

**DEPARTMENT OF JUSTICE: DISABILITY RIGHTS  
SECTION OF THE CIVIL RIGHTS DIVISION**

**FINAL REGULATORY IMPACT ANALYSIS OF THE FINAL  
REVISED REGULATIONS IMPLEMENTING TITLES II AND  
III OF THE ADA, INCLUDING REVISED ADA STANDARDS  
FOR ACCESSIBLE DESIGN**

**FINAL REPORT**

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## ACRONYMS AND ABBREVIATIONS

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1991 ADAAG – ADA Accessibility Guidelines (published July 1991)  
2004 ADAAG – ADA Accessibility Guidelines (published July 2004)  
1991 Standards – Department of Justice regulations implementing the Americans With Disabilities Act (codified at 28 CFR pts. 35 & 36)  
2010 Standards – Department of Justice regulations implementing the Americans With Disabilities Act (to be codified at 28 CFR pts. 35 & 36)  
Access Board – Architectural and Transportation Barriers Compliance Board  
ABRA – Access Board Regulatory Assessment  
ADA – Americans with Disabilities Act  
ADAAG – Americans with Disabilities Act Accessibility Guidelines  
ALT - alterations  
ANPRM – Advance Notice of Proposed Rulemaking  
ANSI – American National Standards Institute  
BLS – Bureau of Labor Statistics  
BR – barrier removal  
CPI – Consumer Price Index  
Department or DOJ – Department of Justice  
EIA – Energy Information Administration  
HUD – Department of Housing and Urban Development  
IBC – International Building Code  
NAICS – North American Industry Classification System  
NC – new construction  
NPRM – Notice of Proposed Rulemaking  
NPV – Net Present Value  
O&M – operation and maintenance  
OMB – Office of Management and Budget  
RA – readily achievable  
RAP – Risk Analysis Process  
SBA – Small Business Association  
SH – safe harbor  
UFAS - Uniform Federal Accessibility Standards

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## OVERVIEW

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As directed by Executive Order 12866 and other statutory and administrative requirements, this final regulatory impact analysis (Final RIA) assesses the economic impact of the final rules revising the regulations of the Department of Justice that implement Titles II and III of the ADA (Final Rules), including estimates of the impact of these rules on small entities. The Final RIA presents a comprehensive benefit-cost analysis of the final rules, assessing the likely incremental impact of nearly 120 “requirements” (*i.e.*, individual revised regulatory provisions, or closely-related groups of revised provisions, that are expected to have an incremental cost impact relative to the Department’s current 1991 Standards) across more than 65 different types of public (Title II) and private (Title III) facilities.

*Methodology and Framework.* The cost-benefit analysis estimates costs and benefits during the time the Final Rules will be in effect as new facilities are built (“new construction”), existing facilities undergo otherwise planned alterations (“alterations”), and existing facilities undergo barrier removal to comply with supplemental requirements not eligible for safe harbor (“barrier removal”). The analysis assumes that buildings have an average lifespan of 40 years and that these rules will likely be superseded by new rules in 15 years.

The analytical framework largely mirrors that of the initial regulatory impact analysis (Initial RIA) that accompanied the Department’s notices of proposed rulemaking published in the *Federal Register* in June 2008. As with the Initial RIA, monetized costs in the Final RIA reflect initial capital outlays for design and construction, as well as applicable recurring costs (such as, for example, ongoing operation and maintenance costs for a required pool lift, replacement costs for a standby power for platform lifts, or the value of a change in productive space due to revised clearance requirements for single-user toilet rooms). The analysis also accounts for costs to users and cost savings to facilities when a less stringent requirement leads to decreased accessibility. Sections 3.1 and 4.1 of the Final RIA detail the methodology and assumptions underlying the estimation of monetized costs. On the benefits side of the economic calculus, the Final RIA incorporates only use-related benefits to persons with disabilities from changes in accessibility attributable to the final rules. These benefits are measured and given a dollar value based upon the requirements’ impact on the amount of time needed to access or use a facility, on improvements in the quality of facility access, or enhancements to the quality of facility use. Detailed discussions of the methodology and assumptions underlying the estimation of monetized benefits are provided in Sections 3.2 and 4.2 of the Final RIA. Other benefits and costs that cannot be quantified due to methodological and data constraints – which for benefits, in the context of these final rules, are undoubtedly significant – are discussed in qualitative terms and explored through a series of threshold analyses in Sections 6.5 and 6.6 of the Final RIA. The Final RIA also uses risk analysis to more realistically address some of the inherent uncertainties underlying the benefit-cost analyses. See Final RIA §§ 3.3, 4.3 (discussing “Risk Analysis” approach) & App. 6 (RAP Primer). Lastly, the Final RIA incorporates changes as compared to the Initial RIA to reflect public comments, updated information/data, and modifications to regulatory provisions in the Final Rules. These updates and revisions are summarized in Chapter 5 of the Final RIA.



*Overall Results.* The overall results of the Final RIA show that the Department’s Final Rules are expected to generate total benefits to society that are greater than their measurable costs under all studied scenarios. Chapter 6 of the Final RIA provides a complete summary and discussion of the results of this regulatory analysis. Most significantly, under the primary baseline scenario used throughout the Final RIA (*i.e.*, 1991 Standards baseline, safe harbor applies, and 50% readily achievable barrier removal for elements not covered by safe harbor), the Final Rules are expected to have a total net present value (NPV) of \$9.3 billion (7% discount rate) and \$40.4 billion (3% discount rate). See Final RIA, Tables ES-1& 6 (reproduced below); Figure 8.

**Total Net Present Value in Primary Scenario at Expected Value (billions \$)**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for baseline)

Discount Rate	Expected NPV	Total Expected PV(Benefits)	Total Expected PV(Costs)
3%	\$40.4	\$66.2	\$25.8
7%	\$9.3	\$22.0	\$12.8

*Results Summary – Costs.* The Final RIA shows that construction costs for new facilities are generally expected to be lower than the capital costs for other types of construction (*i.e.* under alterations or barrier removal). Indeed, nearly one-half of the requirements are expected to have no capital costs or to incur a cost savings as compared to the current 1991 Standards for newly constructed facilities, as architects can “design around” many requirement in the planning stages with minimal cost impacts and some requirements are less stringent and, therefore, less costly. See Final RIA, App. 3-H (Unit Costs). Only three facility groups are projected to have new construction costs that total more than \$26 million over the lifecycle of the final rules: private nursery schools/day care centers; private exercise facilities; and, private aquatic centers. See Final RIA – Supplemental Results (“Supp. Results”), pp. 14-149.

For existing facilities generally, costs of compliance with the Final Rules will be incurred primarily through alterations. The need to make additional changes to comply with these rules during alterations occurs only when an entity voluntarily undertakes an alteration project, and, even then, generally applies only to the particular elements undergoing alteration. Overall, alterations costs vary greatly by facility group, with some facilities experiencing minimal alterations costs (or even cost savings) overall under the final rules (*e.g.*, stadiums, convention centers, auditoriums, airport terminals, public parking facilities, public theaters/concert halls, jails, prisons, bowling alleys, fishing piers, and public amusement parks), and other facilities projected to incur relatively higher costs when undertaking alterations (*e.g.*, hotels, motels, restaurants, single-level stores, indoor service establishments, offices of health care providers, private aquatic centers, and office buildings). See Final RIA – Supp. Results, pp. 14 - 149. The variability in alterations costs are largely driven by the mix of affected elements in each respective facility group.

Barrier removal, by contrast, is a continuing obligation that applies to all public areas of existing Title III-covered private facilities. The Department’s Final Rules, however, provide an element-by-element “safe harbor” provision that is designed to mitigate the impact of these rules on existing private facilities. This safe harbor provisions exempts such facilities from barrier

removal obligations so long as unaltered elements comply with the current 1991 Standards. As a result, many private facilities are expected to incur minimal costs (or no costs) for barrier removal. Indeed, when taking the safe harbor into account, over one-half of the 38 facility groups comprised of Title III-covered (private) facilities are projected to incur no barrier removal costs. See Final RIA – Supp. Results, pp. 14 - 149. To be sure, some existing private facilities will incur barrier removal costs under the final rules due to the presence of elements subject to supplemental requirements for which safe harbor is inapplicable. Title III-covered facility groups with expected barrier removal costs that are higher relative to their respective new construction costs include: private amusement parks; private colleges and universities; exercise facilities; aquatic centers; and, miniature golf courses.

*Results Summary – Benefits.* Turning to the benefits side of the equation, as noted above, the Final RIA puts a dollar value on the use-related benefits to persons with disabilities (estimated using the value of time) arising from changes in accessibility attributable to the final rules. Requirements with the largest monetized benefits (*i.e.*, requirements expected to generate over \$700 million in monetized benefits respectively during the lifecycle of the final rules) include: passenger loading zones; water closet clearance in single-user toilet rooms with out-swinging doors; side reach; bathrooms in accessible guest rooms at lodging facilities (vanities and water closet clearances); accessible exercise machines and equipment; accessible route to exercise machines and equipment; primary accessible means of entry to pools (new construction/alteration); accessible means of entry to wading pools; and, accessible means of entry to spas. See Final RIA, Table 7.

The Final RIA also acknowledges that the final rules will undoubtedly confer substantial and important benefits that cannot be readily quantified or monetized. In this sense, the regulatory assessment must be considered conservative since it almost certainly understates the overall value of the final rules to society. Few would doubt, for example, that the psychological and social impacts of the ability of persons with disabilities to fully participate in public and commercial activities without fear of discrimination, embarrassment, segregation, or unequal access have significant value. Society generally will also experience benefits from the final rules that are difficult to monetize, including: reduced administrative costs (from harmonization of the final rules with model codes); increased worker productivity (due to greater workplace accessibility); improved convenience for persons without disabilities (such as larger bathroom stalls used by parents with small children); and, heightened option and existence values. In addition to unquantifiable benefits, there may be negative consequences and costs as well, such as costs if an entity defers or foregoes alterations, potential loss of productive space during additional required modifications to an existing facility, or possible reduction in facility value and losses to some individuals without disabilities due to the new accessibility requirements. The Final RIA discusses these and other costs and benefits not estimated in the main analysis in qualitative, rather than quantitative, terms. See RIA §§ 6.5, 6.6.

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## EXECUTIVE SUMMARY

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With the adoption of the revised regulations implementing Titles II and III of the Americans with Disabilities Act (Final Rules), the Department of Justice (Department) has commissioned this final Regulatory Impact Analysis (Final RIA or final regulatory analysis). The Final Rules incorporate the 2004 ADA Accessibility Guidelines (2004 ADAAG) published by the Architectural and Transportation Barriers Compliance Board (Access Board) on July 23, 2004. The Access Board conducted an assessment of the potential cost of its revised guidelines but did not assess benefits. This analysis develops and executes a method for estimating both benefits and costs of the Final Rules.

This Final RIA is intended to accompany the Final Rules. The initial step in this process was the publication in the *Federal Register* of a proposed framework for the regulatory analysis, presented as Appendix A to the Advance Notice of Proposed Rulemaking (ANPRM), which was published by the Department on September 30, 2004.<sup>1</sup>

Notices of Proposed Rulemaking (NPRM) for the proposed Title II and Title III regulations were subsequently published on June 17, 2008. A complete copy of the initial regulatory analysis (Initial RIA) conducted by HDR/HLB Decision Economics Inc. was posted on the Department's ADA website ([www.ada.gov](http://www.ada.gov)).<sup>2</sup> In addition, appendices presenting detailed descriptions of the proposed revised ADA standards, the Department's responses to ANPRM comments concerning the proposed methodology for the initial benefit-cost analysis, and a summary of the Initial RIA were also published in the *Federal Register*.<sup>3</sup> The public was given 60 days to submit comments. The Department reviewed and considered the public comments received in response to both the proposed regulations and the Initial RIA. As a result, regulatory revisions have been incorporated into the Final Rules. A discussion of the Final Rules and the Department's responses to NPRM comments relating to the substance of the proposed regulations can be found in the Preambles to the Final Rules. The Final RIA, as well, incorporates changes to estimates, assumptions, and certain aspects of the cost and benefit models in response to public comments on the Initial RIA. The Final RIA estimates the total costs and benefits of the Final Rules, as revised in response to public comments and as a result of further research or updated data sources.

### **Dimensions of the Regulatory Analysis**

#### ***Incremental Effects***

The economic costs and benefits of the Final Rules are estimated for existing and new facilities. Costs and benefits are measured on an *incremental* basis. That is, the economic impact of the Final Rules is represented by the change in benefits as compared to previously enacted access regulations. The primary baseline of the analysis is the 1991 Standards. However, some states and local jurisdictions have adopted more current model codes with different accessibility standards (such as International Building Code (IBC) 2000, IBC 2003, and IBC 2006) and these represent alternative baselines.

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<sup>1</sup> Federal Register, Vol. 69, No. 189: 58768-58786.

<sup>2</sup> Federal Register, Vol. 73, No. 117: 34466-34557.

<sup>3</sup> Federal Register, Vol. 73, No. 126: 36964-37055.

### ***Type of Construction***

The Final Rules impose costs for different types of construction: New Construction, Alterations and Barrier Removal. New construction and alterations apply to new construction of buildings and major renovations at existing sites, respectively. Such projects are thought to involve design opportunities for incorporating accessibility features called for in the Final Rules. Alterations projects take place on existing buildings but are expected to be undertaken on a regular schedule. By contrast, barrier removal projects are assumed to be smaller in scale and undertaken specifically to comply with the Final Rules.

### ***Facilities Subject to Final Rules***

The Final Rules adopt standards for new construction and alteration of facilities covered by Title II (which applies to state and local governments) and Title III (which applies to private entities operating commercial facilities or “public accommodations” as defined by the ADA). For purposes of the final regulatory analysis, public (Title II) and private (Title III) facilities are categorized separately into 68 facility groups or types. Types of facilities include single purpose facilities, such as hotels and classes of facilities, such as retail stores (e.g. clothing, laundromats) or service establishments (e.g., banks, dry cleaners). In some cases, facility groupings are defined based on the size of the facility (e.g., auditoriums and convention centers). Other groupings are based on economic characteristics, especially the responsiveness of average customers to changes in prices for goods and services at facilities. For example, grocery stores and restaurants are in different groups because consumers would have less price responsiveness in shopping at a grocery store than going to a restaurant, since most people can cook at home. Finally, it must be noted that some requirements, such as exercise equipment, may be elements in larger facilities, such as hotels. Benefits from using such elements are assumed to be conditional on facility use.

The Department is adopting a Safe Harbor (SH) provision for existing private (Title III) facilities already compliant with the 1991 Standards. Under Safe Harbor, elements at these existing facilities will not need to undergo barrier removal for revised requirements so long as these elements currently comply with the 1991 Standards. Barrier Removal is not relevant for public (Title II) facilities. Instead, separate program accessibility or “program access” requirements ensure that programs or services offered by a public entity at existing facilities are, when viewed in their entirety, accessible to and usable by persons with disabilities. Program accessibility requirements, however, do not require that every existing facility be made accessible so long as the overall program is itself accessible. Nonetheless, the Final Rules provide that elements in existing public (Title II) facilities that are already compliant with the 1991 Standards or UFAS, are not subject to retrofitting due solely to incremental changes reflected in these Rules. This analysis thus assumes that Title II entities will not need to make changes to existing facilities except in the limited context of supplemental requirements applicable to public play areas, swimming pools, saunas and golf courses.

### ***Description of Requirements***

Over one hundred substantive changes to the 1991 Standards and existing ADA regulations are included in this analysis. These changes include two kinds of requirements – supplemental (or “new”) requirements and revised requirements. Supplemental requirements have no counterpart in the 1991 Standards and the Department is adopting them into the ADA Standards for the first

time. They are comprised of provisions from the Board’s supplemental guidelines relating to State and local government facilities (1998), play areas (2000), and recreation facilities (2002).<sup>4</sup> These requirements apply to elements and spaces that are typically found only in certain facility types, such as courthouses, jails, prisons and a variety of recreational facilities.<sup>5</sup> In some cases, elements subject to new requirements (e.g. swimming pools) are located in facilities that have been subject to the 1991 Standards.

Revised requirements relate to elements or spaces that are currently either subject to a specific scoping or technical requirement in, or are specifically exempted from, the 1991 Standards. They generally apply to elements and spaces that are found in a wide range of commonly used facility types, such as restaurants, retail stores, schools, hospitals, and office buildings. Some revised requirements apply to common building elements (such as windows) and commonly used facility types (such as residential dwelling units) that have no counterpart in the 1991 Standards, but have long been subject to specific accessibility requirements or guidelines from other sources.<sup>6</sup> All of the revised requirements were adopted by the Board in 2004, and all were described in the Board’s final regulatory assessment for the 2004 ADAAG.

Revised requirements fall into two categories, both of which are defined relative to the 1991 Standards: “more stringent” and “less stringent” requirements. Generally speaking, more stringent requirements increase accessibility compared to current requirements, potentially conferring a greater benefit to the general public and imposing a greater cost upon facilities. Less stringent requirements relax standards relative to the current requirement, potentially causing a loss of benefits from access but reduced costs for facilities.

### ***Analytical Scenarios***

To assess the implications of the Safe Harbor provision for existing facilities that are compliant with the 1991 Standards, this analysis provides two sets of results, one with and one without safe harbor. Under the safe harbor, the Department deems compliance with the scoping and technical requirements in the 1991 Standards to constitute compliance with the ADA for purposes of meeting barrier removal obligations. Only elements in a covered facility that are in compliance with the 1991 Standards are eligible for the safe harbor. Thus, under the safe harbor scenario, barrier removal is not required for revised requirements and changes to facilities proceed on the alterations schedule.

To determine the proportion of existing elements that will likely undergo barrier removal or

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<sup>4</sup> New requirements include standards that are not currently being enforced. Among the requirements that are currently being enforced, and therefore do not represent a change and are not included in the assessment, are many of the otherwise “new” requirements applicable to State and local government judicial, detention and correctional facilities.

<sup>5</sup> With respect to elements that are not subject to specific scoping or technical standards in the 1991 Standards, the Department’s current Technical Assistance Manual for Title III provides that “a reasonable number, but at least one” element should be accessible and on an accessible route. Many of the “new” requirements applicable to exercise facilities provide essentially the same thing – that 5% or at least one of each element (exercise machines, lockers, saunas, etc.) be accessible and be on an accessible route. If the “reasonable number but at least one” requirement were to be used, such requirements would not be new, and would in some cases only represent a change for facilities that have more than 20 of a particular element. For purposes of this analysis, however, requirements relating to exercise equipment are modeled as new or “supplemental” requirements.

<sup>6</sup> Such standards include the Uniform Federal Accessibility Standards, the Fair Housing Act, Section 504 of the Rehabilitation Act, and the IBC.

alterations, the analysis utilized the following factors:

- The number of buildings constructed before and after 1993. The proportion of building constructed before 1993 is represented by (c). The buildings constructed after 1993 would be “new” compared to the 1991 Standards and they are assumed to be compliant with the 1991 Standards.
- Elements constructed before 1993 are then sub-divided into whether they have or have not been altered between 1992 and the projected effective date of the Final Rules. The proportion of facilities altered after 1992 is represented by the proportion (b).
- Elements are either subject to more stringent or less stringent requirements. Elements subject to less stringent requirement are not required to undergo barrier removal. Elements subject to more stringent requirement are classified by whether barrier removal is or is not readily achievable. If barrier removal is not readily achievable, the element will become compliant under its alterations schedule. The proportion of elements assumed to be readily achievable is (a).

These conditions imply different cost and construction processes depending on whether the requirement is less or more stringent and whether Safe Harbor is adopted. Data is used to determine (b) and (c); (a) is evaluated under different analytical scenarios.

The 2004 ADAAG was developed with the intent of harmonizing, to the greatest extent possible, the revised requirements with the International Building Code (IBC). IBC baselines are applied where they are more stringent than the 1991 Standards and equivalent to the Final Rules. Separate analyses of these baselines are conducted as scenarios.

## **Methodology Overview**

### ***Approach to Benefits***

Benefit-cost analysis principles are applied to help inform whether the incremental benefits of the Final Rules are justified in economic terms. Benefits from improved accessibility can be categorized either as “use” benefits - incurred because of the use of a facility or requirement - or as non-use benefits. The latter category can include the value of knowing that greater accessibility exists should it be needed in the future and the value of believing that civil society is improved, among others. Use benefits can also be further differentiated among those which accrue from use by persons with a disability and those that accrue from use by a person without a disability (such as the parent with a stroller making use of a curb cut). In the underlying methodological framework of this analysis, use benefits that consumers derive from changes in facility accessibility are generated from changes in the quantity and quality of time spent entering that facility, as well as consuming goods and services there. Benefits are primarily represented by the creation of economic value from these changes in quantity and quality. The “generalized use and access cost” of a facility visit is the basis for determining use value. The actual price paid for goods and services represents only part of this “generalized cost.” Users also incur costs as a manifestation of the time spent traveling to a facility and the time spent within a facility accessing the spaces or features which constitute the primary purpose of the visit. For example, people go to movie theatres to watch a film. Likewise, one goes to a restaurant to eat or to a hotel (as a guest) to sleep. In such cases, the *access time* is the time that a visitor spends within a facility to move from say, the parking lot, to her or his seat, table, or bed. In contrast, *use time* refers to the time spent watching the movie, eating, or sleeping.

This distinction is important because changes in accessibility due to the Final Rules have a direct impact on access time and the quality of the experience for users while visiting a facility. Users derive value from a visit from three distinct sources:

- (a) Changes in access time;
- (b) Enhanced quality of facility access; and
- (c) Enhanced quality of facility use.

Each of these components of value can be monetized with an appropriate “value of time,” namely, an expression of a user’s willingness to pay for changes at the facility. With regard to the first component, minutes saved in accessing a fishing pier, for example, can be monetized by a value of time that depends on the reason for using a facility. That is, facilities that principally involve leisure activities have a lower value than ones involving work, including housework.

The components (b) and (c) identify benefits that are derived from a change in the experience of accessing and using a facility. Enhancing the quality of facility access means changing the experience of moving through doorways, getting a drink of water, or getting into a pool, for example.

Requirements that cause an incremental change in access time -- addressed by component (b) -- enhance value during the entire duration of access time change. Use time -- addressed by component (c) -- is enriched by requirements that fundamentally change the experience of using the facility. For example, requirements that enable users to fish off a pier, use an assisted listening device to better enjoy a lecture or exhibit, or place their wheelchair in a space that does not overlap a circulation path experience increased value throughout the time that they are participating in those activities.

Yet, while this methodological framework assesses and monetizes significant benefits to users with disabilities due to changes in the quantity and quality of facility access and use that can be attributed to the Final Rules, the model nonetheless does not (and cannot) capture the full range of benefits which may accrue from these Rules. User benefits that are neither quantified nor monetized in the final regulatory analysis include: a reduction in stigmatic harm or avoidance in humiliation experienced by a person who uses a wheelchair who can, for the first time, use the single-user toilet room at a restaurant independently due to enhanced clearances; or the sense of integration felt by a high school student with a mobility impairment who can directly access the stage in the school auditorium for school events along with his or her classmates instead of having to use a “back alley” route to the school stage; or the improved safety afforded persons with mobility or visual impairments by having handrails on all stairs that are part of a means of egress. Likewise, this final regulatory analysis does not attempt to quantify use-related benefits that persons *without* disabilities may experience as a result of improved accessibility from the Final Rules (such as a parent with a stroller making use of a curb cut). Lastly, this analysis neither quantifies nor monetizes non-use related benefits arising from the Final Rules, including any cross-sector benefits, option/insurance values, existence values, or third-party employment benefits.

### ***Approach to Costs***

The incremental cost of compliance for facilities includes initial and recurring costs. Initial costs refer to the capital costs incurred for design and construction at the facility to achieve compliance. Recurring costs include, as applicable, operations and maintenance (O&M) and loss

of productive space. In addition, to maintain compliance with some requirements, facilities will need to incur costs to regularly replace equipment. More stringent requirements involve increased capital costs whereas less stringent requirements offer facilities capital cost savings. Recurring costs follow the same cost structure as capital costs.

While the model quantifies and monetizes the costs to facilities in many areas, facilities or users may incur costs in areas that are not quantified or monetized in the model. Such areas include, but may not be limited to, costs from deferring or foregoing alterations, loss of productive space while modifying an existing facility for compliance with those few requirements for which safe harbor does not apply, and reduction in value and losses to individuals without disabilities due to the new accessibility requirements. Some other costs such as potential administrative costs associated with new requirements are estimated in a sensitivity analysis. The absence of a quantitative assessment of such costs is not meant to minimize their importance to individual users or entities that may place a higher value on them. Rather, this analysis does not separately quantify such costs based on the assumption that, given their comparatively low overall cost to society, incorporation of risk analysis (*e.g.*, probability distributions for estimated cost variables) already adequately captures their relative impact on total net value of the Final Rules.

### ***Lifecycle Analysis***

Annual costs and benefits are computed over a long-run planning horizon and summarized by a lifecycle cost analysis. The Department expects that a new rule will be adopted in 10-15 years given the current congressional mandate. Accordingly, it is assumed that 15 years after this rule becomes effective, approximately 2026, construction costs at new buildings and associated accessibility benefits will not be applied to this rule. It is also assumed that existing buildings undergo barrier removal in equal proportions each year as construction costs become potentially readily achievable.

Annual costs and benefits are assumed to extend for 40 years for each building that complies with the Final Rules. The rationale of 40 years is based on the premise that almost all buildings will have been substantially altered by then. The lifecycle analysis also assumes that (a) it takes several years before benefits at a facility reach their full potential; (b) some elements require replacement over and above maintenance costs; and (c) remaining value in the compliant element is captured as a salvage value. Real discount rates of 3.0% and 7.0% are applied to all future costs and benefits as a representation of how the public and private sectors view investments.



## ***Incorporating Uncertainty***

Uncertainty in the estimation of costs and benefits is addressed through risk analysis. Risk analysis principally involves quantifying the uncertainties in factors for estimating costs and benefits. Quantification involves defining probability distributions of possible values for each factor. Data used to quantify uncertainty comes in part from research and discussions with experts. The distributions of cost and benefit factors are inputs to the model, which is then solved using simulation. The simulation process varies all factors simultaneously so that interrelationships between variables are more realistically handled and the impacts of factors on final results are considered jointly. The results include all possible estimates according to their probability of occurrence. In addition, the analysis identifies which parameters are the key influences on results. Risk analysis addresses and in fact, encompasses the approach to sensitivity analysis called for in OMB guidelines.

## **Modeling Benefits**

The model developed to estimate benefits follows directly from the methodology previously discussed. In fact, equating changes in benefits (“utility”) to changes in the quantity and quality of time is convenient because it can draw from extensive literature on the value of time in various activities.

Due largely to data constraints, only use value has been quantified in this analysis. As such, the analysis is conservative – it likely understates the total value of benefits that would be derived by society from the Final Rules. Use value is derived from the anticipated reactions of people with disabilities to changes in access that are tangible and readily quantifiable. User data is generally obtainable through market research and expert opinion. Option and existence values are described instead in qualitative terms.

User benefits are estimated for facility visitors with disabilities who use elements that are affected by the Final Rules.<sup>7</sup> User benefits associated with a direct change in access time are monetized using standard assumptions about the value of time and the type of use. Facility users potentially gain or lose benefits depending on the type of change in access within a facility. Positive and negative benefits are summed for all annual visits to a facility to estimate total net annual benefits. Estimating benefits from changes in access time assumes that all facilities have some level of access.<sup>8</sup> In addition, it is assumed that current users of existing facilities can directly assess the impact of the requirement as a change in access time. Such data consists of minutes saved per use of a facility element.

“Premiums” on the value of time are applied to capture changes in the quality of the user’s experience, and are derived from studies that have documented the increased willingness to pay

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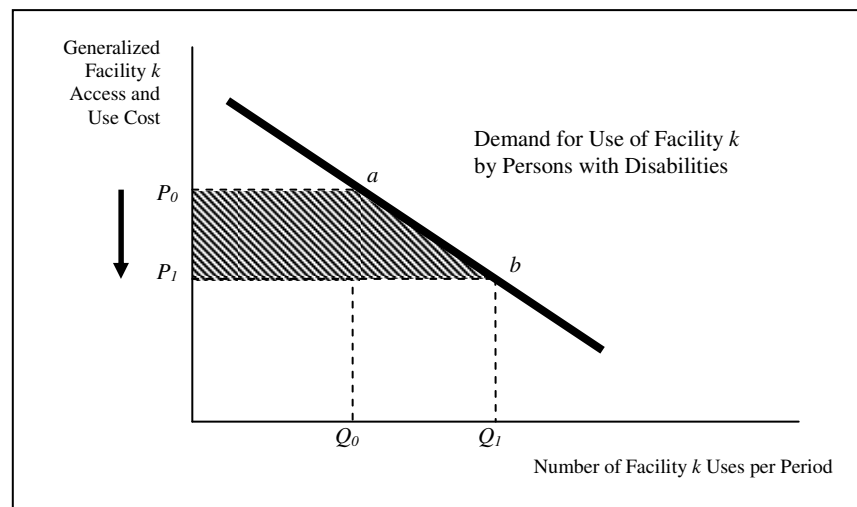
<sup>7</sup> Employees with disabilities are also beneficiaries of requirements that increase access at facilities. However, because limited employment data is available by facility type, most of the assessment of benefits for employees is discussed in the section on unquantified benefits. See Section 6.6.

<sup>8</sup> Initial assumptions concerning the impact of the supplemental requirements on use of recreational facilities by persons with disabilities were that they would permit new *independent* access where it was currently not possible under the 1991 Standards. Evidence from the expert panel suggested that some people with disabilities may already be using such facilities. Their comments, however, also indicate that the supplemental requirements would generate increased use -- potentially dramatic increases in use -- because of latent demand. These features of demand are captured in the development of the demand curve.

for improved access and use of transit facilities. For example, economic analysis and market research have shown that people with disabilities would pay a premium to use accessible transit systems if they were made available. In addition, transit riders would also value sitting more than standing without regard to any change in the time it takes to use the service. Data used to assign values to the user experience of changes in access time and use of facilities has been drawn from these sources.

A diagram of the economic model is shown in Figure ES-1. In the base case (e.g. assuming a baseline of the 1991 Standards), the generalized use and access cost is equal to  $P_0$ . A change in access time at the facility creates  $P_1$ , the generalized use and access cost of the new or revised standard. This change in generalized use and access cost stimulates additional facility visits, shown by an increase from  $Q_0$  to  $Q_1$ . Total annual user benefits are represented by the shaded area  $[P_0 \text{ a b } P_1]$ .

**Figure ES-1: Economic Framework for Estimating Benefits from Changes in Access Time**



## Modeling Costs

Cost estimation is performed for a number of cost categories of buildings and requirements. The approach for each can be summarized in a simplified framework. Overall, the incremental cost of compliance for elements includes initial and recurring costs. Initial costs refer to the capital costs incurred for design and construction at the facility to achieve compliance. Recurring costs include operations and maintenance (O&M) and the value of any lost productive space. Lost space occurs when compliance requires additional maneuvering room be set aside in an accessible space. In addition, to maintain compliance with some requirements, facilities will need to incur costs to regularly replace equipment. More stringent requirements involve increased capital costs whereas less stringent requirements offer facilities capital cost savings. Recurring costs follow the same cost structure as capital costs.

The framework for estimating costs is developed for three types of construction (new construction, alterations and barrier removal) and three categories of cost (capital construction costs, O&M and lost productive space). Applied to the types of construction, the framework only differs in parameter values. The cost framework can be simply defined as:

$$\text{Cost}_{ijkl} = [\# \text{ of facilities}_{ij}] \cdot [\# \text{ of elements per facility}_{ik}] \cdot [\text{cost per element}_{jkl}]$$

Where the subscripts are defined as follows:

- $i$  denotes the facility;
- $j$  denotes the type of construction;
- $k$  denotes the requirement; and
- $l$  denotes the category of cost.

This framework applies to more and less stringent requirements by altering the sign (positive or negative) on the cost per element, as determined by the type of requirement. All unit costs are incremental to a baseline scenario. The number of elements per facility does not change by type of construction.

### *Capital Construction Costs*

Construction costs per element by type of construction (new construction, alterations and barrier removal) differ on basic levels. Construction costs for new construction and alterations are estimated as the cost differential between complying with the 1991 Standards as compared to the 2010 Standards. This implies that, in most cases, construction costs attributable to new construction or alterations would be subtracted from the costs of both standards, and thus, not be measured. New construction and alterations projects represent planned activities at a site, so the Final Rules represent only a difference in design specifications for projects that were being undertaken anyway. By contrast, compliance with the barrier removal requirement implies that whatever level of access is currently provided at a facility, if barrier removal is required, the full cost of retrofitting is attributable to the Final Rules.

### *Operations and Maintenance Costs*

Incremental costs of compliance are not complete without including incremental annual O&M costs. O&M is commonly expressed as a percentage of the unit costs. Requirements can be grouped by the level of use and/or equipment involved in O&M. These O&M categories include (at an increasing level of cost) standard maintenance, high-use maintenance, extraordinary wear and tear, and equipment maintenance. O&M costs are applied for all types of construction. O&M costs start the year after construction has concluded.

### *Loss of Productive Space*

Some requirements also impact (reduce or increase) the space available for productive uses at a facility. The cost to a facility from lost productive space is included in the analysis because it reflects an annual loss in productivity. This cost is assumed to be larger for barrier removal and alterations than for new construction because existing buildings cannot expand the shell and design options may be limited. Loss of productive space is estimated only for the impact of permanent losses of space that directly affect specific facilities' revenues. It was assumed that barrier removal will be scheduled and/or managed in such a way as to make any losses due to the temporary unavailability of productive space negligible relative to total impact on revenues.

The cost of lost productive space is the amount of lost space (in terms of square feet) multiplied by the value of building space (per square foot). Data on lost space has been developed by the Department's architects and independent certified professional cost estimators using standard industry practices. The value of building space has been derived from facility-specific data. Similar to O&M, these costs are applied each year.

### *Replacement Costs*

Some elements added to a building solely to comply with the Final Rules are likely to require replacement during the 40 year period. The cost of replacing the elements adds to the total costs to facilities. For those elements likely to need replacement, the replacement cost is assumed to be equal to the full cost of construction under alterations, except in the case of playgrounds for which unit costs estimates for new construction were used. Only the incremental cost of replacement due to compliance is included.

## **Results**

The primary determination of whether the benefits of the Final Rules exceed costs is the discounted net present value (NPV). A positive net present value increases social resources and is generally preferred. An NPV is computed by summing monetary values of benefits and costs, discounting future benefits and costs using an appropriate discount rate, and subtracting the sum total of discounted costs from the sum total of discounted benefits. All quantified costs and benefits to facilities and the general public are included in this result.

Table ES-1 and Figure ES-2 present total NPV for the primary baseline scenario which assumes that: the safe harbor (SH) is in effect, barrier removal is readily achievable for 50% of elements (RA50), and the 1991 Standards (B1991) serve as the baseline architectural and legal standards. Results for both the 3% and 7% discount rates are shown. Each cost curve is a joint distribution of all uncertainties in the model based on a summation of over 3,000 Monte Carlo simulations.

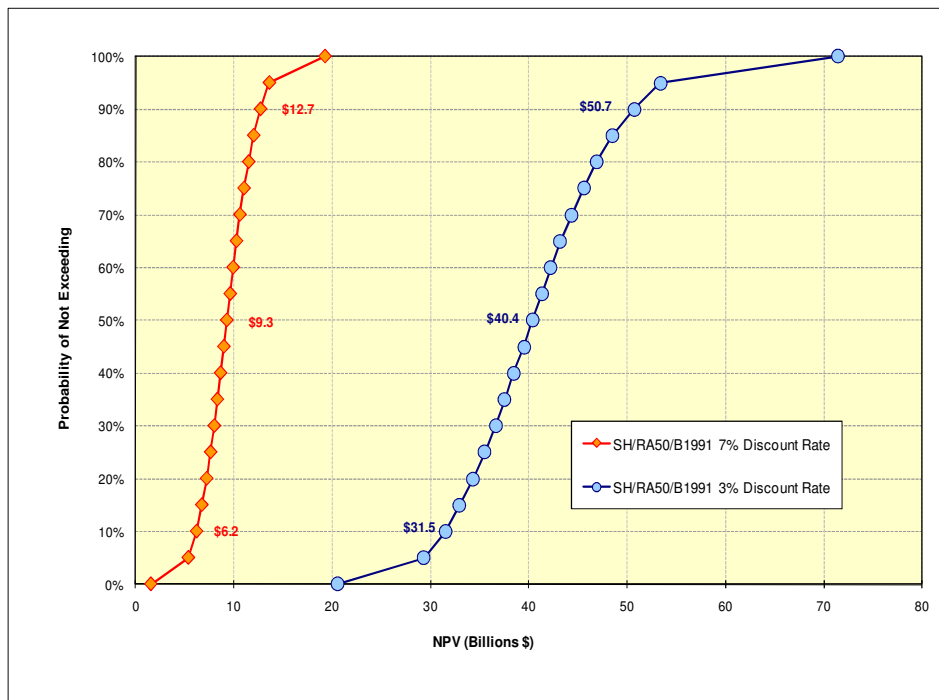
Under the assumptions used to construct this primary baseline scenario, the results indicate that the Final Rules will have a net positive public benefit – i.e., that benefits will exceed costs. For the uncertainties modeled, the risk analysis indicates zero probability that costs would exceed benefits. The latter is seen from the numbers on the chart representing the 10<sup>th</sup>, 50<sup>th</sup> and 90<sup>th</sup> percentiles of the distribution. The range between the 10<sup>th</sup> and 90<sup>th</sup> percentiles represents an 80% confidence interval. This interval can be interpreted as having 80% confidence that the true NPV would be within this range. The most likely NPV is the median (50<sup>th</sup>) percentile (in the middle of this range).

The 7% discount rate indicates that the 80% confidence interval ranges from \$6.2B to \$12.7 B, with a median of \$9.3B. At 3%, this range (\$31.5B to \$50.7B) is much wider and slightly more skewed toward positive NPVs. These results indicate a probability of near zero that costs would exceed benefits. Table ES-1 indicates the expected total benefits and costs from users and facilities, respectively.

**Table ES-1: Total Net Present Value in Primary Scenario at Expected Value (billions \$)  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for baseline)**

Discount Rate	Expected NPV	Total Expected PV(Benefits)	Total Expected PV(Costs)
3%	\$40.4	\$66.2	\$25.8
7%	\$9.3	\$22.0	\$12.8

**Figure ES-2: Total NPV - Primary Scenario: SH/RA50/B1991; 3% and 7% Discount Rates**



The following Figures (ES-3 and 4) show the NPV results for other scenarios.

Figure ES-3 provides an assessment of how NPV changes with different RA assumptions. The chart shows RA at the 0, 50, and 100% levels. The RA scenarios have different costs and benefits, because they apply dissimilar rates of barrier removal as well as different accrual of the benefits associated with them. There are, therefore, two offsetting effects working simultaneously. The first effect pushes costs up as the RA% increases due to a greater number of elements subject to supplemental requirements undergoing barrier removal. The second effect increases the benefits as the RA% increases because the rate of completion of elements related to supplemental requirements is higher, and so are the benefits derived from them. The combination of these effects causes this dissimilar set of curves.

**Figure ES-3: NPV Comparison – Alternate Readily Achievable %: SH/ RA0, RA50, RA100/ B1991**

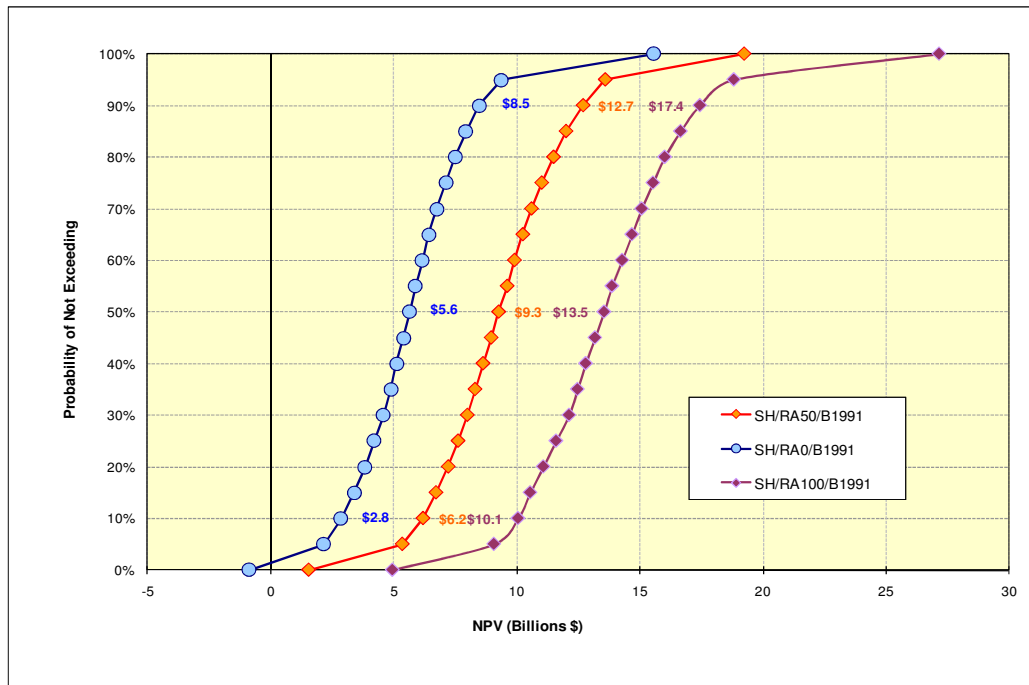


Figure ES-4 represents differences in NPV as between the primary baseline and alternate baselines comprised of three IBC editions (IBC 2000, IBC 2003 and IBC 2006), assuming that each of these respective IBC editions apply uniformly to all requirements and facilities. The results indicate that B2000 (IBC 2000) has the highest NPV and B2006 (IBC 2006) has the lowest and B1991 is less than B2003 (IBC 2003). These results are due to changes in the make-up of the set of requirements that are included in each alternative baseline.

**Figure ES-4: NPV Comparison – Alternate Baselines: SH/RA100/ B1991, B2000, B2003, B2006**

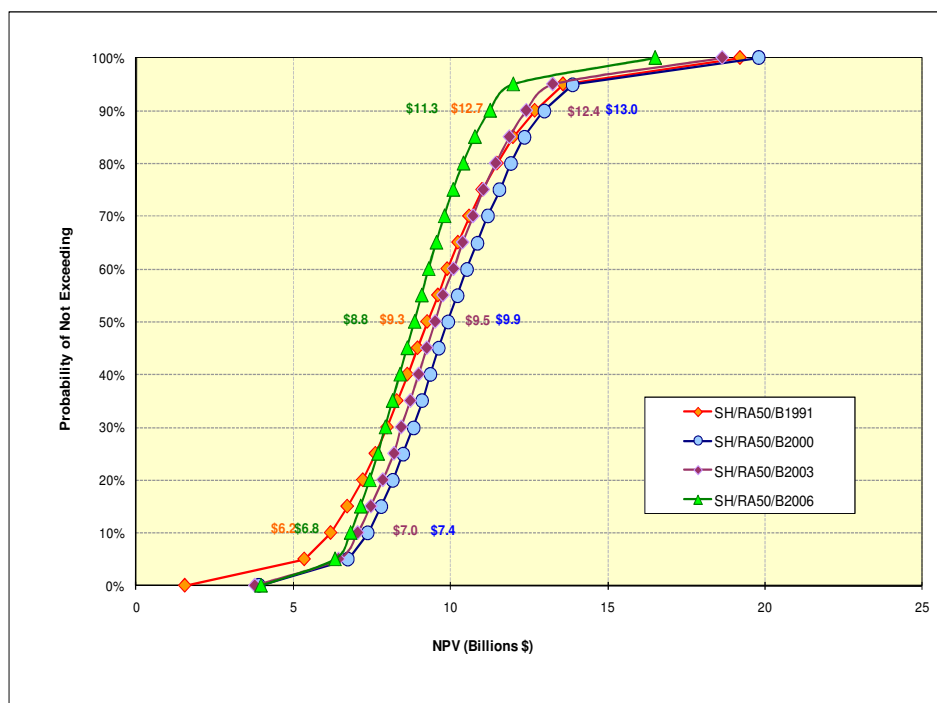


Table ES-2 presents an alternate state- and requirement-specific IBC baseline analysis that shows the estimated impact (in terms of total NPV) of using more refined alternate IBC/ANSI baselines for an illustrative subset of requirements. Since it is not feasible to construct separate IBC baselines for each requirement that precisely track the extent to which the current building or accessibility codes in each respective state or local jurisdiction across the country incorporate IBC or ANSI model code provision which mirror that requirement, a subset of 20 requirements with readily-identifiable IBC/ANSI counterparts was selected for more in-depth study. These requirements were selected for additional research because of their readily identifiable IBC/ANSI counterparts in state or local codes and their predominantly negative net present values. An alternate IBC/ANSI baseline was constructed for each requirement by researching current building and accessibility codes nationwide (*i.e.*, all 50 States, the District of Columbia, and, as applicable, local jurisdictions within States) to identify those jurisdictions that already have adopted its respective IBC/ANSI counterpart(s). Appendix 10 presents a matrix summarizing the results of this research by listing, for each requirement, the State and local jurisdictions that have incorporated equivalent IBC/ANSI model code provisions into their own codes, as well as the types of facilities to which such code provisions apply. Depending on the particular requirement, it is estimated that between 24% and 95% of facilities nationwide are already required to be compliant with a State or local code standard (based on an IBC and/or ANSI provision) that mirrors one of these requirements. Thus, for purposes of these state- and requirement-specific alternate IBC/ANSI baselines, the expected values for NPV were scaled by the appropriate percentages for each requirement.

Table ES-2 shows the results of the alternate state- and requirement specific baselines in terms of total NPV for these requirements. Because these results are based on state- and requirement-specific baselines that reflect the current (rather than estimated or assumed) extent to which equivalent IBC/ANSI model codes have been incorporated into building and accessibility codes nationwide, these results represent the most refined assessment of the NPVs for these requirements that are expected to be realized over the life of these rules. These results assume that, for those State and local jurisdictions which already have incorporated equivalent IBC/ANSI model code provisions into their respective building or accessibility codes, no further action will be necessary with respect to the relevant requirements once the Final Rules become effective. These results also assume that, were the Final Rules not to go into effect, the relevant provisions in these jurisdictions' building or accessibility codes that mirror one or more of these requirements nonetheless would remain unchanged and enforceable.

**Table ES-2: NPV Comparison using Primary (1991 Standards) Baseline and State-by-State Requirement-Specific Alternate IBC/ANSI Baseline**

Req. ID	Requirement	% of Facilities Covered by IBC	NPV 1991 Baseline (million \$)	NPV IBC/ ANSI Baseline (million \$)
3	Automatic Door Break-Out Openings	87%	(\$8)	(\$1)
5	Door and Gate Surfaces	53%	(\$23)	(\$11)
10	Stairs (Alt/BR)	95%	(\$808)	(\$41)
14	Standby Power for Platform Lifts	80%	(\$8)	(\$2)
15	Power-Operated Doors for Platform Lifts	51%	(\$6)	(\$3)
16	Alterations to Existing Elevators	70%	(\$339)	(\$102)
20	Valet Parking Garages	52%	\$83	\$40
28	Water closet clearance in single-user toilet rooms - out swinging door	49%	(\$898)	(\$454)
32	Water closet clearance in single-user toilet rooms - in swinging door	73%	(\$975)	(\$266)
35	Drinking Fountains	47%	(\$66)	(\$36)
37	Side Reach	72%	(\$555)	(\$153)
41	Washing Machines and Clothes Dryers (Scoping)	31%	(\$2)	(\$1)
51	Location of Accessible Route to Stages	36%	(\$152)	(\$97)
52	Wheelchair Space Overlap in Assembly Areas	86%	(\$318)	(\$43)
58	Public TTYS	31%	(\$2)	(\$1)
59	Public Telephone Volume Controls	31%	(\$6)	(\$4)
60	Two-Way Communication Systems at Entrances	24%	(\$9)	(\$7)
61	ATMs and Fare Machines	31%	(\$30)	(\$21)
62	Assistive Listening Systems (technical)	24%	(\$26)	(\$20)
68	Accessible Attorney Areas and Witness Stands	39%	(\$106)	(\$64)
Sum of Above Requirements			(\$4,256)	(\$1,288)

The results in Table ES-2 demonstrate that consideration of these state- and requirement-specific alternate IBC/ANSI baselines for this subset of 20 requirements leads to markedly lower incremental costs (and benefits) for these requirements. Based on these alternate IBC/ANSI baselines, the likely net costs for this subset of requirements falls from -\$4.3B (1991 Standards



baseline) to -\$1.3 B (state- and requirement-specific alternate IBC baselines). It is not known, however, what the overall NPV for the final rules would be were state and requirement-specific alternate IBC/ANSI baselines developed and applied for all requirements. Application of such alternate IBC/ANSI baselines might lead to a decrease in monetized benefits for some requirements as compared to the 1991 Standards baseline.

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## 1. INTRODUCTION

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With the anticipated adoption of the Final Rules, which incorporate the 2004 Americans with Disabilities Act Accessibility Guidelines (2004 ADAAG) the Department of Justice (the Department) has prepared this final regulatory impact analysis (Final RIA or final regulatory analysis) encompassing buildings undergoing new construction, alterations and barrier removal.

This analysis is intended to accompany the Final Rules. The initial step in this process was the publication in the *Federal Register* of a proposed framework for the regulatory analysis, presented as Appendix A to the Advance Notice of Proposed Rulemaking (ANPRM), published by the Department on September 30, 2004.<sup>9</sup> This initial proposed framework for the regulatory analysis has been reproduced in Appendix 1.

Notices of Proposed Rulemaking (NPRM) for the proposed Title II and Title III regulations were subsequently published on June 17, 2008. A complete copy of the initial regulatory analysis (Initial RIA) conducted by HDR/HLB Decision Economics Inc. was posted on the Department's ADA website ([www.ada.gov](http://www.ada.gov)).<sup>10</sup> In addition, appendices presenting detailed descriptions of the proposed revised ADA standards, the Department's responses to ANRPM comments concerning the proposed methodology for the initial benefit-cost analysis, and a summary of the Initial RIA were also published in the *Federal Register*.<sup>11</sup> The public was given 60 days to submit comments. The Department reviewed and considered the public comments received in response to both the proposed regulations and the Initial RIA. As a result, regulatory revisions have been incorporated into the Final Rules. A discussion of the Final Rules and the Department's responses to NPRM comments relating to the substance of the proposed regulations can be found in the Preambles to the Final Rules. The Final RIA, as well, incorporates changes to estimates, assumptions, and certain aspects of the cost and benefit models in response to public comments on the Initial RIA. The Final RIA estimates the total costs and benefits of the Final Rules, as revised in response to public comments and as a result of further research or updated data sources.

This final regulatory analysis estimates the economic impact of the Final Rules, in terms of monetized costs and benefits, on all covered facilities and persons with disabilities. The economic impacts are measured on an *incremental* basis. This means that the impact is measured against an accessibility standard; the primary standard is the current 1991 Standards. Incremental impacts are also measured against model accessibility standards adopted by various States and local jurisdictions.

This report first presents an overview of the 2004 ADAAG and highlights key dimensions of the final regulations that pertain to the analysis. The next chapter discusses the approach to assessing the regulatory impact. Chapter four discusses data and assumptions for measuring costs and benefits and identifies appendices that provide additional details. Chapter five discusses the updates to the Final RIA and responses to NPRM comments addressing RIA-related issues. Chapter six discusses analytical results of the regulation, individual requirements and facilities.

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<sup>9</sup> Federal Register, Vol. 69, No. 189: 58768-58786.

<sup>10</sup> Federal Register, Vol. 73, No. 117: 34466-34557.

<sup>11</sup> Federal Register, Vol. 73, No. 126: 36964-37055.

Several scenarios are evaluated to assess how costs and benefits change under different assumptions. This chapter also explores the qualitative value of benefits not included in the main estimation. Chapter seven discusses the approach to assessing the impact of the Final Rules on small businesses.

Appendices present additional information about the analysis and especially the data and assumptions. Appendix 1 reproduces Appendix A to the Advance Notice of Proposed Rulemaking (ANPRM). Appendix 2 summarizes the requirements in the Final Rules likely to have an economic impact. Appendix 3 contains data related to the estimation of the costs. Appendix 4 contains the data related to the benefits estimation. Appendix 5 discusses the estimation of small business facilities and receipts. Appendix 6 discusses the RAP session in detail. Appendix 7 includes the benefits and cost RAP meetings' agenda and lists the participants. Appendix 8 discusses the changes represented by the new and revised requirements. Appendix 9 lists the applicable baseline for the IBC scenarios. Appendix 10 provides a matrix of select requirements and adoption by State and local jurisdictions nationwide of their respective IBC/ANSI code counterparts.

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## **2. ADAAG BACKGROUND**

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The scope of the final regulatory analysis, applied to the Final Rules, can be viewed as consisting of several parts:

- A restructuring of the 1991 ADAAG issued by the Access Board as final revised guidelines in 2004, containing 68 changed requirements identified and subjected to a regulatory analysis by the Access Board for purposes of estimating their annual capital costs in terms of new construction and alterations, approved by the Office of Management and Budget;
- New requirements for certain State and local facilities first issued by the Access Board as final guidelines in 1998 and not subjected to final regulatory analysis by the Access Board;<sup>12</sup>
- New requirements for play areas first issued by the Access Board as final guidelines in 2000 and subjected to a regulatory analysis by the Access Board to estimate the capital and operations and maintenance (O&M) costs of the new provisions for purposes of new construction and alterations (approved by the Office of Management and Budget);<sup>13</sup> and
- New requirements for other recreational facilities first issued by the Access Board as final guidelines in 2002 and subjected to a regulatory analysis by the Access Board to estimate the capital costs of the new provisions for purposes of new construction and alterations (approved by the Office of Management and Budget).<sup>14</sup>

These different parts are now incorporated into the 2004 ADAAG, with the application and scoping provisions for all parts in ADA Chapters 1 and 2, and the technical requirements for all parts in the remaining chapters of the document.

The 2004 ADAAG imposes requirements for different types of construction: new construction, alterations and architectural barrier removal. New construction and alterations apply to new construction of buildings. Alterations involve major renovations at existing sites that are assumed to be undertaken on a regular basis to maintain building features to current levels of function, quality and style. Alterations differ from barrier removal in that barrier removal is assumed to be undertaken in response to a compliance measure and is smaller in scope.

### **2.1 Access Board Regulatory Assessment**

In order to determine which of the requirements in the Final Rules represent a substantive change from the 1991 Standards, the Department relied primarily on the Access Board's final regulatory assessment for the 2004 ADAAG, which was published in July 2004.<sup>15</sup> The Department also consulted the Board's earlier regulatory assessments for its supplemental guidelines for play areas (2000) and recreation facilities (2002).<sup>16</sup> Because the costs of these supplemental guidelines

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<sup>12</sup> 63 FR 2000, Jan. 13, 1998. Federal Register, Vol.63, No. 8:2000-2058.

<sup>13</sup> 65 FR 62497, Oct. 18, 2000. Federal Register, Vol. 65. No. 202:62498-62529.

<sup>14</sup> 67 FR 56352, Sept. 3, 2002. Federal Register, Vol. 67, No. 170: 56352-56440.

<sup>15</sup> The Board's final assessment for the 2004 ADAAG is available on its web site at <http://www.access-board.gov/ada-aba/reg-assess.htm>.

<sup>16</sup> The Board's final assessments for its supplemental guidelines for play areas and recreation facilities are available

had already been adopted into the ADAAG, they served as part of the Board's baseline, and were not included in its 2004 regulatory assessment.

One difference between the Board's regulatory assessments and the Department's assessment is that the Board compared the provisions in the 2004 ADAAG to those in the 1991 ADAAG (as amended through 2002). The Department however must compare the provisions in the 2004 ADAAG (as ADA Standards) to currently enforceable law, represented primarily by the 1991 Standards (adopted in 1991 and amended in 1994). Although the 1991 Standards are consistent with the 1991 ADAAG, the two documents are not identical – there are some slight differences, both in the text of the requirements and as they have been interpreted and enforced by the Department. Because the purpose of the Department's assessment is to determine how its adoption of the Final Rules will change the status quo, where a provision in the 2004 ADAAG was identified by the Board as a substantive change but is nonetheless consistent with the Department's interpretation of the 1991 Standards and its enforcement practice, the Department's adoption of that provision in the Final Rules represents not a substantive change but merely a codification of current law.<sup>17</sup>

In its regulatory assessment for the 2004 ADAAG, the Board has identified 68 requirements that represented a substantive change relative to the 1991 ADAAG (as amended through 2002) for purposes of newly constructed or altered facilities.<sup>18</sup> These changes were divided into three categories – “reduced cost” requirements, “no or minimal cost” requirements, and “increased cost” requirements. “Reduced cost” requirements include those for which the scoping or technical specifications for newly constructed or altered facilities have been made less stringent, or where new exceptions have been provided. “No or minimal cost” requirements include those that the Board determined would neither add new features or space nor present new design challenges when applied to newly constructed or altered facilities. Finally, the “increased cost” requirements include those that the Board determined would increase the cost of compliance for newly constructed or altered facilities, either by increasing the scoping requirement, making the technical specifications more stringent, or eliminating exceptions.

The Board then assessed the unit cost (the direct, one-time capital cost of making a given element or space compliant with a particular requirement) of each of the 14 requirements it had determined would impose an “increased cost” relative to the 1991 ADAAG (as amended through 2002), and, of those, selected 10 requirements that it determined were likely to have the greatest cost impact on newly constructed and altered facilities in four facility groups (office buildings, hotels, hospitals and long-term care facilities, and public housing). The Board selected these facility types based on its determination that half (or 7) of the 14 “increased cost” requirements would primarily affect these facilities, so that it could be assumed that these facilities were likely

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at <http://www.access-board.gov/play/assess.htm> and <http://www.access-board.gov/recreation/reg-assessment.htm>, respectively. The Board had conducted an initial, but not a final, regulatory assessment for its supplemental guidelines for State and local government facilities issued in 1998.

<sup>17</sup> For example, the requirement that wheelchair spaces and lines of sight in assembly areas be dispersed (sections 221.2.3 and 802.2 of the 2004 ADAAG) represents no change from the Department's interpretation of the current standard, and therefore is not included in this assessment. Other examples of revisions identified by the Board that represent no change from the 1991 Standards include newly specified exceptions for shower and sauna doors in hotel guest rooms (sections 206.5.3 and 224.1.2) and signs required to have raised characters (section 216).

<sup>18</sup> According to the Board's 2004 regulatory assessment: “This assessment focuses on revisions in the final revised guidelines that either add new features or space to facilities, or present design challenges.”

to experience relatively higher costs than other types of facilities. The Board aggregated the unit costs for these requirements on an annual basis as applied to all newly constructed and altered facilities in these four facility groups, and then extrapolated the results to all newly constructed and altered facilities generally.

In the ANPRM, the Department stated that it expected to “adopt” the Access Board’s final regulatory assessment for the 2004 ADAAG as its assessment of the cost impact that the Final Rules will have on newly constructed and altered facilities. At the same time, however, the Department recognized that its assessment of the costs for newly constructed and altered facilities would have to be broader than that of the Board. First, the Department’s assessment would have to include the costs associated with the supplemental guidelines, which, because they had been adopted by the Board in earlier rulemaking initiatives, had been considered part of the Board’s baseline. In addition, as the Department noted in the Regulatory Framework to the ANPRM, the unit costs estimated by the Board, though they could serve as a starting point, would have to be adjusted for inflation, supplemented with indirect costs, balanced with reduced costs, and then spread out over the 40-year lifecycle of the regulation. Finally, because the Department was undertaking a comprehensive benefit-cost analysis, the adjusted, supplemented and annualized costs of each requirement would have to be paired with an assessment of the corresponding benefits.

## **2.2 Requirements**

Based upon its review of the Board’s final regulatory assessment for the 2004 ADAAG, the Department has determined the Final Rules will result in over 100 substantive changes to the 1991 Standards (Table 1 and Appendix 2). These changes are represented by two kinds of requirements – “supplemental” (or “new”) and “revised” requirements. The supplemental requirements are those that have no counterpart in the 1991 Standards and were initially adopted into ADAAG in the form of “supplemental guidelines” providing scoping and technical provisions for judicial, detention and correctional facilities (1998), play areas (2000), and recreation facilities (2002). While the supplemental requirements have been a part of the ADAAG since they were adopted, the Department is now adopting them into the ADA Standards for the first time. These requirements apply to elements and spaces that are typically found only in certain facility types, such as courthouses, jails, prisons, exercise facilities, sports and recreation facilities, recreational boating and fishing facilities, golf courses, miniature golf courses, amusement rides and playgrounds. (Some supplemental requirements, such as those relating to exercise facilities, swimming pools, and play areas, will apply to a broader range of facility types.) The Department has identified approximately 30 individual requirements from the supplemental guidelines that will represent substantive changes to the ADA Standards and are not currently being enforced.<sup>19</sup>

Revised requirements apply to elements or spaces that are currently either subject to (or specifically exempted from) a scoping or technical requirement in the 1991 Standards, and apply to the types of elements and spaces that are typically found in a wide range of commonly used

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<sup>19</sup> Among the requirements that are already being enforced, and therefore do not represent a change and are not included in the assessment, are many of the otherwise new requirements applicable to State and local government judicial and correctional facilities.

facility types, such as restaurants, retail stores, schools, hospitals, and office buildings. Also the revised requirements apply to common building elements (such as windows) and commonly used facility types (such as residential dwelling units) that have long been subject to specific accessibility requirements, either through UFAS, another Federal accessibility standard (for example, under the Fair Housing Act or Section 504 of the Rehabilitation Act) or the International Building Code (IBC). All of the revised requirements were adopted by the Board in 2004 – rather than through earlier supplemental rulemaking – and all were described in the Board’s final regulatory assessment for the 2004 ADAAG.

This assessment defines revised requirements relative to the 1991 Standards as either “more stringent” or “less stringent”. Generally speaking, more stringent requirements are those that have been revised to require more accessibility than the current requirements, potentially conferring a greater benefit at a higher cost, while less stringent requirements are those that have been relaxed relative to the current requirement, potentially conferring a lesser benefit at a lower cost. For the most part, these categories correspond to the Board’s categories “no or minimal cost” and “increased cost,” on the one hand, and “reduced cost,” on the other. The difference in terminology is attributable to the difference between the two assessments: with respect to each requirement, the Board’s assessment measured only the costs, while the Department’s assessment has measured both the benefits and the costs.

The Department’s categories, however, do not track perfectly with those of the Board. Because the Board was assessing the cost impact of each requirement, first, against a baseline of the 1991 ADAAG (as amended through 2002), and secondly, as applied only to a select range of newly constructed and altered facility types, in cases where the 1991 Standards as interpreted and enforced by the Department requires more than the 1991 ADAAG (as amended through 2002), or where the nature of the revision has different cost implications for different types or sizes of facilities across the spectrum of facility types to which the requirement will apply, the Department has categorized the requirement differently. For example, the Department has determined that the revised requirements relating to public entrances (section 206.4.1 of the 2004 ADAAG), which the Board had determined would likely effect no change, may effect a change for certain very large facilities (not addressed in the Board’s assessment) for which the revised requirement may be less stringent than the current requirement. Likewise, the requirement relating to dwelling units with communication features (sections 809.5 and 708.4), which the Board had categorized as a more stringent requirement when costed against a baseline of UFAS, is being costed in this assessment against both UFAS (with respect to which it is more stringent) and an alternate baseline of the transient lodging provisions of the 1991 Standards, compared to which it is less stringent.<sup>20</sup>

Similarly, the revised requirement exempting parking spaces designated for the exclusive use of buses, delivery vehicles, law enforcement vehicles and the like (section 208.1, Exception), which the Board had identified as a “reduced cost” requirement, represents no change from the Department’s current interpretation of the 1991 Standards. However, because in revising the

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<sup>20</sup> The reason for this is that Title II entities that elected to comply with ADAAG rather than UFAS (an option they no longer have under the Final Rules), due to the absence of specific technical and scoping requirements for residential dwelling units in ADAAG, have been obliged to meet the higher accessibility standards for transient lodging facilities.

requirement the Board added a provision requiring parking lots containing such spaces, if they are accessed by the public, to provide an accessible loading zone, this requirement has been categorized as a “more stringent” requirement for purposes of this assessment. Similarly, due to differences between the Board’s interpretation of the 1991 ADAAG and the Department’s interpretation and enforcement of the 1991 Standards, other revised requirements that the Board had identified as imposing a “reduced cost” – including the revised scoping requirements for self-service storage facility spaces and washing machines and clothes dryers – have been categorized as “more stringent” requirements in this assessment.

In addition to the supplemental and revised requirements, the Department is also adopting in the Final Rules other regulatory requirements, including codifications of existing law, and requirements expected to have no cost impact. The codifications of existing law and the requirements expected to have no cost impact have not been incorporated into the Final RIA.

Table 1 lists the revised and supplemental requirements from the Final Rules which have been included in this final regulatory analysis. A summary of these requirements is provided in Appendix 2, most requirements are assumed to apply to one or more facility groups. Allocation of requirements into facilities is discussed in Chapter 3.

**Table 1: List of Requirements**

**Requirements Modeled:**

ID	Requirement	ID	Requirement
1	Public Entrances	25	Parking Spaces (Signs)
2	Maneuvering Clearance or Standby Power for Automatic Doors	26	Passenger Loading Zones at Medical Care and Long-Term Care Facilities
3	Automatic Door Break-Out Openings	27	Ambulatory Accessible Toilet Compartments
4	Thresholds at Doorways	28	Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors
5	Door and Gate Surfaces	29	Shower Spray Controls
6	Location of Accessible Routes	30	Urinals
7	Common Use Circulation Paths in Employee Work Areas	31	Multiple Single-User Toilet Rooms
8	Accessible Means of Egress	32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors
9	Stairs (NC)	33	Water Closet Location and Rear Grab Bar
10	Stairs (ALT/BR)	34	Patient Toilet Rooms
11	Handrails Along Walkways	35	Drinking Fountains
12	Handrails	36	Sinks
13	Accessible Routes from Site Arrival Points and Within Sites	37	Side Reach
14	Standby Power for Platform Lifts	38	Sales and Service Counters (NC)
15	Power-Operated Doors for Platform Lifts	39	Sales and Service Counters (ALT)
16	Alterations to Existing Elevators	40	Washing Machines and Clothes Dryers (technical)
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	41	Washing Machines and Clothes Dryers (scoping)
18	“LULA” and Private Residence Elevators	42	Self-Service Storage Facility Spaces
19	Van Accessible Parking Spaces	43	Limited Access Spaces and Machinery Spaces
20	Valet Parking Garages	44	Operable Parts
21	Mechanical Access Parking Garages	45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)
22	Direct Access Entrances from Parking Structures	46	Operable Windows
23	Passenger Loading Zones	47	Dwelling Units with Communication Features [1991 Standards]
24	Parking Spaces		



ID	Requirement
48	Dwelling Units with Communication Features [UFAS]
49	Galley Kitchen Clearances
50	Shower Compartments with Mobility Features
51	Location of Accessible Route to Stages
52	Wheelchair Space Overlap in Assembly Areas
53	Lawn Seating in Assembly Areas
54	Handrails on Aisle Ramps in Assembly Areas
55	Wheelchair Spaces in Assembly Areas
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)
57	Accessible Route to Press Boxes
58	Public TTYS
59	Public Telephone Volume Controls
60	Two-Way Communication Systems at entrances
61	ATMs and Fare Machines
62	Assistive Listening Systems (technical)
63	Visible Alarms in Alterations to Existing Facilities
64	Detectable Warnings (scoping)
65	Detectable Warnings (technical)
66	Assistive Listening Systems (scoping)
67	Accessible Courtroom Stations
68	Accessible Attorney Areas and Witness Stands
69	Raised Courtroom Stations Not for Members of the Public
70	Accessible Route to Exercise Machines and Equipment
71	Accessible Exercise Machines and Equipment
72	Accessible Saunas and Steam Rooms (NC)
73	Accessible Lockers
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms
75	Wheelchair Spaces in Team or Player Seating Areas
76	Accessible Route in Court Sport Facilities
77	Accessible Route to Bowling Lanes
78	Shooting Facilities with Firing Positions
79	Primary Accessible Means of Entry to Pools (NC/ALT)
80	Accessible Means of Entry to Wading Pools
81	Accessible Means of Entry to Spas
82	Accessible Route to Boating Facilities
83	Accessible Boarding Piers (NC)
84	Accessible Boarding Piers (ALT/BR)

ID	Requirement
85	Accessible Boat Slips (NC)
86	Accessible Boat Slips (ALT/BR)
87	Accessible Route to Fishing Piers
88	Accessible Fishing Piers and Platforms
89	Accessible Route to Golf Courses
90	Accessible Teeing Grounds, Putting Greens, and Weather Shelters (NC)
91	Accessible Teeing Grounds, Putting Greens, and Weather Shelters (ALT/BR)
92	Accessible Practice Putting Greens, Practice Teeing Grounds, and Teeing Stations at Driving Ranges
93	Accessible Route to Mini Golf Holes
94	Accessible Mini Golf Holes
95	Accessible Route to Amusement Rides
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride
97	Maneuvering Space in Load and Unload Area of Amusement Ride
98	Signs at Amusement Rides
99	Accessible Route to Play Components (BR)
100	Accessible Play Components (BR)
101	Accessible Route to Play Components (ALT)
102	Accessible Play Components (ALT)
103	Accessible Route to Play Components (NC)
104	Accessible Play Components (NC)
106	Post Secondary School Multi-Story Dorm Facility
107	Mobility Accessible Prison Cell
108	Communication Accessible Prison Cell
109	Social Service Establishments – Elevator Access (NC)
110	Social Service Establishments – Clear Floor Space around Beds
111	Accessible Saunas and Steam Rooms (ALT/BR)
112	Primary Accessible Means of Entry to Pools (BR)
113	Housing at Places of Education – Kitchen Turning Space
114	Housing at Places of Education – Kitchen Work Surfaces
115	Secondary Accessible Means of Entry into Pools (NC/ALT)
116	Secondary Accessible Means of Entry into Pools (BR)
117	Social Service Establishments – Roll-in Shower

**Requirements Without Significant Cost Implications And Not Modeled:**

Revised policy relating to service animals
Prohibition on the installation of "removable" platforms over accessible seating in assembly areas
Policy regulating electronic personal mobility devices (e.g., Segways)
Policy relating to detention facilities
Requirement that stadiums with 5000+ seats provide three companion seats (rather than one) for each wheelchair space
Eliminating the regulatory option permitting Title II entities to comply with UFAS
Coordinating the requirements for residential dwelling units with HUD's 504 rule

## 2.3 Facilities

The Final Rules adopt standards for new construction and alteration of facilities covered by Title II (which applies to state and local governments) and Title III (which applies to private entities operating commercial facilities or “public accommodations” as defined by the ADA). For purposes of the final regulatory analysis, public (Title II) and private (Title III) facilities are categorized separately. Table 2 lists the 68 facility groups or types assessed in the Final RIA. Types of facilities include single purpose facilities such as hotels and classes of facilities such as retail stores (e.g. bakeries, laundromats) or service establishments (e.g. banks, dry cleaners). In some cases, facility groupings are defined based on the size of the facility (e.g. auditoriums and convention centers). Groups are also distinguished by economic characteristics, especially the responsiveness of average customers to changes in prices at facilities. For example, consumers would have less price responsiveness in buying gasoline than going to a restaurant because many people need to drive a car and because people can always cook at home. Finally, it must be noted that some facilities, such as play areas and pools may be elements in larger facilities, such as hotels. Benefits from using such elements are assumed to be conditional on facility use.

**Table 2: List of Facilities**

A	Inns
B	Hotels
C	Motels
D	Restaurants
E	Motion Picture House
F	Theatre / Concert Hall
G	Stadiums
H	Auditoriums
I	Convention Centers
J	Single Level Stores
K	Shopping Malls
L	Indoor Service Establishments
M	Offices of Health Care Providers
N	Hospitals
O	Nursing Homes
P	Terminal (Private Airports)
Q	Depots
R	Museums, Historical Sites & Libraries

S	Parks and Zoos
T	Amusement Parks
U	Nursery Schools - Daycare
V	Elementary Private Schools
W	Secondary Private Schools
X	Undergraduate and Postgraduate Private Schools
Y	Ski Facilities
Z	Homeless Shelters
AA	Food Banks
AB	Social Service Establishments
AC	Exercise Facilities
AD	Aquatic Centers / Swimming Pools
AE	Bowling Alleys
AF	Golf Courses (private with public access)
AG	Golf Courses (private only)
AH	Miniature Golf Courses
AI	Recreational Boating Facilities
AJ	Fishing Piers and Platforms
AK	Shooting Facilities
AM	Office Buildings
AN	Elementary Public Schools
AO	Secondary Public Schools
AP	Undergraduate and Postgraduate Public Schools
AQ	Public Housing
AR	State and Local Judicial Facilities (courthouses)
AS	State and Local Detention Facilities (jails)
AT	State and Local Correctional Facilities (prisons)
AU	Parking Garages
AV	Self service Storage Facilities
AW	Theatre / Concert Halls (public)
AX	Stadiums (public)
AY	Auditoriums (public)
AZ	Convention Centers (public)
BB	Hospitals (public)
BC	Nursing Homes (public)
BD	Museums, Historical Sites & Libraries (public)
BE	Parks and Zoos (public)
BF	Homeless Shelters (public)
BG	Exercise Facilities (public)
BH	Social Service Establishments (public)
BI	Aquatic Centers / Swimming Pools (public)
BJ	Miniature Golf Courses (public)
BK	Recreational Boating Facilities (public)
BL	Fishing Piers and Platforms (public)

BM	Office Buildings (public)
BN	Parking Garages (public)
BO	Golf Courses (public)
BP	Restaurants (public)
BQ	Amusement Parks (public)

## 2.4 Structure of Analysis and Scenarios

### 2.4.1 Barrier Removal and Safe Harbor

To minimize the financial burden upon existing facilities, while still maintaining high levels of accessibility for persons with disabilities, the Department is adopting a safe harbor (SH) policy. Under SH, the Department will deem compliance with scoping and technical requirements in the 1991 Standards to constitute compliance with the ADA for purposes of meeting BR obligations under the Final Rules on an element-by-element basis. In other words, only elements in an existing covered facility which are in current compliance with the applicable scoping and technical requirements of the 1991 Standards will be eligible for SH.

Safe harbor will not, however, apply to certain requirements or facilities. First, safe harbor does not apply to supplemental requirements – such as the requirements covering play areas and recreational facilities – because such requirements necessarily have no counterpart in the 1991 Standards. Second, existing public facilities operated by State and local governments are not covered by this particular safe harbor provision because barrier removal obligations only arise under Title III. Existing Title II-covered facilities are instead subject to program access requirements.<sup>21</sup> Nonetheless, the Final Rules provide that elements in existing public (Title II) facilities that are already compliant with the 1991 Standards or UFAS, are not subject to retrofitting due solely to incremental changes reflected in these Rules. This analysis thus assumes that Title II entities will not need to make changes to existing facilities except in the limited context of supplemental requirements applicable to public play areas, swimming pools, saunas and golf courses.

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<sup>21</sup> Generally speaking, program access considerations fall outside the scope of this regulatory analysis. However, this analysis does take program access into account when assessing the incremental impact of the Department's proposed Title II requirements for public play areas, swimming pools and saunas and steam rooms. The impact of program access is included in the economic calculus in the limited context of these facilities both because the Department's Title II regulations propose several exemptions and exceptions uniquely applicable to these facilities, and because satisfying program access requirements with respect to these facilities would necessarily require some measure of *physical* accessibility that could not be solely addressed through programmatic changes. Program access for these facilities is incorporated into the model through adjustment of the likelihood that the respective elements comprising each of the three facilities types -- public play areas, swimming pools and saunas -- would require change to bring them into compliance with Title II requirements. See Section 3.1 (discussing methodology used to calculate the number of elements per facility). For example, according to sources cited in the Access Board's regulatory analysis for recreational facilities, a large majority of public swimming pools already provide at least one means of accessible entry. See Architectural and Transportation Barriers Compliance Board, *Assessment of Benefits and Costs of Final Accessibility Guidelines for Recreation Facilities*, section 10.4 (Sept. 2002). Given this high rate of accessibility in existing public pools, the likelihood that an existing public pool would need to add an accessible means of entry (by pool lift or sloped entry) in order to comply with the proposed Title II regulations was "scaled back" in the model to reflect existing accessibility levels. As a result, both the costs and benefits of the final requirements for public (Title II) swimming pools are lower than they otherwise would have been if existing levels of program accessibility had not been taken into account.

As the Department pointed out in the Advance Notice of Proposed Rulemaking (ANPRM), published on September 30, 2004:<sup>22</sup>

Several considerations support this approach. To the extent places of public accommodation have complied with the specific scoping and technical requirements of the current ADA Standards, it would be an inefficient use of resources to require them to retrofit simply to comply with the revised ADA Standards if the change provides only a minimal improvement in accessibility. In addition, covered entities would have a strong disincentive to comply voluntarily with the readily achievable barrier removal requirement if, every time the ADA Standards are revised, they are required once again to retrofit elements just to keep pace with the current standards.

Arguments against implementing SH include the possibility that some up-to-date technologies would not be implemented for barrier removal purposes. This could diminish accessibility for persons with disabilities. Although the reduced improvements compared to new facilities may be minor, some people may lose significant benefits by establishing SH.

## 2.4.2 Classification of Requirements

The framework for determining the impact of the Final Rules on the elements is illustrated in Figure 1. The framework focuses on elements, not facilities, because it is elements that are evaluated for compliance. Viewed another way, facilities are entirely composed of elements, some of which are subject to requirements. Facilities and elements both originate from the date the building is completed. They age, however, at different rates because each time an alteration is undertaken, elements are renewed. This framework classifies elements with respect to when they were built, the likelihood that a requirement will be readily achievable, and whether or not SH is adopted. This framework also illustrates the differences in how revised and supplemental requirements are modeled.

The number of existing elements that are subject to the 1991 Standards is divided into several groups to estimate the current level of compliance. Altered and newly constructed buildings are assumed to fully comply with the 1991 Standards. Compliance with the 1991 Standards is also assumed for existing elements that: were built after 1993; altered after 1992; or have undergone barrier removal after 1992. Non-compliant elements are assumed not to have undergone retrofitting due to barrier removal that was not readily achievable. Classification of elements is as follows:

- The first division classifies elements as being in facilities designed and constructed for first occupancy before or after 1993. Facilities constructed after December 1992 are “new” compared to the 1991 Standards.<sup>23</sup> Figure 1 labels these conditions as “Built before 1993” and “Built after 1993”, respectively. The number of existing buildings constructed before 1993 is represented as the proportion (c).<sup>24</sup>

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<sup>22</sup> Federal Register, Vol. 69, No. 189: 58768-58786, 58771.

<sup>23</sup> Under the 1991 Standards, the new construction standards apply to facilities designed and constructed for first occupancy after January 26, 1993. 28 C.F.R. pt. 36, section 36.401. However, because facility data is only available on an annual basis, this effective date has been assumed to be January 1, 1993.

<sup>24</sup> As detailed in Appendix 3B, building construction date data is used to estimate (c).

- The second classification then sub-divides elements in facilities constructed before 1993 into whether they have or have not been altered between 1992 and 2009.<sup>25</sup> The proportion of facilities altered is represented by the proportion (b).
- The third classification further sub-divides elements in unaltered facilities constructed before 1993 into whether barrier removal for these elements was or was not readily achievable. It is assumed that if barrier removal was readily achievable, then it already has been undertaken. This sub-classification applies to unaltered elements because, if they had been altered, they are assumed to already comply with the 1991 Standards. If barrier removal was not readily achievable, the element is assumed to not comply with the 1991 Standards. The proportion of unaltered elements for which it is assumed that barrier removal will be readily achievable under the Final Rules is represented by (a).

With respect to the revised, more stringent requirements in the Final Rules, existing elements comply through either barrier removal or alterations. In all cases, if barrier removal is not readily achievable, alterations are undertaken. Only compliant elements (relative to the 1991 Standards) subject to more stringent requirements are considered for barrier removal (under a hypothetical “no safe harbor” scenario in the Final Rules) and, of these, only elements for which it is assumed such retrofitting is readily achievable. For existing elements that are currently not in compliance with the 1991 Standards due to barrier removal not being readily achievable, it is also assumed that barrier removal would be similarly not readily achievable since more stringent requirements only increase the level of (and cost of) compliance.

SH policy determines which elements in existing unaltered facilities may forgo retrofitting to comply with more stringent requirements under the Final Rules. In particular, with SH, currently compliant elements (relative to the 1991 Standards) do not need to undertake barrier removal under the Final Rules and would only incur costs during an alteration. Without SH, all currently compliant elements (relative to the 1991 Standards) subject to more stringent requirements undertake barrier removal ahead of the alteration schedule if readily achievable. Implications of different SH policy are shown in Figure 1 in the columns W/ SH and W/O SH (with and without SH, respectively). Either BR (barrier removal) or Alt (alterations) are indicated and represent the type of cost and schedule necessary for compliance.

Elements subject to less stringent requirements already exceed compliance levels required by the Final Rules and thus have no further legal obligations under these Rules.<sup>26</sup> Of course, when elements subject to less stringent requirements are altered, which is assumed to eventually occur in the 40 year lifecycle of a building, such elements do incur alteration costs.

Evaluating supplemental requirements is straightforward. Supplemental requirements have no direct regulatory counterpart in the 1991 Standards. All existing elements must undertake barrier removal to comply with applicable supplemental requirements so long as readily achievable because the safe harbor does not apply to these requirements. Supplemental requirements appear in Figure 1 as subject to requirements after 2010, when the Final Rules are expected to take

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<sup>25</sup> July 2010 is the earliest likely date for the Final Rules to become effective.

<sup>26</sup> Elements that comply with the 1991 Standards are not required to be retrofitted to meet a less stringent requirement. Although the proposed Title III rules will permit entities that had complied with the current requirement to voluntarily retrofit elements to satisfy applicable requirements in the Final Rules should they wish to do so, whether or not to do so is entirely within the discretion of the entity.

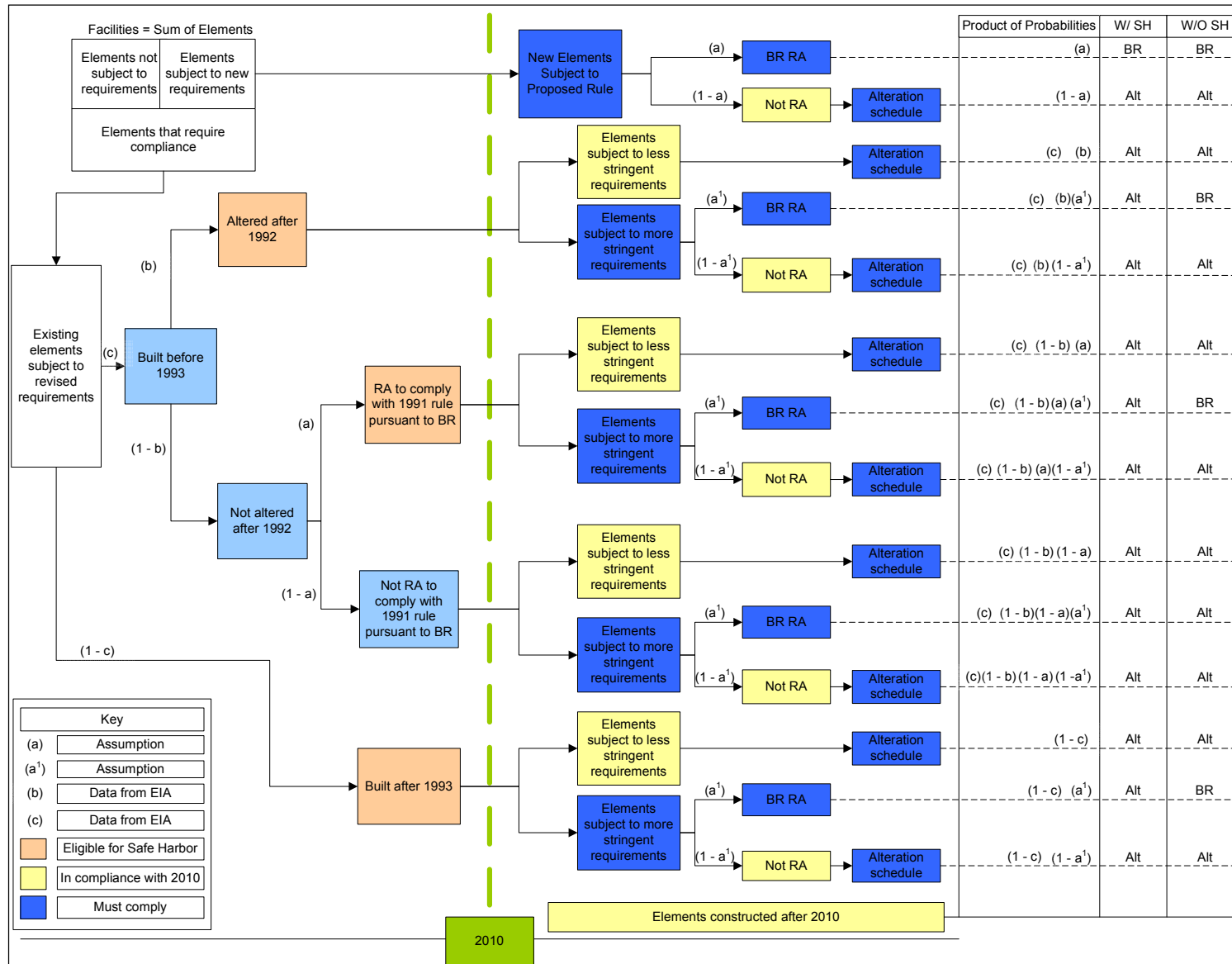
effect. With or without a SH policy, existing elements subject to supplemental requirements are generally assumed to be noncompliant relative to the Final Rules, and, therefore, must undergo barrier removal to the extent readily achievable. This assumption may overestimate benefits and costs for these elements, as facilities may have attempted to make these elements accessible even in the absence of specific scoping and technical requirements in the 1991 Standards (by, for example, relying on accessibility standards provided in state or local building codes, or on the 2004 ADAAG guidelines published by the Board).

Figure 1 illustrates the conditions under which an element may become compliant and the associated cost. Boxes represent different conditions and arrows represent different pathways to these conditions. All arrows, except those dividing elements into new (supplemental), more and less stringent groups, correspond to proportions (or probabilities) of elements that fall under one of the conditions.

The percentage of elements that are readily achievable ( $a^1$ ) for the revised standards may be equal or proportional to a facility's original readily achievable status ( $a$ ). This proportion is not known for facilities or elements. Accordingly, the actual level of readily achievable is modeled as a specific level in several scenarios. Differences in results between these levels are compared to illustrate the range of potential impacts depending on the actual state of compliance and ability to readily achieve barrier removal.

The product of these probabilities represents the distinct likelihood that such a condition would occur. For example, an element existing before 1993, altered after 1992, subject to a more stringent requirement, and is readily achievable has a probability of occurring equal to:  $(c \cdot b \cdot a^1)$ . The sum of all products of probabilities associated with more (or less) stringent requirements is the total proportion of elements that apply to a particular cost schedule W/ SH or W/O SH. These two cost schedules differ with respect to the unit costs necessary to bring an element into compliance. For example, as stated above, more stringent requirements that are readily achievable would incur alterations costs under a SH scenario; the costs would be barrier removal if SH was not adopted.

**Figure 1: Diagram of Conditions Corresponding to Compliance of Elements**





### 2.4.3 Alternative Baselines

The 1991 Standards are the primary baseline for this assessment because they are the only uniform set of accessibility standards that apply to every place of public accommodation, commercial facility and State or local government facility in the country.<sup>27</sup> While most States and/or local jurisdictions have enacted building or accessibility codes that adopt IBC/ANSI model codes (or provisions therein) that mirror requirements in the Final Rules, there is wide variation with respect to which standards have been adopted by such jurisdictions. Because the model codes are voluntary, public entities often modify or carve out particular standards when adopting them into their laws. Across 90,000 towns, cities and counties, the result is a patchwork of different accessibility requirements providing varying levels of access. By contrast, because the ADA is a mandatory Federal law, it applies the same standards to every facility in the country, ensuring a uniform level of accessibility nationwide.

Although the 1991 Standards serve as the primary baseline for this final regulatory assessment, the analysis nonetheless recognizes the influence of State and local law on the accessibility requirements that would apply to facilities even if the Department were to elect not to adopt the Final Rules. A version of the IBC has been adopted, in whole or in part, at the state or local level in all 50 states and the District of Columbia.<sup>28</sup> Many IBC provisions are equivalent in the Final Rules; indeed, code harmonization was one of the Access Board's central goals when promulgating the 2004 ADAAG. Thus, when the Final Rules become effective, facilities that are subject to a building code that incorporates IBC or ANSI standards that mirror requirements in the Final Rules will experience less impact from the Department's adoption of these Rules than other facilities.

In its regulatory assessment for the 2004 ADAAG, the Board presented its cost results as a range encompassing three baselines – current ADAAG, IBC 2000 and IBC 2003 – and discussed the extent to which State and local governments have adopted the model codes. As the Board observed, however, some jurisdictions that adopt the IBC either amend it or adopt separate accessibility codes. Several States that have adopted the IBC have either carved out Chapter 11 (which provides the scoping requirements for accessible facilities), have not adopted the referenced American National Standards Institute (ANSI) requirements (which provide the technical standards for accessible facilities), or, even where they have adopted ANSI, specifically permit facilities to comply with either ANSI or ADAAG. It is also not necessarily self-evident from IBC adoption whether a particular State or local jurisdiction also adopted the supplemental accessibility provisions provided in Appendix E, which must be affirmatively adopted to be effective. Therefore, the mere fact that a State or local government has adopted a version of the IBC or ANSI model code does not necessarily mean (absent additional research)

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<sup>27</sup> Two requirements relating to communications features in public housing units and clear floor space in sleeping rooms of social service establishments are measured against UFAS as their primary baseline, rather than the 1991 Standards. See App. 2, Req. ## 48 and 109 (summary of requirements); App. 8, Req. ## 48 and 109 (matrix of changes for new and revised requirements).

<sup>28</sup> See International Codes – Adoptions by States, <http://www.iccsafe.org/gr/Documents/stateadoptions.pdf> (July 1, 2010). Because IBC 2009 was published only late in 2009, and, thus, has not yet been adopted by many jurisdictions, this Final RIA assess only IBC 2000, 2003 & 2006 in the alternate IBC baseline scenarios discussed in section 6.2.2.

that all facilities in that jurisdiction are legally subject to its every chapter, appendix, or provision therein.

The Department had considered following a state-by-state approach in which the relevant baseline for newly constructed and altered facilities would be locality dependent. However, given the many variations among State and local building and accessibility codes with respect to IBC/ANSI adoption, it was determined that it would be technically infeasible (from a modeling perspective) and inordinately time-consuming to research and construct state- and locality-specific baselines for the over 100 requirements and across the over 60 facility groups covered by this final regulatory assessment. Therefore, the Final RIA presents benefits and costs for newly constructed facilities, altered facilities and existing facilities nationwide as measured against four “uniform” baselines – the primary baseline of the 1991 Standards, and three alternate baselines: IBC 2000, IBC 2003 and IBC 2006 – in each case assuming that the baseline applies to all facilities nationwide. With respect to each of these latter three IBC baselines, it is assumed that all of the relevant provisions of ANSI, Chapter 11 and Appendix E also apply. This assumption is necessary because these are the sources of many of the accessibility standards that apply under the IBC. If none of these sources were assumed to apply, an entity’s adoption of the IBC would afford an incomplete picture of the accessibility of its facilities, and if some but not all of them were assumed to apply, predicting which baselines would apply to which facilities would be impossible. While this approach does not break the results of the assessment down state-by-state, it does permit facilities in each State to see how the impact of the Final Rules varies depending on which version of the IBC the State or local authority has adopted or might adopt in the future.

Additionally, to further assist stakeholders, the Final RIA also includes a more limited set of requirement-specific and state-specific alternate IBC/ANSI baselines for a subset of 20 requirements that have readily identifiable equivalent IBC or ANSI counterparts and that generally have negative NPVs under the primary baseline scenario. These alternate IBC/ANSI baselines are used in order to demonstrate the likely actual incremental impact of these requirements under current conditions nationwide. While time-consuming, it is possible through research to determine with relative certainty the extent to which state or local jurisdictions have adopted particular IBC or ANSI provisions. However, there is no publicly available “facility census” to provide information concerning the location, age, and type of facilities nationwide. Thus, in order to construct requirement-specific and state-specific IBC/ANSI baselines, it was necessary to develop proxies with respect to the number and location of facilities in each facility group. For purposes of these alternate IBC/ANSI baselines, it is assumed that the number of facilities in each facility group that are located in any particular State or local jurisdiction is equal to the percentage of the current United States population (based on statistics from the U.S. Census Bureau) residing in that jurisdiction. The results of these analyses using requirement-specific and state-specific alternate IBC/ANSI baselines are presented in Section 6.2.2.

Baselines are applied in the model on a per-requirement basis. As such, even within an alternate IBC baseline scenario, where the current requirement in the 1991 Standards is more stringent than the IBC provision, the current requirement trumps the IBC provision and continues to serve as the relevant baseline with respect to that requirement. The reasoning behind this methodology is that the 1991 Standards are Federal law, and under the Supremacy Clause of the U.S. Constitution, where a Federal standard conflicts with a State or local standard, the Federal standard prevails. The ADA permits State or local building codes to provide for greater

accessibility than the ADA Standards, but not less. Therefore, in each of the four alternate baseline scenarios, with respect to each new or revised requirement, the IBC provision is only used as the baseline where it is more stringent than the current requirement in the ADA Standards. As a practical matter, this is more frequently the case with respect to the “more stringent” requirements, which were harmonized upward (that is, the requirement stated in the 1991 Standards is less stringent than the IBC provision, and has now been strengthened). By contrast, because most of the “less stringent” requirements are those where the current requirement has been harmonized downward (that is, the requirement stated in the 1991 Standards is more stringent standard than the IBC provision, and has now been relaxed), they have been assessed against the default baseline of the 1991 Standards.

#### **2.4.4 Summary of Scenarios**

Several dimensions of uncertainty in how the Final Rules apply to actual facilities are captured as independent scenarios.<sup>29</sup> These dimensions include: readily achievable levels [0%, 50%, 100%], baselines [1991 Standards, IBC 2000, IBC 2003, IBC 2006], and safe harbor [SH *versus* NSH]. These varying dimensions are shown in Chapter 6.

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<sup>29</sup> Scenarios were considered but not implemented for uncertainty related to issues concerning technical infeasibility and “path of travel”.

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### 3. BENEFIT-COST ANALYSIS APPROACH

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The Department's adoption of the 1991 Standards represented a fundamental change in the accessibility of facilities and, accordingly, the extent to which people with disabilities are able to participate in the mainstream activities of daily life. Most provisions of the Final Rules represent improvements in the quality of accessibility and the degree of inclusion. However, unlike the 1991 Standards, many of the improvements in the quality and degree of accessibility resulting from the Final Rules derive from changes in the scoping, design, and features of specific elements and spaces of a facility, rather than as a result of changes to the facility as a whole. Supplemental requirements, however, are more akin to the 1991 Standards with respect to their anticipated effect on particular facilities (e.g. play areas, recreation facilities, judicial detention and correctional facilities).

OMB Circular A-4 stipulates that a regulatory analysis should account for only costs and benefits that arise as a result of the regulatory action. Considering the diversity of facilities, requirements, construction types, and of course, persons with disabilities, measuring the incremental economic impact of the Final Rules becomes a complex assessment. In all cases, however, changes in costs and benefits are measured against a baseline. The 1991 Standards are the primary baseline for measuring these regulations' costs and benefits. This chapter discusses the development of the theoretical benefit-cost model to measure the most likely as well as the range of incremental impacts of the Final Rules.

#### 3.1 Cost Estimation

Cost estimation is performed for a number of cost categories of buildings and requirements. The approach for each can be summarized in a simplified framework. Overall, the incremental cost of compliance for elements includes initial and recurring costs. Initial costs refer to the capital costs incurred for design and construction at the facility to achieve compliance. Recurring costs include operations and maintenance (O&M) and the cost of any lost productive space. Lost space occurs when compliance requires additional maneuvering room be set aside in an accessible space. In addition, to maintain compliance with some requirements, facilities will need to incur costs to regularly replace equipment. More stringent requirements involve increased capital costs whereas less stringent requirements offer facilities capital cost savings. Recurring costs follow the same cost structure as capital costs.

The framework for estimating costs is developed for three types of construction (new construction, alterations and barrier removal) and three categories of cost (capital construction costs, O&M, and lost productive space). Applied to the types of construction, the framework differs only in parameter values. The cost framework can be simply defined as:

$$\text{Cost}_{ijkl} = [\# \text{ of facilities}_{ij}] \cdot [\# \text{ of elements per facility}_{ik}] \cdot [\text{unit cost per element}_{jkl}]$$

Where the subscripts are defined as follows:

- i* denotes the facility;
- j* denotes the type of construction;
- k* denotes the requirement; and
- l* denotes the category of cost.

This framework applies to more and less stringent requirements by altering the sign (positive or negative) on the cost per element, as determined by the type of requirement. All unit costs are incremental to a baseline scenario and are the same across facilities. The number of elements per facility does not change by type of construction.

### **Numbers of Facilities**

Facilities are defined to be establishments with employees.<sup>30</sup> Total numbers of facilities are available from a variety of published sources. Unfortunately, numbers of facilities are not available by size. Without size differentiation facilities are defined as ‘average’-sized (or perhaps “typical”) because costs then can be appropriately scaled up with a total number of U.S. facilities to obtain a total U.S. cost. As an average then, there would be just as many facilities larger as smaller and by extension, the average would over and under estimate the facility costs in equal proportions. The assumption on what constitutes an ‘average-size’ facility impacts results because if a larger ‘average’ facility is assumed, total costs would increase.

The number of facilities for each type of construction depends principally on whether they currently exist when the Final Rules are adopted. Numbers of existing facilities are determined from published sources. New facilities are determined by data-derived annual growth rates. These rates are facility specific and developed from historical data.<sup>31</sup>

A subset of facilities includes those that must comply with specific requirements because of the amenities they provide. For example, requirements for swimming pools apply to facilities that *are* swimming pools (i.e. Aquatic Centers/Swimming Pools) as well as facilities, such as Hotels, which *have* swimming pools. Accordingly, it is necessary to determine not only the number of hotels, but also the percentage of hotels that have pools. These integrated facility-elements include swimming pools, exercise facilities, play areas and parking lots.

### **Numbers of Elements per Facility**

The number of applicable elements per facility uses assumptions about the average facility and new assumptions about the characteristics of the element.<sup>32</sup> In average facilities, a number of elements can be assumed. Again, as average facilities, larger and smaller facilities would have more and fewer numbers of elements. The defined size and characterization of such facilities are used to determine how many elements a typical facility contains. Assumptions on the number of elements in a facility are derived directly from assumptions on the average facility size.

Elements themselves must also be defined before they can be counted. For example, an average restaurant is defined to have an average of at least 1 passenger loading zone per 100 feet of curb. The frontage average length of the restaurant is assumed to be 100 feet or so and therefore, one

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<sup>30</sup> Facilities operated without employees would be sole-proprietors who may own or lease actual establishments. This depends on the facility type. In general however, the large proportion of non-employee facilities can be assumed to work at home or in facilities already covered in another category (e.g. independent trainers at sports facilities).

<sup>31</sup> Data sources and assumptions are discussed in more detail below.

<sup>32</sup> The number of applicable elements differs from the total number of elements at a facility. For example, the revised requirements for accessible routes have not been assessed with respect to every route within a facility, but only those routes that will be affected by the change to the requirement. With this distinction, unless otherwise stated, elements in the remainder of this analysis refer to only those elements affected by the change to the requirement and which are thus relevant for the regulatory impact analysis.

element is counted for the average size. A similar approach is used to determine the number of such elements for each average facility. These specifications are assumed to apply consistently among all facilities.

Not all average facilities, defined to have one or more elements, actually have them. The proportion of average facilities that have such elements is unknown. Based on the requirements however, the number of average facilities that actually have the element is related to the conditions that determine how the requirement is applied. These conditions are used to develop a scaling factor that is applied to the number of elements in the average facility to more reasonably reflect the nature of the requirement. This scaling factor is defined as the probability that the average facility actually has the element. In other words, the defined number of elements (determined by defining the facility and element, as described above) is conditional on the element being in the facility in the first place. In the example above, even though the average restaurant is to have one passenger loading zone, some average restaurants are located on streets, in malls or other interior spaces where the requirement would not apply. Accordingly, the likelihood that a restaurant has the element that requires compliance is the scaling factor. Applying this factor to the number elements computes an ‘expected’ number of elements per facility that is subject to compliance.<sup>33</sup> Because this factor is not based on data, a reasonably large variability around this value is assumed in the model.

A final adjustment of the number of elements involves determining the proportion of elements that are costed and for what type of construction. For barrier removal and alterations, the number of elements per facility that are costed depends on whether the analytical scenario assumes SH is adopted or the level of readily achievable. When higher levels of readily achievable are assumed, more elements undertake barrier removal than lower levels of readily achievable. These adjustment factors are described in Section 2.4.

The proportion of elements by construction type changes over time. The first elements to improve access do so as part of barrier removal or alterations. Barrier removal construction is assumed to be completed in one year. The number of elements undergoing alterations depends on when the element was originally built and the frequency of alternations. Elements are added each year at the rate new buildings are constructed. Over the 15-year rule-making period, the number of new and altered elements increases and takes on a larger share of the total number of accessible elements in buildings.

## **Unit Costs**

Incremental unit costs represent the cost of compliance with a supplemental or revised requirement measured against the cost of compliance with the current requirement. Unit costs differ with respect to the type of requirement (supplemental, less stringent, and more stringent) and type of construction. Unit costs are defined for a range of possible values to reflect site-specific variation in measures required to achieve compliance. For example, compliance with a requirement applicable to an accessible route could involve distances of 25, 50, or 100 feet, depending on the layout of the accessible entrance and parking lot. As another example, a requirement could be fulfilled by either creating a circuitous but accessible route or providing a lift. The range of values is intended to reflect a reasonable range of possible cases. The low and

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<sup>33</sup> This factor could also be interpreted as adjusting the number of facilities that actually have the element.

high ends of the range of unit costs have been defined as the lower 10% and upper 10% of costs, respectively (this range is equivalent to an 80% confidence interval).

### **3.1.1 Capital Construction Costs**

Capital construction costs per element differ by type of construction in fundamental ways. Construction costs for new and altered buildings are estimated as the difference between the cost of complying under the 1991 Standards and the compliance with the Final Rules (which incorporate the 2004 ADAAG). This implies that in most cases, the costs attributable to the construction or alteration scenario itself would be subtracted from the costs of both standards, and thus, not be measured. By contrast, barrier removal costs require that the entire cost of retrofitting be included. The reason for this distinction is that new and altered buildings represent planned activities at a site, so the requirements in the Final Rules represent only a difference in design specifications for projects that were being undertaken anyway. By contrast, compliance with the barrier removal requirement implies that whatever level of access is currently provided at a facility, if barrier removal is required, the full cost of retrofitting must be incurred.

### **3.1.2 Operations and Maintenance Costs (O&M)**

Incremental costs of compliance are not complete without including incremental annual O&M costs. O&M costs are commonly expressed as a percentage of the capital construction costs. Requirements can be grouped by the level of use and/or equipment involved in O&M. These O&M groups include (at an increasing level of cost) standard maintenance, high-use maintenance, extraordinary wear and tear, and equipment maintenance. O&M costs are applied for all types of construction. O&M costs start the year after construction has concluded.

### **3.1.3 Loss of Productive Space**

Some requirements also impact (reduce or increase) the space available for productive uses at a facility. The incremental impact of the standards is the change in space requirements between the existing and the revised requirements. The total change in productive space for each group of elements is multiplied by the value of space for that facility type. The cost to a facility from lost productive space is included as a requirement cost because it reflects an annual loss in productivity. With regard to barrier removal and alterations, loss of productive space can represent a significant additional cost of the requirements in the Final Rules. Similarly, if a particular requirement frees up productive space, this space savings results in a decreased cost (or benefit) to facility owners.<sup>34</sup> These decreased costs are counted as part of the total cost of 'lost' productive space.

This cost is assumed to be larger for barrier removal than for new construction or alterations because barrier removal does not involve changes to the building shell or improved design that might compensate for the lost productive space. By contrast, changes to the building shell are assumed to be part of new construction or alterations and not a direct result of a requirement. The cost of lost productive space is the amount of lost space (in terms of square feet) multiplied by the value of building space (per square foot). Along with O&M costs, these costs are applied each year of the planning horizon.

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<sup>34</sup> Benefits to facilities are counterbalanced by decreased benefits to facility users.

For examples of the specific calculations described above, see Appendix 3N.

### **3.1.4 Other Management Transition Costs**

Facility management costs attributable to the Final Rules are expected to be minimal. The majority of the requirements are revised requirements and thus subject to Safe Harbor for Barrier Removal. Under Alterations and New Construction, the costs for incorporating (or accounting for) the Final Rules into projects are assumed to be part of the regular course of doing business for contractors, designers, builders and architects who must constantly monitor State, local and national codes.

For the limited number of requirements that are supplemental (relating to courthouses and play and recreation requirements) facilities will need simply to determine if they contain one of the dozen or so supplemental requirements and determine how to contact an equipment manufacturer or contractor to make the change (the cost of bringing the element into compliance is assumed in the unit costs). Since the Department will be providing small business compliance guidance and other technical assistance documents, it is assumed that such costs are likely to be minimal. Nevertheless, in response to public comments, this Final RIA includes a stress test which examines the impact (on a per-facility group basis) of including moderate estimated indirect costs for owners of existing facilities with elements subject to supplemental requirements. See Section 6.3 for greater detail.

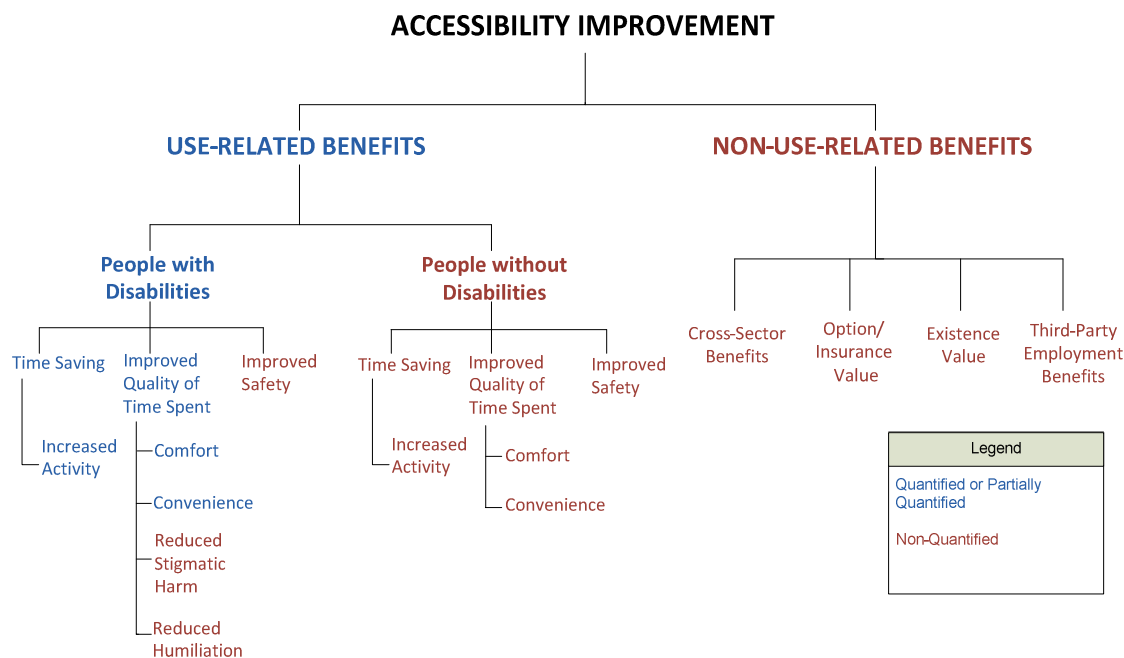
## **3.2 Benefits Estimation**

### **3.2.1 Overview of Theory**

Benefit-cost analysis principles are applied to help inform whether the incremental benefits of the Final Rules are justified on economic terms. Benefits from improved accessibility can be categorized either as “use” benefits - incurred because of the use of a facility or requirement - or as non-use benefits. The latter category can include the value of knowing that greater accessibility exists should it be needed in the future and the value of believing that civil society is improved, among others. Use benefits can also be further differentiated among those which accrue from use by persons with a disability and those that accrue from use by a person without a disability (such as the parent with a stroller making use of a curb cut). Figure 2 presents these benefits within a standardized framework.



**Figure 2: Framework for Accounting for All Benefits Resulting from Accessibility Improvements**



For the purposes of this regulatory analysis, only use benefits to persons with disabilities are estimated in the primary analysis, and only those benefits derived from time savings and improved quality of time spent due to greater comfort and convenience are estimated and monetized in the main analysis (a threshold analysis in Section 6.6 incorporates some estimates for stigmatic harm and humiliation avoided and option/insurance value.)<sup>35</sup>

Use benefits that consumers derive from changes in facility accessibility are generated from the changes in the quantity and quality of time spent consuming goods and services at those facilities. Benefits are primarily represented by the creation of economic value from these changes in quantity and quality.

The generalized use and access cost of a facility visit is the basis for determining use value. The actual price paid for goods and services represents only part of this value. Users also incur costs as a manifestation of the time spent traveling to a facility and the time spent within a facility accessing the spaces or features that constitute the primary purpose of the visit. For example, people go to movie theatres to watch a film. Likewise, one goes to a restaurant to eat or to a hotel (as a guest) to sleep. In such cases, the *access time* is the time that a visitor spends within a facility to move from say, the parking lot, to her or his seat, table, or bed. In contrast, *use time* refers to the time spent watching the movie, eating, or sleeping.

<sup>35</sup> Some data do exist to calculate an estimate of the value of avoided stigmatic harm and humiliation, but the literature is not as extensive and the underlying estimates have not been reviewed to the same extent as other data used to monetize improved comfort and convenience during access and use of a facility. Therefore, the value of avoided stigmatic harm and humiliation have not been incorporated into the main estimation of benefits, but are discussed and analyzed in the threshold analysis. Additionally, the threshold analysis makes use of proxy estimates of option/insurance value.

This distinction is important because changes in accessibility due to the Final Rules have a direct impact on access time and the experience users gain from while visiting a facility. In fact, users derive value from a visit from three distinct sources:

- (a) Changes in access time;
- (b) Enhanced quality of facility access; and
- (c) Enhanced quality of facility use.

Each of these components of value can be monetized with an appropriate value of time that is an expression of a user's willingness to pay for changes at the facility. With regard to the first component, minutes saved in accessing a fishing pier, for example, can be monetized by a value of time that depends on the reason for using a facility. Following common economic assumptions, facilities that principally involve leisure activities have a lower value than ones involving work, including housework.

The components (b) and (c) identify benefits that are derived from a change in the experience of accessing and using a facility. For example, changing access means changing the experience of moving through doorways, getting a drink of water, or getting into a pool. Requirements that cause an incremental change in access time – in component (b) – enhance value during the entire duration of access time change. Use time – in component (c) – is enriched by requirements that fundamentally change the experience of using the facility. For example, requirements that enable users to hear a performance, swim or fish, experience increased value throughout the time that they are participating in those activities, simply because access is available, at any time during use.

These premiums on the user experience have been explored in studies of benefits and behavior of transit systems. For example, economic analysis and market research have shown that people with disabilities would pay a premium to use regular public transit systems if they were made accessible. In addition, transit riders would also value sitting more than standing without regard to any change in the time it takes to use the service. Data used to assign values to the user experience of changes in access time and uses of facilities have been drawn from these sources.

The benefits for users are computed as a change in the *consumer surplus*, an economic measure of public welfare. Consumer surplus is estimated with partial equilibrium models of facility visits. These models determine the quantity of goods or services provided at facilities by the amount demanded by consumers for a given price. For example, when the cost of a visit declines due to the monetized reduction in access time, current users gain by means of an increased value of each use, and new visitors (as well as new visits by current users) are increased. These increases in use and value represent the consumer surplus benefit.

The estimation of facility visits depends on data related to the cost of a visit, the demand for a visit and the number of visits. The cost of a visit is defined as a generalized use and access cost, and includes both the price of using a facility or buying goods there and the cost of the time of traveling to, moving within and using a facility. Demand for a facility is characterized by the price responsiveness of the good or service provided at the facility. This price responsiveness can be directly extrapolated to the cost of a visit. Finally, the number of visitors is derived from market data and assumptions about the projected changes in the use of a facility by users with disabilities, including users who have the specific type of impairment each requirement is designed to address.

### 3.2.2 Benefits from Changes in Access Time

The model developed to estimate benefits follows directly from the methodology previously discussed. In fact, equating changes in benefits (“utility”) to changes in the quantity and quality of time is convenient because it can draw from extensive literature on the value of time in various activities.

Requirements affect access time in a variety of ways. Some requirements alter the time necessary for directly using a facility element. Others change the number of accessible facility elements available to a person with disabilities. A change in numbers of elements is manifested into a time that a person with disabilities would have to wait until one of the remaining elements becomes available. A few requirements involve only changes in equipment that can translate into access time through a difference in mechanical speed.

The magnitude of the change in access time during a facility visit depends on the product of several factors: (a) the change in access time per use of an element; (b) the number of uses per facility visit; and, (c) the likelihood that benefits are realized during a facility visit. The time savings (or increase) is estimated for each requirement based on an incremental change in access compared with the 1991 Standard. Time savings applies to the recreational facility amenities differently from elements of a facility. Only some people use recreational facility amenities (e.g. a pool) while at a non-recreational facility (e.g. a hotel), thus associated time savings is only realized by amenity users at those facilities.

The number of uses of a facility element depends on the element. Some elements are likely to be used with some predictable frequency while spending time at a facility (e.g. a bathroom). The estimated number of users per hour is multiplied by the total time during a facility visit to determine the total number of uses per visit. Other elements are likely to be used once or a few times, but independent of the time at the facility. Entrances and parking lots are examples of elements that are generally used twice: coming and going from a facility.

Even though a facility has become compliant does not mean that user benefits (in the form of time savings) are realized or realized to the extent anticipated. Facility visitors have to use the element to realize the benefits. For example, it is conceivable that a facility with an accessible bathroom is not used during the visit by a person with disabilities. In addition, some requirements imply time savings only under specific circumstances. For example, only during a power outage would users benefit when automatic doors have back-up power. Benefits may also accrue only if the right conditions are present. Requirements that cause persons with disabilities to wait until an accessible element becomes available realize this change in time only if there is someone using the accessible element when the person with disabilities is ready. Finally, the actual time savings or uses vary among persons with disabilities because of their varying degrees of disability.

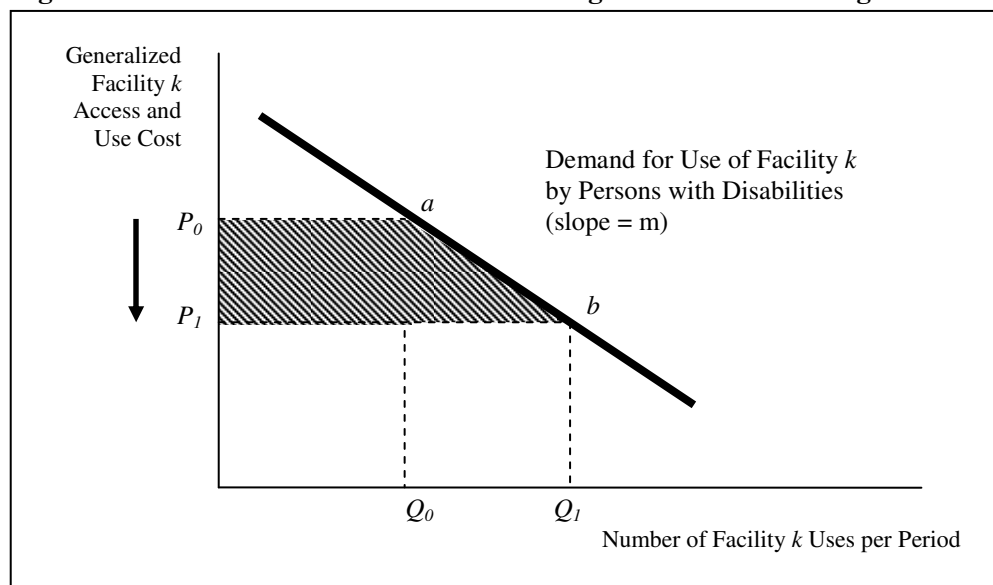
Due to these considerations and others, an estimate of the likelihood that benefits are realized is used to scale down the actual benefits per requirement. The likelihood of realizing benefits is assumed for each requirement. Similar types of requirements are assumed to have the same likelihood of realizing benefits. This scaling factor has an important impact on the benefits estimated in the model. Uncertainty in the size of the scaling factor is included with a relatively wide range of values in the risk analysis.

### 3.2.3 Economic Models for a Change in Access Time

The partial equilibrium model of consumer surplus for existing users who benefit from a change in access time is shown in Figure 3. In the base case, the generalized use and access cost is equal to  $P_0$ . It is assumed that facilities are compliant with the 1991 Standards. More stringent requirements reduce access time whereby users experience a new generalized cost,  $P_1$ . At this cost, a facility would experience additional uses from new or existing users depending on the price responsiveness. Additional facility visits are shown by a shift from  $Q_0$  to  $Q_1$ . The user benefits (or consumer surplus) are represented by the shaded area  $[P_0 \text{ a b } P_1]$ .

The incremental costs incurred by facilities are not transferred to consumers as a change in prices at facilities. This assumption is reasonable since the incremental cost to facilities is expected to be small, especially considering implementation with safe harbor and readily achievable determinations. The revised requirements, which refine already existing requirements and which will be subject to safe harbor, would be highly unlikely to create a significant incremental cost burden. Similarly, it is assumed that the supplemental requirements would not materially affect the supply of either recreational or judicial/law enforcement facilities, though for different reasons. Judicial facilities cannot limit the scope of their activities due to legal mandates imposed by sources other than the ADA or its implementing regulations. In addition, all facilities would still be subject to the readily achievable barrier removal standard, which essentially serves as a “brake” on prohibitively expensive compliance costs for both revised and supplemental requirements. (Note that overall results for the Rule are presented for three different scenarios of estimating readily achievable barrier removal – see Section 6.2.1). It is also assumed that demand from persons with disabilities does not cause a shift in demand and price.

**Figure 3: Economic Framework for Estimating Benefits from Changes in Generalized Access Cost**



The estimation of the consumer surplus is based on the assumption that the demand for goods and services at facilities is dependent on the generalized cost of using them. The generalized cost includes:

- the market price of the good or service at the facility;
- access time within a facility to its elements (i.e. traveling to a seat in a theater);

- travel time to the facility;
- use time (i.e. watching a movie in a theater); and,
- value of time.

The implementation of the Standards is expected to reduce the generalized cost of visiting a facility by decreasing the access time. In turn, the lower cost is expected to increase demand from users with disabilities due to the realization of some latent demand.

Each requirement applied to a facility contributes to the consumer surplus for the facility. Most requirements are intended to increase access for a person with a typical disability. The benefit of increased access is determined by applying any change in access time due to an element during a facility visit to the visitor's value of time. Benefits are calculated for facility visits for each category of disability affected by the facility's requirements (sight, hearing, etc) and are then apportioned to each requirement to reflect its impact on access time for that group of visitors.

Several preliminary calculations and estimates are required before computing the consumer surplus:

- Initial number of uses per year by persons with disabilities, by type of disability. First, the number of visits per average adult in the U.S. is used (see Section 4.2.1 for more details). As a starting point, it is assumed that persons with disabilities visit facilities with the same frequency as those without disabilities. This assumption is modified by two adjustments to reflect potential reasons why persons with disabilities likely visit facilities at different rates than the general population: the imperfect accessibility of facilities and the lower average income among persons with disabilities. Specifically:
  - Ease of Access (EOA) adjustment. The EOA accounts for the relative difficulty of accessing a particular type of facility. Each facility is defined to have a current level of access. The current EOA has values that range from 60 percent (very difficult or no access) to 100 percent (completely accessible). Note that after the Standards are implemented, it is assumed that facilities are accessible such that persons with disabilities experience the same ease of access as those without disabilities for the specific elements covered by the Final Rules. Thus, the new EOA (EOAn) adjustment after the Standards is assumed to be 100 percent.
  - Income adjustment (IA). As a group, persons with disabilities have a lower average income than the rest of the population. The IA incorporates the fact that people with lower incomes tend to visit certain types of facilities at a different rate than persons with higher incomes. The IA multiplies the percentage of the population with a disability that visits a facility by a figure between 60 to 140 percent.
- Type of disability. The proportions of the population with specific types of disabilities are drawn from Census data and are used to determine the number of visitors to a facility who are the targeted beneficiaries of the specified requirements. For example, some access standards at a hotel directly benefit persons using a wheelchair. The proportion of persons using wheelchairs determines the total number of hotel visitors who directly benefit from those requirements.

- Changes in access time ( $A_t$ ). During an average visit,  $A_t$  is a product of:
  - the time change per use of each element/requirement (derived from averages of high, medium and low estimates of time changes provided by the Benefit Risk Analysis Process (RAP) panelists),
  - the frequency of use of each element per visit, either as uses per visit (e.g. parking lots or entrances) or uses per hour of access time (e.g. bathrooms) (also derived from averages of high, medium and low estimates provided by the Benefit Risk Analysis Process (RAP) panelists),
  - the likelihood of realizing the benefit of each element (in some cases, the element affected by a requirement would only be used in cases of emergency or waiting, and so the likelihood of realizing benefits is very low), and
  - the likelihood of the element occurring in a facility (provided by the Cost Risk Analysis Process (RAP) panelists).
- The time savings per facility visit for persons in each type of disability category are summed across all the requirements that are relevant to that facility and disability group. This determines the net effect of the Final Rules on each facility and type of disability. Time savings are valued at the value of time for the average disabled user of the facility. Time savings are equivalent to decreases in the generalized cost mentioned above.
- Value of time (VOT). The VOT is derived from the average hourly earnings for production workers in the U.S. For persons with disabilities, the base VOT is assumed to be equal to 50% of average hourly earnings.<sup>36</sup> Requirements change the quality of the experience at a facility, independent of the time change, by impacting either 1) *access* or 2) *use* of a facility for its primary purpose. To reflect these impacts, the base VOT is augmented with either an access or use premium. For requirements that change access time, such as the requirement that improves the route to an exercise machine at a gym, an access-based VOT premium is assumed to increase the base VOT. The total (or final) VOT is applied to the total change in access time.

Other requirements change the quality of the use of a facility for its intended purpose. One such requirement relates to accessible exercise machines at the gym. Requirement-induced changes in the quality of facility use require a different VOT premium. This premium is equal to the VOT. The use-based VOT premium is applied to the facility use time, not access time. For these requirements, the benefits of the Final Rules are equal to (a) the base VOT-monetized change in access time from the element and (b) the use-based VOT premium over the total use time for all visits to the facility. If the use of a facility is enhanced by more than one requirement, the use-based VOT premium is shared for all relevant requirements.

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<sup>36</sup> See Section 4.2.5 and Appendix 4J for details.

- The slope of the demand curve ( $m$ ) is developed using literature-derived price elasticities for the purchase of goods or services sold at the facilities. In some cases, proxy elasticities are used. The elasticity for the facility type ( $\epsilon$ ) is assumed to be a reasonable approximation of the responsiveness to monetized changes in access and use time at a facility. The slope is computed from:
  - price elasticity at the facility;
  - number of uses per year for persons with disabilities;
  - generalized use and access cost; and
  - EOA adjustment.

In this case, the EOA adjustment is computed as a ratio of EOAn to the current EOA. Resulting values are between one and two and cause an increase in elasticity of facility visits.

After the consumer surplus is calculated for each facility type, the consumer surplus for each individual requirement is derived by prorating the total consumer surplus across all the requirements to a facility based on the time change that each requirement generates (positive or negative).

For the supplemental play and recreational facilities and requirements, an additional calculation is made to estimate the expected increase in the number of new users who were previously unable to visit the facility independently, as well as the benefits generated to them. As new, or “supplemental,” requirements, play and recreation requirements are assumed to have a greater impact on new users (the other requirements are “revised” requirements, building on the 1991 Standards and are assumed to improve existing accessibility). Thus, while the EOA adjustment to the calculation of  $m$  is assumed to estimate the number of new uses by current users, an additional calculation for new play and recreation users is made to estimate the number and the benefits related to new uses by new users who were unable to access these facilities before the implementation of the Final Rules. The estimation follows the guidelines below:

- Before the implementation of the Final Rules, the potential new users’ cost is assumed to be higher than the current users’ cost, because of either the type or intensity of their disability which makes it impossible or very costly to attend a recreational facility. Access could be gained only by having someone else’s assistance. The difference in cost between new and current users is estimated as the cost of paying to get the assistance of a health care aid professional at the recreational facility during an average stay. After the implementation of the Final Rules, the cost for new and current users is assumed to be the same.
- Since there are obviously no new users before the implementation of the Final Rules, the cost of visiting a facility for these new users is equal to, or higher, than the highest valuation implicit in their demand curve. Therefore, it is assumed that before the implementation of the Final Rules, the highest valuation equals the cost to new users (at the point of the demand curve with zero new users). The demand curve is then built from the highest valuation point and the slope of the demand curve as derived for current users.
- The numbers of uses by new users is then estimated at the equilibrium of the demand curve (constructed as described above) and the line representing the cost after the

implementation of the Final Rules. The consumer surplus is estimated as the area above the cost line and below the estimated demand curve for new users.

For examples of the specific calculations described above, see Appendix 4Q.

### 3.3 Risk Analysis

This analysis fully recognizes that many parameters in the model require specification with limited or non-existent data. For example, determining a number of facilities implies that within a certain type of facility (e.g. clothing stores), let alone a facility group (e.g. retail establishments), many differences exist. Such differences mean that no single equation can capture the variability in real conditions as it relates to each of the components. This analysis addresses part of this problem by specifying assumptions so that it is possible to assess implications under alternative assumptions.

Uncertainty is incorporated in this regulatory impact assessment through risk analysis. Economic analyses often take the form of a single “expected outcome” supplemented with alternative scenarios. The limitation of a forecast with a single expected outcome is clear - while it may provide the single best estimate, it offers no information about the range of other possible outcomes and their associated probabilities. The problem becomes acute when uncertainty surrounding the forecast’s underlying assumptions is material.

A common approach is to create “high case” and “low case” scenarios to bracket the central estimate. This scenario approach can exacerbate the problem of dealing with risk because it gives no indication of likelihood associated with the alternative outcomes. The commonly reported “high case” may assume that most underlying assumptions deviate in the same direction from their expected value, and likewise for the “low case.” In reality, the likelihood that all underlying factors shift in the same direction simultaneously is just as remote as that of everything turning out as expected.

Another common approach to providing added perspective on reality is “sensitivity analysis.” Key forecast assumptions are varied one at a time in order to assess their relative impact on the expected outcome. A problem here is that the assumptions are often varied by arbitrary amounts. A more serious concern with this approach is that, in the real world, assumptions do not veer from actual outcomes one at a time. It is the impact of simultaneous differences between assumptions and outcomes that provides a perspective on the risk of a particular forecast.

Risk analysis provides a way around the problems outlined above. It helps avoid the lack of perspective in “high” and “low” cases by measuring the probability or “odds” that an outcome will actually materialize. This is accomplished by defining ranges (probability distributions) to the forecasts of each input variable. The approach varies all inputs simultaneously within their distributions, thus avoiding the problems inherent in conventional sensitivity analysis. The process incorporates potential interrelationships between variables and their associated probability distributions to generate more realistic outcomes.

HDR performs risk analyses through a process called a *Risk Analysis Process* (RAP). RAP involves four steps:

1. Define the structure and logic of the problem;
2. Assign estimates and ranges (probability distributions) to each variable and forecasting coefficient in the forecasting structure and logic;



3. Engage experts and stakeholders to assess model and assumption risks (the “RAP Workshop Session”); and
4. Implement input from experts and stakeholders in the model and generate risk-adjusted results.

This process has been used to gather much of the critical data to estimate costs and benefits. Additional information about RAP process and workshop is contained in Appendices 6 and 7.

### 3.4 Lifecycle Analysis

Growth and change underlies the entire analysis. The number of individuals with disabilities grows over time as population increases. The value of sales per facility grows and so too the number of buildings due to new construction. Forecasts of growth are also inherently uncertain. Lifecycle analysis involves methods that summarize all future costs and benefits (and associated uncertainties) so that they can be understood and compared in the present. Future costs and benefits include both one-time and recurring costs and benefits. Important elements of a lifecycle analysis include the temporal scope of analysis, planning horizon, and discount rate.

Implementation of the Final Rules assumes that six to eighteen months following promulgation of the Final Rules, all facilities will be subject to a “triggering event” that compels compliance with the new regulation.<sup>37</sup> The specific triggers vary for new construction, alterations, and barrier removal, as well as for the regulatory provision (i.e., Title II or Title II) governing the construction. New construction under Title III uses “first occupancy” as its triggering event. Hence, eighteen months after publication of the Final Rules, all covered facilities must be designed and constructed for “first occupancy” in accordance with these requirements.<sup>38</sup> For alterations that fall under Title III, the triggering event is the date that physical alteration begins. Title II construction, on the other hand, uses the same trigger for both new construction and alterations – the date construction commences. For barrier removal, Title III entities are afforded a six-month grace period after publication of the Final Rules. Thereafter, between six months and eighteen months post-publication, Title III entities may choose whether to use the 1991 Standards or the Final Rules as their respective compliance guides. After eighteen months, all elements at existing Title III facilities not then compliant with either set of standards (and not otherwise protected by Safe Harbor), must undergo barrier removal under the Final Rules to the extent readily achievable.

The temporal scope of analysis concerns the period over which this regulation will govern accessibility standards. Given the current congressional mandates, the Department expects to revise its Title II and III regulations (including the ADA Standards) approximately every 10-15 years. Because the nature of future changes is unknown, it is inappropriate to attribute to the Final Rules the benefits and costs that would result from compliance efforts required by a future regulation. Accordingly, it is assumed that only construction projects that are begun within 15 years after the effective date of the Final Rules will be subject to this regulation. This covers the period from the end of 2012 through 2026.

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<sup>37</sup> This is the only scenario considered. Twelve and eighteen months are not considered.

<sup>38</sup> Specifically, “first occupancy” is defined in relation to the completion of a building permit application (completed less than twelve months before the effective date) and the issuance of a certificate of occupancy (completed after the effective date).

This temporal scope has implications for barrier removal, alterations and new construction sub-models. For example, barrier removal actions are assumed to occur evenly over a 15-year period (as compliance becomes readily achievable with respect to additional elements). The numbers of alterations and new construction projects subject to this rule are projected to increase annually until year 15, after which they would be subject to the next rule. The increase in alterations projects is determined by a historically derived alterations schedule. New construction projects are assumed to grow at a fixed rate per type of facility.

The planning horizon for costs and benefits tracks the duration over which costs and benefits are included in the analysis. A reasonable duration for future costs and benefits is based on the longest lasting newly constructed asset which in this case is the period between a building's substantial alterations.<sup>39</sup> Most commercial buildings require substantial renovations every 15-40 years, while others are designed to last 50 years or more.<sup>40</sup> Given the range of situations, 40 years is selected as a reasonable planning horizon to account for all potential major building alterations occurring within this period. In response to public comments on the Initial RIA, discussed further in Chapter 5, the planning horizon for lodging facilities (inns, hotels, and motels) is assumed to be 15 years.

A lifecycle analysis has different implications for future costs and benefits. Construction is assumed to occur over a span of three years for new construction and alterations projects, but over one year for barrier removal. Costs associated with O&M and lost productive space begin in the year after construction ends. Replacement costs are assumed to be a fraction of the initial construction costs. Such costs are incurred at different frequencies depending on the complexity of the element. In addition, salvage values are computed for all requirements applicable to elements that have replacement frequencies extending beyond 40 years.

Benefits are accrued after a facility has completed all compliance measures. Assumptions on construction durations, established on the cost side of the model, are applied to the benefits side to determine when benefits begin. It is also assumed that benefits 'ramp-up' after construction until the full value is realized. A ramp-up describes the increasing use of a facility, beginning from a fairly low level of use. The initially lower use reflects the fact that potential users have simply not learned of the benefits from the Final Rules. Such benefits patterns are commonly observed in the response of users to transportation system investments (such as new roads). Benefits grow with the number of facilities becoming compliant, reaching the maximum after 23 years, the time after which the latest construction is complete and its ramp-up period ends.

The compliance costs must be incurred to maintain access. Over a 40-year period, elements require annual O&M expenditures. In addition, at some point, elements may require replacement. Over 40 years, some devices may be replaced several times whereas others may not be replaced at all. Replacement should be considered as an additional cost over and above ordinary O&M costs. In cases where the replaced element has a useful life remaining at the end of the lifecycle, a "salvage value" is computed. The salvage value is assumed to equal the construction cost prorated for the number of years that have elapsed since the element was installed. If value in the

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<sup>39</sup> Many buildings are built to last a long time, but can require several major alterations before they are beyond usefulness.

<sup>40</sup> Expert opinion was provided by HDR. Some technically advanced facilities such as labs required substantial alterations on a far more frequent basis.

equipment remains after this 40-year horizon, the remaining value (“salvage value”) is *credited back*, assuming that wear and tear has been constant while the element has been in use.

All future costs are discounted to the present using an appropriate discount rate. The discount rate turns all future year dollar values into present year dollar values (for both costs and benefits) so that they can be compared. A discount rate recognizes that current dollars are more valuable than future dollars and systematically converts future dollars to present values. Discounted costs are summed to obtain total present value costs for each requirement and for all facility types. Net present values are simply the difference between the total present value of benefits and the total present value of costs. Recent OMB guidance suggests using a rate of 3.0% or 7.0%. This analysis models the estimated benefits and costs under both discount rates to show how the results might differ depending on which rate is applied.

### **3.5 Evaluation criteria**

A standard criterion for deciding whether a government program and, in this case, the Final Rules can be justified on economic principles is *net present value*—the discounted monetized value of expected net benefits. Net present value is computed by estimating monetary values to benefits and costs, discounting future benefits and costs using an appropriate discount rate, and subtracting the sum total of discounted costs from the sum total of discounted benefits. Discounting benefits and costs transforms gains and losses occurring in different time periods to a common unit of measurement. Programs with positive net present value increase social resources and are generally preferred.

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## 4. DATA AND ASSUMPTIONS

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A large number of data and assumptions are required to estimate costs and benefits of the Final Rules. Some of these data, such as the number of facilities (by type) are drawn directly from Census data. Other data, such as the number of uses of an element during a facility visit must be determined from discussions with experts. Other data values are estimated from closely related data using reasonable proportions or proxies.

Assumptions and professional judgment are applied when data is not available. Assumptions play an important role in determining outcomes. Arguably, they are as important as data since they generally multiply with the same numbers. Uncertainty is higher with assumptions and accordingly, they are assumed to also have a larger parameter range around a most likely value.

### 4.1 Cost Estimation Data and Discussion

#### 4.1.1 Number of Facilities

Baseline data on existing facilities are drawn from several sources (Appendix 3A). The 2007 Economic Census is a primary source for the number of employer-based commercial establishments.<sup>41</sup> In these cases, facilities and facility groups are classified using appropriate North American Industry Classification System (NAICS) codes. The number of facilities in 2010 is estimated by applying sector-specific construction growth rates to 2007 data.<sup>42</sup> Data on public facilities, which are not included in the Economic Census, have come mostly from the Quarterly Census of Employment and Wages, supplemented by data from trade groups, industry studies, and other government sources.

Table 3 shows that the total estimated number of facilities is more than 7 million, with nearly half of those facilities (3.9 million) falling into the broad *Indoor Service Establishment* facility group. *Single-level stores* are also estimated to have a large number of facilities (0.8 million), followed by *Restaurants* and *Offices of Health Care Providers* (approximately 0.5 million each). Together, these four facilities account for slightly less than 80 percent of all facilities in the analysis. Such facilities, that are large in number, magnify any imbalances in costs and benefits.

The number of new facilities constructed each year after the rule passes (and up to year 15) is estimated on a facility-specific basis (Appendix 3B). Industry reports provide data on annual growth rates from 0.3% to 1.2% depending on the facility.<sup>43</sup> In several cases, recent industry growth rates of 3% or more were reported. It was assumed that no industry would maintain a growth rate of more than 1.2% for the 15 years of construction in this analysis. Examples of facilities that grow at slower rates include restaurants, hospitals, and nursing homes and those that grew faster include schools (all types) and museums.

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<sup>41</sup> Employer-based establishments are more likely to require compliance than non-employer establishments (which may be self-employed firms).

<sup>42</sup> The business cycle (i.e. ups and downs of the economy) has not been considered in the lifecycle of the regulation. It is assumed that any business cycle impacts will average out over the planning horizon.

<sup>43</sup> McGraw-Hill Dodge Construction Potentials Bulletin (February 2010).

**Table 3: Number of Establishments in 2010 by Facility Group**

A	Inns	16,953
B	Hotels	15,165
C	Motels	21,092
D	Restaurants	566,856
E	Motion picture house	4,971
F	Theatre / Concert Hall	9,348
G	Stadiums	444
H	Auditoriums	2,676
I	Convention Centers	174
J	Single Level Stores	812,456
K	Shopping Malls	10,092
L	Indoor Service Establishments	3,857,022
M	Offices of Health Care Providers	549,803
N	Hospitals	3,915
O	Nursing Homes	15,014
P	Terminal (private airports)	14,321
Q	Depots	307
R	Museums, Historical Sites & Libraries	4,766
S	Parks or zoos	1,327
T	Amusement Parks	543
U	Nursery schools - Daycare	76,398
V	Elementary Private Schools	18,275
W	Secondary private schools	2,841
X	Undergraduate and Postgraduate Private Schools	2,574
Y	Ski Facilities	403
Z	Homeless shelter	8,715
AA	Food Banks	4,357
AB	Social Service Establishments	66,236
AC	Exercise Facilities	32,609
AD	Aquatic Centers / Swimming pools	12,368
AE	Bowling Alleys	4,688
AF	Golf Courses (private with public access)	9,485
AG	Golf Courses (private only)	4,645
AH	Miniature golf courses	9,475
AI	Recreational Boating Facilities	5,198
AJ	Fishing Piers and	1,714

	Platforms	
AK	Shooting Facilities	5,095
AM	Office Buildings	743,816
AN	Elementary Public Schools	68,781
AO	Secondary Public Schools	23,388
AP	Undergraduate, postgraduate public schools	1,792
AQ	Public Housing	27,767
AR	State and Local Judicial Facilities (courthouses)	9,458
AS	State and Local Detention Facilities (jails)	3,499
AT	State and Local Correctional Facilities (prisons)	1,244
AU	Parking Garages	13,377
AV	Self Service Storage Facilities	14,418
AW	Theatre / Concert halls (public)	6
AX	Stadiums (public)	1,333
AY	Auditoriums (public)	144
BA	Convention Centers (public)	260
BB	Hospitals (public)	1,113
BC	Nursing Homes (public)	1,229
BD	Museums, Historical Sites & Libraries (public)	9,673
BE	Parks or zoos (public)	120,224
BF	Homeless shelter (public)	1,302
BG	Exercise Facilities (public)	1,196
BH	Social Service Establishments (public)	26,940
BI	Aquatic Centers / Swimming pools (public)	1,773
BJ	Miniature golf courses (public)	947
BK	Recreational Boating Facilities (public)	7,797
BL	Fishing Piers and Platforms (public)	1,714
BM	Office Buildings (public)	74,846
BN	Parking Garages (public)	122
BO	Golf Courses (public)	2,640
BP	Restaurants (public)	7
BQ	Amusement Parks (public)	11

#### 4.1.2 Number of Elements per Facility

As mentioned in Section 3.1, the number of elements per facility requires assumptions about the average facility and the element before the number of elements can be counted. These assumptions were developed initially by Department architects and HDR and then discussed, changed or verified by a panel of architects with broad experience and facility specialties. Data tables on the assumptions of the element specifications, the typical facility size and the number of elements are contained in Appendix 3C, 3D and 3E. Examples of assumptions include total square feet of space at the facility, number of stories, or seating capacity. In all cases, the same number of elements was assumed per facility, whether undergoing barrier removal, alterations or new construction.

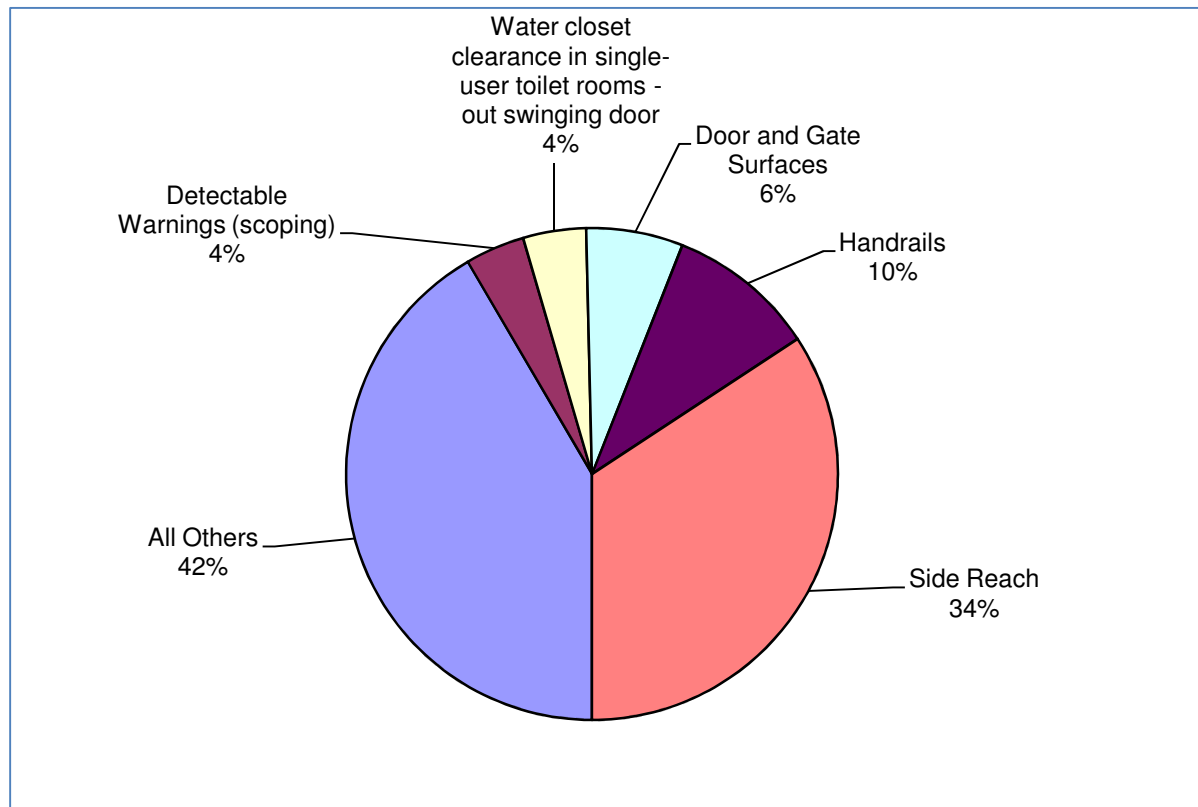
The numbers of elements per facility are defined as uncertain with parameter values defining the most likely low and high values (following the basic risk-analysis framework). A standard low and high range is defined as +/- 20% of the most likely value is applied to all facilities.

Assumptions and values for the likelihoods that average facilities actually contain the element are presented in Appendix 3F and 3G. Most requirements have most likely likelihood values between 3% and 90% (see Appendix 3F). Some facility-requirements are assumed to have likelihood values that differ among facilities (see Appendix 3G). Conditions that support the assumption likelihood that an element is actually in the average facility are contained in these Appendices.

Likelihood values are treated as uncertain in the model because data have not been found to verify assumptions or provide experts something to comment upon. The uncertainty range for these values is assumed to be a three-fold increase or decrease in the most likely value up to the ultimate percentage boundaries of 0 and 100%. For example, a most likely value of 3% ranges from 0% to 10%. A 90% most likely value would range from 30% to 100%.

The distribution of elements across facilities and the total number of facilities reveals important implications for the analysis, especially for requirements that have imbalanced costs and benefits. The top five elements with the largest numbers in all facilities are shown in Figure 4. Side reach requirements comprise the single largest category with 34% of all elements. Together these five elements represent about 60% of all elements subject to the requirements in the Final Rules. Although these elements are the most frequently occurring, they are not necessarily those with the largest costs or largest benefits. However, for side reach, as discussed in more detail below, costs for this requirement are estimated to be much larger than benefits.

**Figure 4: Total Number of Elements: Top Five Most Frequently Occurring and All Others**



Analytical scenarios determine the number of elements that contribute to the total cost. The number of applicable elements per facility depends on the baseline. In practical terms, as discussed in Section 2.4, if the IBC standards comply with the Final Rules then the number of elements that would be included is zero. In addition, readily achievable and SH scenarios track through Figure 1 to determine the proportion of elements that are costed under each type of construction.

Finally, some requirements are not allocated to a facility and thus not included in the analysis. Table 4 lists the requirements that are not included in the analysis and the reason for exclusion.

**Table 4: Requirements not included in Baseline Scenario**

ID	Requirement	Reason
6	Location of Accessible Routes	Not applied in any typical facility
7	Common Use Circulation Paths in Employee Work Areas	No appreciable costs
8	Accessible Means of Egress	No appreciable costs
11	Handrails Along Walkways	Not applied in any typical facility
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	Not applied in any typical facility
18	“LULA” and Private Residence Elevators	Not applied in any typical facility
36	Sinks	Not applied in any typical facility
43	Limited Access Spaces and Machinery Spaces	No appreciable costs
44	Operable Parts	No appreciable costs
53	Lawn Seating in Assembly Areas	Not applied in any typical facility
63	Visible Alarms in Alterations to Existing Facilities	No appreciable costs
65	Detectable Warnings (technical)	No appreciable costs
67	Accessible Courtroom Stations	Only affects employees
69	Raised Courtroom Stations Not for Members of the Public	Only affects employees
76	Accessible Route in Court Sport Facilities	Not applied in any typical facility
84	Accessible Boarding Piers (Alt/BR)	No appreciable costs
86	Accessible Boat Slips (Alt/BR)	No appreciable costs
91	Accessible Teeing Grounds, Putting Greens, and Weather Shelters (NC)	No appreciable costs

### 4.1.3 Construction Costs

An independent certified professional cost estimator was hired to provide detailed cost estimates for each of the 117 requirements.<sup>44</sup> (See Appendix 7B identifying members of Cost RAP Panel). Unit cost estimates were derived using standard industry practices and published sources for construction costs such as reference materials published by *RS Means*. Separate low, middle, and high estimates are developed for each element and separately for new construction, alterations and barrier removal. Costs for new construction reflect the costs of meeting the specified standard that would be incurred above the costs of construction and design already planned. Some elements are expected to have zero cost in new construction because the cost of the element or design is negligible or, in some cases, because at the design phase architects would be expected to be able to “design around” the element’s requirement with no appreciable design or construction costs. Under barrier removal, costs are higher than new construction because they include the full cost of retrofitting to bring an element into compliance. Costs under alterations are more complicated, as they must reflect only the incremental costs necessary to bring an element into compliance, and not other costs that would have already been planned under the alterations.

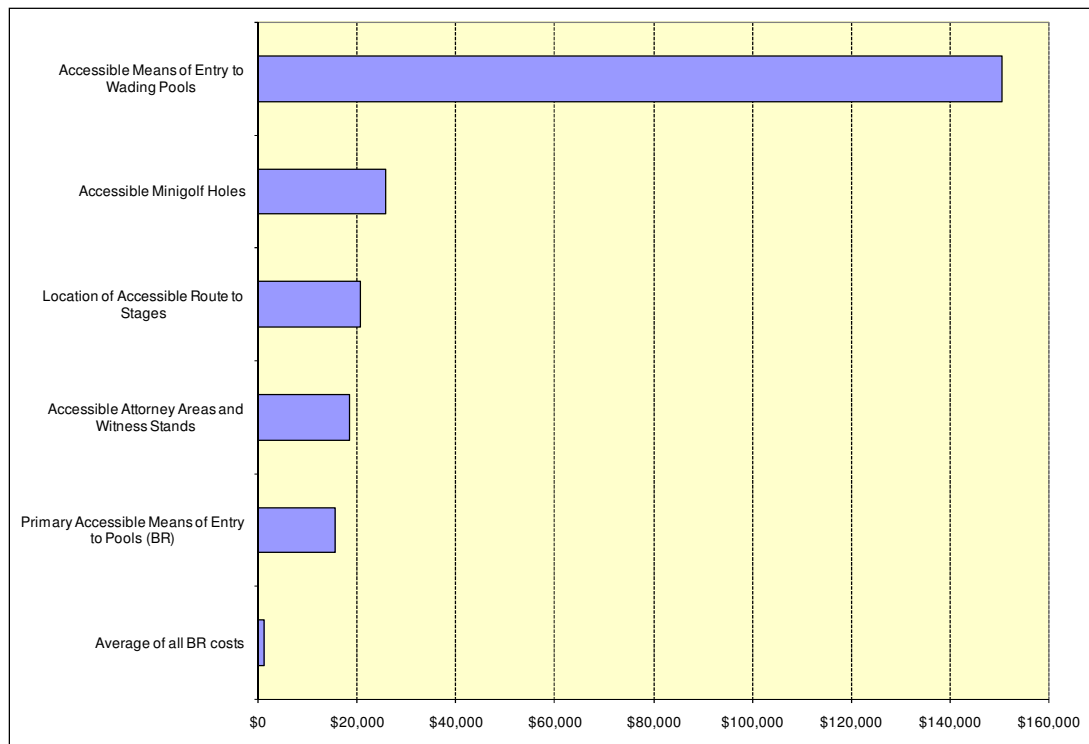
Less stringent requirements have a negative cost, i.e. a savings for facilities. It is assumed that no entity would undertake construction under alterations or barrier removal scenarios to change to a less stringent requirement. (See Appendix 3H for a full listing of costs as well as notations on unit cost assumptions and descriptions.)

<sup>44</sup> Paulette R. Rutlen, CPE, Chief Estimator, The Austin Company worked with the Department to develop unit cost estimates in May 2007. In April 2010, the unit costs were increased 3.6%, the January 2007 to January 2008 year-over-year increase in RSMeans 30-city national average construction cost index (CCI).



At the expected level, the most expensive barrier removal costs include those listed in Figure 5. These costs per element do not reflect the likelihood nor the frequency of occurrence of the element at any facility. By far the most expensive requirement is that for sloped entry into wading pools, since slope grade and related regulations (such as no more than one turn) would result in extremely long ramps. (It is understood that this is unlikely to be technically feasible in many circumstances and the likelihood of facilities building such ramps has been adjusted accordingly.) Many other elements with high construction costs are related to recreational facilities such as accessible holes at mini golf, location of accessible routes to stages, and primary accessible means of entry to pools (see Figure 5).

**Figure 5: Top 5 Average Barrier Removal Construction Costs Per Unit**



#### 4.1.4 Operations and Maintenance Costs

The level of incremental O&M costs and type of O&M costs incurred vary among elements. O&M costs are developed by a firm specializing in facility management. O&M costs are captured as an annual percentage of capital costs. Elements are grouped into four categories depending on maintenance needs: standard maintenance, high use maintenance, extraordinary wear and tear, and equipment. Low, most likely, and high estimates of the percentage of capital costs are defined in each case. O&M estimates range from a low of 2%-4% for standard maintenance items to a high of 4%-6% for equipment (see Appendix 3I).

For a large portion of facilities, the maintenance of many elements is likely to be part of service agreements, which can last for extended periods. Unless compliance results in a significant increase in the number of elements being serviced, or a significantly higher cost or complexity for particular element, significant changes in service agreements are assumed to be unlikely.

Many other elements, such as lower side reach, would not have measurably different O&M costs. Thus, for a large number of the requirements, incremental O&M costs are zero.

#### **4.1.5 Loss of Productive Space**

The value of lost productive space is composed of two parts: (a) an estimate of the lost space; and (b) an estimate of the value of that space. Data on lost space (in square foot terms) have been developed by the Department's architects and an independent certified professional cost estimator using standard industry practices.<sup>45</sup> Changes in productive space for each element are included only if meeting the requirement would result in a loss (or addition) of space would have a direct impact on business income. A significant number of elements (nearly four fifths) would result in no change in productive space, those that do would have impacts of 5 to 40 square feet. Accessible self-service units can also have significant impacts on productive space at the high end of estimates, as some facilities may need to decrease the number of non-accessible units. The productive space impact of galley kitchen clearances under barrier removal can also be significant at the high end. Several elements would result in 'savings of productive space; the largest being the less stringent requirements for accessible route to press boxes and accessible routes to tiered dining in sports facilities, both resulting in reductions of several hundred square feet. (See Appendix 3J.)

The annual value of building space per square foot has been derived from facility-specific data. Variability in space impacts and monetized space are included in the analysis. Based on a lack of facility specific data on income per square foot, data were estimated using building costs per square foot, adjusted by the ratio of income per square foot for office buildings to construction costs per square foot for office buildings. (See Appendix 3K.)

This analysis determined which facilities and requirements would actually incur a loss if there was a space impact. Not all facilities have productive spaces (e.g. schools). Also, not all requirements cause losses of value, even if there is a space impact (e.g. requirements impacting parking lots). In some cases, losses in productive space are excluded for specific facility-requirement combinations (e.g. space impacts from changes in single-user toilets are not valued for hotels because they impact lobbies only). Otherwise, costs are incurred for facilities based on the same scenario assumptions (e.g. readily achievable and alternative baselines).

#### **4.1.6 Replacement Costs**

Most elements should last for the life of the building if properly maintained. An independent professional cost estimator provided estimates of the rate at which elements would need to be replaced during the 20- or 40-year time frame for the nearly 20 elements considered here that would expect replacement. Examples include platform lifts and playground equipment. Costs that might stem from a desire to remodel and not from the fact that an element is at the end of its useful life are not included. For those elements likely to need replacement, the replacement cost is equal to the full cost of construction under alterations. Replacement rates range from once every four years to once every ten years. (See Appendix 3L.)

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<sup>45</sup> BCC Building Cost Consultants of Plattsmouth, Nebraska provided estimates of changes in productive space which were reviewed by the Department's architects.

### 4.1.7 Expert Cost Review

A panel of experts was convened by the Department to review key assumptions associated with facility and element profiles, likelihoods of occurrence, and differences between barrier removal, alterations and new construction. The panel reviewed initial estimates of facility size and the frequency of occurrence by element developed by the Department's architects. Decisions during the working group were consensus-driven for most likely, low, and high parameter values. A sample from the workbook used in the session is shown below in Figure 6.

**Figure 6: Example of Cost RAP Question**

<b>13. Accessible Routes from Site Arrival</b>
Key Element Features:
<ul style="list-style-type: none"><li>• routes accessible by vehicle only</li><li>• Horizontal surface construction materials and accessible path of travel, range - 100', 200', &amp; 500'+ travel distance</li></ul>
Comments:
<hr/> <hr/> <hr/>
Range(s) to use in estimating range of unit costs to account for variations in facility sizes and configurations (if applicable):
<hr/> <hr/> <hr/>
Likelihood that a typical individual facility (in any facility group) will have the element and will be affected by the incremental change to the requirement:
<input type="checkbox"/> 50%      Other: _____

## 4.2 Benefits Data and Assumptions

### 4.2.1 Number of Facility Visits of U.S. Adults

The computation of user benefits relies on estimating the number of annual visits per facility group by persons with disabilities. Industry specific data on the average number of annual visits for adults are assembled for each commercial facility to calculate a figure for the number of persons with disabilities. Data on the average (or total) number of visits have been collected for many types of facilities (see Appendix 4A).<sup>46</sup> Some of the figures on total or average visits included both adults and children. In those cases, the data were scaled down by the percentage of

<sup>46</sup> These facilities include: inns, hotels, motels, restaurants, motion picture houses, multi-level stores, offices of health care providers, both public and private hospitals, both public and private nursing homes, terminals, depots, both public and private parks or zoos, both public and private amusement parks, nursery schools/day care, elementary private schools, secondary private schools, undergraduate and postgraduate private schools, homeless shelter, food banks.

the U.S. population 18 years of age and older. All the data are estimated for 2010 using population growth rates. (See Appendix 4B for population data from U.S. Census Bureau.)

When such data for a facility type cannot be found, the following methodology is used. The number of visits for each private facility type, a baseline  $Q_0$ , is derived from the total sales of a facility group divided by the estimated market price of a facility visit. The total sales per facility group are based on the total sales per industry sector, determined by the U.S. Economic Census, representative of the facility groups. For example, the indoor service establishment facility group (Group I) includes total sales revenue from the personal and laundry service (to capture laundromats and beauty parlors) and at least five other service industry sub sectors including banks and offices of lawyers and accountants (see Appendix 4C). Sales data from 2007 are scaled to 2010 dollars using the Consumer Price Index (see Appendix 4D).

The following facilities are not specifically listed in the Economic Census: fishing piers and platforms, and shooting facilities. The total sales at these facilities are each assumed to be one-third of the total sales revenue of the category, “All Other Amusement and Recreation Industries” (NAICS code 7139908). The remaining third of sales is unknown. It is not known to what extent this assumption over or under estimates sales at these facilities.

Sales are divided by market price per visit to estimate the total number of facility visits. However, data on revenue from sales receipts are not available for some facilities that are counted by the Economic Census or for the public facilities. For these facilities, the numbers of facility visits are directly assumed as such:

- 25% of the U.S. population 18 years and older visit an office building once a year.
- For public facilities with a private counterpart for which information on the total number of visits was available (such as amusement parks), visits were allocated proportionally based on the number of facilities.
- Facility visits for public housing are estimated from data on the number of people living in public housing. A visit consists of a day spent at the facility. Long-term residents spend every day there and thus visit it every day of the year.<sup>47</sup>
- Visit to judicial facilities vary. It is assumed that 1% of the total adult population of the United States (18 years and older) needs to visit a judicial facility annually.
- Visits to detention facilities are derived from data on monthly estimates of felony cases.<sup>48</sup> An annual number of detainees is estimated, assuming that all alleged felons are detained. Further, each alleged felon is assumed to be detained for an average 10 days. Therefore, the number of visits per year is equal to the number of annual detainees multiplied by the average number of days detained, divided by 365 days.
- Visits to state and local correctional facilities are derived in a similar way as public housing for the number of prisoners in state and local correctional facilities.
- The remaining public facilities (such as Public Recreational Boating Facilities) are assumed to have the same proportion of visits per facility as their private counterpart.

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<sup>47</sup> Data are collected by the US Department of Housing and Urban Development (HUD).

<sup>48</sup> Data are collected from Bureau of Justice Statistics.

The baseline  $Q_0$  divided by the U.S. population 18 years and older illustrates the number of visits per facility type made by the typical U.S. consumer, shown below in Table 5. For example, this estimate shows that the typical U.S. consumer visits a restaurant about 200 times annually. (Restaurant facilities are defined by the Economic Census to include full-service restaurants; limited-service eating places; special food services, such as food service contractors, caterers, and mobile food services; and drinking places.) This also shows that the average U.S. consumer most frequently visits single-level sales establishments (including grocery stores, bakeries, clothing stores, and hardware stores), at a rate of about 1.2 times a week. Since it is assumed that the users of school facilities are the enrolled students, the visits made to these facilities reflect the population of the age groups that attend each school facility.

**Table 5: Total Number of Annual Visits per Facility Group by Adults**

Inns	434,136,553	Office Buildings (new)	78,132,713
Hotels	639,668,490	Office Buildings	78,132,713
Motels	573,375,553	Elementary Public Schools	3,481,539,779
Restaurants	48,756,051,381	Secondary Public Schools	4,580,973,393
Motion Picture House	1,102,872,542	Undergraduate and Postgraduate Public Schools	12,215,929
Theatre / Concert Hall	324,797,197	Public Housing	79,278,000
Stadiums	175,461,750	State and Local Judicial Facilities (courthouses)	3,070,066
Auditoriums	158,913,682	State and Local Detention Facilities (jails)	12,215,929
Convention Centers	47,522,304	State and Local Correctional Facilities (prisons)	928,919,605
Single Level Stores	19,414,266,163	Parking Garages	1,576,883,489
Shopping Malls	2,601,181,776	Self Service Storage Facilities	41,943,610
Indoor Service Establishments	25,520,961,000	Theatre / Concert Halls (public)	200,939
Offices of Health Care Providers	858,282,176	Stadiums (public)	517,080,852
Hospitals	73,773,974	Auditoriums (public)	8,186,098
Nursing Homes	539,414,177	Convention Centers (public)	70,023,447
Terminal (private airports)	969,217	Offices of Health Care Providers (public)	0
Depots	24,274,734	Hospitals (public)	18,087,152
Museums, Historical Sites & Libraries	1,766,284,371	Nursing Homes (public)	49,752,934
Parks or zoos	89,624,967	Museums, Historical Sites & Libraries (public)	3,421,306,405
Amusement Parks	267,791,915	Parks or zoos (public)	1,375,642,128
Nursery schools - Daycare	3,368,899,276	Homeless Shelter (public)	15,205,650
Elementary Private Schools	534,547,173	Exercise Facilities (public)	48,272,115
Secondary Private Schools	167,651,785	Social Service Establishments (public)	362,522,271
Undergraduate and Postgraduate Private Schools	898,786,369	Swimming pools / Aquatic Centers (public)	51,136,050
Ski Facilities	45,609,249	Miniature golf courses (public)	24,517,450
Homeless Shelter	103,765,718	Recreational Boating Facilities (public)	57,378,698
Food Banks	210,183,703	Fishing Piers and Platforms (public)	6,004,045
Social Service Establishments	1,012,206,708	Office Buildings (public)	196,782,624
Exercise Facilities	1,487,367,687	Parking Garages (public)	14,125,413
Swimming pools / Aquatic Centers	401,547,700	Golf Courses (public)	46,733,865
Bowling Alleys	237,021,233	Restaurants (public)	1,746,595
Golf Courses (private with public access)	274,110,039	Amusement Parks (public)	5,578,917
Golf Courses (private only)	64,624,920		
Miniature golf courses	512,937,275		
Recreational Boating Facilities	42,088,779		
Fishing Piers and Platforms	6,004,045		
Shooting Facilities	29,690,431		

By far, the largest number of visits are made to Restaurants (49 billion visits), Indoor Service Establishments (25.5 billion visits), and Single-Level Stores (19 billion visits). The large number of visits to Indoor Service Establishments and Single-Level Stores is partly due to the broad nature of those two facility categories. The Restaurant facility type is also fairly broad and includes fast-food establishments as well as luxury restaurants. Other facilities, especially many of the specialized recreational facilities, have significantly fewer visits – close to 50 million or less. These estimates can also be presented as the average number of visits by a typical adult: 159 average visits a year to restaurants, 83 average visits a year to indoor service establishments, and 63 average visits a year to single-level stores (see Appendix 4A for estimates for all facilities).

#### **4.2.2 Number of Facility Visits of Persons With Disabilities**

Estimating visits for persons with disabilities begins with the estimate of U.S. facility visits noted above and then adjusts this level in several ways. Each requirement targets a specific type of disability. The target population of persons with disabilities consists of five groups as defined by the U.S. Census Bureau: ambulatory, wheelchair only, seeing, hearing, and upper body limitation (see Appendix 4E).<sup>49</sup> An ambulatory disability includes persons using a wheelchair. The percent of this targeted population is applied to the baseline  $Q_0$  to establish a  $Q_0$  for each requirement at each facility by requirement. The assumptions of each requirement's target population are shown in Appendix 4K. These percentages of persons with disabilities are assumed to be invariant over time, but actual numbers of persons with disabilities grow with population. This requirement specific  $Q_0$  expresses the number of visits made by each target population.

The baseline  $Q_0$  of each facility is adjusted for persons with lower income to account for the portion of the population with disabilities, who tend to have a lower average income. The income adjustment is a ratio of total household income expenditures per facility for low income persons and average income persons. This adjustment indicates whether low income persons are more or less representative at a facility compared to those with average income. In other words, persons with a lower average income would be underrepresented at some facilities, such as typical luxury facility visits (sports stadiums, opera houses, museums) and overrepresented at other facilities (government housing, laundromats). The assumptions made for each facility are shown in Appendix 4F.

#### **4.2.3 Lifecycle Assumptions**

Several assumptions are made for the lifecycle portion of the analysis. New construction and alterations are assumed to require three years for completion, while barrier removal is expected to take one year. Benefits can be assumed to lag in the first five years as facility users become familiar with changes in the facilities. It is assumed that in the first year, 50% of steady state benefits are realized. Each year, this percentage increases linearly until after five years, when the full benefits related to this portion of construction are reached. Steady state benefits are reached five years after all construction has been finished; from this point, steady state benefits increase at the same pace that population does. By the end of the period when construction start to age, the benefits also start to decrease at the same rate, until they have reached zero when all construction has aged.

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<sup>49</sup> Mobility is also a term used to describe the type of disability that persons have with an ambulatory disability.

#### 4.2.4 Generalized Use and Access Cost

The generalized use and access cost is the sum of the value of time spent traveling to, accessing, and using the facility and the market price of a facility visit. Two of the components of the generalized use and access cost,  $P_0$ , are facility use and travel time, both based on data from the 2005 American Time Use Survey, published by the Bureau of Labor Statistics, U.S. Department of Labor. The average of the responses that concern this analysis range from 4.87 hours spent participating in fishing to about 10 minutes spent purchasing gas (see Appendix 4G).

It can be noted that the estimates for use time of residential facilities includes the total time spent at the facility during the entire year, as one visit is defined as one year.

Another component of the generalized use and access cost, access time, is an estimated variable developed by HDR and the Department, and verified by the RAP panel (see Appendix 4H). As described above, access time includes the time spent accessing a facility, not the time spent using the facility. The most likely estimates of access time range from 7 minutes spent accessing gas stations to 58 minutes spent accessing an amusement park.

As mentioned above, the market prices,  $C_0$ , of some facilities only affects the generalized use and access cost since the number of visits is assumed directly. The market price for visiting an office building, although not paid directly at the entrance, like at a movie theater, is instead estimated to be the value of the person in the office building providing the visitor service, assumed to be \$20.

The market price per visit of a school facility is estimated based on assuming a private elementary or secondary school has an annual tuition of \$10,000, and a private undergraduate and postgraduate school has an annual tuition of \$30,000. The market price for public schools is assumed to be equal to private schools. However, taxpayers pay this price instead of the visitor directly. This annual tuition is divided by the number of days in a school year of elementary and secondary schools, 180 (or 160 for undergraduate and postgraduate schools) to determine the price per visit.

While the market price per visit of government housing (which, being a residential facility is assumed to be a year) could be estimated from the average monthly rent paid (reported by HUD in January 2008 to be \$293), this figure does not affect the calculation the number of visits, which is based upon the number of residents, as described in section 4.2.1 above. The market price of state and local judicial, detention, and correctional facilities is assumed be zero. Appendix 4I lists the market prices per facility.

#### 4.2.5 Value of Time

As described above, the generalized use and access cost includes the cost of time of a facility visit. The total time, including travel time, access time, and use time, are monetized by the value of a visitor's time. The value of time varies by the usual primary function of a facility: non recreational (work), recreational, or residential (see Appendix 4J). The value of time is estimated according to the Bureau of Labor Statistics, U.S. Department of Labor, estimates of the average wage for the average production worker in 2006, approximately \$20 per hour, as a standard estimate what could be earned for an alternate use of that time (i.e. working). It is assumed that the average for the low income population is half of the average wage rate or, \$10 per hour. Due to a high proportion of persons with disabilities being low income, the \$10 wage rate is used as a conservative estimate for their baseline value of time. This baseline value of time is used for

many facilities for which work or housework/errands are performed. Using common economic assumptions, the value of time for recreational facility visits is one half that of the baseline value of time, or \$5 per hour.

The value of time spent at a residential facility, which is the state and local government housing facility group, is determined to be half the average wage rate, also \$10 per hour. Persons in state and local detention and correctional facilities are assumed to have a value of time of \$0.10 per hour.

The value of time for persons enrolled in school facilities is estimated by using the value of time of the adult supervisor of the child. In other words, value the time as if the child was an adult - which assumes 1 hour of supervision for each hour saved. This will also take the normal adjustment factor for non-work time. Therefore, for each child in a classroom (the visitors of the school facilities), the teacher's supervision time is valued at \$1.30 (\$20 per hour divided by an estimated 25 children per classroom).

Premiums on the value of time are developed for two parts of the user experience at a facility. Changes in access time due to requirements are valued at the most likely level of twice the value of time. Some requirements also directly affect the primary purpose of the facility visit. The value of use time at these facilities is enhanced and the associated premium on the value of time is 35% of the value of time and applies for the entire use time. Both of these assumptions are most likely values and are consistent with published sources on the economics of the value of time. Appropriate ranges have been applied to the distributions around these parameters. (See Appendix 4J.)

The premium for use time at a facility that is enhanced by a particular element is assumed to be the difference between the premium value of sitting down and standing up. The premium for access time at a facility is the difference between the premium value of walking and sitting down in a segregated vehicle.

#### **4.2.6 Access Time Change**

Data from an expert panel provide a basis for understanding total access time per requirement during a facility visit. As mentioned in Section 3.2.2, the total access time is computed from the product of (a) the access time change per requirement use; (b) number of uses per visit; and (c) the likelihood that benefits are realized. The realization of time change and number of uses per requirement are described in Appendix 4K. An example of the data requested from the panel is shown in Figure 7. Data from the panel data are summarized for the access time per facility by creating a range of possible access times per facility by the given high, low, and most likely estimates provided by the panelists (see Appendix 4L). The average of the responses determines the low and high limits of the range.

##### ***Likelihood of Experiencing Benefits***

Users may not always experience the full benefit of increased access, as indicated by the RAP Benefits Panel. The RAP Benefits Panel provided estimates of the time savings that would be experienced by users of the facility because of the new access requirements. The panelists' responses provide a range of likely benefits per use of a facility amenity. However, questions did not require panelists to account for all expected time savings associated with the use of each requirement during a facility visit. Accordingly, it is possible that panelists focused on the time savings per use but not the uses per visit. In some cases, the use of an accessibility element, and



thus the realization of benefits, is quite remote (e.g. needing to use the visible alarms). Because results of the panel indicate a high total access time savings, panelists exhibited cognitive biases towards higher impact time or uses, potentially because of the associated discomfort in overcoming accessibility obstacles. To be conservative in the estimation of benefits, a likelihood for experiencing benefits due to each element is incorporated into the model. The likelihoods of experiencing benefits vary from 0.0001% (visible alarms in alterations to existing facilities) to 100% for raised courtroom stations not for members of the public. In consultation with the Department, HDR/HLB determined the likelihood of experiencing benefits from individual requirements grouped into one of several categories based upon the type of time savings resulting from each requirement and the likelihood that benefits would occur. The categories were then ranked from least likely to most likely and assigned conservative estimates of the likelihood of experiencing benefits to ensure that incremental benefits occur only when the element is actually used (such as, for example, a power outage necessitating an alternate means of opening automatic doors or the likelihood of needing to use the rest room during a visit to a shopping mall). Likelihood estimates for each requirement, and descriptions of the groupings (general categories) used can be found in Appendix 4M.

These final parameters for the range of possible time changes and expected number of uses per requirement result in a reasonable, conservative estimate of total time change per facility given the applicable requirements. The total change in access time at the expected level is compared for consistency and validation with the access time provided by the expert panel. The average change and total access time savings in access time should normally not exceed the current access time. The total change in access time per facility group is shown in Appendix 4N.

**Figure 7: Example of Benefits RAP Question**

**13. Accessible routes from site arrival points within sites:** Vehicle-only routes would not have to provide an accessible pedestrian route.

- Time increase in moving around a facility in a car (including waiting for a car) or traveling independently more cautiously or less conveniently compared to having accessible buildings or elements connected through accessible routes
- Expected number of trips made to and from sites within a facility visit
- Target population: Ambulatory

**Time increase (minutes):**

☐ Range: 10 – 60      ☐ Other: \_\_\_\_\_

☐ Most Likely: 20      ☐ Other: \_\_\_\_\_

**Expected number of uses per 100 visits:**

☐ Range: 20 – 60      ☐ Other: \_\_\_\_\_

☐ Most Likely: 30      ☐ Other: \_\_\_\_\_

**Lost Access:**

% of target population whose independent access is now not possible: \_\_\_\_\_

**Comments:**

#### 4.2.7 Price Elasticity of Demand for a Facility Visit

Elasticities for some facility groups are derived directly from literature sources (see Appendix 4O). Facilities of the same type are assumed to have the same elasticities. Elasticities range from

1.8 for golf courses to 0.16 for auditoriums (based on price elasticity of small market orchestras), reflecting the fact that visits to golf courses are fairly sensitive to price, while visits to auditoriums are much less so. State and Local Judicial Facilities, detention and correctional facilities are assumed to have an elasticity of zero; it is assumed there is no market demand for these facility visits and that visits to these facilities are determined by other factors instead of price.

#### **4.2.8 Ease of Access Adjustment**

Each facility is assumed to have an ease of access factor according to the current and future conditions, assuming adoption of the Final Rules. These factors range from 60 percent to 100 percent. At 100 percent, facilities are generally accessible (except for the Final Rules), and vice versa for 0. As discussed in Section 3.2.3, the ratio of current to future EOA provides a scaling factor for the price (or visit) responsiveness by users. Assumptions on the EOA factors are in Appendix 4P.

### **4.3 Risk Analysis**

Uncertainty in the estimation of costs and benefits is addressed through risk analysis. Risk analysis principally involves quantifying the uncertainties in factors for estimating cost and benefit. Quantification involves defining probability distributions of possible values for each factor. Data used to quantify uncertainty come in part from research and discussions with experts. The distributions of cost and benefit factors are inputs to the model, which is then solved using simulation. The simulation process varies all factors simultaneously so that interrelationships between variables are more realistically handled and the impacts of factors on final results are considered jointly. The results include all possible estimates according to their probability of occurrence. In addition, the analysis identifies which parameters are the key influences on results. Risk analysis addresses and in fact, encompasses the approach to sensitivity analysis called for in OMB guidelines.

Uncertainty is quantified for most parameters in the model. Expert RAP panels provided many of the critical inputs with respect to the range of values. These include access time change, uses per visit, and unit costs. Some uncertain variables, such as the number of elements per facility, have a range determined as + and – 20% of the most likely value (the value provided by the panel and HDR architects). This range represents upper and lower boundaries for the distribution. Other parameters, such as (a) the likelihood that an element is in an average facility and (b) the likelihood that benefits are realized during a facility use, have ranges that are determined by consistent application. No data is available to verify these values so ranges wider than +/- 20% are used. In all cases, PERT distributions are used with the low, most likely and high parameter values to define the distribution.<sup>50</sup>

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<sup>50</sup> A PERT distribution is a triangular distribution determined by a minimum, maximum and most likely value. The descriptor “PERT” comes from the fact the same assumptions regarding the mean (that it is four times more likely that the minimum and/or maximum value) are made as in PERT (Program Evaluation and Review Technique) network project planning. (See Vose, David, *Risk Analysis: A Quantitative Guide - Third Edition*, Chapter 14).

## 4.4 Definition of Baselines

The ADA Standards are the primary baseline for this assessment because they are the only uniform set of accessibility standards that apply to every place of public accommodation, commercial facility, and State or local government facility in the country. Alternate IBC baselines potentially have a different incremental cost and benefit for each requirement and facility combination.

The Department did not attempt to calculate the incremental benefits and costs in each case (e.g., separately for IBC 2000, IBC 2003, and IBC 2006). With the 1991 Standards as the primary baseline, this would have amounted to conducting four separate regulatory assessments rather than one. Instead, the Department has identified which of the revised requirements should logically be subject to an IBC baseline (because the IBC provision is more stringent than the current requirement in the ADA Standards) and then, with respect to those requirements, where the IBC provision is also equivalent to the new or revised requirement in the Final Rules, assessed zero benefits and zero costs. Where the IBC provision is not equivalent to the provision in the Final Rules, even if it is more similar to the provision in the Final Rules than it is to the provision in the 1991 Standards, the full incremental benefits and costs of the Final Rules against the ADA baseline have been applied. At worst, this approach will have overstated the benefits and costs for facilities under the IBC baseline. It could not have understated the benefits and costs because whenever the IBC provides a less stringent (less costly) provision than the 1991 Standards (so that the incremental cost difference between compliance with the IBC provision and compliance with the revised requirement would be greater than that between the IBC and the current requirement), the IBC provision is trumped by the current requirement, which must then serve as the baseline.

Appendix 9 shows a table of each requirement's assumption for its application to each IBC baseline. Overall, there are 16 requirements that are in compliance with IBC 2000, 27 that are in compliance with IBC 2003, and 35 that are in compliance with IBC 2006.

Analyses of these baselines are conducted separately for each edition year of the IBC. For each baseline, requirement-level comparisons are made with 1991 Standards and 2004 ADAAG. If the alternative baseline is equivalent to the 2004 ADAAG, the element is assumed to be compliant. Otherwise, compliance is required and at a cost that would be similar to that which would be required if the element complied with only the 1991 Standards.

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## 5. UPDATES TO THE REGULATORY IMPACT ANALYSIS

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This chapter discusses changes made to the Final RIA (as compared to the Initial RIA) to reflect: public comments concerning the methodology underlying the Initial RIA; substantive revisions to the Final Rules; revisions made to the RIA model and data elements; and further research and analysis. Over 4,400 comments were received during the 60-day comment period on the Department's proposed revisions to the regulations implementing Titles II and III of the ADA. Comments were received from a wide spectrum of individuals and entities, including persons with disabilities (and other individuals), industry/trade associations, businesses of various sizes, model code organizations, advocacy groups, local and state governmental entities, non-profit groups, and architecture firms. The preambles to these final rules and the accompanying appendix entitled "Analysis and Commentary on the 2010 Standards for Accessible Design" provide the primary forum for substantive responses to these comments. This section only discusses comments to the extent they implicate RIA-related estimates, assumptions, or methodologies.

### **Facility-Specific Revisions and Comments**

#### *Updated Facility Data (All Facilities)*

The Final RIA reflects updated data with respect to facility counts, sales receipts, and total visits based on data from the U.S. Census Bureau, 2007 Economic Census, and the February 2010 Dodge Construction Potentials Bulletin. Facility counts were updated based on the 2007 Economic Census data and then projected to 2009 estimates using the construction growth rates per facility type in the Dodge Construction Potentials Bulletin.

The total sales receipts per facility type used to estimate the number of visits has also been updated based on the 2007 Economic Census. These 2007 estimates were also projected forward to 2009 estimates based on the change in the Consumer Price Index (CPI).

The number of visits was further refined by new estimates of the percentage of the population with disabilities from a 2005 U.S. Census report and updated U.S. Census Bureau population estimates for the entire U.S. population.

The Value of time during a facility visit was also re-estimated based on new data for 2008, the May 2008 National Occupational Employment and Wage Estimates. This provides a new estimate for the basis of the value of time, \$20.32, the Average Hourly Earnings of Production Workers for 2008 of the total private sector.

#### *Lodging Facilities*

Alteration Rates: A trade association representing the lodging industry asserted in its comments that its members alter their respective lodging facilities more frequently than the general (historically-derived) alteration rate applicable to all facilities in the Initial RIA. The trade association submitted data from an informal survey (of eight unnamed hotel companies) showing that, at these companies' lodging facilities, the toilets and vanities in guest room bathrooms were replaced, on average, every 13.75 and 12.75 years respectively. In light of this survey data, the alteration rates for lodging-related facility groups in the Final RIA (i.e., Inns – Facility Group #A, Hotels – Facility Group #B, and Motels – Facility Group #C) was revised to every 15 years. (While this 15-year alteration schedule is slightly higher than the rounded alteration rate values

provided in the lodging industry comment, this revised rate used in the Final RIA nonetheless still represents a conservative figure since (a) alterations in this analysis are assumed to affect *all* elements in a facility, and (b) it is highly unlikely that structural and other elements in lodging facilities are altered as frequently as bathroom fixtures in guest rooms.)

Unit Costs for Modifications to Bathrooms in Existing Accessible Guest Rooms: Several lodging industry commenters claimed that the cost figures for altering bathrooms in accessible guest rooms at existing lodging facilities in the Initial RIA were too low. These comments suggested that the Initial RIA underestimated alterations costs because it separately assessed the costs for alterations affecting vanities (Requirement #45) and water closet clearances in single-user toilet rooms with out-swinging doors (Requirement #28). Instead, these commenters suggested that more realistic alterations costs would be generated by focusing on the collective impact of the Department's revised requirements for certain features in bathrooms in accessible guest rooms (i.e., toilets, lavatories, vanities, and related clearances). Accompanying some of these comments were prototype plans for existing bathrooms in accessible guest rooms with annotations describing alterations work - without cost detail - that purportedly would need to be done to make these bathrooms compliant with the 2004 ADAAG. (One commenter did provide a general cost estimate of \$20,000 to \$25,000 for making bathrooms in accessible guest rooms accessible. But, without any supporting data, drawings, or description of how this estimate was derived, it could not be evaluated further.)

The review of these comments and prototype plans led to changes in the RIA model for the Final RIA in several respects. First, a new requirement for bathrooms in accessible guest rooms was created by combining the formerly separate requirements for guest room vanities and water closet clearances for single-user toilet rooms with out-swinging doors. (See Appendix 2, Requirement 45.) (As a consequence, the element counts for single-user toilet rooms with out-swinging doors (Req. #28) for lodging facilities were deleted and replaced with the same element counts for bathrooms in accessible guest rooms (Req. #45)). Second, based on the prototype plans submitted by lodging industry commenters, a new set of assumptions were developed by Department architects for the low, medium, and high incremental unit cost scenarios. These cost assumptions include:

- No appreciable incremental unit cost changes in New Construction;
- At the low end unit cost estimate for both Barrier Removal and Alterations, installation of additional shelving would be required;
- At the medium unit cost estimate for both Barrier Removal and Alterations, relocation of two plumbing fixtures, construction of a new plumbing chase for the toilet, and installation of a vanity counter would be required but the bathroom footprint would not change; and
- At the high end unit cost estimate for both Barrier Removal and Alterations, relocation of two plumbing fixtures and the bathroom door, installation of a vanity counter, construction of a new plumbing chase for the toilet, and expansion of the bathroom by shifting the bathing fixture wall into the guest room sleeping area just over one foot would be required, which would increase the bathroom footprint by a total of 8.125 sq ft.

Lastly, these cost assumptions were submitted to the same independent cost estimator who provided incremental unit cost data for the Initial RIA. The resulting unit costs for this new requirement for bathrooms in accessible guest rooms are reflected in Appendix 3H (Unit Costs).

The incremental unit costs for this new requirement, however, do not include any calculations of lost revenue. A lodging trade association's comments suggested that the Initial RIA should have accounted for loss of revenue due to longer renovation periods from extensive work that allegedly would be required to comply with the water closet clearance and vanity requirements in the 2004 ADAAG. Alterations, however, are frequently performed on a large scale and are scheduled to occur when occupancy is low. It is thus expected that the minimal additional time to move plumbing fixtures (medium cost assumption scenario) will not significantly impact facility revenues.

Exercise Facilities: Comments by a lodging trade association criticized the Initial RIA for assuming that exercise facilities would be located only at Hotels, and not smaller lodging facilities (such as Motels). This commenter submitted the results of an industry survey indicating that 85% to 90% of lodging facilities comparable in size to the Motel facility group (in terms of guest room count) have exercise facilities. The Final RIA thus includes estimates for exercise facilities at Motels (as well as Hotels) and assumes the exercise rooms are of similar size in each respective type of lodging facility. (See Appendix 3E1.) Additionally, the likelihood values for exercise facilities (i.e., the likelihood that an exercise facility exists and is likely to require change to become compliant) are increased to 55%, which represents the average of the percent of Hotels and Motels with exercise facilities (90%) based on the industry's survey data and the likelihood of Hotels having exercise facilities that would need to change (20%) as estimated in the Initial RIA. (See Appendix 3G in Initial and Final RIAs.)

Comments from the lodging industry also suggested that the Initial RIA should have accounted for the "social costs" of increased wait times for exercise equipment since, according to these comments, compliance with the 2004 ADAAG would necessitate removal of some pieces of exercise equipment from each exercise facility. No survey data or other supporting information accompanied this comment. In the Department's view, increased wait times at hotel exercise rooms are highly unlikely to result from the supplemental requirements applicable to exercise facilities both because well-planned modifications to the configuration of equipment in exercise rooms will not invariably dictate the removal of pieces of equipment and because experience suggests that exercise facilities at places of lodging are not generally used by hotel guests with sufficient frequency to create lines at exercise equipment. Thus, given the lack of the information to support this comment, such "social costs" are not included in the Final RIA.

Saunas and Steam Rooms: A lodging industry trade association claimed that, contrary to the Initial RIA's assumptions, both Hotels and Motels are likely to have saunas and that these saunas would be larger than two-person saunas (since saunas for two-persons are exempt from barrier removal under the Final Rules). No survey data or other supplementary information accompanied this comment. The issue raised by these comments was mooted, however, by the elimination of the barrier removal exemption for small (2-person) saunas and steam rooms in the Final Rules for both public and private facilities. Now, all saunas and steam rooms of all sizes must comply with the 2010 Standards. In the Final RIA, Requirement #111, Accessible Saunas and Steam Rooms (Alt/BR) applies to Hotels, with an assumed 5% likelihood of occurrence.

### *State and Local Judicial Facilities (courthouses)*

Number of Facilities: Based on further research, the estimated number of existing courthouses in the United States was revised significantly downward in the Final RIA. The number of courthouses was estimated by researching (via contacting individual states) the actual number of courthouses in the five most populous states, the five least populous states, and six others, generating an average number of courthouses per 100,000 persons, and applying that figure to the United States as a whole. The result was an estimate of approximately 9,458 courthouses in the country.

### *State and Local Detention Facilities (Jails)*

Number of Facilities: Based on revised sources, the number of existing jails in the United States was revised in the Final RIA. According to the *Sourcebook of Criminal Justice Statistics 2003*, there were 3,365 state and local detention (jail) facilities in the United States as of 1999. This figure was then adjusted, using growth rates from the February 2010 McGraw Hill Dodge Construction Potentials Bulletin, in order to estimate the number of existing jail facilities as of 2007. (See Final RIA, Appendix 3A.)

### *State and Local Correction Facilities (Prisons)*

Number of Facilities: Based on revised sources, the number of existing prisons in the United States was revised in the Final RIA. According to statistics published by the Bureau of Justice Statistics, there were 1,190 state and local correctional (prison) facilities in the United States (excluding community-based facilities) as of 2005. This figure was then adjusted, using growth rates from the February 2010 McGraw Hill Dodge Construction Potentials Bulletin, in order to estimate the number of existing prison facilities as of 2007. (See Final RIA, Appendix 3A.)

Assumptions Regarding Typical Facility Size: Based on further research, the estimated size and characteristics of the “typical” prison facility was modified in the Final RIA. In summary, the number of inmates, cells, and buildings is increased as compared to the facility assumptions in the Initial RIA. (See Appendix 3C in Initial and Final RIAs.) In addition, based on these revised prison facility characteristics, Department architects also adjusted the “counts” for other elements assumed to be located in prison facilities. (See Final RIA, Appendix 2E Table 3E2 (Number of Elements Per Typical Public Facility).)

### *Homeless Shelters*

Likelihood of Element in Typical Facility: In the Initial RIA, a typographical error in Appendix 3-E2 reported element counts for Requirement #107 Social Service Establishment (UFAS), and for Social Service Establishment (ADAAG), at public exercise facilities (Facility Group # BG). This error has been corrected in the Final RIA. The corrected element counts now properly appear under the renamed (and renumbered) Requirement # 109 Social Service Establishments – Elevator Access (NC) and Requirement #110 Social Service Establishments – Clear Floor Space around Bed) at public homeless shelters (Facility Group # BF).

## Requirement-Specific Revisions and Comments

### *Updated Unit Costs (All Requirements)*

The unit costs for each requirement have been updated to reflect changes in prices since 2007 when unit costs were originally estimated in conjunction with the Initial RIA. Unit cost estimates were adjusted to 2009 dollars by increasing these costs 3.6% based on the RSMMeans 30-city national average construction cost index.

### *Alterations to Existing Elevators (RIA Req. #16)*

**Unit Costs:** Several disability rights advocacy groups commented that costs to alter existing elevators in compliance with this revised requirement would be lower if it were assumed that building owners or operators adjusted the call system to permit users to independently summon accessible elevators, as opposed to altering all elevators programmed to respond to the same call button (as was done when estimating unit costs in the Initial RIA). An independent cost estimator evaluated this comment by discussing this suggestion with two well-known elevator companies. Based on these discussions, the cost estimator determined that it would be significantly *more* expensive, on a per facility basis, to make the suggested adjustment, particularly due to the reprogramming that would be required. Thus, no change was made to the unit costs for this requirement in the Final RIA.

### *Valet Parking (RIA Req. #20)*

**Loss of Productive Space:** Upon further review and analysis, it was determined that two inputs related to the “loss of productive space” calculation for this requirement had been overestimated in the Initial RIA. Specifically, these overestimates were: (i) rather than representing the *incremental impact* of the Valet Parking requirement, the square footage listed in Appendix 3-K (Changes in Productive Space Per Requirement) instead reflected the absolute space requirements for an accessible parking space (and requisite aisle space); and (ii) the value of the change in productive space within the business establishment associated with the valet parking service (*e.g.*, in a restaurant dining room) rather than the value of lost valet parking space. The net effect of these two assumptions was a significant overestimation of the monetized value of the change in productive space for the Valet Parking requirement. Thus, to better reflect the actual incremental impact of this requirement, these two inputs were revised. First, the square footage estimate for the amount of space loss to add accessible parking spots was divided in half to reflect the fact that an accessible parking space takes up the same amount of space as two non-accessible spaces. Second, the value of this loss of space was adjusted to approximately one-fifth of the average value of the space inside the facility with which the valet parking service is assumed to be associated. These new values for the loss of productive space are parallel to a customer who spends \$50 for restaurant meal also paying \$5 for related valet parking.

### *Water Closet Clearances for Single-User Toilet Rooms (RIA Req. ##28 & 32)*

**Unit Costs:** Several commenters representing the restaurant industry expressed concern that, particularly as applied to smaller facilities, the revised requirements for water closet clearances in single-user toilet rooms will require more space and have higher reconstructive costs for existing restaurants than estimated in the Initial RIA. No architectural drawings or other supporting data accompanied these comments. With respect to Barrier Removal, the Final Rules provide safe harbor protection for existing single-user toilet rooms that are in compliance with the 1991 Standards as of the effective date of the rules. Moreover, to the extent existing single-



user toilet rooms are not covered by the safe harbor provision because they do not comply with the 1991 Standards, any barrier removal costs are not properly attributed to the Final Rules. Lastly, with respect to costs related to planned alterations, the low, medium, and high scenarios for unit costs in the Initial RIA already encompassed a range of cost assumptions (including relocating fixtures, reworking plumbing, repairing finishes, and requiring larger toilet room footprints). (See Initial RIA, Appendix 3H.) Consequently, no changes were made to unit costs for Barrier Removal or Alterations in the Final RIA for these two requirements.

*Side Reach (RIA Req. #37)*

Unit Costs: A commenter representing the retail industry suggested that the medium unit cost of a side reach element under Alterations and Barrier Removal (\$150) in the Initial RIA was too low given the variety of side reach elements located in the retail stores. Several of the elements listed in this comment (e.g., vending machines, information/information transfer machines, and point of sale devices) typically are non-fixed “furniture” or “equipment” for which the 2004 Standards do not establish specific scoping or technical requirements. Additionally, while this comment identifies wall outlets as a side reach element, such outlets are not commonly located more than 48” above the finished floor and thus are not likely to be affected by the revised requirement. Lastly, the commenter identifies light or temperature control switches as the side reach elements affected by the revised side reach requirement at retail stores. While neither of these elements was specifically “costed” in the Initial RIA, the high unit costs for both Alterations and Barrier Removal (\$1,500) assume that an electrical side reach element (bathroom hand-dryer) would need to be relocated and rewired. It is not anticipated that the rewiring of a light switch or temperature control would differ appreciably from these high cost scenarios. Thus, in light of these considerations, as well as the fact that this commenter submitted no cost data (or other details) in support of its contention that side reach unit costs in the Initial RIA were “unrealistically low,” the unit costs for the side reach requirement have not been modified in the Final RIA.

*Sales and Service Counters (RIA Req. ##38 & 39)*

Loss of Counter and Sales Space: A commenter in the retail industry stated that there will be a sizeable impact from the “new” requirement for clearance at sales and service counters in terms of losses from loss of merchandise capacity and display space and criticized the Initial RIA for failing to account for the loss of space at sales and service counters resulting from this requirement. However, the requirement for sales and service counters under the proposed requirements (as well as the Final Rules) are not new requirements, but, instead, are *less stringent* requirements, thereby necessitating less space for either New Construction or Alterations and avoiding this commenter’s concerns about the potential negative impact on sales space. (Additional responses to comments concerning this requirement are provided in the Appendix to the Final Rules entitled “Analysis and Commentary on the 2010 Standards for Accessible Design.”)

*Location of Accessible Route to Stages (RIA Req. #51)*

Likelihood of Element in a Typical Facility: Several commenters provided different estimates or personal anecdotes of the likelihood that existing stages in schools, governmental facilities, theaters, convention Centers, or other assembly areas did (or did not) have direct access for persons with disabilities via a lift or ramp. These estimates were too general to be used in the Final RIA. However, a national educational association did provide a survey regarding direct

access to stages at private schools. The results from this survey are incorporated into the Final RIA. Based on this survey data, the likelihood that school assembly areas with stages would need to be modified in order to bring them into compliance with the 2004 ADAAG was revised upwards from 50% (Initial RIA) to 77% (Final RIA).

Unit Costs: A national trade association for assembly areas, as well as several individual venue operators of convention Centers and sports stadiums, gave significantly higher estimates of the cost to add a direct accessible route to stages based on the high cost of constructing a ramp in an existing facility, as well as the anticipated seat loss from placement of the ramp in a former seating area. The Final Rules, however, do not mandate ramps as the sole means of providing direct access to stages. Particularly in existing assembly areas, lifts may well provide a lower-cost accessibility solution. In addition, since the requirement for a direct accessible route to stages is subject to safe harbor, existing assembly areas need only make stages accessible as part of a planned alteration. The design phase of an alteration to a stage would provide ample opportunity to incorporate accessibility while also minimizing (or eliminating) seat loss. In light of these considerations, the unit costs for this requirement remain unchanged in the Final RIA. It should be noted, however, that the low, medium, and high cost scenarios are nonetheless based on a range of accessibility solutions, including adding a lift (low end) and construction of a ramp (high end).

#### *ATMs and Fare Machines (RIA Req. #61)*

Revised vs. Supplemental Requirement: In the preambles to both the Title II and Title III Final Rules, the Department emphasizes its view that the revised requirements addressing communication-related aspects of ATMs represent auxiliary aids and services to which safe harbor does not apply. This requirement which specifies technical specifications ensuring that ATMs and fare machines are independently usable by persons with vision or hearing impairments (e.g., speech output, tactilely discernible input controls, display screen visibility) is thus recharacterized as a supplemental requirement in the Final RIA that is ineligible for safe harbor protection from barrier removal.

#### *Assistive Listening Systems (Technical) (RIA Req. #62)*

Unit Costs: Several advocacy groups representing persons who are deaf or hearing impaired, as well as numerous individuals with hearing impairments, suggested that the Final RIA had overestimated unit costs for hearing aid-compliant assisted listening device (HAC-ALS). These commenters pointed out that HAC-ALS receivers using either FM radio broadcast technology (FM) or Infrared technology (IR) receivers were relatively inexpensive and typically ranged in price from \$150.00 to \$250.00, while neckloops were generally even less expensive at a cost of no more than \$50.00 each. (Induction Loop systems, as noted by these commenters, are already HAC-compliant without additional receivers or other accessories.)

Based on these comments, a comprehensive database of the costs of HAC-ALS receivers and neckloops currently available on the retail market was created by reviewing online documents. This database demonstrated that HAC-ALS costs needed to be revised in the Final RIA. As a result, the Final RIA reflects lower incremental unit costs for this requirement (i.e., the cost differential between non-compliant ALS FM/IR receiver setups and compliant HAC-ALS receivers including any necessary accessories) for New Construction and Alterations. In summary, these unit costs for HAC-ALS were changed to \$29.50 (low end), \$72.00 (medium end), and \$114.50 (high end). (See Appendix 3H, Requirement #62.) The medium unit cost

represents the average incremental cost of all FM/IR receivers in the Department database, while the low and high ends respectively reflect the low and high incremental retail costs for complaint FM/IR receiver setups.

Element Counts and Likelihoods: In the Initial RIA, the element count for HAC-ALS receivers for most facilities with assembly areas reflected the total of *all* ALS receivers located at the facility, rather than only 25% of the total number of required ALS receivers (but not less than two) that must be hearing-aid compliant. (See 2004 ADAAG § 219.3.) The fact that 25% of receivers would need to be hearing aid compliant was incorporated via the likelihood that an element exists and would be subject to change, estimated at 20% to also reflect the fact that some systems would already be compliant with the 2004 ADAAG regarding HAC-ALS requirements. (See Initial RIA, Appendix 3F) While this set of assumptions resulted in the appropriate number of units that would need to become compliant and their associated costs (given the unit costs assumed at the time) several commenters nonetheless expressed confusion and thought the Initial RIA had improperly over-counted the requisite number of HAC-ALS receivers. Thus, in the Final RIA, both the element counts and likelihood for HAC-ALS receivers were modified. First, the element counts for HAC-ALS were decreased (as necessary) to reflect only those receivers required to be hearing-aid compliant by the Final Rules and 2004 ADAAG. (Compare Final RIA, Appendices 3E1 & E2, Req. #62 with Initial RIA, Appendices 3E1 & E2, Req. #62.) Next, the estimated likelihood value for this requirement was increased to 80%. (A relatively high likelihood value – but less than 100% – in order to reflect the fact that some existing ALS are already hearing-aid compatible (either because they are Induction Loops systems or because they use FM/IR receivers with HAC-ALS features already built into the receivers).

Maintenance costs: Question 5 in the NPRMs sought comment from assembly area operators with respect to their experiences managing ALS, particularly maintenance costs and replacement cycles for ALS. While comments were received from operators of various types of assembly areas (e.g., stadiums, arenas, convention Centers), as well as several organizations with experience related to ALS lifecycle costs, the information submitted on this issue was too general in nature to be incorporated into the Final RIA. Nor did any of these comments call into question the Initial RIA's estimates of the incremental annual operation and maintenance costs for HAC-ALS. (See Initial RIA, Sections 4.1.4 & Appendices 3I; and Initial Supplemental Results, pp. 277-78.) The Final RIA thus retains these same incremental annual maintenance cost assumptions for HAC-ALS equipment.

#### *Accessible Saunas & Steam Rooms and Saunas (Req. ## 72 & 111)*

The Final Rules eliminate the barrier removal exemptions proposed in the NPRMs for small (2-person) saunas and steam rooms in public and private facilities. To incorporate this regulatory change, in the Final RIA, adjustments were made to element counts for applicable facilities, as well as to estimates of whether these facilities would have a sauna or steam room subject to the Final Rules. (See Final RIA, Appendices 3-E & 3-F).

#### *Primary Accessible Means of Entry to Pools (Req. ## 79 & 112)*

The Final Rules eliminate the barrier removal exemption proposed in the Title III NPRM for small swimming pools (i.e., under 300 linear feet of pool wall) in private facilities. Under the Final Rules, small pools are no longer BR exempt in public or private facilities. To incorporate this regulatory change into the Final RIA, adjustments were made to element counts for applicable facilities, as well as to estimates of whether these facilities would have a small

swimming pool subject to the Final Rules. (See Final RIA, Appendices 3-E & 3-F). The Primary Accessible Means of Entry to Pools requirements now examine the costs and benefits for all pools, regardless of size or facility type. These requirements include the incremental costs of adding one accessible means of entry to pools and the total time savings and new visits estimation as previously estimated.

*Secondary Accessible Means of Entry to Pools (Req. ## 115 & 116)*

For modeling purposes, unit costs for accessible means of entry to pools in the Final RIA were broken down into “primary” and “secondary” means of entry. The costs and benefits of a second accessible means of entry are modeled for swimming pools at Facility Groups assumed to have one or more pools with over 300 linear feet of pool wall. These Facility Groups are: Secondary schools (public and private) (Facility Group ## (W & AO), Undergraduate and Postgraduate schools (public and private) (Facility Group ## (X & AP), and Swimming pools / Aquatic Center facilities (Facility Group ## (AD & BI). In the Final RIA, unit costs for this requirement are based on the estimated cost of a secondary accessible means of entry to a pool (i.e., accessible stairs or transfer system). On the benefits side, benefits are assumed to be half the time saving benefits of the Primary Accessible Means of Entry to Pools requirements.

Unit Costs: In the Initial RIA, unit costs for larger newly constructed and altered swimming pools (i.e., pools with 300 or more linear feet of pool wall) assumed that *both* the requisite primary and secondary accessible means of entry were pool lifts. (See Initial RIA, Appendix 3H.) (In its NPRMs, the Department proposed an exemption permitting larger existing (and unaltered) swimming pools to provide only one accessible means of entry; secondary means of entry for these pools was not included in the cost analysis.) However, because the 2004 ADAAG only requires the primary accessible means of entry to be a pool lift (or sloped entry), and because other compliant secondary means of entry are generally less expensive (e.g., pool stairs), the Initial RIA likely overestimated the costs for this requirement. (See 2004 ADAAG § 242.2.)

Unit costs for the secondary accessible means of entry requirement are thus revised in the Final RIA in order to permit a more refined approach to likely costs. In addition, because the Final Rules delete the proposed exemption allowing larger, unaltered existing pools to forgo a secondary means of accessible entry, unit costs were further updated to reflect the deletion of this former exemption. For all larger swimming pools – whether newly constructed, altered, or existing and subject to Barrier Removal, unit costs in the Final RIA are based on the assumption that the secondary means of entry is a (less costly) set of pool stairs, rather than a pool lift. (See Final RIA, Appendix 3H).

Several commenters – including disability rights organizations and a pool lift manufacturer – noted their respective concerns that the unit costs for pool lifts in the Initial RIA were too high, suggesting that pool lifts could be purchased for as little as \$5,000. The Initial RIA’s low end cost for a pool lift is in line with this estimate, including not only the cost of the pool lift itself, but also other necessary costs such as installation or clear space costs (if the pool lift is being installed in an existing pool at which deck space beside the pool is assumed to be limited or constrained by other features or equipment). Therefore, the unit costs for pool lifts were not modified in the Final RIA.

### *Accessible Golf Courses – Accessible Routes & Golf Elements (RIA Req. #89-92)*

Element Count: Several commenters – including several disability rights organizations, operators of public golf courses, and golfers with disabilities – urged the Department to revisit its cost assumptions for the requirement mandating accessible golf course elements (teeing grounds, putting greens, and weather shelter). (See Appendix 2, Req. ##90 + 91.) By assuming that both tees and greens on every hole of the typical existing 18-hole golf course would need to be regraded, these commenters believed that the Initial RIA significantly overestimated the actual costs of this requirement as applied to existing golf courses.

In light of these comments, the Department conducted further research on golf courses and reassessed the application of various exceptions, including the exception permitting “golf car passages” to substitute for full compliance with accessible route specifications. (See 2004 ADAAG §§ 206.2.15, 238.2.1, 1006.2.) This review leads to the downward revision of the element count for this requirement from 40 (Initial RIA) to 6 (Final RIA) to properly account for expected existing golf course conditions and the “golf car passage” exception. (See Appendix 3E1, Req. ##90+91 & Appendix 3E2, Req. ##90+91.)

Unit Costs: Additionally, the unit cost assumptions for this requirement regarding the length and width of the required accessible path to be regraded were modified (from 200’ length x 5’ width to 70’ length x 4’ width) to more closely reflect expected course conditions at the typical existing golf course. (See Final RIA, Appendix 3H, Req. ##90+91 (describing unit cost assumptions criteria).) These revised assumptions were then submitted to an independent professional cost estimator for recosting of unit costs for this requirement. The resulting revised unit costs are contained in Appendix 3H of the Final RIA.

Likelihoods and Program Access: In the Initial RIA, program access requirements under Title II of the ADA were taken into account with respect to other public recreational facilities (i.e., swimming pools, saunas and play areas), but not public golf courses. To address this anomaly, the Final RIA now incorporates program access into its analysis of the costs (and benefits) for public golf facilities. The Final RIA takes program access into account at public golf facilities by decreasing the likelihood value for golf-specific requirements at Title II-covered public golf facilities by one-half in comparison to their private (Title III) golf facility counterparts. (See Final RIA, Appendix 3G, Req. ##89-92.)

### *Existing Play Areas – Accessible Routes and Play Components/Accessible Play Components (RIA Req. ##99 & 100)*

Unit Costs: In the Final Rules, the proposed Barrier Removal exemption permitting substitution of ground play components whenever an existing play area may otherwise have been required to add additional elevated play components was deleted. Unit costs for play area requirements were thus revised in the Final RIA, reflecting the removal of this Barrier Removal exemption. (See Final RIA, Appendix 3H, Req. ##99+100 (describing cost assumptions underlying revised unit costs).)

Deletion of BR Exemption: The Final Rules eliminate the barrier removal exemption proposed in the NPRM for small play areas in private (Title III) facilities. To incorporate this regulatory change, in the Final RIA, adjustments were made to element counts for applicable Facility Groups, as well as to estimates of whether the average facility in these groups would have a small play area subject to the Final Rules. (See Final RIA, Appendices 3E & 3F). These Facility

Groups are: Motels, Restaurants, Shopping Malls, and Nursery Schools – Daycare facilities. The estimation includes costs and benefits for accessible small play areas at these facilities, but at a low likelihood of occurrence (3-5%). The likelihood of benefitting at Restaurants is 2%, whereas for all other facilities it is 5%. This change was made to refine the benefits estimated for persons with disabilities visiting restaurants that would use a playground there. That is, this likelihood refined was based on an assumption that using a play area at a restaurant is less likely than at other facilities where a playground is more often the specific reason for the visit.

*Open Captioning in Sports Stadium (RIA Req. #105)*

Requirement Deleted from Final RIA: In the Initial RIA, the Department's proposed requirement for open captioning of safety and emergency announcements at sports stadiums with seating capacities over 25,000 was included in the benefit-cost analysis. (See Initial RIA Appendix 2, Requirement #105.) However, since this requirement has been removed from the Final Rules, it has also been deleted from the Final RIA.

*Mobility Accessible Prison Cells (Req. #107)*

Element Count: While the proposed rules contained a 3% scoping requirement for mobility accessible prison cells (which is less stringent than the 5% scoping requirement in UFAS), the Initial RIA did not estimate the impact of this requirement since no element counts were assigned to any facilities. (See Initial RIA, Appendix 3E2, Requirement #107.) The Final RIA includes an element count for mobility accessible prison cells at detention and correction facilities and, therefore, includes an estimate of the likely economic impact of this less stringent requirement.

*Communication Accessible Prison Cells (Req. #108)*

Element Count: While the proposed rules contained a 2% scoping requirement for communication accessible prison cells (a stringent than UFAS, which establishes no specific scoping standard), the Initial RIA did not estimate the impact of this requirement since no element counts were assigned to any prison facilities. (See Initial RIA, Appendix 3E2, Requirement #108.) The Final RIA includes an element count for mobility accessible prison cells at detention and correction facilities and, therefore, includes an estimate of the likely economic impact of this more stringent requirement.

*Housing at Places of Education – Kitchen Turning Space (RIA Req. #113)*

The Final Rules add a requirement that ADA-covered housing at places of education must comply with the transient lodging standards in 2004 ADAAG, as well as several additional regulatory requirements, to provide greater accessibility for students with disabilities. One of these additional requirements relates to enlarged turning spaces in certain kitchens in such facilities. This requirement for larger turning spaces is incorporated into the Final RIA. Unit costs were estimated (by a professional cost estimator) using an average of the incremental change required for galley kitchens and U-shaped kitchens. Benefits for this requirement are assumed to be the same as Requirement #49, Galley Kitchen Clearances.

*Housing at Places of Education – Kitchen Work Surface (RIA Req. #114)*

The Final Rules contain a regulatory provision requiring certain kitchens in covered housing at places of education to provide more accessible kitchen work surfaces. This requirement for accessible kitchen work surfaces is incorporated into the Final RIA. Unit costs were estimated

(by a professional cost estimator) using the incremental cost of a lowered kitchen work surface. Benefits are assumed to be equivalent to the absolute value of the benefits from Requirement #38, Sales and Service Counters.

#### *Social Service Establishments – Roll-in Shower (RIA Req. #117)*

The Final Rules add a regulatory requirement that homeless shelters or other social service establishments that have more than 50 beds and bathing facilities must provide at least 1 roll-in shower (or 1 roll-in shower for each gender if the genders are served by separate bathing facilities). This requirement for roll-in showers at social service establishments is incorporated into the Final RIA. Unit costs were estimated (by a professional cost estimator) based on the average of three (low, medium, high) cost scenarios. Benefits are assumed to be equal to the time savings of Requirement #50, Shower Compartments in Hotel Guest Rooms with Mobility Features.

### **Other Cost-Related Revisions and Comments**

#### *Barrier Removal Safe Harbor for Qualified Small Businesses*

Commenters representing both business and disability rights perspectives were uniformly critical of the Department’s proposed exemption permitting qualified small business that expended at least 1% of gross revenue on barrier removal in any given year to receive an exemption from barrier removal in the subsequent year. The Department removed this exemption from the Final Rules. However, the deletion of this qualified small business exemption had no effect on the Final RIA since this exemption had not been incorporated into the model in the Initial RIA.

#### *Existing Buildings Constructed Before 1992*

Further research was conducted into the actual age of buildings. Year built estimates by available building type (available from the Energy Information Administration 2003 Commercial Buildings Energy Consumption Survey) are used to more precisely estimate the year built and therefore the year in which alterations would occur. In the Initial RIA, buildings had been assumed to be built uniformly in the years before and after 1992. This affects one of the independent variables, buildings constructed before 1992, which has been changed from 20 percent to 67.62 percent (See Appendix 3B).

#### *New Appendix Added to Illustrate Step-by-Step Cost Calculations*

A trade association commenter requested that step-by-step cost calculations be included for each requirement and at each facility. Since all data used in the model is provided in detailed appendices and the methodology is described in detail, the several hundred additional pages that would be required to write out each individual cost calculation were not included in the Final RIA. Instead, a set of exemplar step-by-step cost calculations (in similar detail to the step-by-step benefit calculations in Appendix 4Q), are included in the Final RIA as Appendix 3N.

#### *Indirect/Managerial Costs*

Many commenters representing various business interests expressed concern that businesses would incur substantial costs under the Final Rules for accessibility consultants, legal counsel, training, and the development of new policies and related documentation (such as manuals). Such “indirect costs,” even assuming they would occur as described by these commenters, are

not properly attributed to the Department's revised regulations implementing the ADA for the reasons discussed below.

Several businesses and trade associations stated that substantial costs would be required for consultants to help determine if facilities were in compliance or needed to undertake barrier removal. The Department has determined that such costs are unlikely. The vast majority of the requirements are revised requirements subject to Safe Harbor. All buildings currently in compliance with the 1991 Standards will not need to undertake further retrofits nor will they require the services of a consultant to tell them so. If, on the other hand, elements at an existing facility are *not* currently in compliance with the 1991 Standards, then the costs of making such a determination and bringing these elements into compliance are not properly attributed to the Final Rules. Such costs would, instead, be due to lack of compliance with the 1991 Standards. For the limited number of requirements that are supplemental (i.e., relating to accessibility at courthouses, play areas, and recreational facilities), the Department believes that covered entities simply need to determine whether they have an element covered by a supplemental requirement (i.e., a swimming pool) and then conduct any necessary barrier removal work either in-house or by contacting a local contractor. Determining whether such an element exists is expected to take only a minimal amount of staff time. Nevertheless, in Section 6.3, the Final RIA has a high-end estimate of the additional management costs of such evaluation (from 1 to 8 hours of staff time).

Business-related commenters also suggested that the Final Rules would require them to hire accessibility consultants to counsel them on how to ensure compliance with the New Construction and/or Alterations requirements in the Final Rules. The Department anticipates that such costs will be minimal since both the 2004 ADAAG and the proposed requirements have been made public for some time and are already being incorporated into designs and plans by architects and builders. Moreover, because one of the goals when adopting the Final Rules was to harmonize ADA standards with model codes (which, in turn, have been adopted on a widespread basis by state and local jurisdictions across the country) to the greatest extent possible, many of the requirements in the Final Rules are already incorporated into building codes nationwide. Further, it is assumed to be part of the regular course of business – and, thereby, incorporated into standard professional services or construction contracts – for architects and contractors to keep abreast of changes in applicable federal, state, and local laws and building codes. Given these considerations, it was determined that the additional costs (if any) for architectural or contractor services that arises out of the Final Rules is expected to be minimal.

Several businesses and organizations representing business interests expressed the view that the Final Rules would cause them to incur significant legal costs in order to defend businesses against ADA lawsuits. Regulatory impact analyses, including the Final RIA, are not an appropriate forum for assessing the costs covered entities may bear, or the repercussions they may face, from failing to comply (or allegedly failing to comply) with current law.

Some commenters stated that the Final Rules would require them to develop new policies or manuals and to retrain employees on the revised ADA standards. For the requirements modeled in the Final RIA, it has been determined that these requirements would require minimal if any changes to covered entities' overall policies and procedures. These revised and supplemental requirements address architectural issues and features, and therefore these requirements are unlikely candidates for inclusion in policy manuals.



### *Global Competitiveness*

A commenter expressed concern that the Final RIA may have overlooked the cost of competitiveness to American businesses in the global market due to the Final Rules. Since these revised and supplemental requirements only regulate facilities physically located in the United States or its territories, and the provision of goods and services within the same jurisdictional parameters, the Final Rules have no impact on the competitiveness of American businesses on a global basis. As well, the increased accessibility afforded by the Final Rules may also have the effect of increasing patronage of American businesses and facilities by foreign tourists and business travelers with disabilities.

### *Alterations Period*

Several business associations suggested in their comments that the general 40-year alteration period applicable to all facility groups in the Initial RIA underestimated the frequency of renovations by most facilities, though these commenters did not provide survey or other data to support a substitute alteration schedule. Nevertheless, the Final RIA includes a new sensitivity analysis assessing the economic impact of a shorter (30-year) alteration period. (See Final RIA, Appendix 3N.)

### *Widespread Adoption of Model Codes by State and Local Jurisdictions*

Many commenters representing disability rights organizations, as well as a model code council, noted that both IBC and ANSI model codes have been widely incorporated in whole or in part into state and local building codes nationwide. Many of these model code standards go beyond the accessibility requirements in the 1991 ADAAG Standards, and, indeed, overlap significantly with the Final Rules. Use of the 1991 Standards as the primary baseline in the Initial RIA, they suggested, made the costs of the proposed regulations appear higher than they would be in actual application. As the Initial RIA acknowledges, the 1991 Standards likely overestimate the costs (and benefits) due to this consideration. However, it is not feasible to construct alternate IBC baselines for each requirement and facility nationwide that take into account the actual IBC/ANSI adoption rates by state or local jurisdiction. (See Initial RIA, Section 5.2.3.) Yet, both the Initial RIA and Final RIA do incorporate IBC/ANSI into the analyses. In the initial RIA, the overall results from several alternate IBC baselines (IBC 2000, IBC 2003, and IBC 2006) were presented, and a more limited analysis, using a requirement-specific alternate IBC/ANSI baseline is used for several illustrative requirements. (See Initial RIA, Section 5.2.3.) In the Final RIA, the “rolled up” results from these same three general alternate IBC baselines are presented, as well as an expanded requirement-specific alternate IBC/ANSI baseline analysis that calculates NPVs for every requirement with an IBC/ANSI counterpart using this requirement-specific alternate baseline. (See Final RIA, Section 6.2.2 & Table 10.)

### *Effective Dates of Final Rules*

Several commenters stated that a 6-month grace period before the New Constructions and Alterations requirements become effective would be more costly than originally estimated. They stated that altering design plans for projects already in process would be a major source of these costs. In the Final Rules, the period before the compliance date has been increased from 6 months to 18 months for all New Construction and Alterations requirements. Barrier Removal obligations, in the Final Rule, remain at a 6-month grace period following publication of the Final Rules. However, for the period of time between six months post-publication and eighteen

months post-publication of the Final Rules, Title III entities are given the choice of either the 1991 Standards or the 2010 Standards as their guide for barrier removal. The Final RIA calculates costs and benefits annually and assumes that changes to New Construction, Alterations, and Barrier Removal begin on average after the first year. Note that this is not a change to the RIA assumptions, although there are some changes to the Final Rules and their implementation.

## **Benefits-Related Revisions and Comments**

### *Revised Population Data for Expected Beneficiaries of the Side Reach Requirement*

Advocates of persons with disabilities expressed concern that an assumption in the Initial RIA -- that lowering the side reach requirement to a maximum of 48 inches will only help persons in wheelchairs-- had the effect of underestimating the full benefits of the side reach requirement. Commenters stated that a significantly larger portion of the population would benefit from the lowered maximum side reach, including persons of small stature and persons with limited upper body mobility. The Final RIA includes in its analysis of benefits those who have difficulty reaching overhead, measured at 6.9% of the population, according to the U.S. Census Bureau (see Appendix 4E), the best proxy found in the Federal data, as well as those in wheelchairs. (No separate statistics are maintained by the Census Bureau concerning the number of persons of short stature in the United States.)

### *Revised Population Data for Expected Beneficiaries of the ALS (Technical) Requirements*

Further research was conducted into the percentage of the American population benefiting from the new technical requirements for ALS. The Final RIA now includes in its analysis of benefits for this technical requirement only persons with hearing aids since these are the individuals most likely to benefit from HAC-ALS. According to the U.S. Census Bureau, 1.8% of the population wears hearing aids. (Persons with cochlear implants may, depending on their particular device, also benefit from HAC-ALS. However, since the Census Bureau does not maintain statistics concerning the number of individuals with cochlear implants, and since cochlear implant devices vary in terms of compatibility with HAC-ALS, no figures with respect to the percentage of the population with cochlear implants are included in the benefits calculations for this requirement.)

### *Benefits Not Included in the Main Estimation of the Final Rule*

Many citizens and advocacy groups strongly criticized the Initial RIA for failing to take into account (by monetizing) many – if not most – of the important benefits arising from the proposed regulations. It is understood that many significant benefits from this rulemaking can neither be quantified nor monetized. These benefits include:

- Improved sense of personal dignity;
- Emotional and psychological value of value per se of independence;
- The social values of improved integration and nondiscrimination;
- Decreased sense of isolation and humiliation, when access is provided to events like graduations, lectures, and concerts;
- The potential for improved grades as students feel better integrated;
- Potential increases over time in income for persons with disabilities; and

- Greater justice in courtroom proceedings due to a decrease in the possibility that some juror's opinions of a witness or an attorney with a disability may be negatively affected seeing that person requiring assistance and thus seeming less independent.

Both the Initial and Final RIAs acknowledge that, for a civil rights issue such as access for persons with disabilities, there are many benefits that cannot be adequately measured, let alone monetized. The Office of Management and Budget's guidance on Regulatory Impact Assessments acknowledges such difficulty and emphasizes the importance of considering identified qualitative benefits when evaluating regulations. The Final RIA includes such a discussion of benefits not estimated in the primary analysis and notes that many persons consider these benefits just as valuable as those that can be monetized. (See Final RIA, Section 6.5.) It bears emphasis that the benefits quantified and monetized in the Final RIA are the *minimum* benefits that are likely to result from promulgation of the Final Rules. In the larger sense, full societal benefits from the Final Rules must be considered as including both these monetized benefits and the benefits described in qualitative terms in this analysis.

Several commenters also noted that the Initial RIA did not attempt to account for the safety or health benefits from the proposed regulations. The Department acknowledges that there are additional safety and health benefits to persons with disabilities from many of the requirements in the Final Rules. But, as with other unquantified benefits, such benefits cannot be adequately captured or monetized in this Final RIA.

#### *Value of Time - Persons With Disabilities*

Several commenters criticized the Initial RIA for using a value of time for persons with disabilities (\$10 per hour; half the hourly wage) that was, they believed, discriminatory and promoted exclusion because it was lower than the standard hourly wage rate. A value of time based on the wage rate in order to monetize time saved or lost is a standard economic methodology for evaluating the relative value of time in the marketplace. Persons with disabilities overall have an observed lower wage rate than persons without disabilities. The wage rate reflects a standard measure of the value of a person's time in the marketplace and is frequently used in economics to measure the opportunity cost of time.

#### *Transportation Costs*

Some commenters suggested that the Initial RIA should have included the decrease in transportation costs for persons with disabilities when they can access an accessible facility closer to their location. Since the change in access time measures the affect of the requirements on the time required to access a facility before versus after becoming compliant, an average access time to the facility was used which thereby assumes that the person with a disability is accessing the facility of choice, independent of accessibility.

#### *Estimation of Benefits and Inclusion of Risk Analysis*

One association commented that, since there was a lack of independent data for many estimated values, the Initial RIA may have overstated some benefits. The incorporation of risk analysis and low and high end estimates into both the Initial and Final RIAs is intended to adjust for possible over- and under- estimation in terms of costs and benefits. (See Section 4.3 of the Initial and Final RIAs for a more comprehensive discussion of the role of Risk Analysis in these analyses.) The risk analysis process thus addresses the concerns raised.

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## 6. RESULTS AND DISCUSSION

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The goal of this analysis is to assess the incremental benefits and costs due to the adoption of the Department's Final Rules. A fundamental indicator of a publicly acceptable rule is one in which public benefits exceed public costs. The difference between benefits and costs quantified over the planning horizon lifecycle and discounted to the present represent a fundamental indicator of project worth. OMB Circular A-4 stipulates that this difference, the net present value (NPV), is to be regarded as a principal measure of value produced by a benefit-cost analysis when, as here, benefits and costs are separated from each other over time (i.e., when some people benefit from accessible facilities long after their construction). Further, Executive Order 12866 states that agencies should attempt to maximize the net benefits of their rulemakings, subject to statutory requirements. An NPV greater than zero indicates that benefits exceed costs and that the regulation can be expected to increase the general level of economic welfare accordingly. An NPV of less than zero could mean that costs exceed benefits. To further evaluate this latter scenario, the existence and magnitude of unmeasured and qualitative benefits may be assessed in a threshold analysis.

This chapter is divided into several sections. The first section (Section 6.1) explores, in some depth, the results of the primary baseline scenario (*i.e.*, 1991 Standards, RA = 50% and SH applies). Benefits and costs are aggregated (and expressed in terms of NPV) to show the total incremental impact of the Final Rules with respect to: (a) all requirements collectively; (b) each new and revised requirement; (c) each type of facility; and (d) public versus private facilities. Some of the results are presented with risk-based probabilities and others as expected (*i.e.*, most likely) values. In addition, graphical information is provided that shows the distribution of benefits and costs in the baseline scenario. (Additional and more detailed requirement-by-requirement and facility-by-facility results at the expected value for the primary baseline scenario are also provided in the separate *Supplemental Results* volume that accompanies this analysis.) These different summaries of results are intended to enable stakeholders to examine the regulatory analysis from their particular perspective.

The second section (Section 6.2) discusses how the total NPV changes under key alternate scenarios. These alternate scenarios are: safe barrier removal that is assumed to be readily achievable at varying percentages [0%, 50%, and 100%]; alternate IBC baselines [IBC 2000, IBC 2003, and IBC 2006]; and harbor *versus* no safe harbor. Due to the large number of scenarios, references to single scenarios use these abbreviations for safe harbor (SH), readily achievable barrier removal (RA) and baselines (*SH*; *RA0*, *RA50*, *RA100*; and, *B1991*, *B2000*, *B2003*, *B2006*) respectively. Results for each of these alternate scenarios are only presented as risk-based probabilities.

The third section (Section 6.3) presents two sets of sensitivity-style analyses that assess the relative impact of varying several key selected assumptions individually. The first set of stress analyses evaluates how altering inputs for six parameters in the model would affect results for all requirements, facility groups, or overall NPV. To further explore the relative impact of parameter variability on results, this section also includes a second set of analyses that examines the key drivers behind the risk ranges for the three requirements with the largest negative NPVs [Water Closet Clearance in Single User Toilet Rooms – In Swinging Doors (Req. #32), Stairs (ALT/BR) (Req.#10) and Water Closet Clearance in Single User Toilet Rooms – Out Swinging

Doors (Req. #28),], as well as the three requirements with the largest positive NPVs [Bathrooms in Accessible Guest Rooms (vanities and water closet clearances) (Req. #45), Passenger Loading Zones (Req. #23), and Accessible Exercise Machines and Equipment (Req. #71)].

Lastly, to supplement the quantitative results presented in preceding sections, the fourth section (Section 6.4) discusses the benefits not included in the main estimation of the Final Rules and their implication for model results. Many of the significant benefits conferred on persons with disabilities, businesses, and society generally by these revised civil rights standards that implement the ADA defy quantification. Such benefits include: decreased administrative costs for businesses, architects, and state and local governments due to harmonization of these revised ADA standards with model codes; increased social equity for persons with disabilities through better access to, and use of, public facilities; enhanced social and physical development of children with disabilities through improved access to play areas and other recreational facilities; and greater use of accessibility features by persons without disabilities (such as a parent using an accessible passenger loading zone at an airport to facilitate easier transport of a stroller and wheeled baggage). Given that the overall NPV for the Final Rules is significantly positive for all scenarios at their respective expected values, such benefits – even if quantifiable – would only serve to underscore the overall conclusion that the regulations would promote the general economic welfare. However, for any individual requirement (or facility) with a negative NPV under any particular scenario, consideration of these benefits not included in the main estimation could well alter the benefit-cost calculus.

The results presented in this section are dependent to a greater or lesser extent on assumptions about facilities, requirements, and user benefits by persons with disabilities that were necessitated by lack of publicly available data or other published sources. Each of these assumptions is discussed in detail in Chapter 4. Some of these assumptions by HDR and the Department were based on the advice of experts and independent research; others are based on HDR's current understanding of the interaction between facilities, requirements, and users. Because of the nature of this analysis, some of these assumptions may have a significant impact on the final results. While these assumptions reflect HDR's current understanding, they would undoubtedly benefit from further outside review.

## **6.1 Results Under Primary Baseline Scenario**

### **6.1.1 Total Net Present Value**

The scenario considered in this section is characterized by assuming: 1991 Standards baseline, RA = 50% and SH applies. Recall from the earlier discussion that the percentage of elements that are RA represent those that undertake barrier removal. Those elements that are not RA would become compliant following an alterations schedule that tracks from the date that building was constructed. For all revised requirements, BR would apply only when SH is not granted. As such, these results represent costs and benefits from all new construction, all altered elements, and BR of newly regulated elements. It is also worth noting that if SH was not to be granted; BR

would become the dominant form of compliance with its relatively large cost burden on facilities.<sup>51</sup>

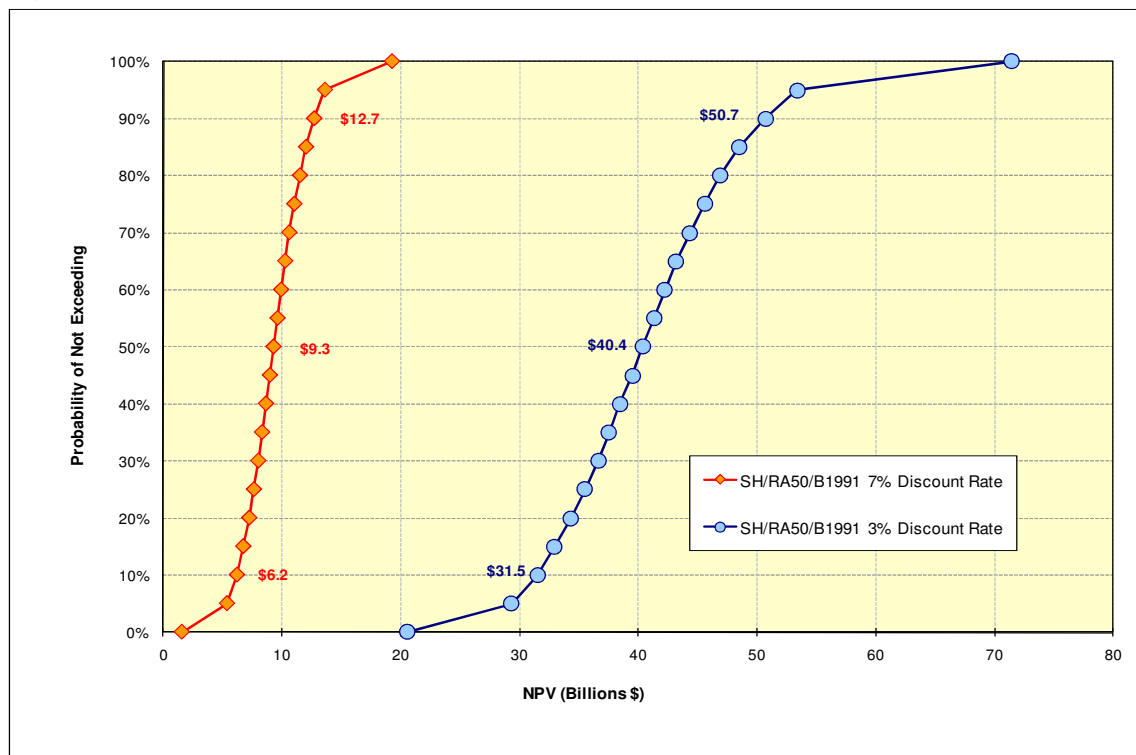
Table 6 and Figure 8 present total NPV for the primary baseline scenario: Safe Harbor (SH), BR is readily achievable for 50% of elements (RA50) and the baseline standard is 1991 (B1991). Results for both the 3% and 7% discount rates are shown. Each cost curve is a joint distribution of all uncertainties in the model based on a simulation of over 3,000 Monte Carlo simulations.

Under the assumptions used to construct this analysis, these results suggest that the Final Rules have a net positive public benefit. The numbers on the chart represent the 10<sup>th</sup>, 50<sup>th</sup> and 90<sup>th</sup> percentiles of the distribution. The range between the 10<sup>th</sup> and 90<sup>th</sup> percentiles represents an 80% confidence interval. This interval can be interpreted as having 80% confidence that the true NPV would be within this range. The most likely NPV is the median (50<sup>th</sup>) percentile (in the middle of this range).

Figure 8 presents total NPV summing all discounted costs and benefits for all facilities and requirements at the 3% and 7% discount rates. The 7% discount rate indicates that the 80% confidence interval ranges from \$6.2 B to \$12.7 B, with a median of \$9.3 B. At 3%, this range (\$31.5 B to \$50.7 B) is much wider and more skewed towards positive NPVs. These results indicate that NPV is unlikely to be less than zero.

Table 6 indicates the total expected benefits and costs from users and facilities, respectively.

**Figure 8: Total NPV – Primary Baseline Scenario: SH/RA50/B1991; 3% and 7% Discount Rates**



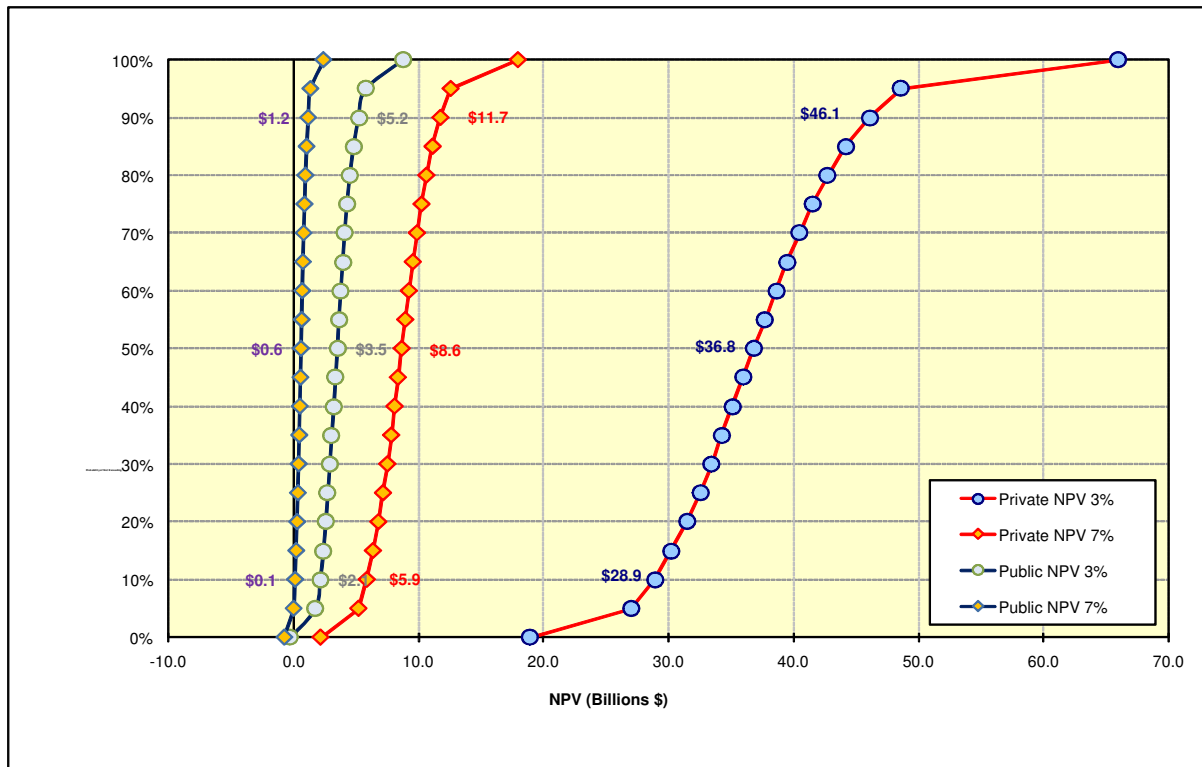
<sup>51</sup> See *Initial Regulatory Impact Analysis of the Proposed Revised Regulations Implementing Titles II And III of the ADA, Including Revised ADA Standards For Accessible Design*, May 9, 2008.

**Table 6: Total Net Present Value in Primary Baseline Scenario at Expected Value (billions \$)**  
 (Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for baseline)

Discount Rate	Expected NPV	Total Expected PV(Benefits)	Total Expected PV(Costs)
3%	\$40.4	\$66.2	\$25.8
7%	\$9.3	\$22.0	\$12.8

Figure 9 presents total NPV separately for private and public facilities respectively at the expected value under the primary baseline (i.e., assuming Safe Harbor (SH) applies, BR is readily achievable for 50% of elements (RA50), and the baseline standard is 1991 (B1991)). Results using both the 3% and 7% discount rates are shown. Each cost curve is a joint distribution of all uncertainties in the model based on results from over 3,000 Monte Carlo simulations. The NPV for private facilities is notably higher under a 3% discount rate, as compared to a 7% discount rate, but the NPV for such facilities under either discount rate nonetheless is still higher than the NPV for public facilities irrespective of the discount rate used due the larger number of facilities and users affected. The smallest NPV is at the expected value is for public facilities at the 7% discount rate (\$0.6 B), but is still likely to be positive.

**Figure 9: Total NPV – Primary Baseline Scenario: SH/RA50/B1991; 3% and 7% Discount Rates for Private and Public Facilities Separately**

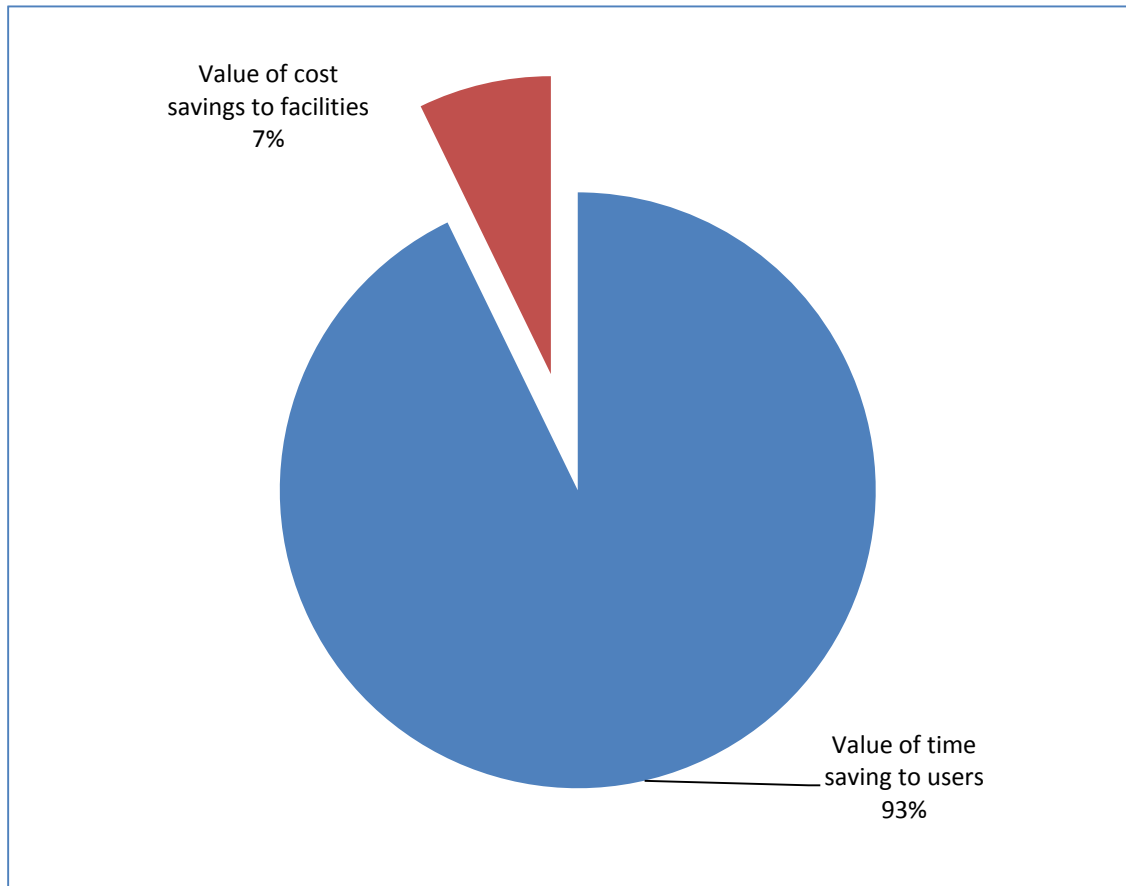


### 6.1.2 Distribution of Costs and Benefits

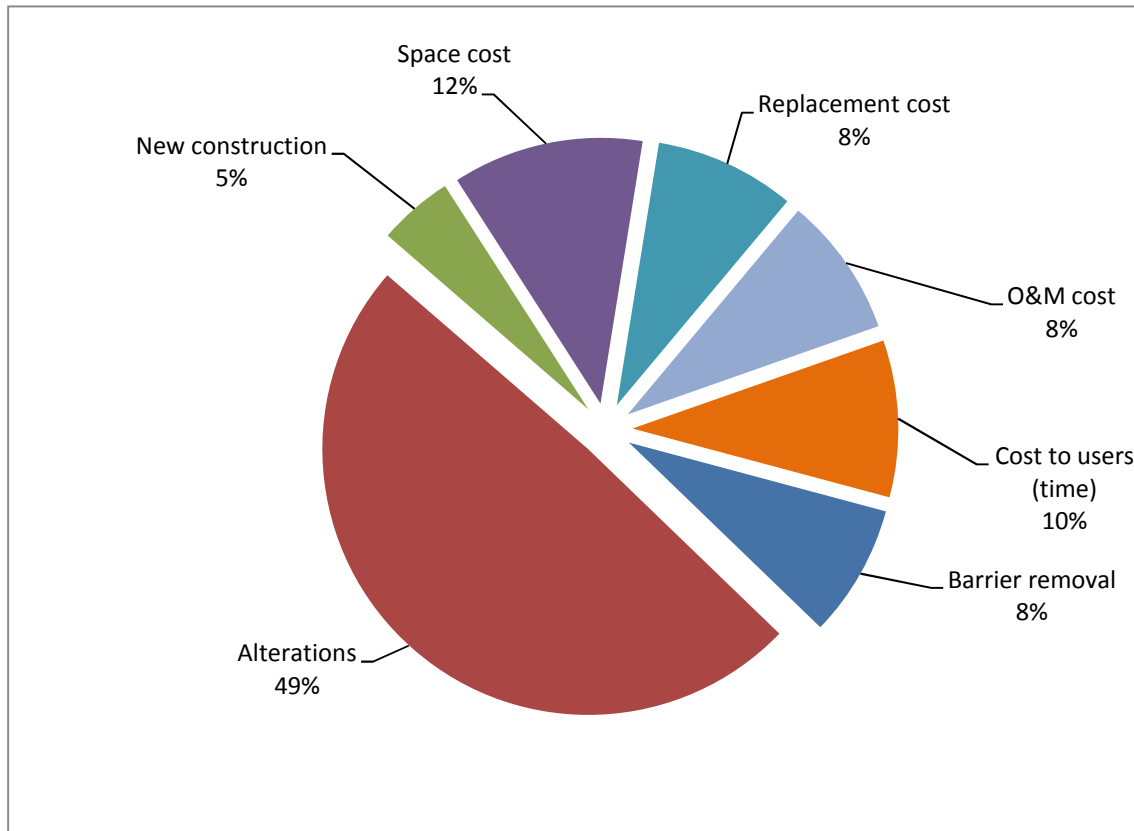
Figure 10 and Figure 11 show the distributions of benefits and costs for the baseline case (SH and 7% discount rate). Time savings for users comprises 93% of total benefits. Cost savings for facilities associated with less stringent requirements for NC and ALT projects is comparatively small, at about 7%. On the cost side, because this scenario involves SH, most of compliance costs use the ALT cost series. NC applies to only new facilities and BR only occurs for 50% of elements that are subject to requirements for the first time. Among other costs, those due to lost productive space are larger than O&M and replacement costs. Costs to users in terms of lost time due to less stringent requirements are also a significant component of cost.



**Figure 10: Distribution of Benefits between Users and Facilities (Cost Savings)**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)



**Figure 11: Distribution of Costs between Type of Cost, Type of Construction, Users<sup>52</sup>**  
**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**



### 6.1.3 Net Present Values by Requirement

Figure 12 shows the NPV for three illustrative requirements with different cost and/or benefit profiles: Shower Spray Controls (Req. # 29) (a revised, more stringent requirement); Assisted Listening Systems (technical) (Req. # 62) (a revised, more stringent requirement with use value benefits); and, Accessible Routes to Bowling Lanes (Req. # 77) (a supplemental requirement with new user benefits).

<sup>52</sup> The costs to users are the increases in time that would result from less stringent requirements.

**Figure 12: NPV for Three Selected Requirements**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

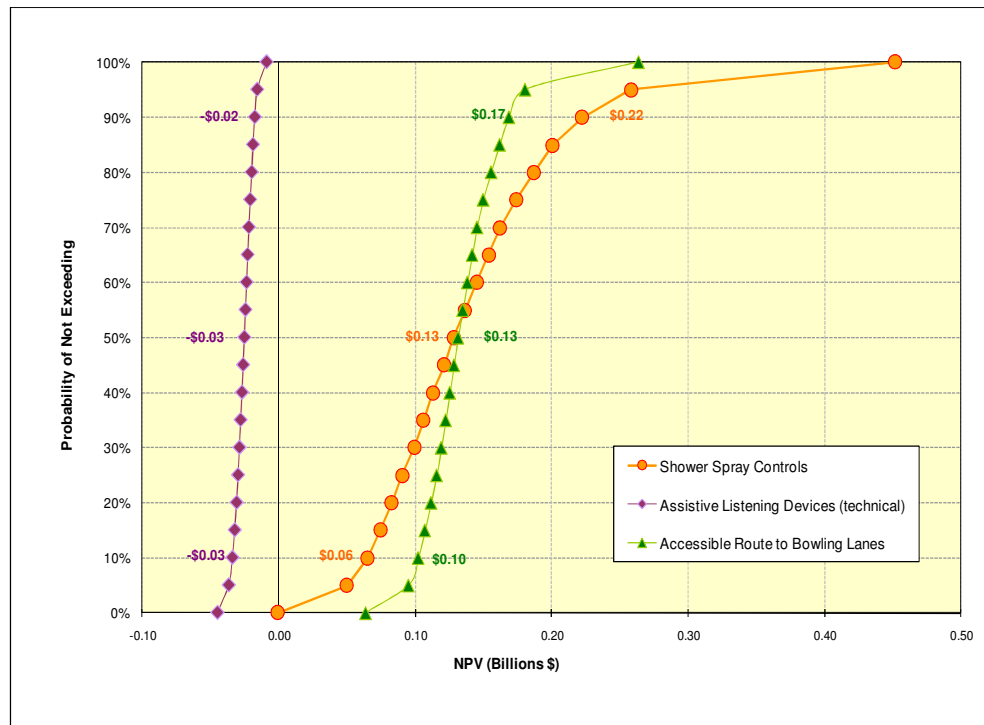


Table 7 (which follows at the end of Section 6.1.4) deconstructs aggregated results by requirement. The columns in this table include:

- NPV.
- Net impact to users (as the total monetized change in access time).
- Top 3 facilities that increase the magnitude of user benefits. For less stringent requirements, these facilities have the largest negative benefits, i.e. costs, to users. The opposite is true for more stringent requirements.
- Net impact to facilities (as the sum of increased and reduced costs across all elements).
- Top 3 facilities which have the highest magnitude of requirement costs (with the same implication on type of requirement as benefits).

Requirements with the largest positive and negative NPVs are also interesting cases to examine in detail (see additional volume of Supplemental Results for details):

- 45. *Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)*: the high positive NPV (\$1.79 B) for this requirement is due to high users benefits (\$1.95 B) and low costs to facilities (\$159 M). Benefits from this requirement are substantial because of the time savings, plus an increase in use value – the quality of the experience in bathroom at a facility in which the comfort of the bathroom is a key determinant of the facility's demand – at hotels, inns, and motels. Being able to use the bathroom

comfortably, safely, or independently due to greater accessibility enhances the experience relating to the primary purpose of staying at the hotel (defined as shelter, a bed and use of a bathroom).

- *70. Accessible Routes to Exercise Machines and 71. Accessible Exercise Machines and Equipment:* New access to exercise facilities also drives high NPVs (\$968 M and \$1.4 B, respectively). Benefits from these requirements are substantial because of the time savings, as well as the enhanced quality of use. Because these requirements now ensure independent access to the facilities' primary use, a large increase in new users is expected. Costs to facilities for the Accessible Route to Exercise Machines requirement are fairly low (\$20.3 M), but costs to facilities for the Accessible Exercise Machines and Equipment requirement are higher (\$492 M), and benefits follow a similar pattern (\$988 M for Accessible Routes to Exercise Machines, and \$1.9 B for Accessible Exercise Machines and Equipment).
- *23. Passenger Loading Zones:* Similar to the NPV for the requirement for Bathrooms in Accessible Guest Rooms (including vanities and water closet clearances), the high positive NPV (\$1.29 B) for this requirement is due to high users benefits (\$1.34 B) and low costs to facilities (\$49 M). The large benefits are driven primarily by a large number of users of restaurants overall and a fair number of users at malls. In each case, the time savings are due to waiting for access to the loading zone, which could be occupied by persons with or without disabilities. Since costs for facilities are relatively insignificant, the NPV is driven by benefits. The most probable likelihood that a loading zone is present at these facilities (10%) and the most probable likelihood that a visitor with disabilities would be waiting (5%) scale down the costs and benefits.
- *100, 102, 104. Accessible Play Components:*<sup>53</sup> The NPV for the Accessible Play Components requirements collectively (*i.e.*, new construction, alterations, and barrier removal), totals \$657 M. This is due to large users benefits (\$720 M) and moderate costs to facilities. The benefits and costs for public schools are moderate due to existing program access requirements which already have made a large number of existing school playgrounds accessible.
- *32. Water Closet Clearance in Single-user Toilet Rooms with In-swinging doors:* The large negative NPV (-\$975 M) for this requirement is due to relatively small monetized benefits to users (\$42 M) but large costs to facilities (\$1 B). Over 90% of the total cost comes from capital construction costs for alterations; unit costs under new construction are less than a tenth of unit costs under alterations (\$200 versus \$3,100, respectively at the median level).
- *9, 10. Stairs:*<sup>54</sup> Stairs under new construction (Req. # 9) has a small positive NPV of \$52.5 M, but it is minimal when paired with the large negative NPV (-\$808 M) for stairs under alterations (Req. # 10). The benefits for this requirement under alterations are

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<sup>53</sup> New construction, alterations, and barrier removal are modeled separately in order to adequately take into account the impact of program access for public facilities and other differences in underlying assumptions related to sizes of play areas and facility groups.

<sup>54</sup> New construction was modeled separately from alterations and barrier removal due to differences in other underlying assumptions.

moderate in size (\$20 M) when compared to other requirements but the costs to facilities are high (\$828 M) due to high unit costs (\$7,500 per flight at the median level).

- *28. Water Closet Clearance in Single-user Toilet Rooms with Out-Swinging Doors:* This requirement posts the largest cost to facilities (\$2.5 B). And while benefits are also high (\$1.6 B) they are less than costs, leading to a relatively negative NPV (-\$898 M)
- *37. Side Reach:* The large negative NPV (-\$555 M) is driven by the ubiquitous nature of this element and a relatively small monetized benefit per use compared with capital cost. Total benefits to users are \$715 M while the cost to facilities is \$1.3 B. The facility group with the largest side reach costs is Indoor Service Establishments, which is also the facility type with the largest number of establishments (more than 3 million).

#### 6.1.4 Net Present Values by Facility

Figure 13 shows the NPV for three illustrative selected facility groups: Inns; Hotels; and, Motels to illustrate how the NPV can vary even for similar facilities.

**Figure 13: NPV for Three Selected Facility Groups**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

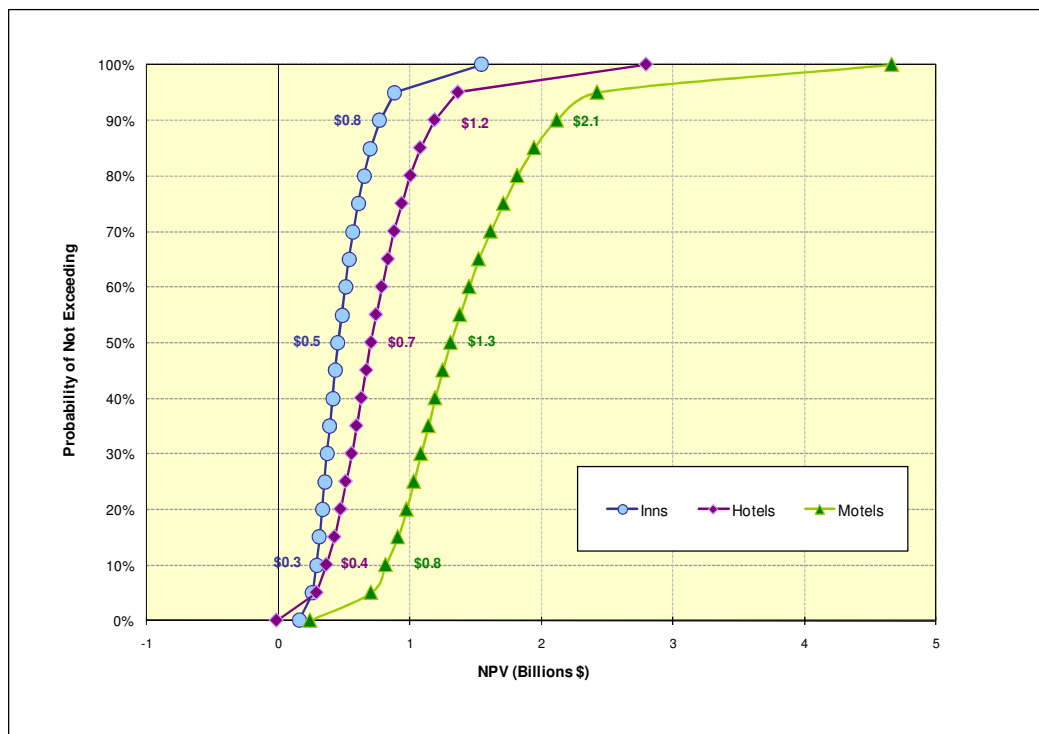


Table 8 summarizes the results for all facilities at the primary baseline scenario. Facilities with the largest positive and negative NPVs are discussed below (Details regarding benefits and costs for each requirement in each facility type can be found in the Supplemental Results volume):

- *Exercise Facilities:* Very high user impacts (\$2.5 B) combined with facility costs of \$684 M lead to a high NPV of \$1.8 B. Benefits are generated from both access time and use

time for Accessible Exercise Machines and Equipment. In addition, the relatively low costs for Accessible Saunas and Steam Rooms further elevate the facilities' overall NPV.

- *Undergraduate and Post-Graduate Private Schools:* The large NPV of \$1.5 B is due to substantial benefits of \$1.6 B while costs total \$152 M. These large benefits are due to moderately high benefits for several requirements, including Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors, Accessible Routes to Exercise Machines, Accessible Exercise Machines and Equipment, and Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms.
- *Motels:* The large NPV for this facility of \$1.4 B is due to relatively low costs of \$431 M compared to substantial benefits of \$1.8 B. These large benefits are driven primarily by benefits from the requirements for Bathrooms in Accessible Guest Rooms (including vanities and water closet clearances), supplemented by Accessible Routes to Exercise Machines and Accessible Exercise Machines and Equipment.
- *Indoor Service Establishments:* The large negative NPV (-\$1.8 B) for this facility is driven partly by the very large number of establishments in this category (over 3 million; next largest category is single-level store with under a million establishments). Amongst the requirements, the costs for alterations for Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors accounts is one of the requirements with the most significantly negative NPV, and is coupled in the this facility group with substantial costs due to lost usable space.
- *Office Buildings:* The Office Buildings facility group collectively posted a large negative NPV of -\$1 B. This large number is due partly to the large number of existing office buildings (nearly three quarters of a million existing buildings). The requirement with the largest impact on office buildings' NPV is Stairs (Alt/BR) followed by alteration costs for the Side Reach requirement, both of which are among those requirements with significantly negative NPVs.
- *Single Level Stores:* This facility group has a fairly large negative NPV (-\$355 M) partly due to high costs for alterations for Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors (one of the requirements with the most significantly negative NPV) coupled with substantial costs due to lost usable space.

The table below details the costs, benefits and net benefits (or costs) for each requirement. The NPV refers to the net benefits less the net costs (numbers in parentheses are negative, and costs are overall costs to society). The Net Impact to Users reflects the value of the benefits to users; less stringent requirements resulting in negative benefits to users are in parentheses. The column listing the Top 3 drivers of benefits list the facilities which generate the largest benefits for that requirement. Net Impact to Facilities lists the cost to facilities of compliance with the requirement; numbers in parentheses represent a cost to the facilities, number without parentheses represent effect savings due to less stringent requirements. Top 3 Drivers of Costs list those facilities in which the greatest costs for the requirement are generated.

**Table 7: Costs and Benefits per Requirement in Primary Baseline Scenario**  
**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
1	Public Entrances	(8.14)	(8.15)	Stadiums (public) Stadiums Shopping Malls	0.02	Shopping Malls Stadiums (public) Stadiums
2	Maneuvering Clearance or Standby Power for Automatic Doors	(0.32)	0.01	Nursing Homes  Convention Centers (public) Convention Centers	(0.33)	Nursing Homes  Nursing Homes (public) Convention Centers (public)
3	Automatic Door Break-Out Openings	(7.96)	0.00	Motels Hotels Hospitals	(7.96)	Hotels Motels Hospitals
4	Thresholds at Doorways	0.08	1.15	Public Housing Motels Hotels	(1.08)	Public Housing Hotels Motels
5	Door and Gate Surfaces	(23.14)	3.66	Museums, Historical Sites & Libraries (public)  Parks or zoos (public) Exercise Facilities	(26.81)	Parks or zoos (public) Undergraduate, postgraduate public schools Elementary Public Schools

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
9	Stairs (NC)	52.50	52.50	Museums, Historical Sites & Libraries (public) Museums, Historical Sites & Libraries Undergraduate and Postgraduate Private Schools	0.00	
10	Stairs (ALT/BR)	(808.41)	20.02	Motels  Hotels Museums, Historical Sites & Libraries (public)	(828.43)	Office Buildings Offices of Health Care Providers  Hotels
12	Handrails	(23.66)	(33.55)	Exercise Facilities Museums, Historical Sites & Libraries (public) Parking Garages	9.88	Public Housing Undergraduate, postgraduate public schools Parks or zoos (public)
13	Accessible Routes from Site Arrival Points and Within Sites	(0.95)	(48.50)	Parks or zoos (public) Golf Courses (private with public access) Amusement Parks	47.55	Parks or zoos (public)  Self Service Storage Facilities Terminal (private airports)
14	Standby Power for Platform Lifts	(8.45)	0.00	Stadiums (public) Stadiums State and Local Judicial Facilities (courthouses)	(8.45)	State and Local Judicial Facilities (courthouses) Stadiums (public)  Stadiums
15	Power-Operated Doors for Platform Lifts	(5.72)	2.39	Stadiums (public)  Stadiums State and Local Judicial Facilities (courthouses)	(8.11)	State and Local Judicial Facilities (courthouses)  Stadiums (public)  Stadiums



ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
16	Alterations to Existing Elevators	(338.98)	2.26	Hotels Nursing Homes Undergraduate and Postgraduate Private Schools	(341.24)	Office Buildings Office Buildings (public)  Hotels
19	Van Accessible Parking Spaces	58.85	67.01	Parks or zoos (public) Amusement Parks Stadiums (public)	(8.17)	Parks or zoos (public) Terminal (private airports) Amusement Parks
20	Valet Parking Garages	82.51	109.84	Restaurants Hotels Theatre / Concert Hall	(27.34)	Restaurants Theatre / Concert Hall Hotels
21	Mechanical Access Parking Garages	206.52	206.95	Parking Garages Parking Garages (public)	(0.43)	Parking Garages Parking Garages (public)
22	Direct Access Entrances from Parking Structures	7.82	7.82	Convention Centers (public)  Shopping Malls Convention Centers	0.00	
23	Passenger Loading Zones	1,292.42	1,341.17	Restaurants Shopping Malls Parks or zoos (public)	(48.75)	Parks or zoos (public) Office Buildings Restaurants
24	Parking Spaces	604.04	631.46	Restaurants Museums, Historical Sites & Libraries (public) Museums, Historical Sites & Libraries	(27.42)	Office Buildings  Restaurants  Parks or zoos (public)
25	Parking Spaces (Signs)	(2.57)	(2.97)	Public Housing	0.40	Public Housing
26	Passenger Loading Zones (Medical / Long-Term Care)	(280.45)	(413.82)	Nursing Homes  Hospitals Nursing Homes (public)	133.37	Nursing Homes  Hospitals Nursing Homes (public)

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
27	Ambulatory Accessible Toilet Compartments	414.78	484.65	Parks or zoos (public) Exercise Facilities Undergraduate and Postgraduate Private Schools	(69.87)	Theatre / Concert Hall Shopping Malls Parks or zoos (public)
28	Water closet clearance in single-user toilet rooms - out swinging door	(898.43)	1,625.70	Indoor Service Establishments Parks or zoos (public) Undergraduate and Postgraduate Private Schools	(2,524.13)	Indoor Service Establishments Offices of Health Care Providers Nursing Homes
29	Shower Spray Controls	136.79	193.36	Undergraduate and Postgraduate Private Schools Motels Hotels	(56.57)	Nursing Homes Undergraduate, postgraduate public schools Parks or zoos (public)
30	Urinals	(11.03)	(11.03)	Undergraduate and Postgraduate Private Schools Museums, Historical Sites & Libraries (public) Museums, Historical Sites & Libraries	0.00	
31	Multiple Single-User Toilet Rooms	94.14	(3.57)	Offices of Health Care Providers Hospitals Theatre / Concert Hall	97.72	Offices of Health Care Providers Theatre / Concert Hall Hospitals
32	Water closet clearance in single-user toilet rooms - in swinging door	(974.75)	42.14	Undergraduate and Postgraduate Private Schools Restaurants Single Level Stores	(1,016.89)	Single Level Stores Restaurants Elementary Public Schools

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
34	Patient Toilet Rooms	(2.13)	(3.87)	Hospitals Hospitals (public)	1.73	Hospitals Hospitals (public)
35	Drinking Fountains	(66.49)	0.39	Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers Swimming pools / Aquatic Centers (public)	(66.88)	Office Buildings  Office Buildings (public) Swimming pools / Aquatic Centers
37	Side Reach	(554.99)	715.52	Indoor Service Establishments Restaurants Single Level Stores	(1,270.51)	Indoor Service Establishments Office Buildings Single Level Stores
38	Sales and Service Counters (NC)	4.73	(9.57)	Restaurants Museums, Historical Sites & Libraries (public) Museums, Historical Sites & Libraries	14.30	Parks or zoos (public)  Indoor Service Establishments  Terminal (private airports)
39	Sales and Service Counters (Alt)	85.10	(170.86)	Restaurants Indoor Service Establishments Single Level Stores	255.96	Indoor Service Establishments  Single Level Stores Restaurants
40	Washing Machines and Clothes Dryers (technical)	(6.26)	0.13		(6.39)	Public Housing Undergraduate, postgraduate public schools Undergraduate and Postgraduate Private Schools
41	Washing Machines and Clothes Dryers (Scoping)	(1.88)	0.07		(1.95)	Public Housing Undergraduate, postgraduate public schools Undergraduate and Postgraduate Private Schools
				Self Service Storage Facilities		Self Service Storage Facilities

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
42	Self-Service Storage Facility Spaces	25.63	29.69		(4.06)	
45	Bathrooms with vanities and water closet clearance out-swinging doors	1,788.45	1,947.03	Motels Hotels Inns	(158.58)	Hotels Motels Inns
46	Operable Windows	240.03	292.69	Motels Hotels Inns	(52.66)	Public Housing Hotels Motels
47	Dwelling Units with Communication Features [1991]	(13.86)	0.02	Public Housing	(13.88)	Public Housing
48	Dwelling Units with Communication Features [UFAS]	(3.70)	0.01	Public Housing	(3.70)	Public Housing
49	Galley Kitchen Clearances	23.81	43.19	Undergraduate and Postgraduate Private Schools Public Housing Undergraduate, postgraduate public schools	(19.38)	Undergraduate, postgraduate public schools Public Housing Undergraduate and Postgraduate Private Schools
50	Shower Compartments with Mobility Features	59.81	(12.79)	Undergraduate and Postgraduate Private Schools Motels Hotels	72.59	Nursing Homes Undergraduate, postgraduate public schools Parks or zoos (public)

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
51	Location of Accessible Route to Stages	(152.02)	0.14	Undergraduate and Postgraduate Private Schools Amusement Parks Secondary Public Schools	(152.16)	Undergraduate, postgraduate public schools Secondary Public Schools Undergraduate and Postgraduate Private Schools
52	Wheelchair Space Overlap in Assembly Areas	(318.10)	437.36	Museums, Historical Sites & Libraries (public) Secondary Public Schools Museums, Historical Sites & Libraries	(755.46)	Stadiums (public) Motion Picture House Theatre / Concert Hall
54	Handrails on Aisle Ramps in Assembly Areas	(366.72)	(418.39)	Museums, Historical Sites & Libraries (public) Museums, Historical Sites & Libraries Undergraduate and Postgraduate Private Schools	51.66	Parks or zoos (public) Motion Picture House Secondary Public Schools
55	Wheelchair Spaces in Assembly Areas	107.15	(10.63)	Undergraduate and Postgraduate Private Schools Motion Picture House Stadiums (public)	117.78	Stadiums (public) Stadiums Undergraduate, postgraduate public schools
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	6.34	(1.07)	Stadiums (public) Stadiums	7.41	Stadiums (public) Stadiums

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
57	Accessible Route to Press Boxes	61.94	(1.39)	Undergraduate and Postgraduate Private Schools  Secondary Public Schools Undergraduate, postgraduate public schools	63.33	Secondary Public Schools Undergraduate and Postgraduate Private Schools Undergraduate, postgraduate public schools
58	Public TTYS	(1.69)	0.02	Shopping Malls Convention Centers (public)  Stadiums (public)	(1.70)	Terminal (private airports) Shopping Malls State and Local Judicial Facilities (courthouses)
59	Public Telephone Volume Controls	(6.10)	0.01	Hotels  Nursing Homes Undergraduate and Postgraduate Private Schools	(6.11)	Hotels State and Local Judicial Facilities (courthouses)  Shopping Malls
60	Two-Way Communication Systems at Entrances	(9.15)	10.21	Motels  Public Housing	(19.36)	Motels  Public Housing
61	ATMs and Fare Machines	(30.48)	27.77	Indoor Service Establishments Stadiums (public) Stadiums	(58.25)	Indoor Service Establishments Stadiums (public) Hotels
62	Assistive Listening Systems (technical)	(25.77)	2.28	Museums, Historical Sites & Libraries (public)  Secondary Public Schools Museums, Historical Sites & Libraries	(28.05)	Secondary Public Schools Undergraduate, postgraduate public schools  Stadiums (public)

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
64	Detectable Warnings (scoping)	318.01	(53.05)	Restaurants Museums, Historical Sites & Libraries (public) Undergraduate and Postgraduate Private Schools	371.07	Indoor Service Establishments  Office Buildings  Single Level Stores
66	Assistive Listening Systems (scoping)	273.95	(7.29)	Museums, Historical Sites & Libraries (public) Museums, Historical Sites & Libraries Undergraduate and Postgraduate Private Schools	281.23	Stadiums (public) Undergraduate, postgraduate public schools Stadiums
68	Accessible Attorney Areas and Witness Stands	(106.31)	0.02	State and Local Judicial Facilities (courthouses)	(106.33)	State and Local Judicial Facilities (courthouses)
70	Accessible Route to Exercise Machines and Equipment	967.70	988.00	Exercise Facilities Undergraduate and Postgraduate Private Schools Motels	(20.30)	Exercise Facilities  Motels Hotels
71	Accessible Exercise Machines and Equipment	1,411.82	1,903.97	Exercise Facilities  Motels Undergraduate and Postgraduate Private Schools	(492.15)	Exercise Facilities  Motels  Undergraduate and Postgraduate Private Schools
72	Accessible Saunas and Steam Rooms (NC)	192.18	192.18	Exercise Facilities Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers	0.00	

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
73	Accessible Lockers	160.38	217.41	Exercise Facilities Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers	(57.03)	Exercise Facilities  Secondary Public Schools Swimming pools / Aquatic Centers
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	169.92	172.01	Undergraduate and Postgraduate Private Schools  Secondary Private Schools	(2.08)	Undergraduate and Postgraduate Private Schools  Secondary Private Schools
75	Wheelchair Spaces in Team or Player Seating Areas	(0.77)	0.01	Undergraduate and Postgraduate Private Schools  Secondary Private Schools	(0.78)	Undergraduate and Postgraduate Private Schools  Secondary Private Schools
77	Accessible Route to Bowling Lanes	132.90	133.92	Bowling Alleys	(1.02)	Bowling Alleys
78	Shooting Facilities with Firing Positions	260.13	261.02	Shooting Facilities	(0.89)	Shooting Facilities
79	Primary Accessible Means of Entry to Pools (NC/ALT)	383.62	1,166.36	Swimming pools / Aquatic Centers  Motels Hotels	(782.74)	Motels Swimming pools / Aquatic Centers Hotels
80	Accessible Means of Entry to Wading Pools	221.10	1,276.52	Swimming pools / Aquatic Centers Swimming pools / Aquatic Centers (public)	(1,055.42)	Swimming pools / Aquatic Centers Swimming pools / Aquatic Centers (public)



ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
81	Accessible Means of Entry to Spas	782.49	1,012.16	Swimming pools / Aquatic Centers Undergraduate and Postgraduate Private Schools Nursing Homes	(229.67)	Nursing Homes Swimming pools / Aquatic Centers Hotels
82	Accessible Route for Boating Facilities	6.64	19.16	Recreational Boating Facilities (public) Recreational Boating Facilities	(12.51)	Recreational Boating Facilities (public) Recreational Boating Facilities
83	Accessible Boarding Piers (NC)	1.10	3.34	Recreational Boating Facilities (public) Recreational Boating Facilities	(2.23)	Recreational Boating Facilities (public) Recreational Boating Facilities
85	Accessible Boat Slips (NC)	(0.66)	12.42	Recreational Boating Facilities Recreational Boating Facilities (public)	(13.08)	Recreational Boating Facilities Recreational Boating Facilities (public)
87	Accessible Route to Fishing Piers	35.62	36.04	Fishing Piers and Platforms Fishing Piers and Platforms (public)	(0.42)	Fishing Piers and Platforms Fishing Piers and Platforms (public)
88	Accessible Fishing Piers and Platforms	81.61	94.61	Parks or zoos (public) Fishing Piers and Platforms Fishing Piers and Platforms (public)	(13.00)	Parks or zoos (public) Fishing Piers and Platforms Fishing Piers and Platforms (public)
89	Accessible Route to Golf Courses	292.35	306.58	Golf Courses (private with public access) Golf Courses (private only) Golf Courses (public)	(14.23)	Golf Courses (private with public access) Golf Courses (private only) Golf Courses (public)

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
90	Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR)	196.16	216.50	Golf Courses (private with public access) Golf Courses (private only) Golf Courses (public)	(20.34)	Golf Courses (private with public access) Golf Courses (private only) Golf Courses (public)
92	Accessible Practice Grounds at Driving Ranges	391.52	399.09	Golf Courses (private with public access) Golf Courses (private only) Golf Courses (public)	(7.57)	Golf Courses (private with public access) Golf Courses (private only) Golf Courses (public)
93	Accessible Route to Mini Golf Holes	535.06	553.74	Miniature golf courses Miniature golf courses (public)	(18.68)	Miniature golf courses Miniature golf courses (public)
94	Accessible Mini Golf Holes	449.95	523.24	Miniature golf courses Miniature golf courses (public)	(73.30)	Miniature golf courses Miniature golf courses (public)
95	Accessible Route to Amusement Rides	440.74	523.01	Amusement Parks Amusement Parks (public)	(82.27)	Amusement Parks Amusement Parks (public)
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride	5.55	7.14	Amusement Parks Amusement Parks (public)	(1.59)	Amusement Parks Amusement Parks (public)
97	Maneuvering Space in Load and Unload Area of Amusement Ride	14.74	18.60	Amusement Parks Amusement Parks (public)	(3.86)	Amusement Parks Amusement Parks (public)
98	Signs at Amusement Rides	4.20	6.22	Amusement Parks Amusement Parks (public)	(2.03)	Amusement Parks Amusement Parks (public)

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
99	Accessible Route to Play Components (BR)	14.00	244.82	Restaurants Elementary Public Schools Parks or zoos (public)	(230.82)	Elementary Public Schools Parks or zoos (public) Elementary Private Schools
100	Accessible Play Components (BR)	323.58	367.13	Restaurants Elementary Public Schools Parks or zoos (public)	(43.55)	Parks or zoos (public) Elementary Public Schools Elementary Private Schools
101	Accessible Route to Play Components (ALT)	133.29	161.72	Restaurants Motels Shopping Malls	(28.43)	Restaurants Parks or zoos (public) Elementary Public Schools
102	Accessible Play Components (ALT)	234.68	241.02	Restaurants Motels Shopping Malls	(6.33)	Restaurants Parks or zoos (public) Nursery schools - Daycare
103	Accessible Route to Play Components (NC)	(77.11)	74.42	Elementary Public Schools Nursery schools - Daycare Parks or zoos (public)	(151.53)	Nursery schools - Daycare Elementary Public Schools Elementary Private Schools
104	Accessible Play Components (NC)	98.80	112.13	Elementary Public Schools Nursery schools - Daycare Parks or zoos (public)	(13.33)	Nursery schools - Daycare Elementary Public Schools Elementary Private Schools
106	Post Secondary School Multi-Story Dorm Facility	(64.04)	0.42	Undergraduate, postgraduate public schools	(64.46)	Undergraduate, postgraduate public schools
107	Mobility Accessible Prison Cell	44.08	(11.72)	State and Local Correctional Facilities (prisons)	55.80	State and Local Correctional Facilities (prisons)
108	Communication Accessible Prison Cell	(5.83)	0.33	State and Local Correctional Facilities (prisons)	(6.17)	State and Local Correctional Facilities (prisons)

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
109	Social Service Establishments – Elevator Access (NC)	6.70	0.00		6.70	Homeless Shelter Homeless Shelter (public)
110	Social Service Establishments – Clear Floor Space around Beds	105.74	110.90	Homeless Shelter Homeless Shelter (public)	(5.17)	Homeless Shelter Homeless Shelter (public)
111	Accessible Saunas and Steam Rooms (ALT/BR)	179.61	421.75	Exercise Facilities Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers	(242.14)	Exercise Facilities Swimming pools / Aquatic Centers Undergraduate and Postgraduate Private Schools
112	Primary Accessible Means of Entry to Pools (BR)	39.32	130.49		(91.16)	Swimming pools / Aquatic Centers Motels Hotels
113	Housing at Places of Education – Kitchen Turning Space	49.66	53.06	Undergraduate and Postgraduate Private Schools Undergraduate, postgraduate public schools	(3.40)	Undergraduate and Postgraduate Private Schools Undergraduate, postgraduate public schools
114	Housing at Places of Education – Kitchen Work Surfaces	(0.17)	4.90	Undergraduate and Postgraduate Private Schools Undergraduate, postgraduate public schools	(5.06)	Undergraduate, postgraduate public schools Undergraduate and Postgraduate Private Schools

ID	Requirement	NPV (millions of \$)	Net Impact to Users (millions of \$)	Top 3 Drivers of Benefits	Net Impact to Facilities (millions of \$)	Top 3 Drivers of Costs
115	Secondary Accessible Means of Entry into Pools (NC/ALT)	132.88	161.89	Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers Undergraduate, postgraduate public schools	(29.01)	Swimming pools / Aquatic Centers Undergraduate and Postgraduate Private Schools Undergraduate, postgraduate public schools
116	Secondary Accessible Means of Entry into Pools (BR)	12.00	26.22	Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers Swimming pools / Aquatic Centers (public)	(14.22)	Swimming pools / Aquatic Centers Undergraduate and Postgraduate Private Schools Swimming pools / Aquatic Centers (public)
117	Social Service Establishments – Roll-in Shower	(0.09)	0.03	Social Service Establishments (public)  Homeless Shelter (public)	(0.11)	Social Service Establishments (public)  Homeless Shelter (public)

The table below details the costs, benefits and net benefits (or costs) to each facility type. The NPV refers to the net benefits less the net costs (numbers in parentheses are negative, and costs are overall costs to society). The Net Impact to Users reflects the value of the benefits to users; less stringent requirements resulting in negative benefits to users are in parentheses. The column listing the Top 3 drivers of benefits list the requirements which generate the largest benefits at that facility. Net Facility Impact lists the cost to facilities of compliance with the requirement; numbers in parentheses represent a cost to the facilities, number without parentheses represent effect savings due to less stringent requirements. The Top 3 Drivers of Impacts to Facilities column lists the requirements with the largest impact on facility costs.

**Table 8: Total Costs and Benefits per Facility Group in Primary Baseline Scenario  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Inns	499.53	519.19	Bathrooms with vanities and water closet clearance out-swinging doors Operable Windows Side Reach	(19.65)	Bathrooms with vanities and water closet clearance out-swinging doors Side Reach Operable Windows
Hotels	753.47	1,232.08	Bathrooms with vanities and water closet clearance out-swinging doors Accessible Exercise Machines and Equipment Primary Accessible Means of Entry to Pools (NC/ALT)	(478.61)	Primary Accessible Means of Entry to Pools (NC/ALT) Bathrooms with vanities and water closet clearance out-swinging doors  Stairs (ALT/BR)
Motels	1,403.08	1,834.48	Bathrooms with vanities and water closet clearance out-swinging doors Accessible Exercise Machines and Equipment Primary Accessible Means of Entry to Pools (NC/ALT)	(431.40)	Primary Accessible Means of Entry to Pools (NC/ALT) Bathrooms with vanities and water closet clearance out-swinging doors  Side Reach
Restaurants	1,413.77	1,742.54	Passenger Loading Zones Parking Spaces  Accessible Play Components (ALT)	(328.77)	Water closet clearance in single-user toilet rooms - in swinging door Side Reach Accessible Route to Play Components (BR)

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Motion Picture House	(169.43)	8.84	Wheelchair Space Overlap in Assembly Areas Passenger Loading Zones Parking Spaces	(178.26)	Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments Water closet clearance in single-user toilet rooms - in swinging door
Theatre / Concert Hall	(145.52)	25.37	Water closet clearance in single-user toilet rooms - out swinging door Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(170.90)	Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments Location of Accessible Route to Stages
Stadiums	(10.90)	18.85	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Van Accessible Parking Spaces	(29.75)	Wheelchair Space Overlap in Assembly Areas Water closet clearance in single-user toilet rooms - out swinging door Accessible Saunas and Steam Rooms (ALT/BR)
Auditoriums	(9.63)	15.83	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(25.46)	Wheelchair Space Overlap in Assembly Areas Location of Accessible Route to Stages Ambulatory Accessible Toilet Compartments
Convention Centers	20.11	19.26	Passenger Loading Zones Ambulatory Accessible Toilet Compartments Direct Access Entrances from Parking Structures	0.85	Assistive Listening Systems (scoping) Detectable Warnings (scoping) Handrails
Single Level Stores	(354.54)	61.78	Side Reach Water closet clearance in single-user toilet rooms - in swinging door Door and Gate Surfaces	(416.32)	Water closet clearance in single-user toilet rooms - in swinging door Side Reach Door and Gate Surfaces

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Shopping Malls	280.14	328.01	Passenger Loading Zones Ambulatory Accessible Toilet Compartments  Accessible Play Components (ALT)	(47.87)	Stairs (ALT/BR) Ambulatory Accessible Toilet Compartments Water closet clearance in single-user toilet rooms - in swinging door
Indoor Service Establishments	(1,758.39)	410.84	Water closet clearance in single-user toilet rooms - out swinging door  Side Reach ATMs and Fare Machines	(2,169.22)	Water closet clearance in single-user toilet rooms - out swinging door  Side Reach ATMs and Fare Machines
Offices of Health Care Providers	(228.77)	76.99	Water closet clearance in single-user toilet rooms - out swinging door  Side Reach Stairs (NC)	(305.76)	Water closet clearance in single-user toilet rooms - out swinging door  Stairs (ALT/BR) Side Reach
Hospitals	(26.42)	(1.70)	Passenger Loading Zones (Medical / Long- Term Care)  Patient Toilet Rooms  Multiple Single-User Toilet Rooms	(24.72)	Accessible Means of Entry to Spas Water closet clearance in single-user toilet rooms - out swinging door Water closet clearance in single-user toilet rooms - in swinging door
Nursing Homes	(192.94)	(61.48)	Passenger Loading Zones (Medical / Long- Term Care) Detectable Warnings (scoping)  Accessible Routes from Site Arrival Points and Within Sites	(131.46)	Water closet clearance in single-user toilet rooms - out swinging door Accessible Means of Entry to Spas  Side Reach
Terminal (private airports)	1.84	0.10	Direct Access Entrances from Parking Structures Passenger Loading Zones Water closet clearance in single-user toilet rooms - out swinging door	1.74	Accessible Routes from Site Arrival Points and Within Sites Detectable Warnings (scoping) Sales and Service Counters (NC)



Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Depots	0.10	0.08	Passenger Loading Zones Water closet clearance in single-user toilet rooms - in swinging door Door and Gate Surfaces	0.01	Detectable Warnings (scoping) Handrails Sales and Service Counters (NC)
Museums, Historical Sites & Libraries	68.81	74.82	Wheelchair Space Overlap in Assembly Areas Passenger Loading Zones Side Reach	(6.01)	Water closet clearance in single-user toilet rooms - in swinging door Wheelchair Space Overlap in Assembly Areas Stairs (ALT/BR)
Parks or zoos	42.28	45.73	Water closet clearance in single-user toilet rooms - out swinging door Passenger Loading Zones Ambulatory Accessible Toilet Compartments	(3.45)	Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - in swinging door Accessible Fishing Piers and Platforms
Amusement Parks	734.55	826.86	Accessible Route to Rides Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(92.30)	Accessible Route to Amusement Rides Maneuvering Space in Load and Unload Area of Amusement Ride Signs at Amusement Park rides
Nursery schools - Daycare	(7.47)	121.85	Water closet clearance in single-user toilet rooms - out swinging door Accessible Play Components (NC) Accessible Route to Play Components (NC)	(129.32)	Accessible Route to Play Components (NC) Water closet clearance in single-user toilet rooms - out swinging door Side Reach
Elementary Private Schools	(29.65)	67.44	Accessible Play Components (BR) Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - out swinging door	(97.09)	Accessible Route to Play Components (BR) Accessible Route to Play Components (NC) Water closet clearance in single-user toilet rooms - in swinging door

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Secondary Private Schools	(10.64)	9.23	Water closet clearance in single-user toilet rooms - out swinging door Wheelchair Space Overlap in Assembly Areas Accessible Exercise Machines and Equipment	(19.87)	Location of Accessible Route to Stages  Accessible Lockers  Side Reach
Undergraduate and Postgraduate Private Schools	1,475.53	1,628.02	Accessible Exercise Machines and Equipment Water closet clearance in single-user toilet rooms - out swinging door Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	(152.49)	Primary Accessible Means of Entry to Pools (NC/ALT)  Location of Accessible Route to Stages Accessible Exercise Machines and Equipment
Ski Facilities	45.94	46.03	Water closet clearance in single-user toilet rooms - out swinging door Passenger Loading Zones Door and Gate Surfaces	(0.09)	Water closet clearance in single-user toilet rooms - out swinging door Door and Gate Surfaces Passenger Loading Zones
Homeless Shelter	138.48	141.08	Social Service Establishments – Clear Floor Space around Beds Water closet clearance in single-user toilet rooms - out swinging door Side Reach	(2.59)	Social Service Establishments – Clear Floor Space around Beds Water closet clearance in single-user toilet rooms - out swinging door Shower Spray Controls
Food Banks	15.70	16.92	Water closet clearance in single-user toilet rooms - out swinging door Parking Spaces Side Reach	(1.22)	Water closet clearance in single-user toilet rooms - out swinging door Side Reach Parking Spaces
Social Service Establishments	(33.20)	1.51	Side Reach Water closet clearance in single-user toilet rooms - in swinging door Door and Gate Surfaces	(34.70)	Water closet clearance in single-user toilet rooms - in swinging door  Side Reach Door and Gate Surfaces

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Exercise Facilities	1,777.80	2,461.53	Accessible Exercise Machines and Equipment Accessible Route to Exercise Machines and Equipment Accessible Saunas and Steam Rooms (ALT/BR)	(683.72)	Accessible Exercise Machines and Equipment Accessible Saunas and Steam Rooms (ALT/BR) Accessible Lockers
Swimming pools / Aquatic Centers	1,380.45	2,771.53	Accessible Means of Entry to Wading Pools Primary Accessible Means of Entry to Pools (NC/ALT) Accessible Means of Entry to Spas	(1,391.08)	Accessible Means of Entry to Wading Pools Primary Accessible Means of Entry to Pools (NC/ALT) Primary Accessible Means of Entry to Pools (BR)
Bowling Alleys	133.35	134.73	Accessible Route to Bowling Lanes Side Reach Door and Gate Surfaces	(1.37)	Accessible Route to Bowling Lanes Side Reach Door and Gate Surfaces
Golf Courses (private with public access)	805.36	842.80	Accessible Practice Grounds at Driving Ranges Accessible Route to Golf Courses Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR)	(37.44)	Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR) Accessible Route to Golf Courses Accessible Practice Grounds at Driving Ranges
Golf Courses (private only)	178.37	199.05	Accessible Practice Grounds at Driving Ranges Accessible Route to Golf Courses Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR)	(20.69)	Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR) Accessible Route to Golf Courses Water closet clearance in single-user toilet rooms - in swinging door
Miniature golf courses	951.40	1,045.72	Accessible Route to Mini Golf Holes Accessible Mini Golf Holes Side Reach	(94.33)	Accessible Mini Golf Holes Accessible Route to Mini Golf Holes Water closet clearance in single-user toilet rooms - in swinging door

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Recreational Boating Facilities	(1.42)	16.18	Accessible Route for Boating Facilities Accessible Boat Slips (NC) Accessible Boarding Piers (NC)	(17.60)	Accessible Boat Slips (NC) Accessible Route for Boating Facilities Water closet clearance in single-user toilet rooms - in swinging door
Fishing Piers and Platforms	41.40	44.95	Accessible Route to Fishing Piers Accessible Fishing Piers and Platforms	(3.56)	Accessible Fishing Piers and Platforms Accessible Route to Fishing Piers
Shooting Facilities	256.76	256.22	Shooting Facilities with Firing Positions Door and Gate Surfaces	0.54	Accessible Routes from Site Arrival Points and Within Sites Detectable Warnings (scoping)
Office Buildings	(1,036.49)	3.55	Passenger Loading Zones Parking Spaces Side Reach	(1,040.03)	Stairs (ALT/BR) Alterations to Existing Elevators Side Reach
Elementary Public Schools	34.55	282.89	Water closet clearance in single-user toilet rooms - out swinging door Accessible Play Components (BR) Accessible Route to Play Components (BR)	(248.34)	Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - in swinging door Side Reach
Secondary Public Schools	181.74	297.85	Water closet clearance in single-user toilet rooms - out swinging door Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(116.11)	Location of Accessible Route to Stages Water closet clearance in single-user toilet rooms - in swinging door Side Reach
Undergraduate, postgraduate public schools	(190.52)	20.93	Water closet clearance in single-user toilet rooms - out swinging door Accessible Exercise Machines and Equipment Accessible Means of Entry to Spas	(211.45)	Post Secondary School Multi-Story Dorm Facility Location of Accessible Route to Stages Stairs (ALT/BR)

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Public Housing	(25.45)	147.21	Water closet clearance in single-user toilet rooms - out swinging door Accessible Play Components (BR) Accessible Route to Play Components (BR)	(172.66)	Stairs (ALT/BR) Operable Windows Accessible Route to Play Components (BR)
State and Local Judicial Facilities (courthouses)	(156.86)	0.81	Water closet clearance in single-user toilet rooms - out swinging door Side Reach Passenger Loading Zones	(157.67)	Accessible Attorney Areas and Witness Stands Water closet clearance in single-user toilet rooms - out swinging door Standby Power for Platform Lifts
State and Local Detention Facilities (jails)	(0.20)	0.02	Shower Spray Controls  Side Reach Passenger Loading Zones	(0.22)	Shower Spray Controls  Side Reach Door and Gate Surfaces
State and Local Correctional Facilities (prisons)	39.98	(7.26)	Mobility Accessible Prison Cell  Detectable Warnings (scoping) Accessible Routes from Site Arrival Points and Within Sites	47.24	Mobility Accessible Prison Cell  Shower Compartments with Mobility Features Accessible Routes from Site Arrival Points and Within Sites
Parking Garages	203.25	208.40	Mechanical Access Parking Garages Stairs (NC) Stairs (ALT/BR)	(5.15)	Stairs (ALT/BR) Mechanical Access Parking Garages
Self Service Storage Facilities	23.03	29.32	Self-Service Storage Facility Spaces  Side Reach Stairs (NC)	(6.30)	Self-Service Storage Facility Spaces  Stairs (ALT/BR) Side Reach
Theatre / Concert Halls (public)	(0.09)	0.03	Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments Wheelchair Space Overlap in Assembly Areas	(0.11)	Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments Location of Accessible Route to Stages

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Stadiums (public)	(35.72)	48.49	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Van Accessible Parking Spaces	(84.22)	Wheelchair Space Overlap in Assembly Areas Water closet clearance in single-user toilet rooms - out swinging door Assistive Listening Systems (technical)
Auditoriums (public)	(0.64)	0.73	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(1.37)	Wheelchair Space Overlap in Assembly Areas Location of Accessible Route to Stages Ambulatory Accessible Toilet Compartments
Convention Centers (public)	30.17	28.89	Passenger Loading Zones Ambulatory Accessible Toilet Compartments Direct Access Entrances from Parking Structures	1.28	Assistive Listening Systems (scoping) Detectable Warnings (scoping) Handrails
Hospitals (public)	(2.69)	(1.35)	Passenger Loading Zones (Medical / Long- Term Care) Patient Toilet Rooms Multiple Single-User Toilet Rooms	(1.34)	Accessible Means of Entry to Spas Water closet clearance in single-user toilet rooms - out swinging door Water closet clearance in single-user toilet rooms - in swinging door
Nursing Homes (public)	(19.52)	(13.47)	Passenger Loading Zones (Medical / Long- Term Care) Detectable Warnings (scoping) Accessible Routes from Site Arrival Points and Within Sites	(6.05)	Water closet clearance in single-user toilet rooms - out swinging door Accessible Means of Entry to Spas Side Reach
Museums, Historical Sites & Libraries (public)	99.05	111.24	Wheelchair Space Overlap in Assembly Areas Passenger Loading Zones Side Reach	(12.20)	Water closet clearance in single-user toilet rooms - in swinging door Wheelchair Space Overlap in Assembly Areas Stairs (ALT/BR)

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Parks or zoos (public)	418.88	601.92	Water closet clearance in single-user toilet rooms - out swinging door Passenger Loading Zones Ambulatory Accessible Toilet Compartments	(183.04)	Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - in swinging door Side Reach
Homeless Shelter (public)	20.28	20.68	Social Service Establishments – Clear Floor Space around Beds Water closet clearance in single-user toilet rooms - out swinging door Side Reach	(0.40)	Social Service Establishments – Clear Floor Space around Beds Water closet clearance in single-user toilet rooms - out swinging door Shower Spray Controls
Exercise Facilities (public)	25.83	35.20	Accessible Exercise Machines and Equipment Ambulatory Accessible Toilet Compartments Accessible Lockers	(9.36)	Accessible Exercise Machines and Equipment Wheelchair Space Overlap in Assembly Areas Accessible Lockers
Social Service Establishments (public)	(13.65)	0.57	Side Reach Water closet clearance in single-user toilet rooms - in swinging door Door and Gate Surfaces	(14.22)	Water closet clearance in single-user toilet rooms - in swinging door Side Reach Door and Gate Surfaces
Swimming pools / Aquatic Centers (public)	125.53	215.22	Accessible Means of Entry to Wading Pools Primary Accessible Means of Entry to Pools (NC/ALT) Accessible Means of Entry to Spas	(89.69)	Accessible Means of Entry to Wading Pools Primary Accessible Means of Entry to Pools (NC/ALT) Primary Accessible Means of Entry to Pools (BR)
Miniature golf courses (public)	27.21	29.94	Accessible Route to Mini Golf Holes Accessible Mini Golf Holes Side Reach	(2.73)	Accessible Mini Golf Holes Water closet clearance in single-user toilet rooms - in swinging door Accessible Route to Mini Golf Holes

Facility	NPV (millions of \$)	Total User Impact (millions of \$)	Top 3 Drivers of Impact to Users	Total Facility Impact (millions of \$)	Top 3 Drivers of Impact to Facilities
Recreational Boating Facilities (public)	4.59	18.33	Accessible Route for Boating Facilities Accessible Boat Slips (NC) Accessible Boarding Piers (NC)	(13.74)	Accessible Route for Boating Facilities Water closet clearance in single-user toilet rooms - in swinging door Accessible Boat Slips (NC)
Fishing Piers and Platforms (public)	26.24	26.95	Accessible Route to Fishing Piers Accessible Fishing Piers and Platforms	(0.71)	Accessible Fishing Piers and Platforms Accessible Route to Fishing Piers
Office Buildings (public)	(93.39)	9.70	Passenger Loading Zones Parking Spaces Side Reach	(103.09)	Stairs (ALT/BR) Alterations to Existing Elevators Side Reach
Parking Garages (public)	1.63	1.68	Mechanical Access Parking Garages Stairs (NC) Stairs (ALT/BR)	(0.05)	Stairs (ALT/BR) Mechanical Access Parking Garages
Golf Courses (public)	85.05	89.49	Water closet clearance in single-user toilet rooms - out swinging door Accessible Practice Grounds at Driving Ranges Accessible Route to Golf Courses	(4.43)	Water closet clearance in single-user toilet rooms - in swinging door Water closet clearance in single-user toilet rooms - out swinging door Side Reach
Restaurants (public)	0.04	0.04	Passenger Loading Zones Parking Spaces Side Reach	(0.00)	Water closet clearance in single-user toilet rooms - in swinging door Side Reach Valet Parking Garages
Amusement Parks (public)	38.83	39.68	Accessible Route to Rides Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(0.85)	Accessible Route to Rides Location of Accessible Route to Stages Wheelchair Space or Transfer Seat or Transfer Device



### 6.1.5 Net Present Value for Public versus Private Facilities

Figure 14 shows the respective NPVs for the following facility groups: Elementary Public Schools; Elementary Private Schools; Undergraduate and Postgraduate Public Schools; and, Undergraduate and Postgraduate Private Schools. The results show a large discrepancy in NPVs between these types of public and private educational facilities. This result reflects how public facilities are not subject to the readily achievable barrier removal requirement. In this comparison, the supplemental requirements for exercise equipment are not costed for undergraduate and postgraduate public schools.

**Figure 14: NPV for Selected Public and Private Educational Facilities**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

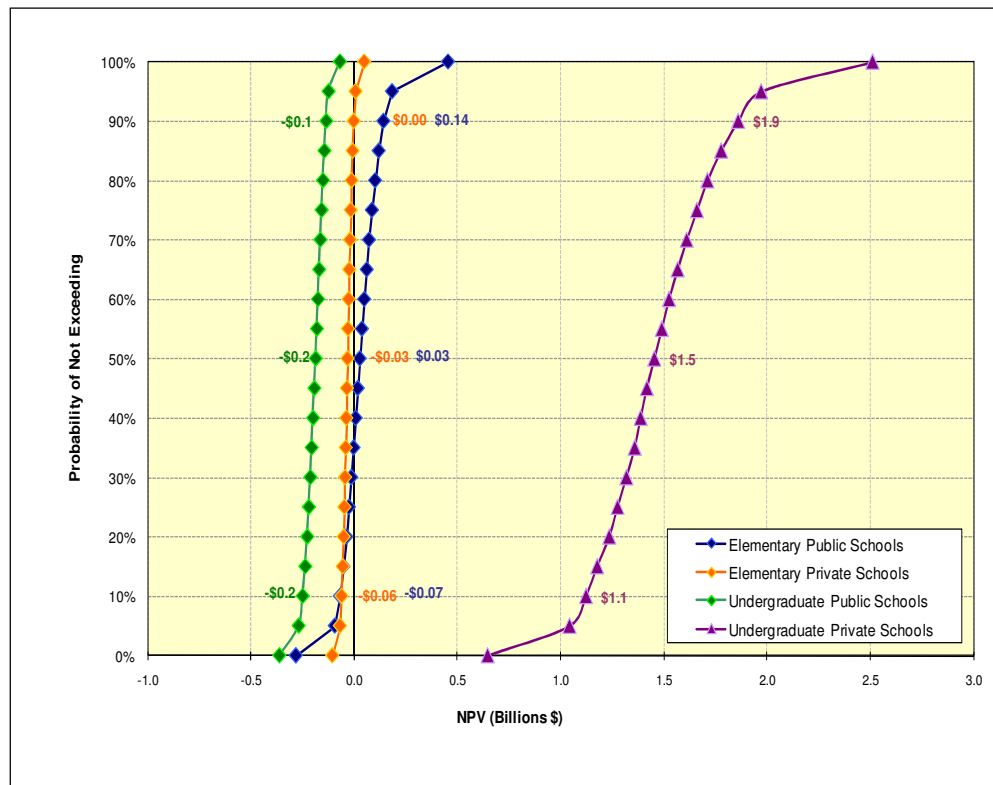


Table 9 presents the NPV for all private and all public facilities analyzed. While the total NPV is positive for both sets of groups, the NPV for private facilities (\$8.6 B) is significantly higher than that for public facilities (\$655 M). The private facility groups with the largest (positive or negative) NPV are Exercise Facilities (\$1.8 B), Undergraduate and Postgraduate Private Schools (\$1.5 B), Motels (\$1.4 B), Single Level Stores (-\$355 M), Office Buildings (-\$1.0 B) and Indoor Service Establishments (-\$1.8 B). The public facility group with the greatest benefits is Parks and Zoos, with a positive NPV of \$419 M. The public facility group with the largest negative NPV is the Undergraduate and Postgraduate Public Schools facility group (-\$191 M).

**Table 9: Net Present Values for Public and Private Facilities**  
**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

	Facility Group	NPV (\$ mil)*	Impact to Facilities*
A	Inns	499.5	(19.7)
B	Hotels	753.5	(478.6)
C	Motels	1,403.1	(431.4)
D	Restaurants	1,403.1	(328.8)
E	Motion Picture House	-169.4	(178.3)
F	Theatre / Concert Hall	(145.5)	(170.9)
G	Stadiums	(10.9)	(29.8)
H	Auditoriums	(9.6)	(25.5)
I	Convention Centers	20.1	0.9
J	Single Level Stores	(354.5)	(416.3)
K	Shopping Malls	280.1	(47.9)
L	Indoor Service Establishments	(1,758.4)	(2,169.2)
M	Offices of Health Care Providers	(228.8)	(305.8)
N	Hospitals	(26.4)	(24.7)
O	Nursing Homes	(192.9)	(131.5)
P	Terminal (private airports)	1.8	1.7
Q	Depots	0.1	0.0
R	Museums, Historical Sites & Libraries	68.8	(6.0)
S	Parks or zoos	42.3	(3.5)
T	Amusement Parks	734.6	(92.3)

	Facility Group	NPV (\$ mil)*	Impact to Facilities*
No public counterpart			
No public counterpart			
No public counterpart			
BP	Restaurants (public)	0.04	(0.01)
No public counterpart			
AW	Theatre / Concert Halls (public)	(0.1)	(0.1)
AX	Stadiums (public)	(35.7)	(84.2)
AY	Auditoriums (public)	(0.6)	(1.4)
AZ	Convention Centers (public)	30.2	1.3
No public counterpart			
No public counterpart			
No public counterpart			
No public counterpart			
BB	Hospitals (public)	(2.7)	(1.3)
BC	Nursing Homes (public)	(19.5)	(6.0)
No public counterpart			
No public counterpart			
BD	Museums, Historical Sites & Libraries (public)	99.0	(12.2)
BE	Parks or zoos (public)	418.9	(183.0)
BQ	Amusement Parks (public)	38.8	(0.8)

	Facility Group	NPV (\$ mil)*	Impact to Facilities*
U	Nursery schools - Daycare	(7.5)	(129.3)
V	Elementary Private Schools	(29.6)	(97.1)
W	Secondary Private Schools	(10.6)	(19.9)
X	Undergraduate and Postgraduate Private Schools	1,475.5	(152.5)
Y	Ski Facilities	45.9	(0.1)
Z	Homeless Shelter	138.5	(2.6)
AA	Food Banks	15.7	(1.2)
AB	Social Service Establishments	(33.2)	(34.7)
AC	Exercise Facilities	1,777.8	(683.7)
AD	Aquatic Centers /Swimming Pools	1,380.4	(1,391.1)
AE	Bowling Alleys	133.4	(1.4)
AF	Golf Courses (private with public access)	805.4	(37.4)
AG	Golf Courses (private only)	178.4	(20.7)
AH	Miniature golf courses	951.4	(94.3)
AI	Recreational Boating Facilities	(1.4)	(17.6)
AJ	Fishing Piers and Platforms	41.4	(3.6)
AK	Shooting Facilities	256.8	0.5

	Facility Group	NPV (\$ mil)*	Impact to Facilities*
No public counterpart			
AN	Elementary Public Schools	34.5	(248.3)
AO	Secondary Public Schools	181.7	(116.1)
AP	Undergraduate, postgraduate public schools	(190.5)	(211.5)
No public counterpart			
BF	Homeless Shelter (public)	20.3	(0.4)
No public counterpart			
BH	Social Service Establishments (public)	(13.7)	(14.2)
BG	Exercise Facilities (public)	25.8	(9.4)
BI	Aquatic Centers /Swimming Pools (public)	125.5	(89.7)
No public counterpart			
No public counterpart			
BO	Golf Courses (public)	85.1	(4.4)
BJ	Miniature golf courses (public)	27.2	(2.7)
BK	Recreational Boating Facilities (public)	4.6	(13.7)
BL	Fishing Piers and Platforms (public)	26.2	(0.7)
No public counterpart			

	Facility Group	NPV (\$ mil)*	Impact to Facilities*
AM	Office Buildings	(1,036.5)	(1,040.0)
No private counterpart			
No private counterpart			
No private counterpart			
No private counterpart			
AU	Parking Garages	203.2	(5.2)
AV	Self Service Storage Facilities	23.0	(6.3)

	Facility Group	NPV (\$ mil)*	Impact to Facilities*
BM	Office Buildings (public)	(93.4)	(103.1)
AQ	Public Housing	(25.2)	(172.7)
AR	State and Local Judicial Facilities (courthouses)	(156.9)	(157.7)
AS	State and Local Detention Facilities (jails)	(0.2)	(0.2)
AT	State and Local Correctional Facilities (prisons)	40.0	47.2
BN	Parking Garages (public)	1.6	(0.05)
No public counterpart			

\*NPV figures in parentheses are negative net values; Figures in parenthesis under "Impact to Facilities" represent a net cost to that facility group, and when not in parentheses represent a net savings to facilities.

## 6.2 Results Under Additional Scenarios

This section discusses the three additional scenarios that are modeled in this final regulatory analysis. These three additional scenarios are: barrier removal that would be readily achievable in either 0%, 50%, or 100% of situations (RA0, RA50, and RA100); alternate baselines using either the 1991 Standards or recent IBC editions (B1991, B2000, B2003, and B2006); and, safe harbor (SH) versus no safe harbor (NSH) for existing facilities.<sup>55</sup>

Results for RA0, and RA100 assume SH and B1991. Alternative baselines for B1991 and the various IBC editions (B2000, B2003, and B2006) all assume SH and RA100.

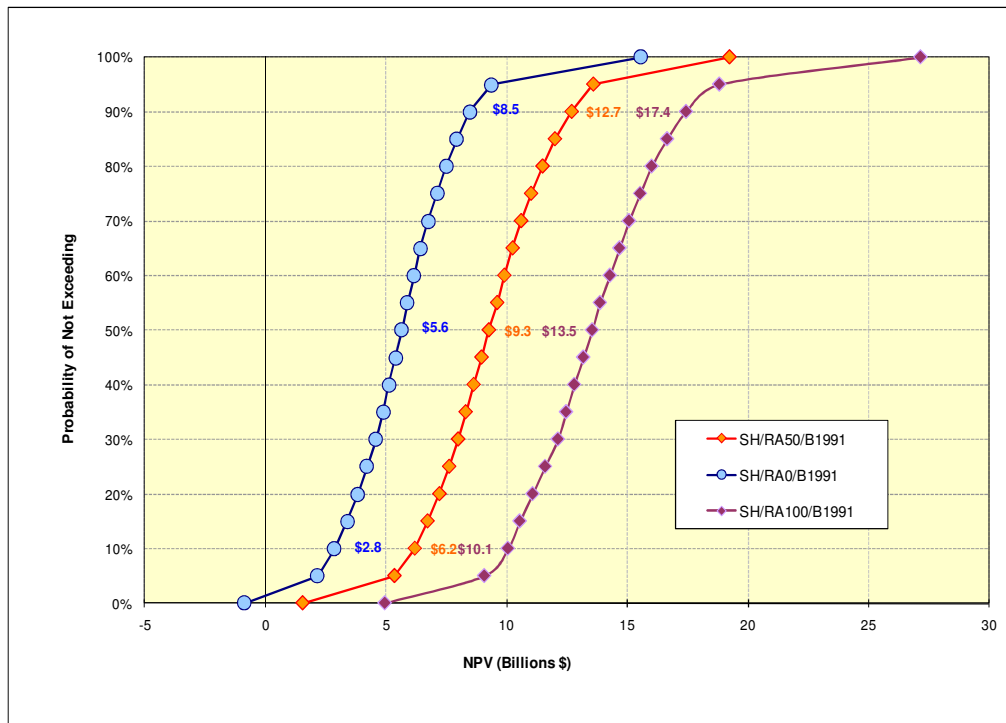
### 6.2.1 Readily Achievable Scenarios

Figure 15 provides an assessment of how NPV changes with different readily achievable assumptions. The chart shows RA at the 0, 50, and 100% levels. The RA scenarios have different costs and benefits, since they imply dissimilar rates of barrier removal construction as well as different accrual of the benefits associated with them. There are, therefore, two offsetting effects working simultaneously. The first effect that pushes costs up as the RA% increases is a higher barrier removal cost due to a higher number of elements subject to new requirements undergoing barrier removal. The second effect increases the benefits as the RA% increases, because the rate of completion of elements related to new requirements is higher, and

<sup>55</sup> See Section 2.4.1 for a discussion of safe harbor and Section 2.4.3 for a discussion of the relationship between the 1991 Standards and recent IBC editions.

so are the benefits derived from them. The combination of these effects is the cause of this dissimilar set of curves.

**Figure 15: NPV Comparison – Alternate Readily Achievable Scenarios: RA0, RA50, RA100 (Under Safe Harbor, 1991 Standards for Baseline, 7% Discount Rate)**

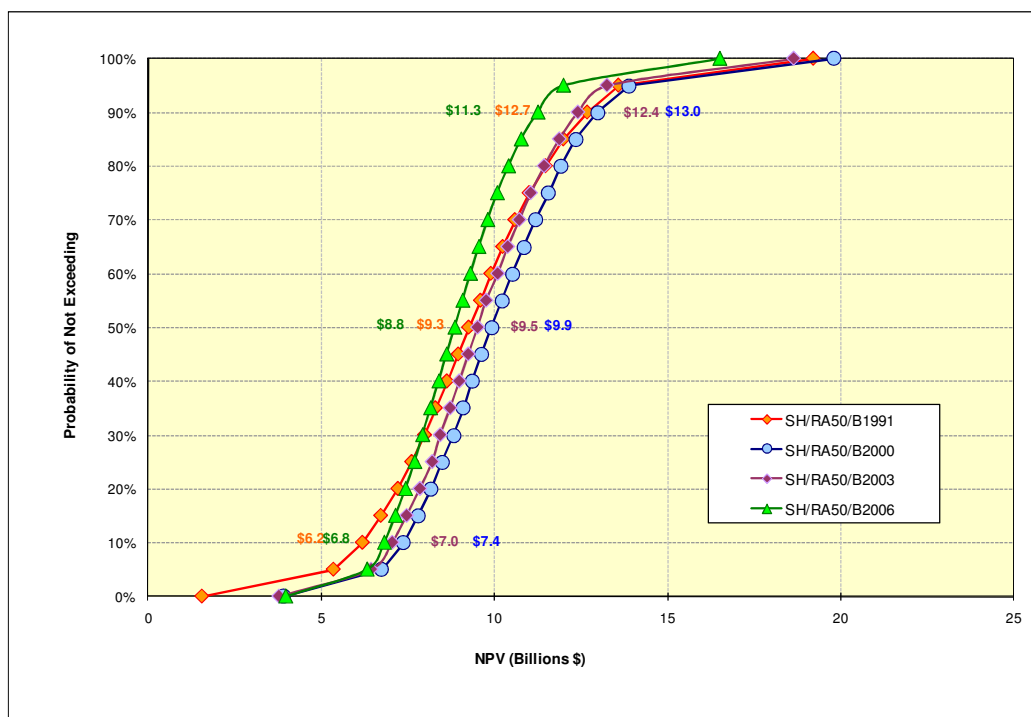


## 6.2.2 International Building Code (IBC) Scenarios

Figure 16 presents differences in NPV for different baselines, including the various IBC editions (B2000, B2003, and B2006). These probability curves indicate the effect of changing the set of requirements that apply. The results indicate that B2000 (IBC 2000) has the highest NPV, B2006 (IBC 2006) has the lowest, and B1991 is less than B2003 (IBC 2003). These results are due to changes in the make-up of the set of requirements that are included in each alternative baseline.

The alternative baselines for the different IBC fluctuate as various requirements, some with positive NPVs and some with negative NPVs, are included under the various IBC years. The NPV using the 2000 IBC as a baseline is highest of the four, and well above that for the 1991 Standards as twelve elements are no longer costed. This difference is primarily driven by the fact that the Side Reach requirement is already under the 2000 IBC and its NPV is not included. Using the 2003 IBC as a baseline, the NPV is still higher than under the 1991 Standards as a baseline, but lower than the 2000 IBC. This is largely due to the fact that Passenger Loading Zones are covered under the 2003 IBC and are thus no longer included, though it is counterbalanced by the fact that the requirement for Accessible Attorney Areas and Witness Stands is no longer included. The total NPV using the 2006 IBC is lowest of all the scenarios (though not by much), as the requirements for Bathrooms in Accessible Guest Rooms (vanities and water closet clearances) and Water Closet Clearances with Out-Swinging Doors are no longer included under this scenario.

**Figure 16: NPV Comparison – Alternate Baselines: B1991, B2000, B2003, and B2006  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 7% Discount Rate)**



As discussed previously in Section 2.4.3, it was not feasible to construct alternate IBC baselines for each requirement and facility nationwide that took into account actual IBC/ANSI adoption by state and local jurisdictions. Nonetheless, to further assist stakeholders in assessing the impact of the Final Rules, the final regulatory analysis includes a more limited assessment of 20 selected requirements relative to state- and requirement-specific alternate IBC/ANSI baselines that reflect the extent to which State and local jurisdictions nationwide have incorporated equivalent IBC/ANSI model code provisions into their respective building or accessibility codes. These requirements were selected for additional research because of their readily identifiable IBC/ANSI counterparts in state or local codes and their predominantly negative net present values. An alternate IBC/ANSI baseline was constructed for each requirement by researching current building and accessibility codes nationwide (*i.e.*, all 50 States, the District of Columbia, and, as applicable, local jurisdictions within States) to identify those jurisdictions that already have adopted its respective IBC/ANSI counterpart(s). Appendix 10 presents a matrix summarizing the results of this research by listing, for each requirement, the State and local jurisdictions that have incorporated equivalent IBC/ANSI model code provisions into their own codes, as well as the types of facilities to which such code provisions apply. Depending on the particular requirement, it is estimated that between 24% and 95% of facilities nationwide are already required to comply with a State or local code standard (based on an IBC and/or ANSI provision) that mirrors one of these requirements. Thus, for purposes of these state- and requirement-specific alternate IBC/ANSI baselines, the expected values for NPV were scaled by the appropriate percentages for each requirement.

Table 10 presents an alternative state- and requirement-specific IBC baseline analysis that demonstrates the estimated impact (in terms of total NPV) of using more refined alternate

IBC/ANSI baselines for an illustrative subset of requirements. Since it is not feasible to construct separate IBC baselines for each requirement that precisely track the extent to which the current building or accessibility code in each respective state or local jurisdiction across the country incorporates an IBC or ANSI model code provision that mirrors that requirement, a subset of 20 requirements with both readily-identifiable IBC/ANSI counterparts and generally negative NPVs under the primary baseline (*i.e.*, the subset included one requirement with a positive NPV) was selected for more in-depth study. Table 10 presents the comparative results (in terms of total NPV) for these requirements using a primary baseline (1991 Standards) and a state- and requirement-specific alternate IBC/ANSI baseline. These alternate IBC/ANSI baselines were constructed for each of the requirements by researching current building codes nationwide (*i.e.*, all 50 States, the District of Columbia, and, as applicable, local jurisdictions within States) to determine whether the equivalent IBC/ANSI counterpart(s) for each of these requirements had been adopted and was being enforced as part of the building or accessibility code in the respective State or local jurisdiction. Depending on the particular requirement, it is estimated that between 24% and 95% of facilities nationwide are already required to be compliant with a State or local code standard (based on an IBC and/or ANSI provision) that mirrors one of these requirements. Thus, for purposes of these state- and requirement-specific alternate IBC/ANSI baselines, the expected values for NPV were scaled by the appropriate percentages for each requirement.

These results show that consideration of state- and requirement-specific alternate IBC/ANSI baselines for these requirements results in markedly lower incremental costs (and benefits) as compared to their respective results under the primary baseline. Based on these alternate IBC/ANSI baselines, the likely net costs for this subset of requirements falls from -\$4.3 B (1991 Standards baseline) to -\$1.3 B (state- and requirement-specific alternate IBC baselines). It is not known, however, what the overall NPV for the Final Rules would be were state and requirement-specific alternate IBC/ANSI baselines developed and applied for all requirements. Application of such alternate IBC/ANSI baselines might lead to a decrease in monetized benefits for some requirements as compared to the 1991 Standards baseline.

**Table 10: NPV Comparison using Primary (1991 Standards) Baseline and State-by-State Requirement-Specific Alternate IBC/ANSI Baseline (Under Safe Harbor, 50% Readily Achievable Barrier Removal, 7% Discount Rate)**

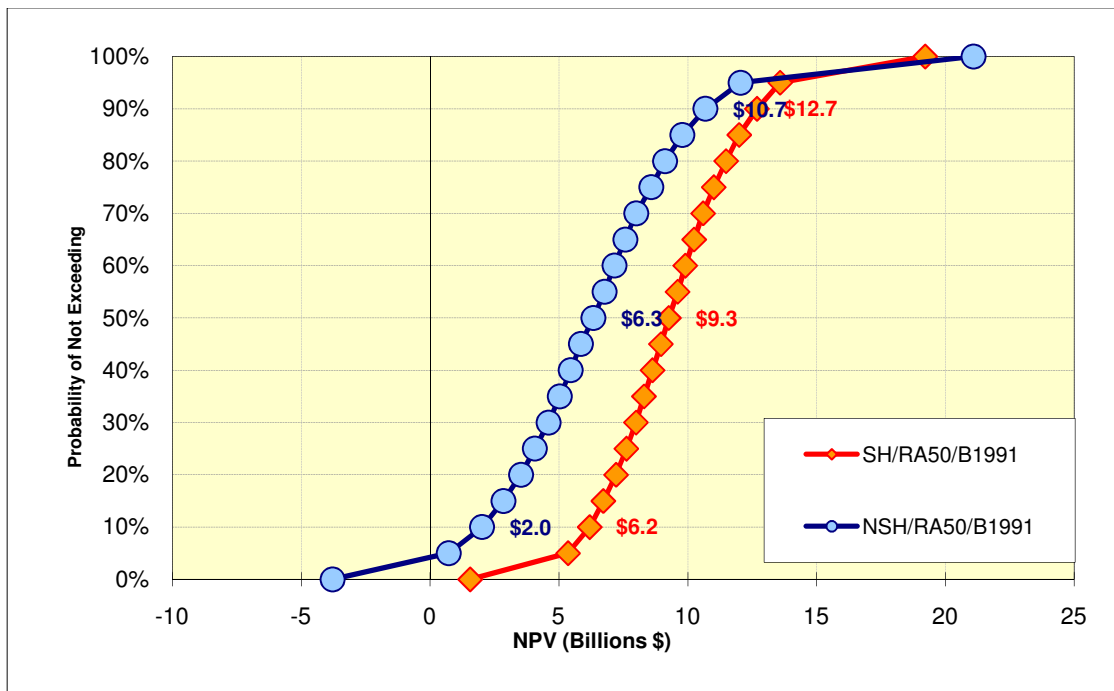
Req. ID	Requirement	% of Facilities Covered by IBC	NPV 1991 Baseline (million \$)	NPV IBC/ANSI Baseline (million \$)
3	Automatic Door Break-Out Openings	87%	(\$8)	(\$1)
5	Door and Gate Surfaces	53%	(\$23)	(\$11)
10	Stairs (Alt/BR)	95%	(\$808)	(\$41)
14	Standby Power for Platform Lifts	80%	(\$8)	(\$2)
15	Power-Operated Doors for Platform Lifts	51%	(\$6)	(\$3)
16	Alterations to Existing Elevators	70%	(\$339)	(\$102)
20	Valet Parking Garages	52%	\$83	\$40
28	Water closet clearance in single-user toilet rooms - out swinging door	49%	(\$898)	(\$454)
32	Water closet clearance in single-user toilet rooms - in swinging door	73%	(\$975)	(\$266)
35	Drinking Fountains	47%	(\$66)	(\$36)

Req. ID	Requirement	% of Facilities Covered by IBC	NPV 1991 Baseline (million \$)	NPV IBC/ ANSI Baseline (million \$)
37	Side Reach	72%	(\$555)	(\$153)
41	Washing Machines and Clothes Dryers (Scoping)	31%	(\$2)	(\$1)
51	Location of Accessible Route to Stages	36%	(\$152)	(\$97)
52	Wheelchair Space Overlap in Assembly Areas	86%	(\$318)	(\$43)
58	Public TTYS	31%	(\$2)	(\$1)
59	Public Telephone Volume Controls	31%	(\$6)	(\$4)
60	Two-Way Communication Systems at Entrances	24%	(\$9)	(\$7)
61	ATMs and Fare Machines	31%	(\$30)	(\$21)
62	Assistive Listening Systems (technical)	24%	(\$26)	(\$20)
68	Accessible Attorney Areas and Witness Stands	39%	(\$106)	(\$64)
Sum of Above Requirements			(\$4,256)	(\$1,288)

### 6.2.3 Safe Harbor and No Safe Harbor Scenarios

The following graph compares the net benefits under safe harbor (SH) and without safe harbor (NSH) policies for the entire rule (both assuming RA50 and 1991 Standards). The difference in NPV is significant. Without SH, benefits would most likely exceed costs by a little more than \$6 B whereas with a SH policy, benefits are expected to exceed costs by more than \$9 B. Part of the explanation for this discrepancy is that under NSH, BR costs are applied to more stringent requirements and the level of benefits for many element's barrier removal are lower than costs. The larger costs are then magnified because of the larger numbers of facilities that would be required to undertake BR before the next rule-making occurs.

**Figure 17: Safe Harbor vs. No Safe Harbor**  
(Under 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)





6.3 Relative Impact of Selected Assumptions

As noted in Sections 3.3 and 4.3, this regulatory impact analysis incorporates a risk analysis process that simultaneously varies all estimated inputs within their distributions to generate more realistic assessments of the likely range of not only the total monetized costs and benefits of the Final Rules., but also a better understanding of the potential impact on results of the uncertainty surrounding such inputs. The results presented in preceding sections of this Final RIA illustrate how parameters of multiple uncertainties translate into variability of NPVs.

To further explore the relative impact of alternate assumptions for certain selected parameters or inputs, Two sets of additional analyses were conducted which – unlike the risk analysis approach otherwise used throughout the Final RIA --varied each assumption individually. Such an approach is similar to traditional sensitivity analysis which assesses the impact in results from a hypothetical change to one parameter. The two sets of additional analyses consist of: (1) a set of “stress tests” examining the impact on results (when the value of one selected input is altered while holding all other parameters constant; and (2) a series of analyses exploring the relative impact of the variability (risk ranges) for inputs that serve as the key drivers of the overall costs and benefits for the three requirements with the largest negative NPVs under the primary baseline, as well as the three requirements with the largest positive NPVs under this same baseline. The results from each set of additional sensitivity-type analyses are presented and discussed separately below. All changes to costs and benefits in these analyses are assessed under the primary baseline (i.e., (Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, and 7% Discount Rate).

The stress tests analyses examine the relative impact on costs and benefits of varying the following six selected inputs individually: the premium on access time; the premium on use time; the price elasticity of demand for facility visits; the alterations rate for existing facilities; the indirect cost of a business owner’s time to review new guidelines (as requested by business and industry-related commenters); and, the number of persons with disabilities expected to benefit from the Final Rules. The results of these analyses are presented below in Tables 11 – 16.

The first stress test examines the impact of reducing the access time premium. The access time premium is defined in the model to range from 0.75 to 1.25 percent of the value of time. (The median of the range is 1.) This stress analysis assesses the impact on reducing the premium to 0.5. In other words, the access time change is valued at 50% of the base VOT.

Table 11 provides the results of this first stress analysis relative to all requirements assessed in the Final RIA. Some requirements have no data since, in the primary baseline scenario, they were not costed (see Table 4). Reducing the premium used for access time by half (i.e., using an access premium of 0.5 instead of 1) reduces the benefits to users by that factor. Lowering the premium by one half reduces total net benefits from \$9.2 B to \$5.8 B, or 37%.

Table 11: Impact on Results of Reduced to Access Time Premium  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

		Impact of Reduced Premium On Net Benefits to Users Premium = .5
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Requirement	NPV (Million \$)	NPV (Million \$)
Public Entrances	(8.1)	(6.1)
Maneuvering Clearance or Standby Power for Automatic Doors	(0.3)	(0.3)
Automatic Door Break-Out Openings	(8.0)	(8.0)
Thresholds at Doorways	0.1	(0.2)
Door and Gate Surfaces	(23.1)	(23.8)
Location of Accessible Routes	-	-
Common Use Circulation Paths in Employee Work Areas	-	-
Accessible Means of Egress	-	-
Stairs (NC)	52.5	39.2
Stairs (ALT/BR)	(808.4)	(813.5)
Handrails Along Walkways	-	-
Handrails	(23.7)	(16.9)
Accessible Routes from Site Arrival Points and Within Sites	(0.9)	5.2
Standby Power for Platform Lifts	(8.5)	(8.5)
Power-Operated Doors for Platform Lifts	(5.7)	(6.3)
Alterations to Existing Elevators	(339.0)	(339.5)
Platform Lifts in Hotel Guest Rooms and Dwelling Units	-	-
“LULA” and Private Residence Elevators	-	-
Van Accessible Parking Spaces	58.8	44.9
Valet Parking Garages	82.5	55.0
Mechanical Access Parking Garages	206.5	153.0
Direct Access Entrances from Parking Structures	7.8	5.9
Passenger Loading Zones	1,292.4	967.2
Parking Spaces	604.0	447.9
Parking Spaces (Signs)	(2.6)	(1.8)
Passenger Loading Zones (Medical / Long-Term Care)	(280.5)	(177.1)
Ambulatory Accessible Toilet Compartments	414.8	326.2
Water closet clearance in single-user toilet rooms - out swinging door	(898.4)	(1,209.3)
Shower Spray Controls	136.8	108.0
Urinals	(11.0)	(9.3)
Multiple Single-User Toilet Rooms	94.1	95.0
Water closet clearance in single-user toilet rooms - in swinging door	(974.7)	(982.7)
Water Closet Location and Rear Grab Bar	-	-
Patient Toilet Rooms	(2.1)	(1.2)
Drinking Fountains	(66.5)	(66.6)
Sinks	-	-
Side Reach	(555.0)	(734.1)
Sales and Service Counters (NC)	4.7	7.0
Sales and Service Counters (Alt)	85.1	127.7

		<b>Impact of Reduced Premium On Net Benefits to Users Premium = .5</b>
<b>Requirement</b>	<b>NPV (Million \$)</b>	<b>NPV (Million \$)</b>
Washing Machines and Clothes Dryers (technical)	(6.3)	(6.3)
Washing Machines and Clothes Dryers (Scoping)	(1.9)	(1.9)
Self-Service Storage Access	25.6	18.2
Limited Access Spaces and Machinery Spaces	-	-
Operable Parts	-	-
Bathrooms with vanities and water closet clearance out-swinging doors	1,788.4	1,355.5
Operable Windows	240.0	166.5
Dwelling Units with Communication Features [1991]	(13.9)	(13.9)
Dwelling Units with Communication Features [UFAS]	(3.7)	(3.7)
Galley Kitchen Clearances	23.8	18.7
Shower Compartments with Mobility Features	59.8	60.7
Location of Accessible Route to Stages	(152.0)	(152.0)
Wheelchair Space Overlap in Assembly Areas	(318.1)	(331.1)
Lawn Seating in Assembly Areas	-	-
Handrails on Aisle Ramps in Assembly Areas	(366.7)	(262.3)
Wheelchair Spaces in Assembly Areas	107.1	108.8
Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	6.3	6.6
Accessible Route to Press Boxes	61.9	62.3
Public TTYS	(1.7)	(1.7)
Public Telephone Volume Controls	(6.1)	(6.1)
Two-Way Communication Systems at Entrances	(9.2)	(11.7)
ATMs and Fare Machines	(30.5)	(37.4)
Assistive Listening Systems (technical)	(25.8)	(25.8)
Visible Alarms in Alterations to Existing Facilities	-	-
Detectable Warnings (scoping)	318.0	331.3
Detectable Warnings (technical)	-	-
Assistive Listening Systems (scoping)	273.9	275.8
Accessible Courtroom Stations	-	-
Accessible Attorney Areas and Witness Stands	(106.3)	(106.3)
Raised Courtroom Stations Not for Members of the Public	-	-
Accessible Route to Exercise Machines and Equipment	967.7	807.8
Accessible Machines and Equipment	1,411.8	1,096.0
Accessible Saunas and Steam Rooms (NC)	192.2	165.8
Accessible Lockers	160.4	127.7
Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	169.9	126.5

		<b>Impact of Reduced Premium On Net Benefits to Users Premium = .5</b>
<b>Requirement</b>	<b>NPV (Million \$)</b>	<b>NPV (Million \$)</b>
Wheelchair Spaces in Team or Player Seating Areas	(0.8)	(0.8)
Accessible Route in Court Sport Facilities	-	-
Accessible Route to Bowling Lanes	132.9	129.1
Shooting Facilities with Firing Positions	260.1	256.3
Primary Accessible Means of Entry to Pools (NC/ALT)	383.6	132.6
Accessible Means of Entry to Wading Pools	221.1	(29.6)
Accessible Means of Entry to Spas	782.5	565.8
Accessible Route for Boating Facilities	6.6	4.7
Accessible Boarding Piers (NC)	1.1	0.8
Accessible Boarding Piers (ALT/BR)	-	-
Accessible Boat Slips (NC)	(0.7)	(1.9)
Accessible Boat Slips (Alt/BR)	-	-
Accessible Route to Fishing Piers	35.6	35.0
Accessible Fishing Piers and Platforms	81.6	71.7
Accessible Route to Golf Courses	292.4	275.4
Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR)	196.2	184.1
Accessible Teeing Grounds, Putting Greens, and Weather Stations (NC)	-	-
Accessible Practice Grounds at Driving Ranges	391.5	369.3
Accessible Route to Minigolf Holes	535.1	477.7
Accessible Minigolf Holes	449.9	396.3
Accessible Route to Rides	440.7	391.0
Wheelchair Space or Transfer Seat or Transfer Device	5.6	4.6
Maneuvering Space in Load and Unload Area	14.7	12.3
Signs at Amusement Park rides	4.2	3.4
Accessible Route to Play Components (BR)	14.0	(42.2)
Accessible Play Components (BR)	323.6	240.1
Accessible Route to Play Components (ALT)	133.3	93.8
Accessible Play Components (ALT)	234.7	176.1
Accessible Route to Play Components (NC)	(77.1)	(93.4)
Accessible Play Components (NC)	98.8	74.7
Roll-In Showers	-	-
Post Secondary School Multi-Story Dorm Facility	(64.0)	(64.1)
Mobility Accessible Prison Cell	44.1	47.0
Communication Accessible Prison Cell	(5.8)	(5.9)

		Impact of Reduced Premium On Net Benefits to Users Premium = .5
Requirement	NPV (Million \$)	NPV (Million \$)
Social Service Establishments – Elevator Access (NC)	6.7	6.7
Social Service Establishments – Clear Floor Space around Beds	105.7	77.5
Accessible Saunas and Steam Rooms (ALT/BR)	179.6	118.8
Primary Accessible Means of Entry to Pools (BR)	39.3	9.8
Housing at Places of Education – Kitchen Turning Space	49.7	43.7
Housing at Places of Education – Kitchen Work Surfaces	(0.2)	(1.1)
Secondary Accessible Means of Entry into Pools (NC/ALT)	132.9	95.8
Secondary Accessible Means of Entry into Pools (BR)	12.0	6.1
Social Service Establishments – Roll-in Shower	(0.1)	(0.1)
<b>TOTAL</b>	<b>9,249.98</b>	<b>5,805.63</b>

The second stress test examines the impact of reducing the use time premium. The use time premium is defined in the benefits model to range from 0.2 to 0.5 the base VOT (with the median use time premium at 0.35 the base VOT). This stress analysis examines the impact on reducing the median use time to 0.175. Table 12 below presents results only for those requirements with use values. This analysis shows that reducing the premium for use time by half (*i.e.*, using a use time premium of 0.175 instead of 0.35) lowers total NPV for the rule from \$9.2 B to \$8.9 B, or less than 4%.

**Table 12: Impact on Results of Reduced to Use Time Premium**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

Requirement	Baseline Use Value = .35 NPV (Million \$)	Alternate Use Value = .175 NPV (Million \$)
Ambulatory Accessible Toilet Compartments	\$414.78	\$409.07
Water closet clearance in single-user toilet rooms - out swinging door	(\$898.43)	(\$927.69)
Shower Spray Controls	\$136.79	\$98.67
Urinals	(\$11.03)	(\$9.23)
Water closet clearance in single-user toilet rooms - in swinging door	(\$974.75)	(\$977.63)
Bathrooms with vanities and water closet clearance out-swinging doors	\$1,788.45	\$1,665.19
Galley Kitchen Clearances	\$23.81	\$12.22
Shower Compartments with Mobility Features	\$59.81	\$64.00
Wheelchair Space Overlap in Assembly Areas	(\$318.10)	(\$404.57)
Wheelchair Spaces in Assembly Areas	\$107.15	\$108.63
Assistive Listening Systems (technical)	(\$25.77)	(\$26.35)

Requirement	Baseline Use Value = .35 NPV (Million \$)	Alternate Use Value = .175 NPV (Million \$)
Accessible Exercise Machines and Equipment	\$1,411.82	\$1,395.64
Accessible Fishing Piers and Platforms	\$81.61	\$78.30
Accessible Mini Golf Holes	\$449.95	\$448.23
Accessible Play Components (BR)	\$323.58	\$322.42
Accessible Play Components (ALT)	\$234.68	\$234.37
Accessible Play Components (NC)	\$98.80	\$98.29
Housing at Places of Education – Kitchen Turning Space	\$49.66	\$34.84
Housing at Places of Education – Kitchen Work Surfaces	(\$0.17)	(\$0.74)
<b>Total for Entire Rule</b>	<b>\$9,249.98</b>	<b>\$8,921.00</b>

The third stress analysis assesses the impact of reducing the price elasticity of demand for each facility. The results presented in Table 13 show that changing the slope of the demand curve (which is derived, in part, from the elasticity) has only a minor overall impact on consumer surplus. Reducing the elasticities by half (meaning that each reduction in price leads to a smaller change in demand) reduces net benefits to users from \$19.2 B to \$15.4 B. The elasticity impacts only new uses of a facility and the new users of a newly independent accessible facility (*e.g.*, Aquatic Centers/Swimming Pools). The facilities with a significant change in user benefits when the elasticity is reduced are the facilities with expected new users, brought about by the supplemental requirements. Only one facility NPV changes from positive to negative: Public Recreational Boating Facilities' NPV declines from the small positive value of \$4.6 M to -\$1.4 M.

**Table 13: Impact on Results of Reduced Demand Elasticity At All Facilities (millions)**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

Facility Group (Million\$)	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In NPV	
	Impact to Users	NPV	Impact to Users	NPV	Million\$	%
Inns	\$519.2	\$499.5	\$516.9	\$497.3	(\$2.3)	0.5%
Hotels	\$1,232.1	\$753.5	\$1,225.8	\$747.2	(\$6.3)	0.8%
Motels	\$1,834.5	\$1,403.1	\$1,804.7	\$1,373.3	(\$29.8)	2.2%
Restaurants	\$1,742.5	\$1,413.8	\$1,740.0	\$1,411.3	(\$2.5)	0.2%
Motion Picture House	\$8.8	(\$169.4)	\$8.8	(\$169.5)	(\$0.1)	0.0%
Theatre / Concert Hall	\$25.4	(\$145.5)	\$25.4	(\$145.5)	(\$0.0)	0.0%
Stadiums	\$18.9	(\$10.9)	\$18.8	(\$10.9)	(\$0.0)	-0.2%
Auditoriums	\$15.8	(\$9.6)	\$15.8	(\$9.6)	(\$0.0)	-0.1%
Convention Centers	\$19.3	\$20.1	\$19.2	\$20.1	(\$0.1)	0.3%
Single Level Stores	\$61.8	(\$354.5)	\$61.8	(\$354.5)	(\$0.0)	0.0%

Facility Group (Million\$)	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In NPV	
	Impact to Users	NPV	Impact to Users	NPV	Million\$	%
Shopping Malls	\$328.0	\$280.1	\$327.4	\$279.5	(\$0.6)	0.2%
Indoor Service Establishments	\$410.8	(\$1,758.4)	\$410.8	(\$1,758.4)	(\$0.0)	0.0%
Offices of Health Care Providers	\$77.0	(\$228.8)	\$77.0	(\$228.8)	(\$0.0)	0.0%
Hospitals	(\$1.7)	(\$26.4)	(\$1.7)	(\$26.4)	(\$0.0)	0.0%
Nursing Homes	(\$61.5)	(\$192.9)	(\$61.5)	(\$193.0)	(\$0.1)	0.0%
Terminal (private airports)	\$0.1	\$1.8	\$0.1	\$1.8	(\$0.0)	0.0%
Depots	\$0.1	\$0.1	\$0.1	\$0.1	(\$0.0)	0.2%
Museums, Historical Sites & Libraries	\$74.8	\$68.8	\$74.6	\$68.6	(\$0.2)	0.4%
Parks or zoos	\$45.7	\$42.3	\$35.2	\$31.7	(\$10.5)	33.2%
Amusement Parks	\$826.9	\$734.6	\$540.3	\$448.0	(\$286.5)	64.0%
Nursery schools - Daycare	\$121.9	(\$7.5)	\$121.7	(\$7.6)	(\$0.1)	-1.4%
Elementary Private Schools	\$67.4	(\$29.6)	\$67.3	(\$29.8)	(\$0.1)	-0.5%
Secondary Private Schools	\$9.2	(\$10.6)	\$9.2	(\$10.6)	(\$0.0)	0.0%
Undergraduate and Postgraduate Private Schools	\$1,628.0	\$1,475.5	\$1,618.0	\$1,465.5	(\$10.0)	0.7%
Ski Facilities	\$46.0	\$45.9	\$24.6	\$24.5	(\$21.4)	87.6%
Homeless Shelter	\$141.1	\$138.5	\$139.5	\$136.9	(\$1.5)	1.1%
Food Banks	\$16.9	\$15.7	\$16.9	\$15.7	(\$0.0)	0.1%
Social Service Establishments	\$1.5	(\$33.2)	\$1.5	(\$33.2)	(\$0.0)	0.0%
Exercise Facilities	\$2,461.5	\$1,777.8	\$1,478.9	\$795.2	(\$982.6)	123.6%
Swimming pools / Aquatic Centers	\$2,771.5	\$1,380.4	\$1,708.1	\$317.0	(\$1,063.4)	335.5%
Bowling Alleys	\$134.7	\$133.4	\$71.9	\$70.5	(\$62.9)	89.2%
Golf Courses (private with public access)	\$842.8	\$805.4	\$482.6	\$445.1	(\$360.2)	80.9%
Golf Courses (private only)	\$199.1	\$178.4	\$114.2	\$93.5	(\$84.9)	90.8%
Miniature golf courses	\$1,045.7	\$951.4	\$603.9	\$509.5	(\$441.8)	86.7%
Recreational Boating Facilities	\$16.2	(\$1.4)	\$10.9	(\$6.7)	(\$5.3)	-78.9%
Fishing Piers and Platforms	\$45.0	\$41.4	\$23.4	\$19.9	(\$21.5)	108.2%
Shooting Facilities	\$256.2	\$256.8	\$131.1	\$131.6	(\$125.1)	95.1%
Office Buildings	\$3.5	(\$1,036.5)	\$3.5	(\$1,036.5)	(\$0.0)	0.0%
Elementary Public Schools	\$282.9	\$34.5	\$282.6	\$34.2	(\$0.3)	0.9%
Secondary Public Schools	\$297.9	\$181.7	\$297.8	\$181.6	(\$0.1)	0.1%
Undergraduate, postgraduate public schools	\$20.9	(\$190.5)	\$20.7	(\$190.7)	(\$0.2)	-0.1%

Facility Group (Million\$)	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In NPV	
	Impact to Users	NPV	Impact to Users	NPV	Million\$	%
Public Housing	\$147.2	(\$25.5)	\$140.8	(\$31.9)	(\$6.4)	-20.2%
State and Local Judicial Facilities (courthouses)	\$0.8	(\$156.9)	\$0.8	(\$156.9)	\$0.0	0.0%
State and Local Detention Facilities (jails)	\$0.0	(\$0.2)	\$0.0	(\$0.2)	\$0.0	0.0%
State and Local Correctional Facilities (prisons)	(\$7.3)	\$40.0	(\$7.3)	\$40.0	\$0.0	0.0%
Parking Garages	\$208.4	\$203.2	\$203.5	\$198.3	(\$4.9)	2.5%
Self Service Storage Facilities	\$29.3	\$23.0	\$29.2	\$22.9	(\$0.1)	0.6%
Theatre / Concert Halls (public)	\$0.0	(\$0.1)	\$0.0	(\$0.1)	(\$0.0)	0.0%
Stadiums (public)	\$48.5	(\$35.7)	\$48.4	(\$35.8)	(\$0.1)	-0.1%
Auditoriums (public)	\$0.7	(\$0.6)	\$0.7	(\$0.6)	(\$0.0)	-0.1%
Convention Centers (public)	\$28.9	\$30.2	\$28.8	\$30.1	(\$0.1)	0.3%
Hospitals (public)	(\$1.4)	(\$2.7)	(\$1.4)	(\$2.7)	(\$0.0)	0.0%
Nursing Homes (public)	(\$13.5)	(\$19.5)	(\$13.5)	(\$19.5)	(\$0.0)	-0.1%
Museums, Historical Sites & Libraries (public)	\$111.2	\$99.0	\$110.9	\$98.7	(\$0.4)	0.4%
Parks or zoos (public)	\$601.9	\$418.9	\$453.2	\$270.1	(\$148.8)	55.1%
Homeless Shelter (public)	\$20.7	\$20.3	\$20.5	\$20.1	(\$0.2)	1.1%
Exercise Facilities (public)	\$35.2	\$25.8	\$20.8	\$11.4	(\$14.4)	126.5%
Social Service Establishments (public)	\$0.6	(\$13.7)	\$0.6	(\$13.7)	(\$0.0)	0.0%
Swimming pools / Aquatic Centers (public)	\$215.2	\$125.5	\$130.7	\$41.0	(\$84.6)	206.3%
Miniature golf courses (public)	\$29.9	\$27.2	\$17.3	\$14.6	(\$12.6)	86.8%
Recreational Boating Facilities (public)	\$18.3	\$4.6	\$12.3	(\$1.4)	(\$6.0)	-424.8%
Fishing Piers and Platforms (public)	\$27.0	\$26.2	\$14.1	\$13.3	(\$12.9)	96.7%
Office Buildings (public)	\$9.7	(\$93.4)	\$9.7	(\$93.4)	(\$0.0)	0.0%
Parking Garages (public)	\$1.7	\$1.6	\$1.6	\$1.6	(\$0.0)	2.5%
Golf Courses (public)	\$89.5	\$85.1	\$49.0	\$44.6	(\$40.5)	90.8%
Restaurants (public)	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.0)	0.0%
Amusement Parks (public)	\$39.7	\$38.8	\$21.1	\$20.2	(\$18.6)	92.1%
<b>Total</b>	<b>\$19,230.9</b>	<b>\$9,250.0</b>	<b>\$15,359.3</b>	<b>\$5,378.4</b>	<b>(\$3,871.6)</b>	<b>72.0%</b>

The fourth stress test estimates the impact on total costs and NPV of increasing the assumed alterations rate for existing facilities from once every 40 years to of once every 30 years. The



initial estimate on the average amount of time between major renovations was 40 years. A lodging trade association provided alterations data for hotel bathrooms that adjust the alterations rate for those facilities to once every 15 years (see Section 5 for greater detail). Additional data on the average rate of major alterations for other facilities was not found. Table 14 below shows the results of assuming an increased alterations rate. If an average alterations rate of once every 30 years (in between 15 and 40 years) is used, NPV increases from \$9.2 B to \$9.5 B.

**Table 14: Impact on NPV of Increased Rate of Alterations**  
**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

Facility Group (Million\$)	Results Using 40-year alterations schedule (15-year for inns, hotels, and motels)			Results Using 30-year alterations schedule (15-year for inns, hotels, and motels)			Change In NPV
	Impact to Users	Impact to Facilities	NPV	Impact to Users	Impact to Facilities	NPV	\$
Inns	\$519.2	-\$19.7	\$499.5	\$519.2	-\$19.7	\$499.5	\$0.0
Hotels	\$1,232.1	(\$478.6)	\$753.5	\$1,232.1	(\$478.6)	\$753.5	\$0.0
Motels	\$1,834.5	(\$431.4)	\$1,403.1	\$1,834.5	(\$431.4)	\$1,403.1	\$0.0
Restaurants	\$1,742.5	(\$328.8)	\$1,413.8	\$2,349.9	(\$449.7)	\$1,900.2	\$486.5
Motion Picture House	\$8.8	(\$178.3)	(\$169.4)	\$15.1	(\$254.3)	(\$239.2)	(\$69.8)
Theatre / Concert Hall	\$25.4	(\$170.9)	(\$145.5)	\$33.7	(\$241.2)	(\$207.5)	(\$62.0)
Stadiums	\$18.9	(\$29.8)	(\$10.9)	\$24.8	(\$57.9)	(\$33.2)	(\$22.3)
Auditoriums	\$15.8	(\$25.5)	(\$9.6)	\$21.5	(\$35.6)	(\$14.1)	(\$4.5)
Convention Centers	\$19.3	\$0.9	\$20.1	\$24.1	\$0.9	\$25.0	\$4.9
Single Level Stores	\$61.8	(\$416.3)	(\$354.5)	\$69.2	(\$465.7)	(\$396.5)	(\$42.0)
Shopping Malls	\$328.0	(\$47.9)	\$280.1	\$198.0	(\$27.3)	\$170.7	(\$109.5)
Indoor Service Establishments	\$410.8	(\$2,169.2)	(\$1,758.4)	\$577.7	(\$3,064.4)	(\$2,486.7)	(\$728.3)
Offices of Health Care Providers	\$77.0	(\$305.8)	(\$228.8)	\$145.0	(\$611.0)	(\$466.0)	(\$237.2)
Hospitals	(\$1.7)	(\$24.7)	(\$26.4)	(\$3.1)	(\$27.1)	(\$30.2)	(\$3.8)
Nursing Homes	(\$61.5)	(\$131.5)	(\$192.9)	(\$112.7)	(\$173.8)	(\$286.6)	(\$93.6)
Terminal (private airports)	\$0.1	\$1.7	\$1.8	\$0.1	\$1.7	\$1.8	\$0.0
Depots	\$0.1	\$0.0	\$0.1	\$0.1	\$0.0	\$0.1	\$0.0
Museums, Historical Sites & Libraries	\$74.8	(\$6.0)	\$68.8	\$108.9	(\$8.8)	\$100.1	\$31.2
Parks or zoos	\$45.7	(\$3.5)	\$42.3	\$55.4	(\$4.0)	\$51.3	\$9.1
Amusement Parks	\$826.9	(\$92.3)	\$734.6	\$979.3	(\$103.1)	\$876.2	\$141.6
Nursery schools - Daycare	\$121.9	(\$129.3)	(\$7.5)	\$144.7	(\$152.1)	(\$7.4)	\$0.1
Elementary Private Schools	\$67.4	(\$97.1)	(\$29.6)	\$73.6	(\$110.2)	(\$36.5)	(\$6.9)
Secondary Private Schools	\$9.2	(\$19.9)	(\$10.6)	\$11.7	(\$26.0)	(\$14.3)	(\$3.7)

Facility Group (Million\$)	Results Using 40-year alterations schedule (15-year for inns, hotels, and motels)			Results Using 30-year alterations schedule (15-year for inns, hotels, and motels)			Change In NPV
	Impact to Users	Impact to Facilities	NPV	Impact to Users	Impact to Facilities	NPV	\$
Undergraduate and Postgraduate Private Schools	\$1,628.0	(\$152.5)	\$1,475.5	\$1,913.6	(\$191.1)	\$1,722.5	\$247.0
Ski Facilities	\$46.0	(\$0.1)	\$45.9	\$59.0	(\$0.1)	\$58.9	\$13.0
Homeless Shelter	\$141.1	(\$2.6)	\$138.5	\$181.3	(\$4.9)	\$176.5	\$38.0
Food Banks	\$16.9	(\$1.2)	\$15.7	\$22.0	(\$1.7)	\$20.2	\$4.5
Social Service Establishments	\$1.5	(\$34.7)	(\$33.2)	\$2.1	6.3.1 (\$48.8)	6.3.2 (\$46.7)	6.3.3 (\$13.5)
Exercise Facilities	\$2,461.5	(\$683.7)	\$1,777.8	\$2,711.6	(\$732.9)	\$1,978.7	\$200.9
Swimming pools / Aquatic Centers	\$2,771.5	(\$1,391.1)	\$1,380.4	\$3,319.0	(\$1,604.3)	\$1,714.6	\$334.2
Bowling Alleys	\$134.7	(\$1.4)	\$133.4	\$135.0	(\$1.5)	\$133.5	\$0.2
Golf Courses (private with public access)	\$842.8	(\$37.4)	\$805.4	\$1,022.2	(\$46.6)	\$975.7	\$170.3
Golf Courses (private only)	\$199.1	(\$20.7)	\$178.4	\$241.5	(\$26.0)	\$215.4	\$37.0
Miniature golf courses	\$1,045.7	(\$94.3)	\$951.4	\$1,222.5	(\$102.2)	\$1,120.3	\$168.9
Recreational Boating Facilities	\$16.2	(\$17.6)	(\$1.4)	\$19.7	(\$20.5)	(\$0.8)	\$0.6
Fishing Piers and Platforms	\$45.0	(\$3.6)	\$41.4	\$52.5	(\$3.7)	\$48.8	\$7.4
Shooting Facilities	\$256.2	\$0.5	\$256.8	\$300.1	\$0.5	\$300.6	\$43.9
Office Buildings	\$3.5	(\$1,040.0)	(\$1,036.5)	\$5.0	(\$1,457.3)	(\$1,452.4)	(\$415.9)
Elementary Public Schools	\$282.9	(\$248.3)	\$34.5	\$320.6	(\$296.7)	\$24.0	(\$10.6)
Secondary Public Schools	\$297.9	(\$116.1)	\$181.7	\$402.9	(\$165.6)	\$237.3	\$55.6
Undergraduate, postgraduate public schools	\$20.9	(\$211.5)	(\$190.5)	\$27.1	(\$274.2)	(\$247.0)	(\$56.5)
Public Housing	\$147.2	(\$172.7)	(\$25.5)	\$179.1	(\$223.1)	(\$44.1)	(\$18.6)
State and Local Judicial Facilities (courthouses)	\$0.8	(\$157.7)	(\$156.9)	\$1.1	(\$211.3)	(\$210.2)	(\$53.4)
State and Local Detention Facilities (jails)	\$0.0	(\$0.2)	(\$0.2)	\$0.0	(\$0.3)	(\$0.2)	(\$0.0)
State and Local Correctional Facilities (prisons)	(\$7.3)	\$47.2	\$40.0	(\$10.0)	\$65.9	\$55.9	\$15.9
Parking Garages	\$208.4	(\$5.2)	\$203.2	\$266.4	(\$7.8)	\$258.6	\$55.3
Self Service Storage Facilities	\$29.3	(\$6.3)	\$23.0	\$37.8	(\$10.4)	\$27.4	\$4.3

Facility Group (Million\$)	Results Using 40-year alterations schedule (15-year for inns, hotels, and motels)			Results Using 30-year alterations schedule (15-year for inns, hotels, and motels)			Change In NPV
	Impact to Users	Impact to Facilities	NPV	Impact to Users	Impact to Facilities	NPV	\$
Theatre / Concert Halls (public)	\$0.0	(\$0.1)	(\$0.1)	\$0.0	(\$0.2)	(\$0.1)	(\$0.0)
Stadiums (public)	\$48.5	(\$84.2)	(\$35.7)	\$66.2	(\$168.9)	(\$102.6)	(\$66.9)
Auditoriums (public)	\$0.7	(\$1.4)	(\$0.6)	\$1.0	(\$1.9)	(\$0.9)	(\$0.3)
Convention Centers (public)	\$28.9	\$1.3	\$30.2	\$36.1	\$1.4	\$37.5	\$7.4
Hospitals (public)	(\$1.4)	(\$1.3)	(\$2.7)	(\$1.8)	(\$2.7)	(\$4.5)	(\$1.8)
Nursing Homes (public)	(\$13.5)	(\$6.0)	(\$19.5)	(\$17.9)	(\$9.3)	(\$27.2)	(\$7.7)
Museums, Historical Sites & Libraries (public)	\$111.2	(\$12.2)	\$99.0	\$161.9	(\$17.9)	\$144.0	\$44.9
Parks or zoos (public)	\$601.9	(\$183.0)	\$418.9	\$752.0	(\$230.8)	\$521.1	\$102.2
Homeless Shelter (public)	\$20.7	(\$0.4)	\$20.3	\$26.6	(\$0.7)	\$25.8	\$5.6
Exercise Facilities (public)	\$35.2	(\$9.4)	\$25.8	\$45.2	(\$11.2)	\$34.0	\$8.2
Social Service Establishments (public)	\$0.6	(\$14.2)	(\$13.7)	\$0.8	(\$20.0)	(\$19.2)	(\$5.5)
Swimming pools / Aquatic Centers (public)	\$215.2	(\$89.7)	\$125.5	\$274.5	(\$112.3)	\$162.3	\$36.7
Miniature golf courses (public)	\$29.9	(\$2.7)	\$27.2	\$38.4	(\$3.5)	\$34.9	\$7.7
Recreational Boating Facilities (public)	\$18.3	(\$13.7)	\$4.6	\$23.2	(\$18.1)	\$5.1	\$0.5
Fishing Piers and Platforms (public)	\$27.0	(\$0.7)	\$26.2	\$34.5	(\$0.9)	\$33.6	\$7.4
Office Buildings (public)	\$9.7	(\$103.1)	(\$93.4)	\$13.6	(\$145.6)	(\$131.9)	(\$38.6)
Parking Garages (public)	\$1.7	(\$0.0)	\$1.6	\$2.1	(\$0.1)	\$2.1	\$0.4
Golf Courses (public)	\$89.5	(\$4.4)	\$85.1	\$119.8	(\$6.4)	\$113.3	\$28.3
Restaurants (public)	\$0.0	(\$0.0)	\$0.0	\$0.1	(\$0.0)	\$0.1	\$0.0
Amusement Parks (public)	\$39.7	(\$0.8)	\$38.8	\$50.1	(\$1.1)	\$49.0	\$10.2
<b>Total</b>	<b>\$19,230.9</b>	<b>(\$9,981.0)</b>	<b>\$9,250.0</b>	<b>\$22,361.1</b>	<b>(\$12,853.9)</b>	<b>\$9,507.2</b>	<b>\$257.2</b>

The fifth stress test examines the relative impact per facility group of including indirect costs (in terms of monetized time) for businesses or governmental entities to examine the new guidelines and determine whether changes are needed to their respective existing facilities. Because the safe harbor protects elements that are already compliant with the 1991 Standards from retrofit obligations, this stress test assumes that only owners or operators of existing facilities with

elements affected by the supplemental requirements, such as pools and play areas, would incur such indirect costs. For the facilities with these elements, it is assumed that business or facility owners would spend an average of 4.5 hours reading the new guidelines per element affected by the supplemental requirements and determining whether or not a change would be needed. This time is valued at the average wage rate of all manager occupations in the U.S. (\$48.23 per hour). The increase in costs per typical facility with an element subject to the supplemental requirements is shown in the Table 15 below. The Nursery Schools-Daycare facility group has the most significant change in NPV at 225.5% due to the playground elements at these facilities and the large number of facilities of this type.

**Table 15: Impact on NPV of Estimated Managerial Costs for Supplemental Requirements at All Facilities (Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

Facilities With Elements Subject To Supplemental Requirements	Supplemental Requirements (#67-112)	2010 Number Of Facilities	Cost Per Facility Type	Baseline NPV (Mill\$)	NPV w/ Mngrial Costs (Mill\$)	% Change In NPV
Hotels	7	15,165	-\$3,291,319	\$753	\$750	-0.4%
Motels	8	21,092	-\$4,577,706	\$1,403	\$1,399	-0.3%
Restaurants	6	566,856	-\$123,027,659	\$1,656	\$1,533	-7.4%
Stadiums	12	444	-\$96,377	-\$33	-\$33	0.3%
Single Level Stores	1	812,456	-\$176,331,313	-\$397	-\$573	44.5%
Shopping Malls	6	10,092	-\$2,190,293	\$171	\$168	-1.3%
Hospitals	12	3,915	-\$849,680	-\$30	-\$31	2.8%
Nursing Homes	1	15,014	-\$3,258,592	-\$287	-\$290	1.1%
Parks or zoos	10	1,327	-\$288,011	\$51	\$51	-0.6%
Amusement Parks	130	543	-\$117,843	\$876	\$876	0.0%
Nursery schools - Daycare	6	76,398	-\$16,581,007	-\$7	-\$24	225.5%
Elementary Private Schools	6	18,275	-\$3,966,248	-\$37	-\$40	10.9%
Secondary Private Schools	61	2,841	-\$616,537	-\$14	-\$15	4.3%
Undergraduate and Postgraduate Private Schools	56	2,574	-\$558,636	\$1,723	\$1,722	0.0%
Homeless Shelter	2	8,715	-\$1,891,531	\$176	\$175	-1.1%
Social Service Establishments	2	66,236	-\$14,375,528	-\$47	-\$61	30.8%
Exercise Facilities	42	32,609	-\$7,077,300	\$1,979	\$1,972	-0.4%
Swimming pools / Aquatic Centers	15	12,368	-\$2,684,231	\$1,715	\$1,712	-0.2%
Bowling Alleys	3	4,688	-\$1,017,432	\$134	\$133	-0.8%
Golf Courses (private with public access)	14	9,485	-\$2,058,521	\$976	\$974	-0.2%
Golf Courses (private only)	17	4,645	-\$1,008,226	\$215	\$214	-0.5%
Miniature golf courses	3	9,475	-\$2,056,406	\$1,120	\$1,118	-0.2%
Recreational Boating Facilities	16	5,198	-\$1,128,085	-\$1	-\$2	145.3%

Facilities With Elements Subject To Supplemental Requirements	Supplemental Requirements (#67-112)	2010 Number Of Facilities	Cost Per Facility Type	Baseline NPV (Mill\$)	NPV w/ Mngrial Costs (Mill\$)	% Change In NPV
Fishing Piers and Platforms	2	1,714	-\$372,033	\$49	\$48	-0.8%
Shooting Facilities	1	5,095	-\$1,105,833	\$301	\$300	-0.4%
Elementary Public Schools	6	68,781	-\$14,927,783	\$24	\$9	-62.3%
Secondary Public Schools	94	23,388	-\$5,076,014	\$237	\$232	-2.1%
Undergraduate, postgraduate public schools	87	1,792	-\$388,825	-\$247	-\$247	0.2%
Public Housing	6	27,767	-\$6,026,327	-\$44	-\$50	13.7%
State and Local Judicial Facilities (courthouses)	31	9,458	-\$2,052,615	-\$210	-\$212	1.0%
State and Local Correctional Facilities (prisons)	6	1,244	-\$270,022	\$56	\$56	-0.5%
Stadiums (public)	12	1,333	-\$289,353	-\$103	-\$103	0.3%
Hospitals (public)	12	1,113	-\$241,548	-\$4	-\$5	5.4%
Nursing Homes (public)	1	1,229	-\$266,770	-\$27	-\$27	1.0%
Parks or zoos (public)	10	120,224	-\$26,092,852	\$521	\$495	-5.0%
Homeless Shelter (public)	2	1,302	-\$282,643	\$26	\$26	-1.1%
Exercise Facilities (public)	40	1,196	-\$259,539	\$34	\$34	-0.8%
Social Service Establishments (public)	2	26,940	-\$5,847,008	-\$19	-\$25	30.5%
Swimming pools / Aquatic Centers (public)	13	1,773	-\$384,724	\$162	\$162	-0.2%
Miniature golf courses (public)	3	947	-\$205,641	\$35	\$35	-0.6%
Recreational Boating Facilities (public)	16	7,797	-\$1,692,128	\$5	\$3	-33.4%
Fishing Piers and Platforms (public)	2	1,714	-\$372,033	\$34	\$33	-1.1%
Golf Courses (public)	14	2,640	-\$572,973	\$113	\$113	-0.5%
Restaurants (public)	6	7	-\$1,520	\$0	\$0	-2.8%
Amusement Parks (public)	130	11	-\$2,411	\$49	\$49	-0.005%
<b>Total for Facilities with Supplemental Requirement Elements</b>			<b>-\$435,779,078</b>	<b>\$13,086</b>	<b>\$12,651</b>	<b>-3.3%</b>

Lastly, the sixth stress test examines the impact of raising the estimated percentage of the United States population that would benefit from the increase in accessibility as a result of the Final Rules. The primary analysis uses estimates of population by type of disability based on data collected by the United States Census Bureau (see Appendix 4E). Many have argued, though, that the definitions used by the Census Bureau are too narrow and do not adequately capture the number of persons whose mobility, sight, hearing or other characteristics limit their accessibility to facilities in some way. Because no consensus estimates were found to adjust the Census Bureau population estimates, an analysis was conducted to evaluate the level of impact on NPV if the estimates of population by category of disability or limitation were actually one-third

higher than Census Bureau estimates. Table 15 below shows that increasing by one-third the estimated number of persons with disabilities assumed to benefit from the Final Rules results in a net impact to users that is 28% higher, and an NPV that is 57% greater as compared to the results under the primary analysis.

**Table 16: Impact on NPV of Increased Estimates of Persons with Disabilities**  
(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)

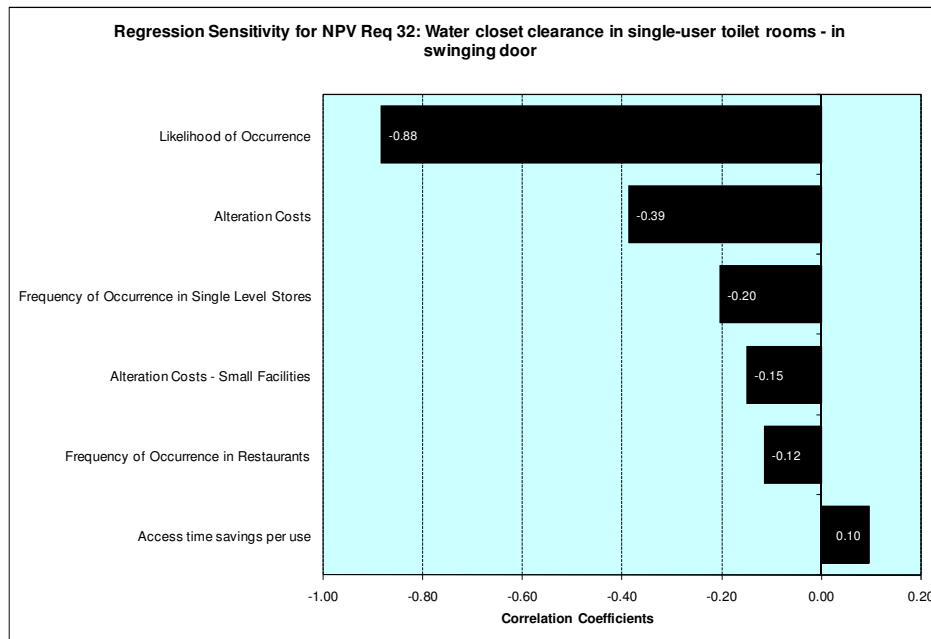
	Primary Estimates (millions \$)	Estimates If Persons With Disabilities Higher by 1/3	% Increase
NPV for Entire Rule	\$9.25	\$14.56	57.4%
Net Impact to Users	\$19.23	\$24.54	27.6%

Turning to the second set of sensitivity analyses addressed in this section, these sensitivity-type studies examine the relative significance of the variability (risk ranges) of inputs for each of “top three” requirements in terms of the largest negative and positive NPVs respectively. The three requirements with the largest positive NPVs and largest negative NPVs, respectively, were selected because they can be characterized as key drivers of the overall costs and benefits of the Final Rules. The charts below (Figures 18 – 23) present the driving factors behind the risk range for the NPV estimates for each of these six requirements. These charts indicate, for each respective requirement, the level of risk attributable to those variables with the most significant impact on the overall NPV for that requirement. Those factors that explain the largest portion of the risk are the ones that will have the largest impact on the overall NPV.

### Three Requirements With Highest Negative NPVs Under the Primary Baseline

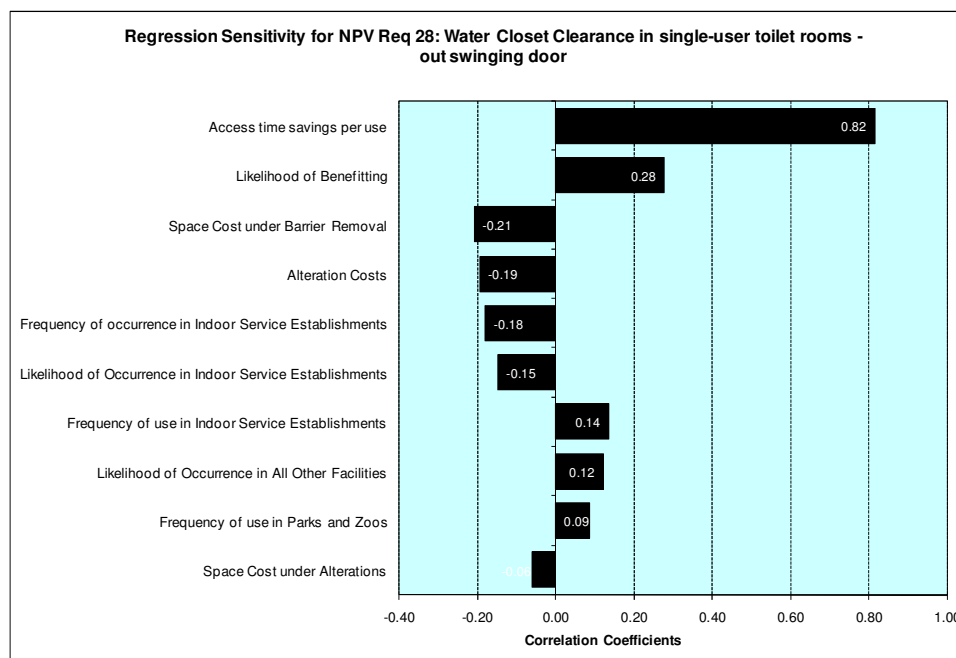
The Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors requirement (Req. # 32) has the highest negative NPV (-\$975 million) of the requirements assessed in the Final RIA. Figure 18 illustrates the relative impact of the variability around some of the key inputs for this requirement’s NPV. The estimated range (which is incorporated to account for uncertainty regarding the actual figure) for the “likelihood of occurrence” input is the most significant driver of the range in results for the requirement’s NPV. The estimated range for alterations costs has the second-most significant impact on the NPV range for this requirement. The estimated range of the input for “frequency of occurrence” at single-level stores is the third-most important driver of the NPV range due to the large number of single-level stores.

**Figure 18: Distribution of Sensitivities for Requirement 32: Water Closet Clearance in Single-User Toilet Rooms – In-Swinging Doors**



The Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors requirement (Req. # 28) has the second highest negative NPV (-\$898.4 million) under the primary baseline. Figure 19 illustrates the relative impact of the variability around some of the key inputs influencing this requirement’s NPV. The estimated range for the “access time saved” input is the most significant driver for the range of results for the requirement’s NPV, followed by the estimated range for the “likelihood of benefiting from use of the element” input.

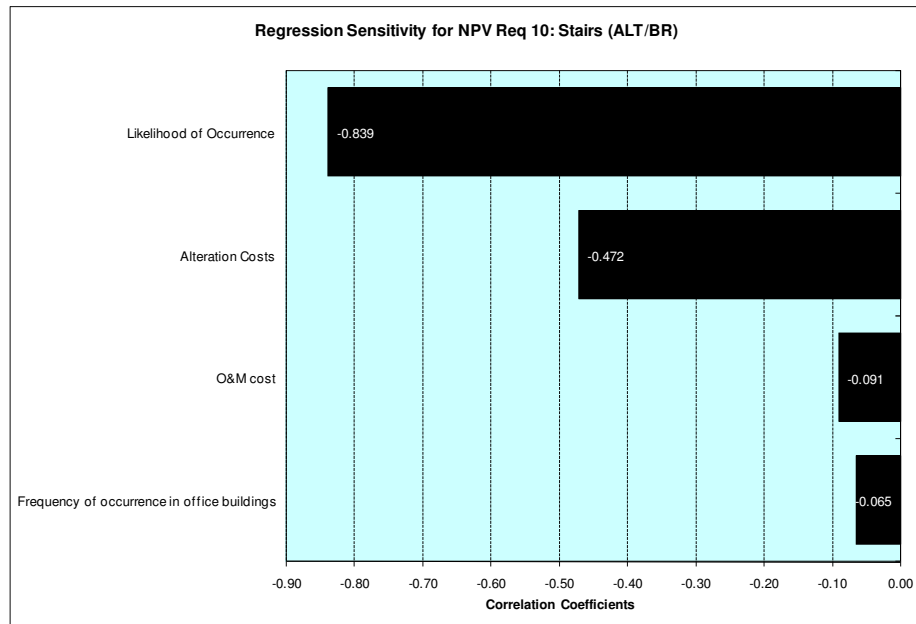
**Figure 19: Distribution of Sensitivities for Requirement 28: Water Closet Clearance in Single-User Toilet Rooms – Out-Swinging door**



The requirement with the third highest negative NPV (-\$808.4 million) under the primary baseline is the requirement for Stairs (Alt/BR) (req. # 10). Figure 20 illustrates the relative impact of the variability around some of the key inputs driving the NPV for this requirement. The estimated range for the “likelihood of occurrence” parameter is the most significant driver of requirement’s NPV. The estimated range for alterations costs has the second-most significant impact on NPV range. The estimated range for O&M costs is the third-most important driver of NPV, followed closely by the estimated range for the “frequency of occurrence in office buildings” parameter due to the high number of facilities in this facility group.



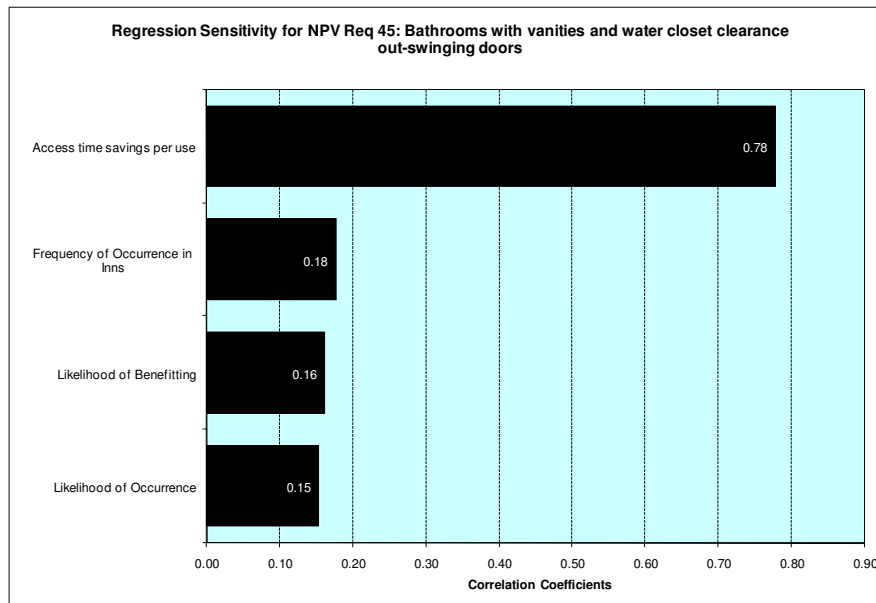
**Figure 20: Distribution of Sensitivities for Requirement 10: Stairs (ALT/BR)**



### **Three Requirements With Highest Positive NPVs Under the Primary Baseline**

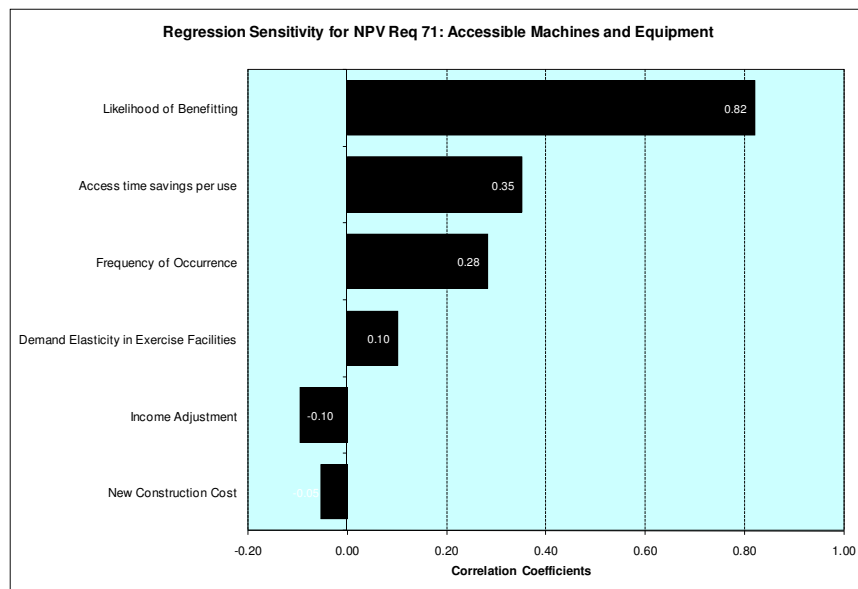
The requirement with the largest positive NPV (\$1,788.5 million) under the primary baseline of all requirements assessed in the Final RIA is the Bathrooms in Accessible Guest Rooms (vanities and water closet clearances) requirement (Req. # 45). Figure 21 illustrates the relative impact of the variability around some of the key inputs that serve as the driving forces behind the NPV for this requirement. The estimated range for the “access time savings per use” input is the most significant driver of this requirement’s NPV range, followed by the estimated ranges for the “frequency of occurrence in inns” and the “likelihood of benefiting” inputs respectively.

**Figure 21: Distribution of Sensitivities for Requirement 45: Bathrooms In Accessible Guest Rooms (vanities and water closet clearances)**



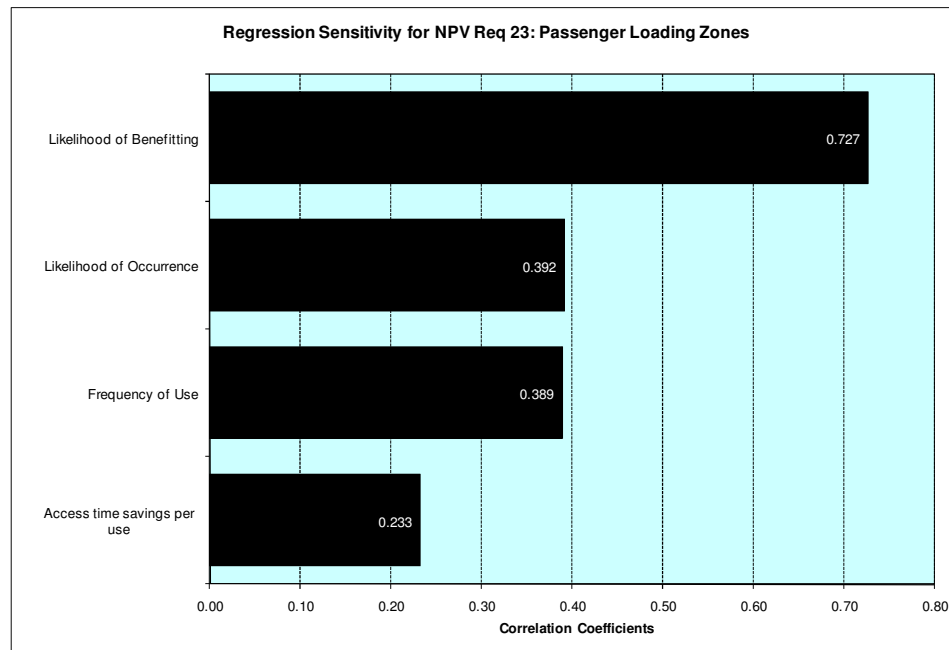
The Accessible Exercise Machines and Equipment requirement for facilities with exercise equipment (Req. # 71) has the second-highest NPV (\$1,411.8 million) under the primary baseline. Figure 22 illustrates the relative impact of various assumptions on the NPV for the Accessible Exercise Machines and Equipment requirement. The estimated range for the “likelihood of benefiting” input is the most significant driver of the requirement’s NPV range, followed by the estimated range for the “access time savings” parameter.

**Figure 22: Distribution of Sensitivities for Requirement 71: Accessible Exercise Machines and Equipment**



The Passenger Loading Zones requirement (Req. # 23) has the third-highest NPV (\$1,292.4 million) under the primary baseline. Figure 23 illustrates the relative impact of various assumptions on NPV for this requirement. The estimated range for the “likelihood of benefitting” input is the most significant driver of this requirement’s NPV range, followed by the range of estimates around the “frequency of use” and “likelihood of occurrence” parameters.

**Figure 23: Distribution of Sensitivities for Requirement 23: Passenger Loading Zones**



In sum, the range of estimates modeled for several factors appear repeatedly as key drivers behind many of the requirements with the largest positive and negative NPV:

- Likelihood that an element occurs,
- Likelihood of benefiting from a requirement,
- Frequency of use, and
- Access time.

The two likelihood factors have standard rules to apply ranges around the point estimate in most cases (see Appendix 3F, 3G, and 4M). The frequency of use and access time estimates were developed based upon responses from the RAP Benefits Panel. These differ from the unit cost estimate ranges, which were developed separately at high, medium, and low for each requirement (and at new construction, alterations, and barrier removal).

## 6.4 Changes in Facility Visits

The increased accessibility of facilities due to the requirements should generate additional visits to those facilities by persons with disabilities (and presumably by additional persons without disabilities who might visit facilities together with persons with disabilities as a group, such as a family at a restaurant). The increase in demand generated by the decrease in price is presented in Section 3.2 (see Figure 3). Thus, while facilities incur some costs to become in compliance with the Final Rules, many are also expected to experience greater activity than would otherwise have been the case. Overall, facilities are expected to experience 0.5% more visits by persons with disabilities, or 75 million visits. The facilities likely to experience the largest increases are the

newly scoped recreational facilities (e.g., Aquatic Centers, Exercise Facilities, Miniature Golf Courses), as well as Public Housing.

**Table 17: Estimated Change in the Number of Facility Visits (Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

Facility Group	Total Number of Facilities (2010)	Number of Small Entity Facilities (2010)	% of Total Facilities that are Small Entity Facilities	Sales (or Expenditures) per Typical Facility (All sizes) (\$)	Estimated Sales (or Expenditures) per Small Entity Facility 2007 (\$)	Average Sales (or Expenditures) per Small Entity as Percent of Average Sales for All Sizes
<b>Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)</b>						
Inns	16,953	16,614	98%	\$276,669	\$276,669	100%
Hotels	15,165	4,095	27%	\$11,453,808	\$1,259,919	11%
Motels	21,092	20,670	98%	\$504,294	\$504,294	100%
Restaurants	566,856	442,148	78%	\$880,642	\$308,225	35%
Motion Picture House	4,971	2,287	46%	\$2,419,713	\$314,563	13%
Theatre / Concert Hall	9,348	8,974	96%	\$1,454,100	\$348,984	24%
Auditoriums	2,676	1,980	74%	\$5,994,548	\$659,400	11%
Single Level Stores	812,456	552,470	68%	\$3,526,173	\$352,617	10%
Shopping Malls[1]	10,092	8,881	88%	\$3,880,720	\$3,880,720	100%
Indoor Service Establishments	3,857,022	1,465,669	38%	\$1,620,570	\$372,731	23%
Offices of Health Care Providers	549,803	483,826	88%	\$1,403,290	\$435,020	31%
Hospitals	3,915	1,057	27%	\$164,921,961	\$1,649,220	1%
Nursing Homes	15,014	6,306	42%	\$11,515,088	\$1,381,811	12%
Museums, Historical Sites & Libraries	4,766	4,337	91%	\$1,912,720	\$401,671	21%
Parks or zoos	1,327	1,115	84%	\$2,910,019	\$582,004	20%
Amusement Parks	543	434	80%	\$29,606,564	\$2,368,525	8%
Nursery schools - Daycare	76,398	65,702	86%	\$420,833	\$164,125	39%
Elementary Private Schools	18,275	15,168	83%	\$1,616,245	\$468,711	29%
Secondary Private Schools	2,841	2,358	83%	\$3,024,170	\$877,009	29%
Ski Facilities	403	310	77%	\$5,830,410	\$641,345	11%
Homeless Shelter	8,715	7,757	89%	\$1,629,925	\$342,284	21%
Food Banks	4,357	3,181	73%	\$1,480,257	\$370,064	25%
Social Service Establishments	66,236	49,015	74%	\$1,242,276	\$347,837	28%
Exercise Facilities	32,609	29,674	91%	\$839,372	\$268,599	32%
Aquatic Centers /Swimming Pools	12,368	11,997	97%	\$420,073	\$189,033	45%

Facility Group	Total Number of Facilities (2010)	Number of Small Entity Facilities (2010)	% of Total Facilities that are Small Entity Facilities	Sales (or Expenditures) per Typical Facility (All sizes) (\$)	Estimated Sales (or Expenditures) per Small Entity Facility 2007 (\$)	Average Sales (or Expenditures) per Small Entity as Percent of Average Sales for All Sizes
Bowling Alleys	4,688	4,125	88%	\$687,018	\$295,418	43%
Golf Courses (private public access)	9,485	8,441	89%	\$2,335,087	\$863,982	37%
Golf Courses (private only)	4,645	4,134	89%	\$1,452,612	\$537,467	37%
Miniature golf courses	9,475	9,096	96%	\$293,107	\$111,381	38%
Recreational Boating Facilities	5,198	4,990	96%	\$826,080	\$710,429	86%
Shooting Facilities	5,095	4,891	96%	\$828,387	\$712,413	86%
Parking Garages	13,377	3,077	23%	\$694,211	\$270,742	39%
Self Service Storage Facilities	14,418	10,814	75%	\$647,296	\$608,458	94%
<b>Public Facilities (Owned or Operated by Small Governmental Jurisdictions)</b>						
Elementary Public Schools	68,781	19,946	29%	\$2,871,139	\$344,537	12%
Secondary Public Schools	23,388	6,549	28%	\$11,109,976	\$999,898	9%
Public Housing	27,767	7,219	26%	\$540,120	\$442,899	82%
State and Local Judicial Facilities (courthouses)	9,458	2,554	27%	\$528,720	\$269,647	51%
State and Local Correctional Facilities (prisons)	1,244	336	27%	\$12,170,556	\$4,746,517	39%
Hospitals (public)	1,113	300	27%	\$33,947,412	\$33,947,412	100%
Parks or zoos (public)	120,224	32,461	27%	\$218,530	\$209,788	96%
Office Buildings (public)	74,846	19,460	26%	\$112,487	\$112,487	100%

## 6.5 Impacts Not Estimated in the Primary Analysis

In addition to the monetized benefits presented above, additional benefits are likely to result from the new standards. Many of these benefits are more difficult to quantify. Among the potential benefits that have been discussed by researchers and advocates are: reduced administrative costs due to harmonized guidelines; increased business opportunities; increased social development; and improved health benefits.<sup>56</sup> For example, the Final Rules will

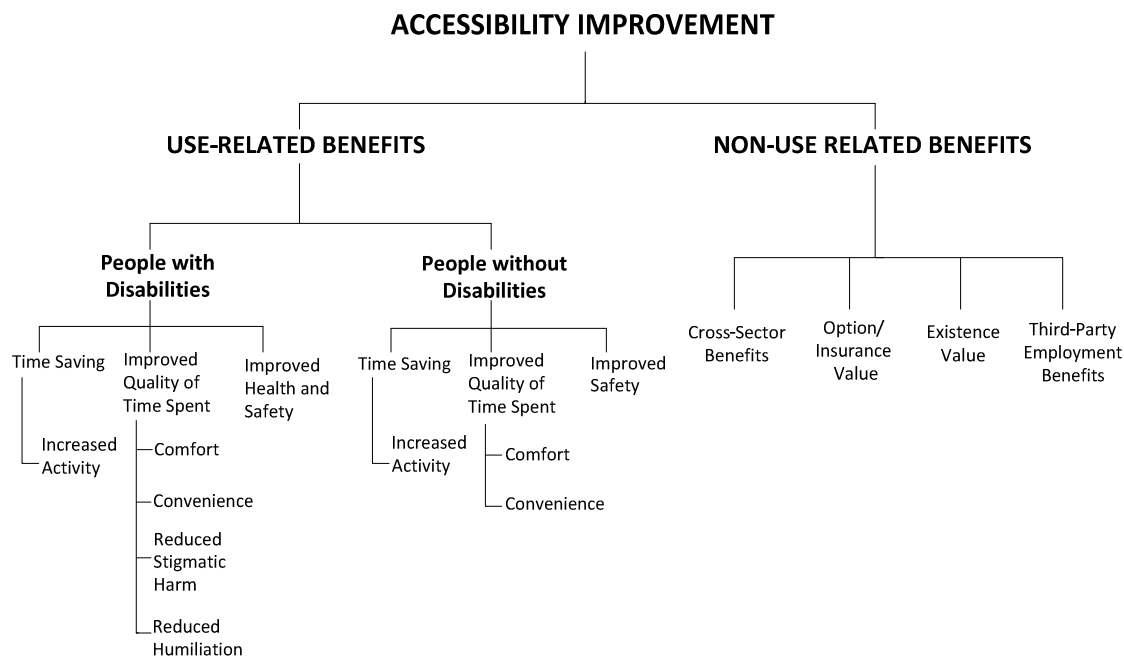
<sup>56</sup> Many of these benefits were discussed in the Access Board's various regulatory assessments.

substantially increase accessibility at newly scoped facilities like recreational facilities and judicial facilities, which previously had been very difficult for persons with disabilities to access but should now give them the same opportunities for recreational enjoyment and more equitable judicial facility experiences.

The range of potential benefits likely to accrue with increased accessibility can theoretically be organized into those that result from direct use of the accessibility improvement and those that are not related directly to such use. Use-related benefits include those accruing to individuals with disabilities, including time savings, quality of life enhancement, and safety, as well as those accruing to those without disabilities who may also make use of the accommodations. A typical example of use benefits to non-disabled populations is the use of expanded bathroom stalls by families with children, which may enhance their comfort and convenience.

Non-use benefits include cross-sector effects (savings arising from reduced social service agency activity as persons are more independent) and third-party employment effects. Other non-use benefits include option/insurance values (the value persons without disabilities derive from the ‘option’ of using accessible features should they need to in the future) and existence values (the benefit that individuals get from the mere existence of a good, service, or resource). Figure 24 presents a preliminary framework for organizing many of the benefits of increased accessibility by use and non-use categories.

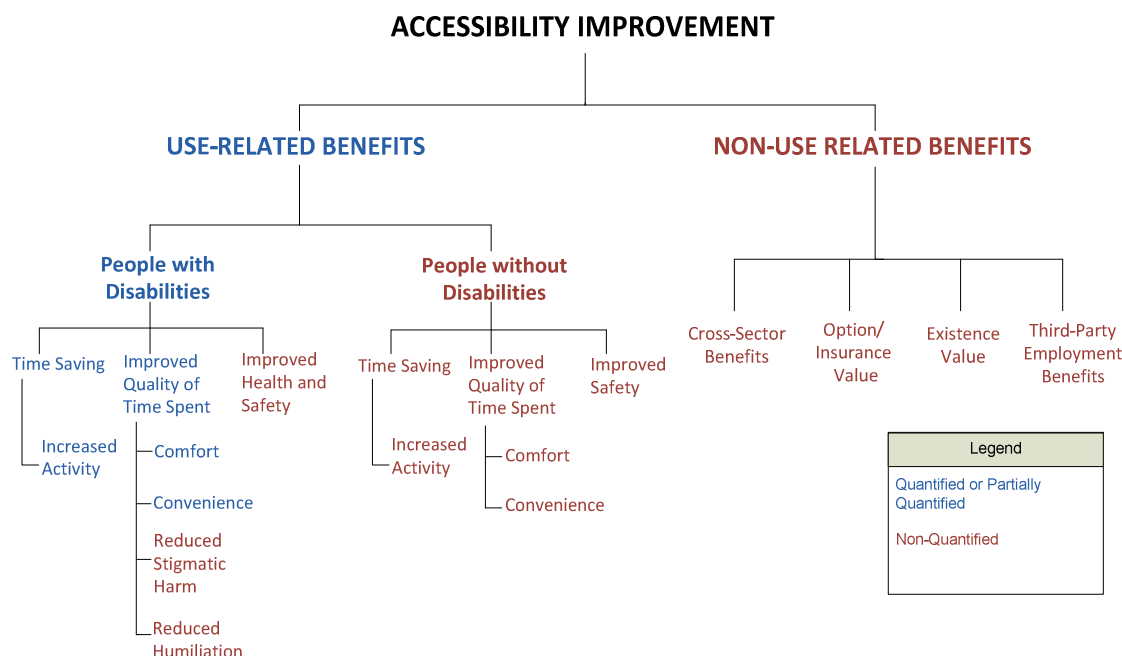
**Figure 24: Framework for Accounting for All Benefits Resulting from Accessibility Improvements**



This Final RIA, tasked to measure those costs and benefits of the Rule which can be monetized, is necessarily limited in its capacity to confidently place a robust value on many of the benefits noted here. Most will agree that the psychological and social impacts of the ability of persons with disabilities to fully participate in public and commercial activities without discrimination, fear of embarrassment, or unequal access has value; the challenge is to put a dollar figure on it in terms of economic value (*i.e.*, in terms of people’s willingness to pay for such benefits or their

willingness to be compensated to go without them). Similarly, the value that a society places on civil rights is a complex issue, not likely to be easily measured in terms of economic value. Nevertheless, a value of this Rule to society is that it advances civil rights. The RIA can attempt to measure the benefits that arise from improved time usage by persons with disabilities, but cannot adequately assess all the psychological and social benefits of the Rule. Thus, the benefits measured in the Final RIA are necessarily less than those actually bestowed upon society. Therefore, in the main cost-benefit analysis of this rule, this RIA quantifies only a subset of the user benefits. Figure 25 highlights those benefits that are quantified in the primary estimation of this analysis. (Preliminary estimates for avoided stigmatic harm are utilized in the Threshold Analysis, Section 6.6).

**Figure 25: Quantified and Non-quantified Benefits within the Accounting Framework**



In addition to benefits that cannot reasonably be quantified or monetized, there may be negative consequences and costs that fall into this category as well. The absence of a quantitative assessment of such costs in the formal regulatory analysis is not meant to minimize their importance to affected entities: rather, it is to acknowledge the inherent difficulty in their estimation. Areas where the Department believes entities may incur costs that are not monetized in the formal analysis include, but may not be limited to, the following:

**Costs from deferring or foregoing alterations.** Entities covered by the final rules may choose to delay otherwise desired alterations to their facilities due to the increased incremental costs imposed by compliance with the new rules' requirements. This may lead to facility deterioration and loss in the value of such facilities. In extreme cases, the costs of complying with the rules' requirements may lead some entities to opt to not build certain facilities at all. For example, the Department estimates that the incremental costs of building a new wading pool associated with



the final rules will increase by about \$142,500, on average. Some facilities may opt to not build such pools to avoid incurring this increased cost.

**Loss of productive space while modifying an existing facility.** During complex alterations where moving walls or plumbing systems will be necessary to comply with the final rules, productive space may be unavailable until the alterations are complete. For example, a hotel altering its bathrooms to comply with the final rules will be unable to allow guests to occupy these rooms while construction activities are underway, and thus the hotel may forgo revenue from these rooms during this time. While the amount of time to perform alterations varies significantly, the costs of unavailable, lost space could be high in certain cases especially if space is already limited or if an entity or facility is located in an area where space is of particular high value (e.g., New York or San Francisco).

**Change in use of non-productive space.** Some requirements may necessitate a change in the use of space which is not directly used to generate sales or revenue but which may add to the appeal or aesthetics of a particular facility and, thus, indirectly affect business volume. This can be described as a ‘repurposing’ of non-productive space. For example, in hotels such spaces may include lobbies, hallways, publically-available restrooms, or other spaces which, while not available for rental by guests, may nonetheless add value to the overall experience and appeal of the facility. If a requirement in the Final Rules necessitates that some of the space which previously served as the lobby (or hallway) must now be used to comply with requirements governing single-user toilet rooms, there may be a ‘cost’ to the facility if the business value of that space is greater as part of the lobby than as part of an ADA-compliant single-user toilet room. No data was found regarding what the potential incremental value of such changes in non-productive space might be; consequently, the speculative (and indirect) cost of such repurposing of non-productive space is not estimated in the Final RIA. This regulatory analysis does, however, provide a quantitative assessment of the value of changes in productive space (*i.e.*, space changes expected to have a direct impact on sales or revenue) that are attributable to requirements in the Final Rules. See Final RIA § 3.1.3.

**Administrative/Legal Fees.** Another type of cost to entities that is not monetized in the formal analysis is legal fees to determine what, if anything, a facility needs to do in order to comply with the new rules or to respond to lawsuits. Likewise, covered entities may need to retain the services of engineers, architects, or other consultants to determine what modifications to their facilities are needed to comply with the new requirements. The Department has not quantified the costs of retaining the services of these kinds of experts. Several commenters indicated that entities will incur increased legal costs because the requirements are changing for the first time since 1991. Since litigation risk could increase, entities could spend more on legal fees than in the past.

**Reduction in facility value and losses to individuals without disabilities due to the new accessibility requirements.** It is possible that some changes made by entities to their facilities in order to comply with the new requirements may result in fewer individuals without disabilities using such facilities (because of less enjoyment) and may create a disadvantage for individuals without disabilities, even though the change might increase accessibility for individuals with disabilities. For example, the rules’ requirements for wading pools might decrease the value of

the pool for the entity that owns it (because the rules' requirements for a sloped entry might make the pool too shallow) due to fewer individuals using it. Similarly, several commenters from the miniature golf industry expressed concern that it would be difficult to comply with the regulations for accessible holes without significantly degrading the experience for other users. Finally, with respect to costs to individuals who do not have disabilities, a very tall person, for example, may be inconvenienced by having to reach further for a lowered light switch.

### **6.5.1 Use Benefits Not Estimated in Primary Analysis Accruing to Persons With Disabilities**

There are benefits to persons with disabilities that would arise from improved access due to the Final Rules in terms of an overall improved sense of well-being that comes from the belief that places of public accommodation are generally accessible, as well as improved individual experiences.

Some of the most frequently cited qualitative benefits of increased access highlighted by advocacy groups and individuals within the disability community are the increase in personal sense of dignity that arises from increased access and the decline in possibly humiliating incidents due to accessibility barriers. Struggling to join classmates on a stage, to use a bathroom with too little clearance, or to visit a swimming pool all negatively affect a person's sense of independence. In some instances, struggling in a bathroom or to get on a stage for a graduation can lead to humiliating accidents, derisive comments, or just embarrassment. The impact of such incidents can be temporary – such as a period of embarrassment – or more long-term, such as in the case of a student who drops participation in band because he/she is always embarrassed about being unable to get on stage. These humiliations, together with feelings of being “stigmatized . . . as different or inferior” from being relegated to use other, noticeably less comfortable or pleasant elements of a facility (such as a bathroom instead of a kitchen sink for rinsing a coffee mug at work), all have a negative impact on persons with disabilities.<sup>57</sup>

Reversing the problems outlined above can lead to other benefits. Increased accessibility may well lead to decreased isolation among some persons with disabilities. It has been noted by commenters to the NPRMs that limits to accessibility at some types of facilities, particularly recreational facilities, lead some persons with disabilities to venture out to those facilities less frequently, further separating them from the larger community. As barriers to access are lowered, it becomes easier to access facilities, more persons with disabilities visit entities outside the home, and social interaction increases. Society values the ability for all members to fully interact with each other, even if adequate measures of its value have not yet been developed.

Similarly, increased accessibility may lead to more effective participation of persons with disabilities within the legal system. Some have raised the possibility that jurors may unconsciously view the testimony of witnesses who need additional assistance to the witness stand differently from that of other witnesses. Similarly, the arguments of a lawyer or the culpability of a defendant may be viewed somewhat differently by some persons if that lawyer or defendant cannot independently access the traditional witness stand or attorney areas and either

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<sup>57</sup> The phrase and example are from *Vande Zande v. Wis. Dept. of Admin.*, 44 F.3d 538, 546 (7<sup>th</sup> Cir. 1995)., *See also*, Cass Sunstein, “Cost-Benefit Analysis without Analyzing Costs or Benefits: Reasonable Accommodation, Balancing and Stigmatic Harms, 74 U. CHI L. REV. 1895 (2007).

needs to be helped to these places by another person or struggles to reach the place. If any jurors view such witnesses, attorneys, or others before the court differently, just because of their difficulty accessing a place in the courtroom, then there is the possibility that decisions could be affected. Increased participation and decreased humiliation or stigmatization while arguing a case or testifying may well help Justice be blind, so to speak.

There are additional health and safety benefits likely to follow from the Rules. Increased access to play areas (for children) and recreational facilities such as gyms (for adults) provide improved health benefits.<sup>58</sup> Since there may be an overlap with other opportunities for exercise,<sup>59</sup> this makes the actual health impact of the new requirements difficult to quantify. Safety benefits from the Rules range from those due to explicit safety-focused changes, such as those relating to alterations of stairs (to ensure easier and safer egress), to less obvious benefits such as the decreased likelihood of falls by persons of short stature needing to stand on unsteady surfaces to reach a hotel thermostat or other controls. The totality of possible accidents avoided by the new Rules could be substantial, but is difficult to assess.<sup>60</sup>

Additionally, there is the possibility that increased access to educational facilities could lead to improved academic performance among children with disabilities, in turn leading to greater lifetime income. Such impacts would have an economic impact over time, but are difficult to isolate and predict.

### **6.5.2 Use Benefits Not Estimated in Primary Analysis Accruing to Persons Without Disabilities**

Improved accessibility can affect more than just the Rule's target population; persons without disabilities may also benefit from many of the requirements. Even though the requirements were not designed to benefit persons without disabilities, any time savings experienced or easier access to a facility is also a benefit that should properly be attributed to that change in accessibility. Curb cuts in sidewalks make life easier for those using wheeled suitcases or pushing a baby stroller. For people with a lot of luggage or a need to change clothes, the larger bathroom stalls can be a highly valued commodity. A ramp into a pool can allow a child (or adult) with a fear of water to ease into that pool. Safety features such as particular detectable warning signs may alert distracted persons without disabilities more quickly in the case of an emergency. All are examples of 'unintended' positive impacts of the Rules to people the Rules were not intended to help. And ideally, all should be part of the calculus of the benefits to society of the Rules.

Additionally, evidence supports the notion of children both with and without disabilities benefiting from interaction with one another.<sup>61</sup> There will likely be social development benefits

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<sup>58</sup> The United States Architectural And Transportation Barriers Compliance Board, Assessment of Benefits and Costs of Final Accessibility Guidelines for Recreation Facilities (September 2002), contains references supporting this. A copy is located at: <http://www.access-board.gov/recreation/reg-assessment.htm>.

<sup>59</sup> Although clearly there will be fewer alternatives absent the Final Rules.

<sup>60</sup> A survey could be conducted to estimate for possible safety benefits, but would be based on a great deal of uncertainty and was beyond the scope of this effort.

<sup>61</sup> The United States Architectural and Transportation Barriers Compliance Board, Final Accessibility Guidelines For Play Areas: Economic Assessment (October 2000), contains references supporting this. A copy is located at: <http://www.access-board.gov/play/assess.htm>.

generated by an increase in accessible play areas. However, these are nearly impossible to quantify for several reasons. One, there is no guarantee that accessibility will generate play opportunities between children with and without disabilities. Two, there may be substantial overlap between other opportunities for these two groups to interact, such as schools and religious facilities. Three, it is not even certain what the unit of measurement for social development should be.

And finally, any impacts on judicial decisions that arise due to improved accessibility and decreased stigmatization in judicial facilities impacts all persons without disabilities as well; citizens place value on a better working judicial system.

### **6.5.3 Non-Use Benefits Not Estimated in Primary Analysis**

There are additional benefits to society that arise from improved accessibility, even if not directly generated from the use of the facility or requirement at the moment. For instance, cross-sector benefits may occur from resource savings arising from reduced social service agency outlays when people are able to access centralized points of service delivery rather than receiving home-based care. Home-based and other social services may include home health care visits and welfare benefits. Third party employment effects can arise when enhanced accessibility results in increasing rates of consumption by disabled and/or non-disabled populations, which in turn results in reduced unemployment.

Two additional forms of benefits are discussed less often, let alone quantified: insurance and existence values. Option value is the value that people with and without disabilities derive from the option of using accessible facilities at some point in the future. Like insurance, people derive benefit from the knowledge that the option to use the accessible facility exists, even if it ultimately goes unused. Just because an individual is a non-user of accessible elements today does not mean that he or she will remain so tomorrow. In any given year, there is some probability of an individual developing a disability (either temporary or permanent) that will necessitate use of these features. For example, the 2000 Census found that 41.9% of adults 65 years and older identified themselves as having a disability. Census Bureau figures, moreover, project that the number of people 65 and older will more than double between 2000 and 2030 – from 35 million to 71.5 million. Therefore, even individuals who have no direct use for accessibility features today get a direct benefit from the knowledge of their existence should they need them in the future. This is like an insurance policy against any future disability – hence the term insurance value or insurance benefit.

Existence value is the benefit that individuals get from the plain existence of a good, service, or resource – in this case, accessibility. It can also be described as the value that people both with and without disabilities derive from the guarantees of equal protection and non-discrimination that are accorded through the provision of accessible facilities. In other words, people value living in a country that affords protections to persons with disabilities, whether or not they themselves are directly or indirectly affected. Unlike user value and insurance value, existence value does not require an individual to ever use the resource or even plan on using the resource in the future. There can be numerous reasons why individuals might value accessibility even if they do not require it now and do not ever anticipate needing it in the future. These include:

bequest motives, benevolence toward relatives and/or friends who require accessibility features,<sup>62</sup> and general feelings of empathy and responsibility toward individuals with disabilities.

Bequest values – the wish to leave accessible features to future generations – do not seem appropriate in the present context. For something like a natural resource that has an infinite lifecycle (barring natural disaster or society’s failure to preserve it), bequest values make sense. For structural changes made to facilities that may last up to forty years, but which might change again in more or less time, bequests make less sense. Even in buildings that comply fully with the Final Rules, it is unclear whether they will stand long enough to accumulate substantial bequest valuations.

Feelings of empathy or responsibility are closely related to another unquantified benefit – social equity. Clearly this is a real phenomenon, as so many individuals without disabilities have worked toward the adoption of both the current and the Final Rules. However, it is difficult to measure and even more difficult to separate from other existence value benefits, like altruism, which risks double-counting.<sup>63</sup>

#### **6.5.4 Other Benefits**

Other benefits more specific to the manner of implementation and coordination may also arise due to these Rules. These benefits reflect more the effectiveness of policy management and implementation as opposed to benefits inherent in the existence of accessibility itself; in other words they are the product of the process of improving accessibility, not of having better accessibility, and are thus not included in the above framework. Substantial effort was taken in the development of the guidelines upon which the Final Rules are based to ensure that they would be consistent with model codes such as the IBC 2003. This harmonization of other model codes with the ADA Standards will yield substantial benefits to businesses, architects, and State and local governments, in addition to the benefits generated for people with disabilities. The Final Rules represent essentially one set of requirements that eliminates confusion and unintentional failure to meet standards while reducing administrative costs associated with determining the exact requirements. The Final Rules will also make it easier for State and local codes to be certified as meeting or exceeding Federal standards.

Employees with disabilities will also benefit from the Final Rules. Employees of the establishments in compliance with the Final Rules will experience greater accessibility when doing their work. The benefits an employee experiences in an accessible workplace are realized through the same changes in access time that are experienced by non-employee users. Employees perceive the time change as enabling more work to be done with greater ease. Increased efficiency is valuable to employees looking for advancement and valuable to employers who

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<sup>62</sup> This is different from altruism, because altruism assumes no direct connection between the altruist and the recipient of the benefit. Altruism is a concept closely related to existence value, although it can be present among users and non-users alike. The Office of Budget and Management (OMB) rejects the measurement of general altruism in regulatory analysis because it impacts costs and benefits equally (see OMB Circular A-4). In other words, the concern for the welfare of others would be present for users as well as industries. Since there is no reason to expect selective altruism in the ADA context, this type of altruism can be ignored in the analysis of existence value. Much of the material on altruism comes from McConnell, “Does Altruism Undermine Existence Value?,” *Journal of Environmental Economics and Management* 32 (1997): 22-37.

<sup>63</sup> See, for example, Lazo, McClelland, and Schulze, “Economic Theory and Psychology of Non-Use Values,” *Land Economics* 73, No. 3 (August 1997): 358-371.

benefit from more productive workers. However, measuring benefits to employees with disabilities is difficult, in large part because there is little to no data on the number of employees with disabilities per facility group or establishment type, which would be necessary to evaluate the benefits per employee per facility.

## 6.6 Threshold Analysis

Given that the range of possible NPV values for the entire Final Rules are unlikely to be less than zero (see Section 6), the foregoing discussion of unquantified benefits has greatest potential impact on particular requirements with negative NPVs.<sup>64</sup> If requirements and their impacts can be considered separately, those with negative monetized NPVs will warrant closer evaluation. For these requirements, the actual total overall value to society includes the non-monetized benefits discussed above, and the true NPV for each is some value greater than the figure presented here.

To gain additional perspective on the full range of benefits, this RIA includes several analyses in a Threshold Analysis. In cases where quantitatively measured costs exceed the quantitatively measured benefits by \$100 million or more over the life of the rule, the “*threshold value*” is the value that society would need to assign to the unquantified benefits to “balance the ledger” (to balance benefits with costs). This threshold analysis is applied in relation to the value of stigmatic harm, safety and insurance value for several requirements, and as well as an annualized estimate over 54 years (after which those last facilities built before the expected new rule with safe harbor would likely be complete replaced) for the two requirements with the largest negative NPVs (Water closet clearance in single-user toilet rooms - out swinging door and Water closet clearance in single-user toilet rooms - in swinging door).

The requirements relating the water closet clearances are among the most costly (in monetary terms) of the new provisions. Although the *monetized* costs of these requirements substantially exceed the *monetized* benefits, the benefits that have not been monetized (avoiding stigma and humiliation, protecting safety, and enhancing independence) are expected to be quite high. The added clearance ensures that wheelchair users can effect a side transfer, which may often obviate the need for obtaining the assistance of another person to engage in what is, for most people, among the most private of activities.

We estimate that the costs of the requirement as applied to out-swinging doors will exceed the monetized benefits by \$454 million, which when annualized over 54 years equals a net cost of approximately \$32.6 million a year.<sup>65</sup>

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<sup>64</sup> It is important to remember that despite all the benefits not included in the main analysis, it is also possible to overestimate benefits. For example, consider a city block that already contains two facilities with play areas. Under the Final Rules, a new facility with a play area must make itself accessible even at an increased construction cost. The cost will be the same as for any other play area undergoing construction, but the benefit is likely to be lower given that play area demand for that area is likely already being well filled. This is impossible to take into account in a model that is designed to abstract from these sorts of details. However, the possibility that benefits will actually fall short of median levels is taken into account using risk analysis.

<sup>65</sup> While the analysis assumes a new rule after 15 years, those facilities built just before the promulgation of those new rules are expected to be covered by a safe harbor provision for the expected 40 year average expected before the facilities is replaced. Thus, some benefits and recurring costs are expected in years 15 through 54.

We estimate that people with the relevant disabilities will use a newly accessible single-user toilet room with an out-swinging door approximately 677 million times per year. Dividing the \$32.6 million annual cost by the 677 million annual uses, we conclude that for the costs and benefits to break even in this context, people with the relevant disabilities will have to value safety, independence, and the avoidance of stigma and humiliation at just under 5 cents per use.

There are substantially fewer single-user toilet rooms with in-swinging doors, and substantially fewer people with disabilities will benefit from making those rooms accessible. And the alterations costs to make a single-user toilet room with an in-swinging door accessible are substantially higher (because of the space taken up by the door) than the equivalent costs of making a room with an out-swinging door accessible. Thus, we calculate that the costs of applying the toilet room accessibility standard to rooms with in-swinging doors will exceed the monetized benefits of doing so by \$266.3 million over the life of the regulation, or approximately \$19.14 million per year when annualized over 54 years.

We estimate that people with the relevant disabilities will use a newly accessible single-user toilet room with an in-swinging door approximately 8.7 million times per year. Dividing the \$19.14 million annual cost by the 8.7 million annual uses, we conclude that for the costs and benefits to break even in this context, people with the relevant disabilities will have to value safety, independence, and the avoidance of stigma and humiliation at approximately \$2.20 per use.

### **6.6.1 Value of Stigmatic Harm**

The threshold analysis presented here is applied using an estimate on the value of stigmatic harm, safety benefits (for some requirements) and insurance value. In other words, the analysis seeks to estimate by how much society would need to value reduced stigmatic harm, fewer injuries and the option value of using the increased accessibility in the future in order to balance benefits with costs. For purposes of the threshold value, the value of eliminating stigmatic harm may be inferred from studies and analysis of behavior associated with transit use. Similar to values that are applied in the main cost-benefit analysis related to the quality of the trip, additional insight may be gained from studies that evaluated the likelihood of using segregated vehicles compared to integrated vehicles. For instance, by observing the proportion of persons with disabilities who elect to use adapted transit when dial-a-ride is available at equal or lesser fare and better time costs, their preference for transit can be attributed to its public availability. In other words, the proportion of people that choose to take integrated transportation service as opposed to segregated service suggests an interest in avoiding the stigma of being disabled.

Studies collect information about the proportion of persons with disabilities who use segregated dial-a-ride service when regular service is available. One study found that approximately 80% of persons with disabilities elected to use dial-a-ride; in other words, while their motivations are certainly not definitively known, 20% of users may have chosen regular service to avoid stigmatic harm, or at least part of their rationale could have included this aspect of value.

This proportion can be converted to a weight on the value of time (similar to quality of time adjustments related to access time) for use in the threshold analysis. The equivalent weight would be computed from the proportion's inverse value, or  $[1/(\text{proportion of dial-a-ride users})]$ . While this conversion formula may be overly simplistic, the rationale is consistent with theory. For example, when the proportion of dial-a-ride users is 100%, there is no value of stigmatic

harm. At the opposite extreme, if no persons with disabilities choose dial-a-ride, the potential for significant stigmatic harm would likely be part of the reason for this choice. For our example of a user population of 80%, the weight on the value of time to avoid stigmatic harm is 1.25, or 25% above the normal value of time.

Adding an additional factor to the value of time saved by improved accessibility that accounts for the avoided stigmatic harm will increase benefits for all requirements that are more stringent, but will also increase the disbenefits that arise from relaxed requirements. Since more stringent requirements outweigh less stringent requirements in this rule, the overall impact of incorporating the avoidance of stigmatic harm would be to increase the overall net benefits of the rule.

Based on the above, an estimated premium of 0.25 for avoiding stigmatic harm can be applied to the estimation (this premium was not included in the primary analysis partly because the research behind this estimation is not as extensive as the research behind estimates of premiums for travel comfort). The effect of this premium on the negative NPVs is best calculated on the IBC-specific NPV (in which costs and benefits were adjusted according to a state-by-state review of whether the States/counties had adopted that specific requirement out of the IBC), where available. Thus, for the four more stringent requirements which have individual IBC-specific NPVs that are negative by at least \$100 million, incorporating the avoidance for stigmatic harm into the benefits calculations shrinks the State-IBC Specific NPVs from \$1.0 B to \$0.8 B.

**Table 18: Impact of 0.25 Premiums on Value of Time for Avoiding Stigmatic Harm for Select Requirements (million \$)**

**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

Number	Requirement	NPV, Baseline of 1991 Standards, Safe Harbor, 50% Readily Achievable, 7% discount rate	% of All Facilities Covered by Individual State Adoption of IBC	NPV Using State- Specific IBC for Baseline	NPV Using State-Specific IBC for Baseline and Including .25 Premium on Time for Avoided Stigmatic Harm
16	Alterations to Existing Elevators	-\$339.0	70%	-\$102	-\$102
28	Water Closet Clearance in Single-User Toilet Rooms – Out-Swinging Doors	-\$898.4	46%	-\$454	-\$316
32	Water Closet Clearance in Single-User Toilet Rooms – In-Swinging Doors	-\$974.7	72%	-\$266	-\$271
37	Side Reach	-\$555.0	72%	-\$153	-\$105
<b>Total</b>				<b>-\$975</b>	<b>-\$794</b>

A “threshold premium” on the value of time can be calculated for each of these individual requirements. This ‘threshold premium’ is the premium required on the value of time in order to shift the NPV for that individual requirement to zero. In other words, this premium represents how many more people would value avoiding the stigma or embarrassment that the new



requirement addresses. For two of these requirements – Water Closet Clearance in Single-User Toilet Rooms With Out-Swinging Door (Req. # 28) and Side Reach (Req. # 37) the threshold premium would only need to be 1.4 and 1.5 respectively for their NPVs to be equal to zero using a requirement-specific alternate IBC/ANSI baseline. To put these stigmatic threshold premiums into perspective, the 1.4 threshold premium for the water closet clearance requirement for single-user toilet rooms with out-swinging doors means that the negative NPV for this requirement would be reduced to zero if a person with a disability who needed to use the restroom at a shopping mall valued avoiding stigmatic harm while accessing the mall’s single-user toilet room by at little as 16 cents.<sup>66</sup>

**Table 19: Threshold Premium for Select Requirements**

**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

Number	Requirements	Expected NPV in Main Analysis (million\$)	State-IBC Specific NPV (million\$)	Avoided Stigmatic Harm Threshold Premium*	NPV at Threshold
16	Alterations to Existing Elevators	-\$339.0	-\$102	220.7	\$0.0
28	Water Closet Clearance in Single-User Toilet Rooms – Out-Swinging Doors	-\$898.4	-\$454	1.4	\$0.0
32	Water Closet Clearance in Single-User Toilet Rooms – In-Swinging Doors	-\$974.7	-\$266	46.9	\$0.0
37	Side Reach	-\$555.0	-\$153	1.5	\$0.0
*Premium for stigmatic harm (applied to all requirements) which would result in an NPV of zero for the requirements.					

As noted above, promulgation of the final rules would also likely generate many other substantial unquantified benefits aside from avoidance of stigmatic harm. For persons with disabilities, these additional benefits might well include avoided humiliation (*i.e.*, embarrassment which goes beyond the general desire to avoid “standing out” as a person with a disability) and strengthened safety measures. Persons without disabilities may also experience benefits from believing that the final will improve access/decrease discrimination encountered by persons with disabilities, or by placing value on the “insurance” of improved accessibility for their potential use in the future if needed.

Another threshold analysis contains two calculations to explore the potential value significance of these additional – and in relation to the same four requirements. The first (Scenario A) estimates the average monetary value that persons with the types of disabilities expected to

<sup>66</sup> The analysis assumes that visitors with the targeted disability use and benefit from the requirements during approximately one-fourth of their visits to these facilities and that the base value of time at shopping mall is approximately \$4.25. The monetary value of the threshold premium for avoided stigmatic harm was calculated using the following formula: [(Threshold Premium for Avoided Stigmatic Harm – Req. #28) x (Base Value of Time @ Facility Group K) x (Est. Time Change in Hours –Req. # 28) – ((Base Value of Time @ Facility Group K) x (Est. Time Change in Hours –Req. # 28))].

benefit from the improved access generated by each of these requirement must place per facility visit on avoiding humiliation and/or increased safety in order for the NPV for each respective requirement to equal zero under a requirement-specific alternate IBC/ANSI baseline. (These figures are calculated by dividing the state-specific NPV by the number of visit to facilities with these elements by persons with the targeted disability over a fifteen year period, after which new rules are expected). Under this methodology, for three of these four requirements, persons with disabilities need place a value of less than 1 cent on the benefits of avoided humiliation and/or improved safety (or any other non-monetized benefits) on each visit to facilities with elements affected by these requirements in order to make each requirements' respective NPVs equal zero.

The second threshold estimate, by contrast, calculates the average monetary value each American (on a per capita basis) would need to place annually (over a fifteen year period) on the “existence” of improved accessibility for persons with disabilities (or the “insurance” of improved accessibility for their own potential use in the future) in order for the NPVs for each respective requirement to equal zero. Under this methodology, if Americans on average placed an “existence” value and/or “insurance” value of between 2 cents on the low end to 7 cents on the high end per requirement, then the NPVs for each of these requirements would be zero. Note that this later calculation assumes no added value of avoided humiliation, of increase safety and increased independence.

**Table 20: Additional Threshold Analyses**

**(Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline, 7% Discount Rate)**

<b>Number</b>	<b>Requirements</b>	<b>Expected NPV in Main Analysis (million\$)</b>	<b>State-IBC Specific NPV (million\$)</b>	<b>Additional Value per Visit By Person with Disability to Reach \$0 NPV</b>	<b>Additional Annual Value per Capita to Reach \$0 NPV</b>
16	Alterations to Existing Elevators	-\$339.00	-\$102	\$0.00	\$0.02
28	Water Closet Clearance in Single-User Toilet Rooms – Out-Swinging Doors	-\$898.40	-\$454	\$0.00	\$0.07
32	Water Closet Clearance in Single-User Toilet Rooms – In-Swinging Doors	-\$974.70	-\$266	\$0.02	\$0.06
37	Side Reach	-\$555.00	-\$153	\$0.00	\$0.02

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## 7. SMALL BUSINESS IMPACT ANALYSIS

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As directed by the Regulatory Flexibility Act of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), as well as Executive Order 13,272, the Department is required to consider the potential impact of the Final Rules on small entities, including small businesses, small nonprofit organizations and small governmental jurisdictions. This process helps to determine whether to certify a rule for regulatory flexibility purposes for those entities that are more likely to be adversely impacted by the Final Rules. This analysis of impacts is intended to support appropriate regulatory alternatives that minimize economic burden for small businesses.

### **Number of Facilities by Group: Small Entity Facilities Versus Facilities of All Sizes**

First, to estimate the cost impact relative to sales to small businesses and small nonprofit organizations [hereinafter referred to as “small private entities”], the total number of small entities and the total sales receipts of these entities are estimated for each facility group.<sup>67</sup> These figures are calculated using publicly-available data from the Office of Advocacy of the Small Business Administration (SBA) which, in turn, is based on data collected in the 2002 U.S. Economic Census. SBA data for 2002 is estimated forward to 2007 using rates of new construction based on the May 2007 Dodge Construction Potentials Bulletin. Since new data on the number of small businesses by receipt size are not available with the 2007 Economic Census data, the 2007 estimated numbers are estimated forward to 2010. See Appendix 5.

For a few facility groups, however, some additional assumptions were required to estimate the number of facilities and sales by small private entities. Data for several facility groups was estimated in the main Regulatory Impact Analysis using information gathered from sources other than the 2002 U.S. Economic Census; analytical consistency required the use of these same data sources for this handful of facility groups in the small business impact analysis, adjusted by data from SBA.<sup>68</sup> In addition, estimates of the total number of inns, hotels and motels came from a

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<sup>67</sup> The data sources used in this small business impact analysis (i.e., data from the Small Business Administration and the U.S. Economic Census) provided “rolled up” figures for small entities that included both small businesses and small non-profit organizations. Due to these data limitations, it was not possible to calculate the cost impact of the Final Rules separately for these two types of small entities. Thus, this small business impact analysis provides “rolled up” figures that collectively calculate the cost impact of the Final Rules on small businesses and small non-profit organizations. Additionally, the following facility types were not included in this analysis due to lack of adequate publicly available data: Stadiums; Convention centers; Terminal (private airports); Depot; Undergraduate and Postgraduate Private Schools; Fishing Piers and Platforms; Office Buildings; Undergraduate; Postgraduate public schools; State and Local Detention Facilities (jails); Theatre / Concert Halls (public); Stadiums (public); Auditoriums (public); Convention centers (public); Offices of Health Care Providers (public); Nursing Homes (public); Homeless Shelter (public); Exercise Facilities (public); Social Service Establishments (public); Swimming pools (Aquatic Centers - public); Miniature golf courses (public); Recreational Boating Facilities (public); Fishing Piers and Platforms (public); Parking Garages (public); Golf Courses (public); Restaurants (public); and, Amusement Parks (public).

<sup>68</sup> Specifically, the total number of golf courses, miniature golf courses, and elementary and secondary private schools was estimated from sources outside the Economic Census. To determine the number of small private businesses in these facility groups, the percentage of small business establishments (and sales receipts) of the most similar SBA category was taken from the SBA data and then applied to the totals for facilities of all sizes for that group which was collected from the outside source.

U.S. Economic Census report on numbers of guestrooms for all types of accommodation. The data in this report presents the number of inns (defined as having less than 75 guestrooms), hotels (more than 150 rooms), and motels (between 75 and 150 rooms). Since these details are outside the SBA definitions of a small business, an assumption is made that 98% of all inns and motels are small businesses. The remaining number of small private entities in the Accommodation category, as tabulated by SBA, is used to estimate the number of hotels that are small entities.

Second, to estimate the cost impact relative to sales on small governmental jurisdictions (defined as governments of counties, cities, and towns with populations less than 50,000) [hereinafter “small governments”], it was necessary to use data from the 2002 Census of Governments on county and municipal governments to estimate the number of public facilities in these jurisdictions, since government entities are not covered by the U.S. Economic Census.<sup>69</sup> This Census of Governments also includes data on expenditures by broad category (education, hospitals, parks, etc.) broken down by size of jurisdiction. This Census of Government data is used in this analysis in place of sales data (as used for small private entities). However, in one area – outlays for educational expenditures – data from the Census of Governments was not sufficiently broken down to permit allocation among specific facility groups (*i.e.*, elementary schools, secondary schools, etc.). Thus, with respect to educational expenditures, funds are allocated equally to elementary and secondary facilities (since elementary schools are likely to be greater in number but smaller in size than secondary schools). Data from the Census of Governments for 2002 is brought forward to 2007 using rates of new construction estimated from the May 2007 Dodge Construction Potentials Bulletin. Since a new Census of Governments has not yet been published, these estimates are brought forward to 2010 by applying the percentage of small facilities and receipts of the total to the estimated 2010 facilities and sales receipts done for the regulatory analysis.

Table 21 summarizes the data on the number of small entities and estimated sales (or expenditures) for small private entities and small governments, as compared to the “typical” facility in each group. Table 21 also includes data concerning the percentage of total facilities of each type that are owned or operated by small private entities or are under small governmental jurisdictions (for instance, nearly all Inns, or 98%, are small businesses). Table 21 also includes information on the estimated sales (or expenditures) of typical-sized facilities and of small entities only for each facility group, and a comparison of the two (for example, average sales for Inns are expected to be the same, *i.e.* 100% of, average sales for all Inns irrespective of size). In Table 21, data for facilities owned or operated by small private entities is listed first; data for small governments follows thereafter in the second half of the table.<sup>70</sup>

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<sup>69</sup> See Appendix 5 for data from the 2002 Census of Governments used for calculations on small governments and their expenditures.

<sup>70</sup> For ease of reference, the column headings in Table 17 collectively refer to small businesses, small nonprofit organizations, and small governmental jurisdictions as “small entities.”

**Table 21: Number of Facilities and Total Sales for Small vs. Facilities of All Sizes, and Ratio of Average Sales per Facility, by Facility Group**

Facility Group	Total Number of Facilities (2010)	Number of Small Entity Facilities (2010)	% of Total Facilities that are Small Entity Facilities	Sales (or Expenditures) per Typical Facility (All sizes) (\$)	Estimated Sales (or Expenditures) per Small Entity Facility 2007 (\$)	Average Sales (or Expenditures) per Small Entity as Percent of Average Sales for All Sizes
<b>Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)</b>						
Inns	16,953	16,614	98%	\$276,669	\$276,669	100%
Hotels	15,165	4,095	27%	\$11,453,808	\$1,259,919	11%
Motels	21,092	20,670	98%	\$504,294	\$504,294	100%
Restaurants	566,856	442,148	78%	\$880,642	\$308,225	35%
Motion Picture House	4,971	2,287	46%	\$2,419,713	\$314,563	13%
Theatre / Concert Hall	9,348	8,974	96%	\$1,454,100	\$348,984	24%
Auditoriums	2,676	1,980	74%	\$5,994,548	\$659,400	11%
Single Level Stores	812,456	552,470	68%	\$3,526,173	\$352,617	10%
Shopping Malls <sup>71</sup>	10,092	8,881	88%	\$3,880,720	\$3,880,720	100%
Indoor Service Establishments	3,857,022	1,465,669	38%	\$1,620,570	\$372,731	23%
Offices of Health Care Providers	549,803	483,826	88%	\$1,403,290	\$435,020	31%
Hospitals	3,915	1,057	27%	\$164,921,961	\$1,649,220	1%
Nursing Homes	15,014	6,306	42%	\$11,515,088	\$1,381,811	12%
Museums, Historical Sites & Libraries	4,766	4,337	91%	\$1,912,720	\$401,671	21%
Parks or zoos	1,327	1,115	84%	\$2,910,019	\$582,004	20%
Amusement Parks	543	434	80%	\$29,606,564	\$2,368,525	8%
Nursery schools - Daycare	76,398	65,702	86%	\$420,833	\$164,125	39%
Elementary Private Schools	18,275	15,168	83%	\$1,616,245	\$468,711	29%
Secondary Private Schools	2,841	2,358	83%	\$3,024,170	\$877,009	29%
Ski Facilities	403	310	77%	\$5,830,410	\$641,345	11%
Homeless Shelter	8,715	7,757	89%	\$1,629,925	\$342,284	21%
Food Banks	4,357	3,181	73%	\$1,480,257	\$370,064	25%

<sup>71</sup> For the shopping malls facility group, average sales/receipts for small facilities (as calculated from SBA data) was estimated to be greater than average sales/receipts for larger facilities (as calculated from the 2002 Economic Census). Thus, for purposes of this analysis, the conservative assumption was made that average sales/receipts were equivalent for the two sizes of facilities.

Facility Group	Total Number of Facilities (2010)	Number of Small Entity Facilities (2010)	% of Total Facilities that are Small Entity Facilities	Sales (or Expenditures) per Typical Facility (All sizes) (\$)	Estimated Sales (or Expenditures) per Small Entity Facility 2007 (\$)	Average Sales (or Expenditures) per Small Entity as Percent of Average Sales for All Sizes
Social Service Establishments	66,236	49,015	74%	\$1,242,276	\$347,837	28%
Exercise Facilities	32,609	29,674	91%	\$839,372	\$268,599	32%
Aquatic Centers /Swimming Pools	12,368	11,997	97%	\$420,073	\$189,033	45%
Bowling Alleys	4,688	4,125	88%	\$687,018	\$295,418	43%
Golf Courses (private public access)	9,485	8,441	89%	\$2,335,087	\$863,982	37%
Golf Courses (private only)	4,645	4,134	89%	\$1,452,612	\$537,467	37%
Miniature golf courses	9,475	9,096	96%	\$293,107	\$111,381	38%
Recreational Boating Facilities	5,198	4,990	96%	\$826,080	\$710,429	86%
Shooting Facilities	5,095	4,891	96%	\$828,387	\$712,413	86%
Parking Garages	13,377	3,077	23%	\$694,211	\$270,742	39%
Self Service Storage Facilities	14,418	10,814	75%	\$647,296	\$608,458	94%
<b>Public Facilities (Owned or Operated by Small Governmental Jurisdictions)</b>						
Elementary Public Schools	68,781	19,946	29%	\$2,871,139	\$344,537	12%
Secondary Public Schools	23,388	6,549	28%	\$11,109,976	\$999,898	9%
Public Housing	27,767	7,219	26%	\$540,120	\$442,899	82%
State and Local Judicial Facilities (courthouses)	9,458	2,554	27%	\$528,720	\$269,647	51%
State and Local Correctional Facilities (prisons)	1,244	336	27%	\$12,170,556	\$4,746,517	39%
Hospitals (public)	1,113	300	27%	\$33,947,412	\$33,947,412	100%
Parks or zoos (public)	120,224	32,461	27%	\$218,530	\$209,788	96%
Office Buildings (public)	74,846	19,460	26%	\$112,487	\$112,487	100%

### Net Costs Per Facility Group: Small Entity Facilities *Versus* “Typical” Facilities

Once the number of facilities that are small entities and their receipts had been estimated, net costs (incorporating both costs savings from less stringent requirements and added costs of more stringent requirements) of the rule for small entities were then calculated. As with the cost model used in the “main” regulatory impact analysis, net costs in the small business analysis are based (with one exception as described below) on unit cost estimates (Appendix 3H), the number and

mix of elements in facilities of each type (Appendix 3E), the likelihoods for change (Appendices 3F & 3G), and other applicable cost considerations (such as operation & maintenance costs, productive space costs, and assumptions concerning years before replacement of particular required element or equipment) (Appendices 3I through 3L). In addition, as with the “main” regulatory analysis, this small business analysis also generally took into account, as applicable, exemptions and exceptions in the Final Rules that are specifically directed at smaller facilities or entities, including exemptions for certain existing small recreational facilities (i.e., play areas, swimming pools, and saunas or steam rooms) under Titles II and III. Lastly, overall calculations of the net cost impact of the Final Rules on small entities (versus “typical” facilities) were modeled in the same manner as in the “main” regulatory impact analysis, using a 7% discount rate and the following scenario: a safe harbor provision applying to elements in existing facilities that comply with the 1991 Standards (SH); barrier removal readily achievable for 50% of elements (RA50); and a baseline of the 1991 Standards (B1991).

In only one respect did the underlying “main” cost model need to be modified for purposes of this small business analysis. Since smaller facilities (in which small entities are frequently located) often have a different number and/or mix of elements as compared to larger facilities, adjustments were made to element counts in certain facilities to account for this differentiating consideration between facilities of different sizes. Specifically, for purposes of the small business analysis, it was assumed that if an element occurs twice or less within a typical facility, then that element also would occur with the same frequency in a facility owned or operated by a small entity. Such elements include: entrances; sales and service counters; and some bathrooms. By contrast, if an element occurs more than twice in a typical facility, then it is assumed for facilities owned or operated by small entities that that element occurs at a rate equal to the ratio of sales per small facility to sales per typical facility (as shown above in Table 17). It is assumed that this ratio cannot be greater than 1; for public hospitals and office buildings, this ratio is fixed at 1. Elements which vary between small and typical-sized facilities include: side reach; bathroom elements in dwelling facilities; stairs; and handrails. A complete listing of the frequency of occurrence for elements in typical facilities, as used for these calculations, can be found in Appendix 3E.

Table 22, which follows below, illustrates the relative impact of the rules on small entities (*i.e.*, small businesses, small nonprofit organizations, and small governments) versus entities of all sizes for each facility group in the analysis. A ratio of 1.0 (as for Inns) indicates that net costs for small entities are essentially the same for Inns as a whole; a ratio below one indicates that net costs per small entity on average are less than for entities of all sizes for that facility group.

As indicated above, “net costs” are the total costs to facilities – “net” of any cost savings from less stringent requirements. The costs are noted as “net” because some requirements have a cost savings (less stringent requirements) and the costs listed by facility type are net of all cost savings. All types of costs (unit price, operation and maintenance, and space costs) are included in the cost increases or decreases.

Note that costs are actually positive – as in cost savings to facilities – for a few facilities for which the benefits resulting from less stringent requirements outweigh the costs of the more stringent requirements for that facility type and size. The cost impact on hospitals is one example, as the net impact of the rule is to lower overall compliance costs, primarily due to the less stringent requirement no longer requiring canopies at passenger loading zones (requirement #26).

Cost savings may also vary with size, *i.e.* small entities may have cost savings, while typical facilities do not, due to the differing composition of the number and type of elements.

Table 22 presents net costs for all facilities and per facility, for each facility group.

**Table 22: Net Cost Comparison: Small vs. Facilities of All Sizes, by Facility Group, (Under Safe Harbor, 50% Readily Achievable Barrier Removal, 1991 Standards for Baseline)**

Facility Group	Total Net Costs (Millions \$)		Net Costs Per Facility (\$)		
	Typical Facilities (All Sizes)	Small Entity Facilities	Typical Facilities (All Sizes)	Small Entity Facilities	Ratio of Net Cost per Small Entity Facility to Typical Facility <sup>72</sup>
<b>Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)</b>					
Inns	\$19.7	\$19.3	\$1,159.3	\$1,159.3	1.00
Hotels	\$478.6	\$81.7	\$31,560.2	\$19,942.3	0.63
Motels	\$431.4	\$422.8	\$20,453.1	\$20,453.1	1.00
Restaurants	\$328.8	\$240.3	\$580.0	\$543.5	0.96
Motion Picture House	\$178.3	\$14.3	\$35,859.3	\$6,237.0	0.17
Theatre / Concert Hall	\$170.9	\$67.6	\$18,281.7	\$7,535.7	0.57
Auditoriums	\$25.5	\$8.3	\$9,514.0	\$4,205.2	0.44
Single Level Stores	\$416.3	\$282.4	\$512.4	\$511.1	1.00
Shopping Malls	\$47.9	\$42.1	\$4,742.9	\$4,742.9	1.00
Indoor Service Establishments	\$2,169.2	\$698.4	\$562.4	\$476.5	0.85
Offices of Health Care Providers	\$305.8	\$113.7	\$556.1	\$235.0	0.42
Hospitals	\$24.7	-\$1.0	\$6,315.3	-\$968.3	-0.15
Nursing Homes	\$131.5	\$9.0	\$8,756.0	\$1,422.4	0.16
Museums, Historical Sites & Libraries	\$6.0	-\$0.6	\$1,260.9	-\$149.8	-0.12
Parks or zoos	\$3.5	\$2.9	\$2,600.4	\$2,569.4	0.99
Amusement Parks	\$92.3	\$8.1	\$169,996.8	\$18,698.8	0.11
Nursery schools - Daycare	\$129.3	\$100.8	\$1,692.8	\$1,533.6	0.91
Elementary Private Schools	\$97.1	\$63.9	\$5,312.9	\$4,215.8	0.79
Secondary Private Schools	\$19.9	\$6.6	\$6,994.3	\$2,779.1	0.40
Ski Facilities	\$0.1	\$0.1	\$231.7	\$199.2	0.86
Homeless Shelter	\$2.6	\$2.3	\$297.7	\$297.7	1.00
Food Banks	\$1.2	\$0.7	\$279.0	\$222.8	0.80

<sup>72</sup> Several facility types have cost savings (in which the benefits due to less stringent requirements outweigh the costs of more stringent requirements) for either small or typical facilities, or both. For these facility groups, a ratio is not calculated.



Facility Group	Total Net Costs (Millions \$)		Net Costs Per Facility (\$)		
	Typical Facilities (All Sizes)	Small Entity Facilities	Typical Facilities (All Sizes)	Small Entity Facilities	Ratio of Net Cost per Small Entity Facility to Typical Facility <sup>72</sup>
Social Service Establishments	\$34.7	\$22.4	\$523.9	\$457.0	0.87
Exercise Facilities	\$683.7	\$334.2	\$20,967.3	\$11,260.8	0.54
Aquatic Centers /Swimming Pools	\$1,391.1	\$1,343.3	\$112,476.6	\$111,976.0	1.00
Bowling Alleys	\$1.4	\$0.9	\$293.2	\$219.0	0.75
Golf Courses (private public access)	\$37.4	\$31.0	\$3,947.3	\$3,676.4	0.93
Golf Courses (private only)	\$20.7	\$14.7	\$4,453.7	\$3,558.6	0.80
Miniature golf courses	\$94.3	\$90.2	\$10,780.4	\$9,914.9	1.00
Recreational Boating Facilities	\$17.6	\$15.4	\$3,386.0	\$3,089.9	0.91
Shooting Facilities	-\$0.5	-\$0.5	-\$105.2	-\$105.2	1.00
Parking Garages	\$5.2	\$0.5	\$385.0	\$170.5	0.44
Self Service Storage Facilities	\$6.3	\$4.5	\$436.8	\$413.6	0.95
<b>Public Facilities (Owned or Operated by Small Governments)</b>					
Elementary Public Schools	\$248.3	\$44.9	\$3,610.6	\$2,251.5	0.62
Secondary Public Schools	\$116.1	\$4.2	\$4,964.5	\$636.5	0.13
Public Housing	\$172.7	\$40.2	\$6,218.4	\$5,567.8	0.90
State and Local Judicial Facilities (courthouses)	\$157.7	\$23.5	\$16,671.2	\$9,188.2	0.55
State and Local Correctional Facilities (prisons)	-\$47.2	-\$5.0	-\$37,973.5	-\$14,974.9	0.39
Hospitals (public)	\$1.3	\$0.4	\$1,199.7	\$1,199.7	1.00
Parks or zoos (public)	\$183.0	\$49.4	\$1,522.5	\$1,520.8	1.00
Office Buildings (public)	\$103.1	\$26.8	\$1,377.3	\$1,377.3	1.00

Note: Negative Net Costs are net savings.

The final table below (Table 23) presents estimates of annualized costs and annualized costs as a percent of sales for both typical and small facilities. Net costs are the total costs over the course of the rule, while the annualized costs represent those total costs, annualized of the life of the rule.

For facilities owned or operated by small private entities, annualized costs are less than 0.5% of sales for all but Aquatic Centers/Swimming Pools (4.4%) and Miniature Golf Courses (0.67%). Annual costs are between 0.10% and 0.50% for five facility types: Exercise Facilities (0.31%); motels (0.3%), Theatre / Concert Halls (0.16%), Motion Picture Houses (0.15%) and Hotels (0.12%). For the rest of the facility groups, annual costs for small entities are less than 0.10% of sales.

For small governmental jurisdictions, Table 23 shows that annual costs are less than 0.5% of expenditures for all facility types. Indeed, with the exception of a single facility group (state and

Local Judicial Facilities (courthouses) (0.26%), annual costs are below 0.1% for all facilities owned or operated by small governments.

Another measure of comparison between typical facilities and facilities owned or operated by small entities is the ratio of annual costs as a percentage of sales. The higher the ratio, the larger the cost burden relative to sales or expenditures for small entities in comparison to facilities of all sizes. For small private entity facilities, this ratio is largest for Single Level Stores (9.97), Ski Facilities (7.82), and Hotels (5.74) because of the significant difference in sales for typical and small facilities of these types, which was much greater than the difference in costs. This ratio is the lowest, 1.0, for inns and motels, which are typically owned or operated almost entirely by small businesses.

For small governments, the ratio of annual costs as a percentage of expenditures for typical facilities versus small facilities is largest for Elementary Public Schools (5.20), Secondary Public Schools (1.42), Public Housing (1.09), and State and Local Judicial Facilities (courthouses) (1.08).

**Table 23: Annual Cost Comparison: Small vs. Facilities of All Sizes, by Facility Group**

Facility Group	Annualized Cost Per Typical Facility (All Sizes) (\$)	Annualized Cost Per Small Entity Facility (\$)	Annual Costs as a Percent of Annual Sales Per Typical Facility (All Sizes)	Annual Costs as a Percent of Annual Estimated Sales Per Small Entity Facility	Ratio of Annual Cost as a Percentage of Sales for Typical to Small Entity Facilities <sup>73</sup>
<b>Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)</b>					
Inns	\$87	\$87	0.03%	0.03%	1.00
Hotels	\$2,367	\$1,496	0.02%	0.12%	5.74
Motels	\$1,534	\$1,534	0.30%	0.30%	1.00
Restaurants	\$44	\$41	0.00%	0.01%	2.68
Motion Picture House	\$2,690	\$468	0.11%	0.15%	1.34
Theatre / Concert Hall	\$1,371	\$565	0.09%	0.16%	1.72
Auditoriums	\$714	\$315	0.01%	0.05%	4.02
Single Level Stores	\$38	\$38	0.00%	0.01%	9.97
Shopping Malls	\$356	\$356	0.01%	0.01%	1.00
Indoor Service Establishments	\$42	\$36	0.00%	0.01%	3.68
Offices of Health Care Providers	\$42	\$18	0.00%	0.00%	1.36
Hospitals	\$474	-\$73	0.00%	0.00%	-15.33
Nursing Homes	\$657	\$107	0.01%	0.01%	1.35
Museums, Historical Sites & Libraries	\$95	-\$11	0.00%	0.00%	-0.57

<sup>73</sup> Several facility types have cost savings (in which the benefits due to less stringent requirements outweigh the costs of more stringent requirements) for either small or typical facilities, or both. For these facility groups, a ratio is not calculated.

Facility Group	Annualized Cost Per Typical Facility (All Sizes) (\$)	Annualized Cost Per Small Entity Facility (\$)	Annual Costs as a Percent of Annual Sales Per Typical Facility (All Sizes)	Annual Costs as a Percent of Annual Estimated Sales Per Small Entity Facility	Ratio of Annual Cost as a Percentage of Sales for Typical to Small Entity Facilities <sup>73</sup>
Parks or zoos	\$195	\$193	0.01%	0.03%	4.94
Amusement Parks	\$12,751	\$1,403	0.04%	0.06%	1.37
Nursery schools - Daycare	\$127	\$115	0.03%	0.07%	2.32
Elementary Private Schools	\$399	\$316	0.02%	0.07%	2.74
Secondary Private Schools	\$525	\$208	0.02%	0.02%	1.37
Ski Facilities	\$17	\$15	0.00%	0.00%	7.82
Homeless Shelter	\$22	\$22	0.00%	0.01%	4.76
Food Banks	\$21	\$17	0.00%	0.00%	3.19
Social Service Establishments	\$39	\$34	0.00%	0.01%	3.12
Exercise Facilities	\$1,573	\$845	0.19%	0.31%	1.68
Aquatic Centers / Swimming pools	\$8,437	\$8,399	2.01%	4.44%	2.21
Bowling Alleys	\$22	\$16	0.00%	0.01%	1.74
Golf Courses (private public access)	\$296	\$276	0.01%	0.03%	2.52
Golf Courses (private only)	\$334	\$267	0.02%	0.05%	2.16
Miniature golf courses	\$809	\$744	0.28%	0.67%	2.42
Recreational Boating Facilities	\$254	\$232	0.03%	0.03%	1.06
Shooting Facilities	-\$8	-\$8	0.00%	0.00%	1.16
Parking Garages	\$29	\$13	0.00%	0.00%	1.14
Self Service Storage Facilities	\$33	\$31	0.01%	0.01%	1.01
<b>Public Facilities (Owned or Operated by Small Governments)</b>					
Elementary Public Schools	\$271	\$169	0.01%	0.05%	5.20
Secondary Public Schools	\$372	\$48	0.00%	0.00%	1.42
Public Housing	\$466	\$418	0.09%	0.09%	1.09
State and Local Judicial Facilities (courthouses)	\$1,250	\$689	0.24%	0.26%	1.08
State and Local Correctional Facilities (prisons)	-\$2,848	-\$1,123	-0.02%	-0.02%	1.01
Hospitals (public)	\$90	\$90	0.00%	0.00%	1.00
Parks or zoos (public)	\$114	\$114	0.05%	0.05%	1.04
Office Buildings (public)	\$103	\$103	0.09%	0.09%	1.03

The foregoing analysis indicates that the Final Rules will not have a significant economic impact on a substantial number of small entities. For small government jurisdictions, annualized costs are not expected to be greater than 0.5% of sales for *any* type of facility. Similarly, for all but a handful of small private entities, annualized costs are not expected to be greater than 0.5% of

sales. (Only with respect to two types of facilities owned or operated by small private entities – Aquatic Centers/Swimming Pools and Miniature Golf Courses – are annualized costs estimated to exceed 0.5% of sales.)

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## **APPENDIX 1: PROPOSED FRAMEWORK FOR THE REGULATORY ANALYSIS (REPRODUCED FROM ANPRM)**

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### **1. INTRODUCTION**

As directed by Executive Order 12866 and OMB Circular A-4, as well as the Regulatory Flexibility Act and Executive Order 13272, the Department may be required to conduct a comprehensive Regulatory Impact Analysis of the revised ADA Standards. A Regulatory Impact Analysis may include a statement of need for the proposed regulation, the identification of a reasonable range of alternatives, the conduct of a Benefit-Cost Analysis of the proposed regulation and the alternatives, and an analysis of uncertainty in the identification and quantification of costs and benefits. The Benefit-Cost Analysis entails the comprehensive description of the incremental costs and benefits of each alternative, to the extent practicable, in terms of monetary value. In this context, a Benefit-Cost Analysis would apply to each of the new or changed scoping and technical provisions in the revised ADA Standards that represent substantive changes from the current ADA Standards, as well as to possible alternatives to those provisions. The proposed Regulatory Impact Analysis would be included as part of the NPRM, and while the public will have an opportunity to comment on its assumptions and results at that time, this is the time to suggest significant changes to the Department's proposed methodology. In presenting in this ANPRM its current thinking on how it might approach the regulatory analysis, the Department seeks to engage the public in the choice of its methodology before significant time and effort is expended on its implementation.

#### **Role of Regulatory Impact Analysis in the ADA Regulatory Process**

Regulatory Impact Analysis is intended to inform stakeholders in the regulatory process of the effects, both positive and negative, of proposed new regulations. The principal stakeholders are those who will be directly affected by the regulations, namely people with disabilities and the owners and developers of facilities that will incur the direct costs of compliance. However, the public at large, including people both with and without disabilities, is also a key stakeholder in the regulatory process. The costs and cost savings associated with the proposed regulatory action will ripple throughout the economy, potentially affecting business costs and consumer prices. Businesses may respond to the new and revised requirements in a number of ways, some of which entail costs that may be easily measurable, such as increased or reduced construction, operating, and maintenance costs, and others of which entail costs that may not be as easily measurable, such as delays in construction and renovation. Thus, in addition to their effect on direct capital, operating, and maintenance costs, new and revised accessibility requirements influence less obvious but equally genuine aspects of cost, such as construction schedules. Construction schedules might be lengthened where the regulations impose new requirements and shortened where the burden of a given scoping or technical provision has been reduced relative to the current ADA Standards. The Regulatory Impact Analysis will seek to recognize and account for such schedule-related changes in costs.

The public at large will also benefit from the Final Rules. Accessible facilities benefit persons with and without disabilities alike. This represents their use value. For individuals with disabilities, use value will include benefits arising from the ability to participate in previously inaccessible facility-based activities, or the availability of more convenient or independently usable facility elements or spaces. In addition, because people who do not need the protections of

the ADA in the present may need them in the future, like an insurance policy, people without disabilities may place a value on accessible features. People may also place some value on the existence of accessible features unrelated to their anticipation of future personal need for them. This is reflected in people's possible willingness to pay something to ensure that equal access is provided for others (family, friends, and other members of society) who are or might become temporarily or permanently disabled, or to safeguard the principle of equal protection for people with disabilities, regardless of the risk of onset or the general incidence of disability. Benefit-Cost Analysis helps the general public ascertain whether the value of these "nonuse" related benefits is quantitatively significant relative to the costs.

Some stakeholders might believe that economic analysis of any kind is simply irrelevant with respect to the implementation of a civil rights statute. The ADA is a comprehensive civil rights statute protecting the rights of persons with disabilities, and as such, could provide sufficient justification for regulatory action even if the Benefit-Cost Analysis were to produce negative results. Others might believe that, although economic yardsticks must not override the protections laid down in Federal statutes, the comprehensive articulation, if not quantification, of all benefits, including the nonuse values discussed above, can help promote understanding and further societal implementation of the protections established in law. Some might also believe that Benefit-Cost Analysis can be helpful in evaluating options for exempting certain elements or spaces in existing facilities from the provisions of the revised ADA Standards. Stakeholders are encouraged to express their views and to advise the Department as to how best to conduct these analyses as part of any rulemaking that is published to adopt the revised ADA Standards.

## **2. SCOPE OF THE REGULATORY IMPACT ANALYSIS**

In conducting its analysis, the Department will be required to take a broader approach to the assessment of the benefits and costs of the revised ADA Standards than the Access Board was required to take in assessing ADAAG. The Department's broader approach is required for two reasons. First, while the Access Board developed the guidelines contained in ADAAG incrementally over several years, the Department is now proposing to adopt ADAAG as a whole, as the revised ADA Standards. Since 1992, the Access Board has undertaken five separate and distinct rulemaking actions. The most recent of those rulemaking actions involves 68 substantive changes and additions to the scoping and technical requirements provided in the current ADA Standards (estimated to impose annual incremental costs on new or altered facilities of between \$12.6 and \$26.7 million). The other four rulemaking actions involved the adoption of supplemental guidelines for children's facilities (\$0); state and local facilities; play areas (between \$37 and \$84 million); and recreational facilities (between \$26.7 and \$34.4 million). Examined singly, the Board estimated each of the five rulemaking actions to entail incremental annual costs of less than \$100 million, which is the threshold established in OMB Circular A-4 as the trigger for the Benefit-Cost Analysis requirement.

The Department, however, is proposing to adopt the revisions to the current ADA Standards and the four supplemental guidelines as a whole as the revised ADA Standards. When combined, the Access Board's estimated annual cost of all of the ADAAG revisions falls within a range between \$76.3 million and \$145.1 million (uncorrected for between-year inflation). With the mid-point of this range at about \$111 million, there is a material probability that the combined cost of adopting the revised ADA Standards as a whole will exceed the \$100 million threshold.

The second reason that the Department will likely be required to undertake a full Benefit-Cost

Analysis is that the Department, unlike the Access Board, is responsible for implementing the requirements of the ADA with respect to existing facilities. Thus, the Department must account for the additional incremental costs and benefits attributable to the adoption of the revised ADA Standards to the extent that the new or revised provisions will apply to existing facilities. The additional incremental cost associated with these requirements increases the likelihood that the total regulatory costs will exceed the \$100 million threshold for Benefit-Cost Analysis.

To the extent practicable, the Department proposes to apply state-of-the-art methods of Benefit-Cost Analysis as provided in OMB Circular A-4. While Circular A-4 is definitive with respect to principles, it leaves Federal agencies with discretion with respect to the means and methods of application. The Department is seeking comment, advice, and information on its proposed approach in the three key application areas, as follows: (1) categorizing the revised ADA Standards for purposes of identifying costs and benefits; (2) defining baselines and incremental costs; and (3) identifying and quantifying costs and benefits.

### **3. CATEGORIZATION OF THE REVISED ADA STANDARDS FOR PURPOSES OF ASSESSING COSTS AND BENEFITS**

The adoption of the current ADA Standards represented a fundamental change in the accessibility of facilities and, accordingly, in the extent to which people with disabilities are able to participate in the mainstream activities of daily life. Most provisions of the revised ADA Standards represent improvements in the quality of accessibility and the degree of inclusion. However, unlike the current ADA Standards, many of the improvements in the quality and degree of accessibility resulting from the revised ADA Standards will derive from changes in the scoping, design, and features of specific elements and spaces of a facility, rather than as a result of changes to the facility as whole.

The various elements and spaces addressed in the revised ADA Standards vary among different types of facilities and will be classified accordingly. In addition, the impact of the new and revised requirements may be fundamentally different with respect to facilities that are newly constructed or altered after the effective date of the revised ADA Standards, on the one hand, and existing facilities, on the other. This in turn requires an additional level of categorization. The Department and the stakeholders in this regulatory action have an interest in viewing the combined costs, benefits, and net benefits with respect to the substantive new and revised provisions in the revised ADA Standards both as a whole and as applied to particular types of facilities.

Under the Department's proposed categorization scheme, the Department will assess costs and benefits for each element addressed in the revised ADA Standards, as categorized by building and facility type, separately for newly constructed or altered facilities and existing facilities. Once costs and benefits are assessed for each element, they (costs, benefits, and net benefits) will be aggregated ("rolled-up") with respect to (i) the type of building and facility; (ii) newly constructed or altered facilities; (iii) existing facilities; and (iv) the revised ADA Standards as a whole. The different "roll-ups" will enable stakeholders to examine the regulatory analysis from their particular perspective.

#### **4. DISTINGUISHING THE BASELINES FROM THE INCREMENTAL COSTS AND BENEFITS**

OMB Circular A-4 stipulates that a regulatory analysis is only supposed to account for those costs and benefits that arise as a result of the proposed regulatory action itself. Such costs and benefits are called “incremental” because they reflect only the costs and benefits imposed by the adoption of the regulation – excluded are any costs and benefits that are imposed by already existing requirements. The latter costs and benefits constitute the “baseline” against which the incremental costs and benefits of the new regulation are compared. The baseline thus represents the costs and benefits that would arise whether or not the Final Rules are adopted. Although the current enforceable ADA Standards clearly impose costs and benefits upon society, for the purpose of the proposed Regulatory Impact Analysis, which will be designed to identify the incremental costs and benefits of the proposed rulemaking, the current ADA Standards and other Federal requirements will be considered the baseline, and as such, will be assigned zero costs and benefits. Thus, technically, if compliance with a current requirement costs \$40, and compliance with the changed requirement costs \$50, this will be stated as baseline of zero, incremental cost of \$10.

As a general principle, the Department proposes to determine the incremental cost for each element or space addressed by a new or revised standard in the revised ADA Standards by first determining whether or not the current ADA Standards specify scoping and technical requirements for that element or space. If the current ADA Standards do address the element or space, then the provision in the revised ADA Standards will be referred to as a change in existing requirements. If not, the provision in the revised ADA Standards will be referred to as a new requirement.

##### **Incremental Costs Applied to Newly Constructed or Altered Facilities**

Where a given provision in the revised ADA Standards reflects a change in the existing requirements applicable to a particular element or space, the incremental cost (or savings) for that element or space in facilities newly constructed or altered after the effective date of the revised ADA Standards will be only the difference between the costs and benefits imposed by the requirement in the current ADA Standards and other Federal requirements with respect to that element or space and the costs and benefits imposed by the changed requirement. This is because, if the revised ADA Standards were not adopted, those elements in such facilities would still be required to comply with the current ADA Standards and other Federal requirements. If, with respect to any given element or space, it costs more to implement the revised Standard than it would have cost to implement the current Standards, the assessment of incremental cost will capture that additional amount. If it costs less, the assessment of incremental savings will capture that amount.

With respect to new requirements, the entire actual cost of compliance will be attributed to the revised ADA Standards. New requirements are those applicable to elements and spaces for which there were previously no standards. For example, all amusement rides built or altered after the effective date of the revised ADA Standards are required to be accessible to persons who use wheelchairs or other mobility devices. Neither the current ADA Standards nor other Federal requirements contain any requirement with respect to amusement rides. Therefore, the costs and benefits of complying with this requirement can be attributed entirely to the revised ADA Standards.



In its regulatory analysis, the Access Board presented results based on two baseline concepts, one in which the baseline is taken as the current ADAAG requirements, and a second in which the baseline is taken as the voluntary model codes, in which the requirements are very similar to the revised ADA Standards that will be proposed in the NPRM. That regulatory analysis also discussed the extent to which State and local governments have adopted the model codes. The Department may take a similar approach in its Regulatory Impact Analysis or it may calculate incremental costs in new and altered facilities, with respect to those States and localities that have adopted a model code, as the difference between the model code requirements and the revised ADA Standards if that is determined to be practicable.

### **Incremental Costs Applied to Existing Facilities**

The same principles will apply with respect to incremental costs applicable to elements and spaces in existing facilities (those that were or will be newly constructed or altered prior to the effective date of the revised ADA Standards). Thus, with respect to elements and spaces in existing facilities, the relevant incremental costs (savings) will be only the difference between the costs and benefits imposed by the requirement in the current ADA Standards and other Federal requirements with respect to that element or space and the costs and benefits imposed by the changed requirement.

The Department is considering several options with respect to existing facilities with respect to their continuing obligations under the readily achievable barrier removal requirement. Which options the Department chooses will affect the calculation of costs and benefits with respect to elements and spaces in those existing facilities with respect to that requirement. For example, if the Department were to exempt elements and spaces that are compliant with the current ADA Standards from any obligation to comply with the revised ADA Standards pursuant to the readily achievable barrier removal requirement, the incremental costs and benefits of the revised ADA Standards with respect to those elements and spaces will be zero. In that case, only the incremental costs and benefits (actual costs and benefits of the revised ADA Standards, minus the costs and benefits of the current ADA Standards) of implementing the revised ADA Standards with respect to noncompliant (nonexempt) elements of such facilities, to whatever extent that may be required under the readily achievable barrier removal requirement, would be counted.

The Department is also considering other options that may affect the calculation of incremental costs and benefits for existing facilities with respect to their obligations under the readily achievable barrier removal requirement. Under one option, existing facilities would be permitted to apply reduced scoping requirements for specified elements and spaces in the revised ADA Standards, such as the number of accessible entries to swimming pools. Whether or not this option is selected, the entire cost of the requirement would be attributable to the revised ADA Standards because, in the absence of the new regulation, there would be no requirement applicable to these elements or spaces. However, should the Department elect to apply reduced scoping to such elements and spaces, the incremental costs and benefits of the revised ADA Standards will likely be lower than they would be if the Department did not apply reduced scoping. Under another option, for purposes of the readily achievable barrier requirement, the Department may simply exempt existing facilities from compliance with certain scoping and technical requirements in the revised ADA Standards that are deemed inappropriate for barrier

removal. Under this option, the incremental costs and benefits will also be lower than they would be if the Department did not provide such exemption.

## **5. IDENTIFYING AND QUANTIFYING COSTS, BENEFITS, AND NET BENEFITS**

While the revised ADA Standards will apply directly to newly constructed or altered facilities, the Department will determine in its ADA regulation whether and to what extent the revised ADA Standards will apply to existing facilities. The cost of any required compliance with the revised ADA Standards by existing facilities will be more difficult to determine than the cost of compliance for newly constructed and altered facilities. Many existing facilities are subject only to the readily achievable barrier removal requirement. Under that requirement, what is readily achievable for any given facility must be determined on a case-by-case basis and, by statute, has no monetary or other absolute parameters. In addition, cost estimates are more readily available with respect to newly constructed and altered facilities. Thus, while the basic principles are the same for both, the Department is considering rather different technical approaches to the Benefit-Cost Analysis of the revised ADA Standards with respect to newly constructed and altered facilities, on the one hand, and existing facilities, on the other.

### **Costs and Benefits of Provisions Applied to Newly Constructed and Altered Facilities**

For facilities that will be newly constructed or altered after the effective date of the revised ADA Standards, the Department will seek to estimate the economic value of the incremental costs and benefits of each new or revised provision, and from there the net costs or benefits of the rule as a whole, by fairly conventional means. Using the Access Board's estimates of direct unit costs as a starting point, the Department will estimate the direct life-cycle costs (based on an estimated 50-year life cycle of a building) imposed by each provision. These direct costs may include one-time cash expenditures occurring at the time of construction or alteration (also known as "capital" costs), annual cash expenditures necessary to cover the incremental costs of maintaining and operating accessible elements and spaces, and any loss of economic value caused by the reduction of productive space or productivity. Indirect costs include losses in social value that may arise as a result of the revised ADA Standards, such as reduced accessibility or, due to the increased cost of construction, a reduction in the number of total facilities and buildings that are constructed.

Benefits are primarily represented by the creation of social value, and can be divided into three categories. "Use value" is the value that people both with and without disabilities derive from the use of accessible facilities. "Insurance value" is the value that people both with and without disabilities derive from the opportunity to obtain the benefit of accessible facilities. Finally, "existence value" is the value that people both with and without disabilities derive from the guarantees of equal protection and non-discrimination that are accorded through the provision of accessible facilities. Other kinds of benefits include the saving of direct costs, such as from reduced construction, alteration, or retrofitting expenses resulting from reduced accessibility requirements.

Based on the estimates of costs and benefits, the Department will calculate the annualized value and the net present value of the rule as whole. In addition to requiring the presentation of annualized costs and benefits, OMB Circular A-4 stipulates that net present value is to be regarded as a principal measure of value produced by a Benefit-Cost Analysis when costs and benefits are separated from each other over time (i.e., when some people benefit from accessible facilities long after their construction). A net present value greater than zero would indicate that

benefits exceed costs and that the regulation can be expected to increase the general level of economic welfare accordingly. While a net present value of less than zero could mean that costs exceed benefits, the existence of significant unmeasured and qualitative benefits must be taken into account. The Department proposes to identify and discuss all unmeasured and qualitative benefits. As one means of accounting for measurement risk, the Department also proposes to adopt the method of Threshold Analysis. Under this method, if quantitatively measured costs appear to exceed quantitatively measured benefits, the Department will calculate the value that society would need to assign to un-quantified benefits in order to balance the ledger. This “threshold value” will be reported for public review and comment in the NPRM, along with a qualitative description of the un-quantified benefits at issue.

### **Quantification of Costs and Benefits**

Among the conventions of economic analysis, and an accepted principle in OMB Circular A-4, is that the amount of money people either pay or are willing to pay for goods and services represents a reasonable index of the total benefit they derive from such goods and services. This is called “willingness to pay.” The Department recognizes that the research community has made significant progress in the measurement of willingness to pay using proxies from market prices, surveys, and other methods. The Department also recognizes that some values nevertheless defy measurement. For example, while society clearly values the existence of constitutional protections, ascertaining the monetary equivalence of such values might be controversial and technically impracticable. Accordingly, the Department proposes to express benefits that are difficult to measure in qualitative rather than quantitative terms.

Circular A-4 indicates that, where available and relevant, market prices represent the appropriate starting point for ascertaining willingness to pay. Thus, for example, if a movie theater or swimming pool becomes newly accessible as a result of the revised ADA Standards, the resulting user value could be determined by multiplying the volume of new visits by people with disabilities by the market price of entry (namely, the ticket price). However, an issue with market prices arises where a provision in the revised ADA Standards renders an existing facility “more” accessible rather than newly accessible. Such might be the case, for example, with respect to the provision requiring an independent means of getting in and out of the pool in an otherwise accessible swimming facility, or the provision requiring equal access to the good seats in an otherwise accessible theater. In such cases, it may be argued that the price of entry overstates the value of the provision, since entry per se would still be feasible without the change. On the other hand, others may argue that the swimming or theater experience is fundamentally altered, perhaps even newly facilitated in a meaningful way, by the availability of improved, independent access. In practice, practitioners of Benefit-Cost Analysis employ empirical data, opinion surveys, expert judgment, and sensitivity analysis to obtain reasoned estimates of use value.

Economists also recognize that, as applied to people with low incomes, the willingness-to-pay index can underestimate economic value from the perspective of public policy. For example, the food purchases of single parents living below the poverty line are smaller than similarly constituted households with higher incomes. While both constitute willingness-to-pay data, for the low-income household, the data indicate affordability, not the economic value obtained from nutrition. In this regard, the Department recognizes that the median income among people with disabilities is significantly lower (about half) than that of the U.S. population generally. As a result, the willingness of people with disabilities to pay for access to architecturally improved facilities might not reflect the value of such facilities as viewed by the framers of the ADA and

other policy makers. In practice, most Regulatory Impact Analyses use benefit values, such as a value of a statistical life in assessing health and safety regulations, assuming that the population receiving the benefits is of average income.

Another issue that arises when willingness to pay is used as an index of value is that market prices simply do not exist for all goods and services. Such might be the case with a municipal swimming pool provided free of charge, or for a token, largely subsidized user fee. Another example might be the improvement of a particular element or space, such as a kitchen or toilet, in an otherwise accessible office building. Survey-based information is the principal means of obtaining willingness-to-pay data in such cases. A commonly used survey approach in Regulatory Impact Analysis is called the “Stated Preference” method. Stated Preference surveys pose carefully conceived and scientifically structured hypothetical choices and trade-offs to random samples of survey respondents. Special statistical analysis of the survey data is then employed in order to obtain estimates of willingness to pay. A concern with the Stated Preference surveys is that respondents may not have sufficient incentives to offer thoughtful responses that are consistent with their preferences, or that respondents may be inclined to bias their responses for one reason or another. Without a real budgetary constraint, for example, respondents with disabilities might be inclined to exaggerate their willingness to pay for more accessible facilities. On the other hand, respondents without disabilities might understate their true willingness to pay for accessibility measures due to a tendency to underestimate the risk of becoming disabled oneself. Additionally, people might have difficulty articulating the strength of their feelings regarding, for example, the integration of a child with a disability into a mainstream school or play area if they do not have a child with a disability. Perhaps people are more likely to underestimate than overestimate their willingness to pay for the existence of legal protections if they have not experienced disability first-hand or within their family. The Department recognizes the need to anticipate the risk of both under- and over-estimation of value based on the hypothetical willingness-to-pay questions posed in Stated Preference surveys. The Department recognizes as well that, other things being equal, “revealed preference” data – data based on actual transactions – is to be preferred over Stated Preference data because revealed preferences represent actual decisions in which market participants enjoy or suffer the consequences of their decisions.

Finally, measurement error is inevitable in the assessment of both costs and benefits. The revised Standards will have different implications for elements and spaces in facilities of different types and different ages. The number of elements and spaces in facilities is itself uncertain. Data will often be sparse and will be subject to recording errors of many kinds. In addition to the method of Threshold Analysis described above, the Department proposes to adopt the method of Risk Analysis to help ensure that the analysis is transparent with respect to measurement risk. While rather technical in application, the principle is straightforward: with Risk Analysis, every number employed in the analysis is expressed as a range – what statisticians call a “probability distribution” – that reflects the whole array of possible outcomes and the probability of each occurring. When all the ranges are combined into estimates of total costs and total benefits for a given regulatory provision, the result is not a single “best guess” of net benefit, but a probability range of possible outcomes.

## **Costs and Benefits of Provisions Applied to Existing Facilities Under the Barrier Removal Requirement: Proposed Simulation Model**

Title III of the ADA reflects Congress's specific intent not to establish – either in the statute or regulations – absolute technical or monetary standards for what constitutes readily achievable barrier removal in existing buildings. Some stakeholders, particularly businesses (and especially small businesses), have long expressed concern regarding the need to assess the costs of compliance with the readily achievable barrier removal requirement in absolute terms, notwithstanding the essentially relative nature of the statutory requirement. The Department is considering the development of a computer simulation model to estimate the incremental costs and benefits of the revised ADA Standards as applied to existing facilities that may be required to retrofit particular elements or spaces only to the extent required by the readily achievable barrier removal requirement. For each new or revised scoping or technical provision in the revised ADA Standards representing a substantive change from the current ADA Standards, the computer model would assess the statistical probability that existing facilities would be required to implement the provision pursuant to the readily achievable barrier removal requirement. In order to determine whether a provision would apply to a given facility, the Department contemplates plugging a range of different factors relevant to the “readily achievable” analysis into the model, including the possibility of using multiple criteria that distinguish among small- and large-sized enterprises.

Two statistical databases would be developed in order to implement the simulation model. One is a database of costs associated with retrofitting elements and spaces in existing facilities, where the facilities are stratified by type, age, physical condition, and financial size. This database would also include estimates of user and nonuser benefits. The second database would include the estimated number of elements and spaces in existing facilities that would be subject to the readily achievable barrier removal requirement (in each year of the life-cycle analysis) in each stratum. Within each stratum, the incidence of facilities in various classes would permit the model to be executed for each of the options under Departmental consideration. The Department would collect the information used to populate the databases from all available sources. As set out above, all entries in the databases would be expressed as a range of probabilities in order to account for the inevitable risk of error and varying degrees of sampling quality. Thus, the model would be statistical by nature, which means that different types and sizes of facilities would be represented as sample data, not data for each facility in the nation. Costs would be statistical in the same sense.

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## APPENDIX 2: SUMMARY OF REQUIREMENTS

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The following summaries are provided solely for the convenience of the reader and should not be interpreted to represent the official interpretations of either the U.S. Department of Justice or the United States Architectural & Transportation Barriers Compliance Board (“Access Board”).

**Key:**

ABRA	-- Access Board Regulatory Assessment of Final ADA/ABRA Guidelines (July 2004).
ADAAG	-- Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines (July 2004).
DOJ Final Rules	-- Department of Justice Final Rules - 2010 ADA Standards for Title II (28 C.F.R. part 35) and Title III (28 C.F.R. part 36).
IBC	-- International Building Code.
UFAS	-- Uniform Federal Accessibility Standards.
1991 Standards	-- DOJ ADA Standards for Accessible Design (28 C.F.R. part 36, App. A)

### ENTRANCES, DOORS AND ROUTES

#### (1) Public Entrances

ABRA 6.4. ADAAG 206.4.1; 404.

At least 60% of public entrances in newly constructed facilities will be required to be accessible. The current requirement requires 50% of public entrances to be accessible, plus additional entrances so the total number of accessible public entrances is equal to the number of required exits (based on building or fire codes; typically two), but not exceeding the total number of planned public entrances. For most facilities, it is likely to have no effect. However, for large facilities such as arenas, stadiums, convention centers, and shopping malls that are required to have many exits and plan to use them as public entrances/exits, this change will likely result in fewer accessible entrances than the current standard would have required. The revision will have no effect on altered or existing facilities.

#### (2) Maneuvering Clearance or Standby Power for Automatic Doors

ABRA 7.8. ADAAG 404.3.2.

Neither the 1991 Standards nor the Final Rules require automatic doors to be installed. However, when a facility installs an automatic door and it serves as part of an accessible means of egress, the door will now be required to have sufficient maneuvering clearance unless stand-by power is provided or the door/gate remains open when the power is off. Currently, maneuvering clearance is not required for accessible egress doors even if no stand-by power is provided and there is no open-when-off feature. ABRA 7.8 states that this requirement would have limited application and would primarily affect in-swinging automatic doors that serve small spaces with an occupant load of less than 50 persons.

### **(3) Automatic Door Break-Out Openings**

ABRA 6.24. ADAAG 404.1; 404.3; 404.3.1; 404.3.6, Exception.

Automatic doors that are part of a means of egress without standby power will be required to provide 32 inch minimum break out openings (“swing out” option) when operated in emergency mode (unless there are manual swinging doors serving the same means of egress). ABRA 6.23 states that most automatic doors already comply with this requirement.

### **(4) Thresholds at Doorways**

ABRA 6.22. ADAAG 404.1; 404.2.5, Exception.

Exterior sliding doors that are part of an accessible route<sup>74</sup> will have to provide lower (1/2 inch) thresholds (currently 3/4 inch). The revision maintains the current exception for existing thresholds that do not exceed 3/4 inch and are beveled on each side, and so will effect no change for altered or existing facilities. The revision effects no change for interior sliding doors, which are currently required to provide 1/2 inch thresholds.

### **(5) Door and Gate Surfaces**

ABRA 6.22. ADAAG 404.1; 404.2.10, Exceptions 2, 4.

Swinging doors and gates except tempered glass doors without stiles will be required to meet technical requirements (smooth surfaces on lowermost 10 inches) so that individuals who use wheelchairs can open these doors/gates without creating a trap or pinch point. Currently, there is no requirement with respect to the surface features of doors. Existing doors and gates are specifically exempted. ABRA 6.22 states that most doors are thought to be in compliance.

### **(6) Location of Accessible Routes**

ABRA 6.3. ADAAG 206.3.

An accessible route will have to coincide with or be located in the same area as the circulation path<sup>75</sup> used by the general public. Currently, accessible routes must coincide with general circulation paths to the maximum extent feasible. Because, by statute, altered facilities need only comply with accessibility requirements to the maximum extent feasible, this revision effects no change for altered or existing facilities.

### **(7) Common Use Circulation Paths in Employee Work Areas**

ABRA 6.2. ADAAG 203.9; 206.2.8; 403.5, Exception; 405.5, Exception; 405.8, Exception

Common use circulation paths within employee work areas will have to comply with the technical requirements for accessible routes, with specific exceptions provided where compliance may be difficult due to the size, arrangement, location or function of the work area. Currently, employee work areas are only required to permit individuals with disabilities to approach, enter, and exit. However, common use areas (which do have to be accessible) such as employee toilet or locker rooms, break rooms, kitchenettes, and the exits serving these spaces,

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<sup>74</sup> An accessible route must comply with specifications for walking surfaces, running slope, doorways, ramps, curb ramps, elevators, platform lifts, etc. Specifications include width of unobstructed surface, cross slope, and amount of turning space.

<sup>75</sup> A circulation path is an exterior or interior way of passage provided for pedestrian travel, including but not limited to, walks, hallways, courtyards, elevators, platform lifts, ramps, stairways, and landings.

are often located in areas adjacent to or interspersed with employee work areas. This requirement does not apply to barrier removal because it involves areas used exclusively by employees.

### **(8) Accessible Means of Egress**

ABRA 6.7. ADAAG 207.1, Exception 1; 216.4.

The Final Rules incorporate by reference the International Building Code (IBC)<sup>76</sup> requirements for accessible means of egress. The 1991 Standards generally incorporate scoping and technical requirements of local codes instead of the IBC; according to ABRA 6.7, these codes are the same as the IBC in most respects.

### **(9) Stairs (NC)**

#### **(10) Stairs (ALT/BR)**

ABRA 6.10. ADAAG 210.1, Exception 2; 504.2.

All stairs that are part of a means of egress will have to comply with the requirements for accessible stairs, which cover treads, risers, and handrails. For purposes of alterations, however, where levels are connected by an accessible route, only the handrail requirement applies. Under the 1991 Standards the requirements for stairs do not apply to stairs serving levels that are otherwise connected by an accessible route (e.g., an elevator).

### **(11) Handrails along Walkways**

ABRA 6.20. ADAAG 403.6.

Handrails on non-ramp walkways, while not required, if installed will be subject to accessibility requirements (including height, gripping surface, and clearance requirements). Currently, the technical requirements for handrails only apply to handrails that are themselves required (e.g., for ramps and accessible routes with a slope steeper than 1:20).

### **(12) Handrails**

ABRA 5.22. ADAAG 505.5 thru 505.10

The technical requirements for handrails in the Final Rules will be more flexible as compared to the current standards. These more flexible requirements apply, for example, to the distance between handrail gripping surfaces and other surfaces (currently exactly 1.5 inches; revised a minimum of 1.5 inches) and a wider range of approved handrail gripping surface diameters. This revised provision also eliminates the requirement for a horizontal section of handrail at the bottom of stairs.

### **(13) Accessible Routes from Site Arrival Points and Within Sites**

ABRA 5.3. ADAAG 206.2.1, Exception 2; 206.2.2, Exception.

With respect to areas within sites or between an entrance and site arrival point that can only be accessed by vehicle (such as the roads and parking areas of many suburban “big-box” retail shopping malls), facilities will be exempt from providing a pedestrian accessible route. Currently buildings and facilities on a site are required to be connected by an accessible route even if sidewalks are not provided.

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<sup>76</sup> The IBC is a voluntary model building code that has been adopted, in whole or in part, by nearly all States and local jurisdictions.



## **LIFTS/ELEVATORS**

### **(14) Standby Power for Platform Lifts**

ABRA 7.2. ADAAG 207.2.

Where a platform lift is used as part of an accessible means of egress, it will be required to have a back-up power source. Currently, such lifts are not required to have back-up power.

### **(15) Power-Operated Doors for Platform Lifts**

ABRA 7.9. ADAAG 410.6.

Platform lifts will be required to have power-operated doors with the exception of lifts that serve no more than two landings which are permitted to have self-closing manual doors on opposite ends. Current standards permit either maneuvering space or power-operated doors. ABRA 7.9 states that platform lifts typically do serve only one or two landings and do have self-closing manual doors on both sides.

### **(16) Alterations to Existing Elevators**

ABRA 6.6. ADAAG 206.6.1.

When an element in an existing elevator is altered, the same element will have to be altered in any other elevators that are programmed to respond to the same call button. Currently, only elements being altered have to be made accessible.

### **(17) Platform Lifts in Hotel Guest Rooms and Dwelling Units**

ABRA 5.8. ADAAG 206.7; 206.7.6.

A multi-story hotel guest room or residential dwelling unit that is required to be accessible will be allowed to use a platform lift in lieu of an elevator as part of the accessible route. Under the current standard, only elevators would be permitted.

### **(18) Limited Use/Limited-Application Elevators (LULA) and Private Residence Elevators**

ABRA 5.7. ADAAG 206.2.3, Exceptions 1-2; 206.6, Exceptions 1-2; 206.7

Facilities that are not required to install an elevator but that plan one anyway will be permitted to install a LULA instead. This provision will also permit private residence elevators to be used in a multi-story residential dwelling unit. The revision will affect multi-story facilities that meet the elevator exemption in ADAAG 206.2.3 or 206.7.

## **PARKING LOTS, GARAGES AND LOADING ZONES**

### **(19) Van Accessible Parking Spaces**

ABRA 7.3. ADAAG 208.2.4.

One in six (rather than one in eight) accessible spaces is required to be van accessible. This will only affect facilities with more than 200 parking spaces. ABRA 7.3 states that facilities that are required to provide only two van accessible spaces (those with 600 or fewer total parking spaces) may not incur increased cost where the two spaces are placed together and share a common access aisle.

## **(20) Valet Parking**

ABRA 6.9. ADAAG 208.2.

Facilities with valet-only parking services, which currently must provide an accessible passenger loading zone but are not required to provide accessible parking spaces, will now have to provide accessible parking spaces as well.

## **(21) Mechanical Access Parking Garages**

ABRA 6.9. ADAAG 209.4-5.

Mechanical access parking garages<sup>77</sup> will no longer be exempt from providing an accessible passenger loading zone; these loading zones, will be required at vehicle drop-off and pick-up areas.

## **(22) Direct Access Entrances from Parking Structures**

ABRA 6.5. ADAAG 206.4.2.

All (rather than one) direct pedestrian connections from a parking structure to a facility will be required to be accessible. For large facilities such as shopping malls, this may result in more accessible entrances than would otherwise be required by ADAAG 206.4.1.

## **(23) Passenger Loading Zones**

ABRA 6.8. ADAAG 209.2.1; 503.2-4.

Facilities that provide one long continuous passenger loading zone will have to provide one accessible passenger loading zone for every 100 feet of loading space. Access aisles will have to be on the same level as the vehicle pull-up space (currently can be on a sidewalk with a curb ramp). ABRA 6.8 states that this requirement is designed to apply to airports, where loading zones more than 100 feet long are common.

## **(24) Parking Spaces**

ABRA 5.9. ADAAG 208.1, Exception.

This provision clarifies that parking spaces designated for the exclusive use of buses, delivery vehicles, law enforcement vehicles and the like are not required to be accessible. Parking lots containing such spaces, however, if they are accessed by the public, will have to have an accessible loading zone.

## **(25) Parking Spaces (Signs)**

ABRA 5.9. ADAAG 216.5, Exceptions 1-2.

Facilities with four or fewer parking spaces and residential facilities with assigned parking spaces will no longer be required to identify accessible parking spaces (including the van accessible space) with signs displaying the International Symbol of Accessibility.

## **(26) Passenger Loading Zones at Medical Care and Long-Term Care Facilities**

ABRA 5.10. ADAAG 209.3.

Where a medical or long-term care facility offers periods of stay longer than 24 hours, it is required to provide at least one passenger loading zone at an accessible entrance. Currently, these

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<sup>77</sup> Mechanical access garages use lifts, elevators, or other mechanical devices to move vehicles from the street level to a parking tier.

accessible loading zones are required to have a canopy or roof overhang. Under the revised provision, they will not.

## **BATHROOMS**

### **(27) Ambulatory Accessible Toilet Compartments**

ABRA 7.4. ADAAG 213.3.1; 604.8.2.

In multi-user men's toilet rooms where the number of toilet compartments and urinals equals six or more, at least one toilet compartment will have to be ambulatory accessible. The 1991 Standards currently count only toilet compartments for this purpose; ABRA 7.4. states that the change is intended to create parity with multi-user women's toilet rooms.

### **(28) Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors**

ABRA 7.10. ADAAG 604.3.

This provision only represents a change for single-user toilet rooms that have a lavatory installed adjacent to the water closet; this number represents rooms with *out*-swinging doors. For such toilet rooms, the water closet will now have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory will no longer be permitted to overlap the water closet clearance, except in special dwelling unit cases.

### **(29) Shower Spray Controls**

ABRA 7.11. ADAAG 607.6; 608.6.

In accessible bathtubs and shower compartments, the revised standards require shower spray controls to have an on/off control and to deliver water that is 120°F (49°C) maximum. Currently, neither feature is required. Meeting the latter specification will require either controlling the maximum temperature at each shower spray unit or at the hot water supply.

### **(30) Urinals**

ABRA 5.13. ADAAG 213.3.

In men's toilet rooms with only one urinal, an accessible urinal will no longer be required. Currently, where a toilet room provides only one urinal, it must be accessible. Because an inaccessible urinal has limited clear floor space, it is inaccessible not only to wheelchair users but also to ambulatory users who walk with crutches or a cane. Such toilet rooms will still be required to provide an accessible toilet compartment.

### **(31) Multiple Single-User Toilet Rooms**

ABRA 5.12. ADAAG 213.2, Exception 4.

Where multiple single-user toilet rooms are clustered in a single location, 50% (rather than 100%) will be required to be accessible. Among the types of facilities to which this will likely apply are medical facilities where multiple single-user toilet rooms are provided for specimen collection. Accessible single-user toilet rooms will have to be identified by the international symbol of accessibility.

### **(32) Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors**

ABRA 5.23. ADAAG 603.2.3, Exception 2; 604.3

This provision only represents a change for single-user toilet rooms that have a lavatory installed adjacent to the water closet; this number represents rooms with *in*-swinging doors. For such toilet rooms, the water closet will now have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory will no longer be permitted to overlap the water closet clearance, except in special dwelling unit cases. The in-swinging doors will be permitted to swing into the clearance around any fixture, as long as clear floor space is provided within the toilet room beyond the door's arc.

### **(33) Water Closet Location and Rear Grab Bar**

ABRA 5.24. ADAAG 604.2; 604.5.2, Exception 1.

The revised provision will allow greater flexibility for the placement of the centerline of water closets, and will also permit a shorter grab bar where there is not enough space due to special circumstances (e.g., because a lavatory is located next to the water closet and the wall behind the lavatory is recessed so that the lavatory does not overlap the clear floor space at the water closet). The 1991 Standards contain no exception for grab bar length, and require the centerline to be exactly 18 inches from the side wall, while the revised requirement will allow the centerline to be between 16 and 18 inches from the wall.

### **(34) Patient Toilet Rooms**

ABRA 5.19. ADAAG 223.1, Exception.

Toilet rooms that are part of critical or intensive care patient sleeping rooms will no longer be required to provide mobility features.

## **COMMON ELEMENTS**

### **(35) Drinking Fountains**

ABRA 6.11. ADAAG 211.2, Exception; 211.3, Exception; 602.2, Exception; 602.4; 602.7.

Drinking fountains will be required to provide a forward approach only (with knee and toe clearance) unless they are used exclusively by children. The 1991 Standards permit both parallel and forward approaches. ABRA 6.11 states that the forward approach is more common in new drinking fountains.

### **(36) Sinks**

ABRA 6.12. ADAAG 212.1.3; 606.2, Exception.

(Note: Sinks are used in places like kitchens, and are distinguished from lavatories, which are used in places like toilet and locker rooms.) The 1991 Standards provide technical specifications but no scoping requirement for sinks, which are only subject to the general rule for unscoped elements (“a reasonable number, but at least one”). Under the revised provision, at least 5% of sinks in each accessible space will be required to be accessible. Both the 1991 Standards and the Final Rules permit the clear floor space for sinks to be positioned for a parallel approach, but the revised provision makes an exception for spaces that include a cook top or conventional range, which will have to be positioned for a forward approach.

### **(37) Side Reach**

ABRA 6.19. ADAAG 205.1; 228.1-2; 308.3; 309.3.

Compared to the current requirement, the revised side reach requirement will have a lower maximum (48" instead of the current 54") and higher minimum (15" instead of 9"). The requirement will apply to operable parts on accessible elements located on accessible routes, and to elements in accessible rooms and spaces. Elements and operable parts and controls that could be affected by the revised side reach requirements include: electrical outlets; thermostats; fire-alarm pull stations; card readers; keypads; coat hooks; window control hardware; paper towel dispensers and hand dryers in toilet rooms; ATMs; and at least one in each group of depositories, vending machines, change machines, and gas pumps (with a specified exception). (Elements may comply with either the side or forward reach requirement.)

### **(38) Sales and Service Counters (NC)**

#### **(39) Sales and Service Counters (ALT)**

ABRA 5.26. ADAAG 904.4, Exception; 904.4.1, Exception; 904.4.2.

For counters providing a forward approach, the revised requirement will permit the counter to be shorter in length, by 6 inches, than currently required (30" instead of the current 36"). Altered facilities could install even shorter (24") counters if longer counter lengths would require reducing the number of existing counters.

### **(40) Washing Machines (technical and scoping)**

#### **(41) Clothes Dryers (technical and scoping)**

ABRA 5.21. ADAAG 214.2-3; 611.3; 309.3; 309.3.2, Exception 1.

The revised requirements specify the number of machines of each type required to be accessible (1-2 depending upon the total number provided). An exception permits the maximum height for the tops of these machines to be 2 inches higher than the general requirement for high reach maximums over an obstruction. ABRA 5.21 states that the exception is designed to accommodate the height of currently available machines.

### **(42) Self-Service Storage Facility Spaces**

ABRA 5.20. ADAAG 225.3.

The revised requirements specify the number of storage spaces required to be accessible; i.e., 5% of the first 200 storage spaces and 2% of the excess over 200. Currently, only one storage unit in each class is required to be accessible.

### **(43) Limited Access Spaces and Machinery Spaces**

ABRA 5.1. ADAAG 203.4-5.

The revised requirement exempts spaces that either have limited means of access (catwalks, crawl spaces, etc.) or are visited only by service personnel, even if such spaces are nonetheless "occupiable." The current provision only exempts such spaces if both conditions apply and the space is "non-occupiable."

### **(44) Operable Parts**

ABRA 5.2. ADAAG 205.1, Exceptions.

Various exceptions will be added to the requirement that operable parts be accessible, including exceptions for operable parts to be used solely by service or maintenance personnel, redundant

controls (except for light switches), extra outlets along an uninterrupted kitchen counter, floor electrical receptacles, outlets for dedicated use, and HVAC diffusers.

**(45) Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)**

ABRA 7.10. ADAAG 604.3 (water closet clearances) & ABRA 7.13. ADAAG 806.2.4.1 (transient lodging guest room vanities)

Due to considerations unique to bathrooms in mobility-accessible guest rooms in transient lodging facilities (i.e., inns, hotels, and motels), the specifications in the Final Rules for water closet clearances and comparable guest room vanities are addressed collectively in this requirement. With respect to water closet clearances: This requirement only represents a change for a single-user toilet room in a mobility-accessible guest room that has a lavatory installed adjacent to the water closet; this requirement assumes the toilet room has an *out*-swinging door. For such toilet rooms, the water closet will now have to provide clearance for both a forward and a parallel approach (the current standard permits one or the other), and the lavatory will no longer be permitted to overlap the water closet clearance. With respect to vanities: If vanity countertop space is provided in a toilet or bathing room in a lodging facilities' mobility-accessible guest room, vanity counter top space that is comparable, in terms of size and proximity to the lavatory, will be required. This requirement may make the mobility-accessible bathroom more usable to all hotel guests.

**(46) Operable Windows**

ABRA 7.6. ADAAG 229.1.

In accessible rooms where the windows are intended to be opened by the occupants, at least one window will have to be accessible (i.e., meet the technical requirements for operable windows). An exception applies to accessible rooms in public dwelling units. This requirement does not apply to windows intended to be opened by employees. The revision will primarily affect hotel guest rooms, dorm rooms and patient sleeping rooms with mobility features because windows in most other types of facilities are intended to be opened by service or maintenance personnel and not the occupants.

**(47) Dwelling Units with Communication Features [1991 Standards]**

**(48) Dwelling Units with Communication Features [UFAS]**

ABRA 7.14. ADAAG 809.5; 708.4.

At least 2% of public housing units will be required to provide communication features. Communication features include peepholes and doorbells with both audible and visual signals at primary entrances (if provided within sleeping quarters, turn-off switch required); voice and TTY at entrance (if voice communication provided at entrances); extension of system wiring to smoke detection systems within these units (if alarm system provided in building); extension of visual alarms (if provided) into these units and building area where units are located.

**(49) Galley Kitchen Clearances**

ABRA 7.12. ADAAG 804.2.

The revised requirement clarifies what constitutes a “pass-through” kitchen, but makes no changes to clearance requirements. This clarification means that “galley” style kitchens that do not have two entrances must meet the greater (60 inches) clearance requirements of “u-shaped” kitchens. Spaces without a cook top or conventional range will be exempt from kitchen clearance

requirements. ABRA 7.12 states that this revision primarily affects “galley” kitchens without two entrances in dwelling units with mobility features. The 1991 Standards do not provide any requirement with respect to kitchen clearances.

#### **(50) Shower Compartments in Hotel Guest Rooms with Mobility Features**

ABRA 5.25. ADAAG 608.1; 608.2.1; 608.2.3; 608.4; 608.5.3; 608.7, Exception.

The revised requirement will provide more flexible specifications for transfer-type and roll-in showers. Specifications for transfer-type showers (which must be 36" x 36") will accommodate molded compartments with rounded bottom edges and permit a higher maximum curb (as high as 2 inches; otherwise only a ½ inch) in altered facilities where structural reinforcement of the floor slab would otherwise be disturbed. “Alternate” roll-in showers (larger than standard roll-in showers --at least 36" x 60," rather than 30" x 60," with a 36" opening on the long side) which are currently permitted only in hotel rooms and require the shower controls to be located adjacent to the seat on the long side, will now be permitted in all facilities and will permit the controls to be located elsewhere. Also, a low curb (up to ½ inch high) will be allowed in roll-in showers, which may reduce usability for some while improving the containment of water in some installations.

### **ASSEMBLY AREAS**

#### **(51) Location of Accessible Route to Stages**

ABRA 7.1. ADAAG 206.2.6.

For stages where the circulation path (for the general audience) directly connects the stage to the seating area, the accessible route also will have to be direct. Currently, an accessible route connecting accessible seating locations to performing areas may go outside the assembly area and use an indirect interior accessible route.

#### **(52) Wheelchair Space Overlap in Assembly Areas**

ABRA 6.26. ADAAG 802.1.4, 802.1.5.

Wheelchair spaces will not be permitted to overlap accessible routes or circulation paths. Currently, although accessible routes and circulation paths are not supposed to be obstructed by any object, this requirement was not explicit.

#### **(53) Lawn Seating in Assembly Areas**

ABRA 6.15. ADAAG 221.5.

Lawn seating and exterior overflow seating areas without fixed seats will have to connect to an accessible route. The accessible route does not, however, have to extend through the lawn seating area.

#### **(54) Handrails on Aisle Ramps in Assembly Areas**

ABRA 5.11. ADAAG 210.1, Exception 3; 405.1, Exception.

Handrails on aisle ramps adjacent to seating in assembly areas that are part of an accessible route to accessible seating or other accessible elements, which are required to be on only one side of the ramp (the side that is not adjacent to the seats), will be permitted to be discontinuous and

need not have extensions beyond the ramp where the handrails must be discontinuous to allow access to seating and aisle crossing.

#### **(55) Wheelchair Spaces in Assembly Areas**

ABRA 5.18. ADAAG 221.2; 221.2.1-3.

A revised formula will reduce the number of wheelchair spaces required in larger assembly areas with fixed seating. This revised formula provides 6 wheelchair spaces for the first 500 seats; 1 space for each 150 seats for the next 500 to 5000 seats; and 1 space for each 200 seats in excess of 5000 seats. The revision will also clarify that these requirements should be applied separately to each type of seating. The current formula provides for 6 wheelchair spaces for the first 500 seats and then 1 space for each 100 seats in excess of 500.

#### **(56) Accessible Route to Tiered Dining Areas in Sports Facilities**

ABRA 5.4. ADAAG 206.2.5, Exception 3.

An accessible route will have to be provided to 25% of tiered dining areas. Each tier will have to provide the same services and the accessible route will have to serve accessible seating. Currently, all newly constructed tiered dining areas must be accessible, while in alterations, tiered dining areas are not required to be made accessible as long as the same services and décor are provided on an accessible level that is usable by the general public.

#### **(57) Accessible Route to Press Boxes**

ABRA 5.4. ADAAG 206.2.5, Exception 3.

Where the aggregate area of all press boxes does not exceed 500 square feet, small press boxes that are located on bleachers with entrances on only one level and freestanding small press boxes elevated more than 12 feet will be exempted from accessibility requirements. ABRA 5.5 states that this new exception was designed to apply to high school sports facilities; it could affect smaller facilities at colleges as well.

### **EFFECTIVE COMMUNICATION**

#### **(58) Public TTYs**

ABRA 7.5. ADAAG 217.4.

For interior pay phones in private facilities, at least one public TTY will be required in facilities with more than 4 public pay phones (per building and/or per floor) and in banks of 4 or more phones. For interior pay phones in government facilities, at least one public TTY will be required in facilities with at least one public pay phone in a public use area (per building and/or per floor) and in banks of 4 or more phones. (For both types of facilities, this requirement will not apply if there is another bank of telephones containing a public TTY within 200 feet and on the same floor.) For exterior pay phones in both types of facilities, at least one public TTY is required on a site with 4 or more public pay phones in an exterior location. The 1991 Standards require TTYs in these facilities but not on each floor that has four or more (or one or more, for government facilities) public phones. New with this revision is the requirement for a TTY wherever there are banks of four or more telephones (except as specified) and at all public rest stops that have a public pay phone.



**(59) Public Telephone Volume Controls**

ABRA 6.13. ADAAG 217.3; 704.3.

All public pay phones (interior and exterior) will be required to have volume controls; identifying signs will no longer be required. The revision will also expand the volume increase range. ABRA 6.13 states that these are the same technical requirements now in effect under other accessibility laws.

**(60) Two-Way Communication Systems**

ABRA 7.7. ADAAG 230.1; 708.

Two-way communication systems at entrances used to gain admission to a facility or a restricted area inside a facility will be required to have visible as well as audible signals. Handsets, if provided, will be subject to minimum handset cord length requirements.

**(61) ATMs and Fare Machines**

ABRA 6.26. ADAAG 707.

Revision will add specific technical requirements for privacy, speech output, tactilely discernable input controls, display screens, and Braille instructions to current general accessibility requirements. Exceptions will be made that relate to the type of network or information provided (for example, audible tones will not be required for visible output where privacy is desirable). The 1991 Standards require these machines to be accessible to and independently usable by persons with vision impairments, but do not contain any technical specifications.

**(62) Assistive Listening Systems (Technical)**

ABRA 6.25 and 5.17. ADAAG 706, 219.3, Exception 2.

Assistive listening systems (ALS) will now be required to meet certain technical requirements (such as standard mono jacks and specifications for sound level pressure, signal-to-noise ratio, and peak clipping levels). In addition, a new provision requires 25% (minimum 2) of the ALS receivers provided by an assembly areas to be hearing-aid compatible unless the assembly area uses an induction loop assistive listening system. ABRA 6.25 states that currently available assistive listening systems meet the new specifications.

**(63) Visible Alarms in Alterations to Existing Facilities**

ABRA 5.14. ADAAG 202.3; 215.1, Exception.

New exception will require visible alarms to be added to existing fire alarm systems only when systems are upgraded or replaced, or when a new system is installed.

**(64) Detectable Warnings (scoping) and****(65) Detectable Warnings (technical)**

ABRA 5.27. ADAAG 218.2-3; 810.5; 810.5.2; 705.1.1-3; 705.2.

Curb ramps, hazardous vehicular areas, and reflecting pools will no longer be subject to the requirement for detectable warnings. Detectable warnings will still be required at transit platform edges. New technical requirements will be added for detectable warnings. This requirement has been suspended in part during much of the period since its adoption and is being reconsidered by the Access Board under another set of guidelines.

#### **(66) Assistive Listening Systems (Scoping)**

ABRA 5.17. ADAAG 219.2, Exception; 219.3, Exceptions 1-2.

Revised formula will reduce the number of receivers required for assistive listening systems in larger assembly areas. Revised formula will require the number of receivers to equal 4% (minimum 2) of the seats for the first 500 seats, 3% of the next 501-1000 seats, 2% of the next 1001-2000 seats, and 1% of seats over 2000. (Current formula requires the number of receivers to equal 4% (minimum 2) of all the seats, with no change in formula for larger areas). Multiple assembly areas within one facility and under the same management will be able to calculate the number of receivers based on total seats in the facility. Assembly areas (except courtrooms) without audio amplification systems will no longer be required to provide assistive listening systems (currently assistive listening systems are required in all assembly areas that have an occupant load of at least 50 people).

### **STATE AND LOCAL JUDICIAL, DETENTION AND CORRECTIONAL FACILITIES**

#### **(67) Accessible Courtroom Stations**

ADAAG 231.2; 808 (also 304, 305, and 902).

Clear floor space for a forward approach will be required for all courtroom stations (judges' benches, clerks' stations, bailiffs' stations, deputy clerks' stations, court reporters' stations and litigants' and counsel stations). Other accessibility specifications will include accessible work surface heights and toe and knee clearance.

#### **(68) Accessible Attorney Areas and Witness Stands**

ADAAG 206.2.4.

Vertical access by ramp, elevator, or platform lift will have to be fully in place at time of construction or alteration. (Members of the public who need vertical access could appear at any time as members of the jury, attorneys, or witnesses.)

#### **(69) Raised Courtroom Stations Not for Members of the Public**

ADAAG 206.2.4, Exception 1.

Raised courtroom stations that are used by judges, clerks, bailiff, and court reporters will not have to provide full vertical access when first constructed or altered if they are constructed to be easily adaptable to vertical accessibility. (The need for vertical access to these stations will be known far enough in advance to add the actual access when effective.)

### **EXERCISE FACILITIES**

#### **(70) Accessible Route to Exercise Machines and Equipment**

ABRA-REC Chapters 9 and (court sports) 11. ADAAG 206.2.13.

An accessible route must serve fixed exercise machines and equipment that are required to be accessible.

**(71) Accessible Exercise Machines and Equipment**

ABRA–REC Chapters 9 and (court sports) 11. ADAAG 236; 1004.

One of each type of exercise machine must meet clear floor space specifications. Types of machines are generally defined according to the muscular groups exercised or the kind of cardiovascular exercise provided.

**(72) Accessible Saunas and Steam Rooms (NC) &  
(111) Accessible Saunas and Steam Rooms (ALT/BR)**

ABRA–REC Chapter 10. ADAAG 241; 612.

Saunas and steam rooms will be required to meet accessibility requirements, including accessible turning space and an accessible bench. Where they are provided in clusters, 5% but at least one sauna or steam room in each cluster will have to be accessible.

**(73) Accessible Lockers**

ABRA–REC Chapters 9 and (court sports) 11. ADAAG 225.2.1; 811.

Lockers will be required to be accessible. Where lockers are provided in clusters, 5% but at least one locker of each type (e.g., full-length, half-length, etc.) in each cluster will have to comply. Under the current standard, only one locker of each type provided is required to be accessible. Therefore, this requirement represents a change only for facilities with more than 20 of a particular type of locker in a cluster.

**(74) Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms**

ABRA–REC Chapters 9 and (court sports) 11. ADAAG 222; 803.

Dressing rooms, fitting rooms, and locker rooms will have to be accessible. Where rooms are provided in clusters, 5% but at least one of each type of room in each cluster will have to be accessible.

**OTHER RECREATIONAL FACILITIES****(75) Wheelchair Space in Team or Player Seating Areas**

One or more wheelchair spaces will be required in each team or player seating area with fixed seats, depending upon the number of seats provided for spectators. For bowling lanes, the requirement will be limited to lanes required to be accessible.

**(76) Accessible Route in Court Sport Facilities**

ABRA–REC Chapters 9 and (court sports) 11. ADAAG 206.2.12.

Each area of sport activity (e.g., courts and playing fields, whether indoor or outdoor) will have to be served by accessible route. In court sports, the route will also have to directly connect both sides of court.

**(77) Accessible Route to Bowling Lanes**

ABRA–REC Chapters 9 and (court sports) 11. ADAAG 206.2.11.

An accessible route will be required to each bowling lane. Where bowling lanes are provided in clusters, 5% but at least one lane in each cluster will have to be accessible. This requirement will only represent a change for bowling facilities with more than 20 lanes per cluster.

**(78) Shooting Facilities with Firing Positions**

ABRA–REC Chapters 9 and (court sports) 11. ADAAG 243; 1010.

An accessible turning space will be required for each different type of firing position at a shooting facility if designed on site. Where firing positions are provided in clusters, 5% but at least one position of each type in each cluster will have to be accessible. This requirement will only represent a change for shooting facilities with more than 20 firing positions of a particular type per cluster.

**(79) Primary Accessible Means of Entry to Pools (NC/ALT) &****(112) Primary Accessible Means of Entry to Pools (BR)**

ABRA–REC Chapter 10. ADAAG 242.2; 1009.2-1009.3.

Swimming pools generally will be required to have at least one accessible means of entry. This primary accessible entry must be either a pool lift or a sloped entry. Larger swimming pools (*i.e.*, those with over 300 linear feet of pool wall) must also provide a second accessible means of entry which is addressed separately in Requirement ## 115 & 116.

**(80) Accessible Means of Entry to Wading Pools<sup>78</sup>**

ABRA–REC Chapter 10. ADAAG 242.3; 1009.3.

At least one sloped means of entry will be required into the deepest part of each wading pool.

**(81) Accessible Means of Entry to Spas (including hot tubs)**

ABRA–REC Chapter 10. ADAAG 242.4; 1009.2, 4, 5.

Spas will be required to meet accessibility requirements, including an accessible means of entry. Where spas are provided in clusters, 5% but at least one spa in each cluster will have to be accessible. Either a pool lift, a transfer wall, or transfer system will be permitted.

**RECREATIONAL BOATING FACILITIES<sup>79</sup> AND FISHING PIERS****(82) Accessible Route to Boating Facilities**

206.2.10; 1003.2

New Construction Requirement: An accessible route will be required to all accessible boating facilities, including boat slips and boarding piers at boat launch ramps. If gangways (only one end of route is attached to land) and floating piers (neither end is attached to land) are involved, a number of exceptions from the general standards for accessible routes will be provided in order to take into account the difficulty of meeting accessibility slope requirements due to fluctuations in water level.

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<sup>78</sup> The Department is aware that this requirement may not be technically feasible in many circumstances. The requirement has been included in this analysis, but with an extremely low likelihood of occurrence.

<sup>79</sup> Recreational Boating Facilities include marinas, launching facilities, piers, and docks that are designed for recreational use, but do not include the design of passenger vessels or ferry docks, or access on and off passenger vessels.

Alterations Requirement: Where an existing gangway or series of gangways is replaced or altered, an increase in the length of the gangway shall not be required except to the extent required by the path of travel requirement.

**(83) Accessible Boarding Piers (NC) &  
(84) Accessible Boarding Piers (ALT/BR)**

ABRA–REC Chapter 5. ADAAG 235.3; 1003.2-3.

If provided at boat launch ramps, 5% of boarding piers, but at least one, will have to be accessible. Accessible boarding piers must comply with the requirements for accessible boat slips for the entire length of the pier. Clear pier space at least 60" wide and at least as long as boat slip. Every 10' maximum of linear pier edge must contain at least one continuous clear opening at least 60" wide. (Exception permitting clear pier space to be 36" wide for length of up to 24", provided that multiple 36" wide segments are separated by segments that are at least 60" clear in width and length.) Permits edge protection up to 4" high and up to 2" deep at continuous pier openings. Cleats and other boat securement devices are not required to comply with height provisions for controls and operating mechanisms.

**(85) Accessible Boat Slips (NC) &  
(86) Accessible Boat Slips (ALT/BR)**

ABRA–REC Chapter 5. ADAAG 235.2; 1003.3.1.

New Construction Requirement: A specified number of boat slips in each recreational boating facility will be required to meet specified accessibility standards and to be dispersed throughout the boat slip area and among the various types of slips provided. The scoping ranges from 1 accessible boat slip for facilities with 25 or fewer boat slips to 12 accessible boat slips for facilities with 901 to 1000 boat slips (plus 1 additional accessible boat slip for each 100 boat slips over 1000). Where the number of boat slips is not identified, each 40 feet of boat slip edge provided along perimeter of pier counts as one boat slip. Increase in number of accessible boat slips not required. Clear pier space at least 60" wide and at least as long as boat slip. Every 10' maximum of linear pier edge must contain at least one continuous clear opening at least 60" wide. (Exception permitting clear pier space to be 36" wide for length of up to 24", provided that multiple 36" wide segments are separated by segments that are at least 60" clear in width and length.) Permits edge protection up to 4" high and up to 2" deep at continuous pier openings. Cleats and other boat securement devices are not required to comply with height provisions for controls and operating mechanisms.

Alterations Requirement: In existing piers, clear pier space may be perpendicular to and extend the width of the boat slip if the facility has at least one accessible boat slip and providing more will reduce the total number (or widths) of boat slips.

**(87) Accessible Route to Fishing Piers**

ABRA–REC Chapter 6. ADAAG 206.2.14; 1005.1.

New Construction Requirement: An accessible route will be required to each accessible fishing pier and platform. The exceptions described under recreational boating will apply to gangways and floating piers.

Alterations Requirement: Where an existing gangway or series of gangways is replaced or altered, an increase in the length of the gangway shall not be required except to the extent required by the path of travel requirement.

**(88) Accessible Fishing Piers and Platforms**

ABRA–REC Chapter 6. ADAAG 237; 1005.

At least 25% of railings will be required to be no higher than 34" high (so that a person seated in a wheelchair could reach over the railing) and dispersed among the piers and platforms. If railings, guards, or handrails are provided, accessible edge protection, clear floor or ground space, and turning space will be required. An exception permits railings to comply, instead, with the IBC provision, which permits railings to be 42" high.

**GOLF AND MINIATURE GOLF COURSES**

**(89) Accessible Route to Golf Courses**

ABRA–REC Chapter 4. ADAAG 206.2.15; 1006.2-3.

An accessible route will be required to connect all accessible elements within the boundary of the golf course and, in addition, to connect golf car rental areas, bag drop areas, teeing grounds, putting greens, and weather shelters. An exception permits the accessible route requirements to be met, within the boundaries of the golf course, by a "golf car passage" (the path typically used by golf cars) if specifications for width and curb cuts are met.

**(90) Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (ALT/BR)**

ABRA–REC Chapter 4. ADAAG 238.2; 1006.4.

Golf cars will have to be able to enter and exit each putting green, each weather shelter, and, for each hole, at least one teeing ground (two if more than two teeing grounds are provided), including the forward ground. In existing golf courses, where compliance is not feasible due to terrain, the forward teeing ground is not required to be one of the teeing grounds that can be accessed by a golf car.

**(91) Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (NC)**

ABRA–REC Chapter 4. ADAAG 238.2; 1006.4.

Golf cars will have to be able to enter and exit each putting green, each weather shelter, and, for each hole, at least one teeing ground (two if more than two teeing grounds are provided), including the forward ground.

**(92) Accessible Practice Grounds (Putting Greens, Practice Teeing Grounds, and Teeing Stations) at Driving Ranges**

ABRA–REC Chapter 4. ADAAG 238.3.

5% but at least one of each of practice putting greens, practice teeing grounds, and teeing stations at driving ranges will have to permit golf cars to enter and exit.

**(93) Accessible Route to Mini Golf Holes**

ABRA–REC Chapter 8. ADAAG 206.2.16; 239.3; 1007.2.

An accessible route will be required to connect accessible miniature golf holes and, as well, the last accessible hole directly to the course entrance or exit; generally, the accessible holes will have to be consecutive with one permitted break in the sequence of holes. Specified exceptions would be available for accessible routes located on the playing surfaces of holes.

**(94) Accessible Mini Golf Holes**

ABRA–REC Chapter 8. ADAAG 239.2; 1007.3.

At least 50% of miniature golf holes on miniature golf courses will be required to be accessible (includes specified clear space at start of play and specified golf club reach range area).

**RIDES AND PLAY AREAS<sup>80</sup>****(95) Accessible Route to Amusement Rides**

ABRA–REC Chapter 4. ADAAG 206.2.9; 1002.2.

An accessible route will be required to serve each ride, including the load/unload area.

**(96) Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride**

ABRA–REC Chapter 4. ADAAG 234.2; 1002.4-6.

New Construction Requirement: Each newly constructed amusement ride, except for mobile/temporary rides and a few additional excepted rides, will be required to provide at least one type of wheelchair accessibility, by means of one wheelchair space or one transfer seat or one transfer device (the design of the transfer device is not specified).

Alterations Requirement: Existing amusement rides are exempt unless their structural or operational characteristics are altered to the extent that their performance differs from that specified by the manufacturer or the original design.

**(97) Maneuvering Space in Load and Unload Area of Amusement Ride**

ABRA–REC Chapter 4. ADAAG 234.2; 1002.3.

Specified maneuvering space is required in the load/unload area of each amusement ride, except for mobile/temporary rides.

**(98) Signs at Amusement Rides**

ABRA–REC Chapter 4. ADAAG 216.12.

Signs are required at entries to queues and waiting lines identifying the type and location of access for the amusement ride.

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<sup>80</sup> Play areas include those designed for children aged 2 and older. Exceptions include family facilities where the proprietor resides. Requirements apply separately to play areas separated geographically or by age.

**(99) Accessible Route to Play Components (BR),  
(101) Accessible Route to Play Components (ALT) &  
(103) Accessible Route to Play Components (NC)**

ABRA-PLAY Chapter 4. ADAAG 206.2.17; 240.1-.2; 1008.2-.4.

At least one accessible route must be provided within each play area, which must connect ground level play components required to be accessible and elevated play components required to be accessible, including entry and exit points. A number of exceptions to the usual accessible route requirements apply. Special rules apply to accessible ground surfaces, incorporated by reference from nationally recognized standards for accessibility and safety in play areas (among compliant materials are certain engineered wood fiber and rubber surfacing products). Ground surfaces must be inspected and maintained regularly and frequently to ensure continued compliance. In existing play areas, if only play components are altered and the ground surface is not altered, the ground surface need not comply except to the extent required by the path of travel requirement (up to 20% of the cost of the alteration).

**(100) Accessible Play Components (BR),  
(102) Accessible Play Components (ALT) &  
(104) Accessible Play Components (NC)**

ABRA-PLAY Chapter 4. ADAAG 240.2; 1008.4

ABRA-PLAY Chapter 4. ADAAG 240.1-.2; 1008.4

At least one ground level play component of each type provided (e.g., for different experiences such as rocking, swinging, climbing, spinning, and sliding) must be accessible, connected to an accessible route, and (where there is more than one) dispersed throughout the play area and integrated with other play components. If elevated play components (those that are approached above or below grade and that are part of a composite play structure) are provided, a certain proportion (representing a defined number of different types) must be accessible. The alterations requirement does not apply when existing play components are merely relocated for purposes of creating safe use zones and the ground surface is not altered or extended for more than one use zone.

**(106) Post Secondary School Multi-Story Dorm Facility**

DOJ Final Rules 35.151(f); 36.406(e); ADAAG 224; 806

Public post secondary schools that had previously opted to comply with the UFAS will now be subject to the requirements for transient lodging. With respect to dormitory facilities, the biggest differences are accessible vertical access (i.e., elevators, platform lifts, etc.) between all levels, distribution of rooms with communications features for people who are deaf or hard of hearing, and distribution of rooms with mobility features. The DOJ Final Rules require broader access for people with disabilities than UFAS.



**(107) Mobility Accessible Prison Cell**

DOJ Final Rules 35.151(k); ADAAG 232.2; 807.2

Detention and correctional facilities that previously complied with UFAS will now be required to comply with the DOJ Final Rules and ADAAG. ADAAG 807.2 specifies the accessibility requirements for cells with mobility features. Under the DOJ Final Rules, fewer mobility-accessible cells (from 5% to 3%) are required as compared to UFAS.

**(108) Communication Accessible Prison Cell**

ADAAG 232.2; 807.3

Detention and correctional facilities will be required, for cells equipped with audible emergency alarm systems or permanently installed telephones, to provide 2% of these cells with accessible communication features in compliance with ADAAG 807.3.

**(109) Social Service Establishments – Elevator Access**

ADAAG 233.1; 206.2.3

Group homes, halfway houses, shelters, or similar social service establishments that provide temporary sleeping accommodations or residential dwelling units will now be subject to the requirements for residential facilities, including ADAAG 206 concerning accessible routes. Currently, these types of social service establishments must comply with section 9.5 of the 1991 Standards or UFAS, depending on the nature of the facility (*i.e.*, public or private). One notable effect of this change is that multi-story social service establishments may no longer be required to provide accessible vertical access (*i.e.*, elevator or platform lift) to each story or level so long as all common and public use areas are otherwise located on an accessible route.

**(110) Social Service Establishments – Clear Floor Space Around Beds**

DOJ Final Rules 35.151(e)(1); 36.406(d)(1); ADAAG 806.2.3

Group homes, halfway houses, shelters, or similar social service establishments that provide temporary sleeping accommodations or residential dwelling units, and which are operated by public entities that previously complied with UFAS, will now be subject to the new requirements for residential dwelling units in the ADA Standards. The main impact of the change for these facilities is that in sleeping rooms with more than 25 beds, 5% of the beds will now be required to provide clear floor space to enable a person using a wheelchair to transfer into the bed.

**(113) Housing at Place of Education - Kitchen Turning Space**

DOJ Final Rules 35.151(f)(1); 36.406(e)(1); ADAAG 809.2.2.

Housing at places of education (*i.e.*, college dormitories, student apartments, or other types of residential housing provided in an educational setting) that are covered by the ADA will be required by the Final Rules to comply with the transient lodging standards in ADAAG, as well as several additional requirements (drawn primarily from residential housing standards) to provide greater accessibility for students with disabilities. One of these additional requirements relates to turning spaces in kitchens in such facilities when kitchens are located either within housing units containing accessible sleeping rooms with mobility features (including suites and clustered sleeping rooms) or on floors containing accessible sleeping rooms with mobility features. Covered kitchens will be required to provide larger turning spaces that comply with ADAAG 809.2.2.

**(114) Housing at Place of Education – Kitchen Work Surface**

DOJ Final Rules 35.151(f)(1); 36.406(e)(1); ADAAG 804.3.

Specified kitchens in housing at places of education, as noted above, will be required by the Final Rules to provide several enhanced accessibility features (in addition to complying with applicable transient lodging standards in ADAAG). These kitchens, in addition to providing larger turning spaces (see Requirement # 113), must also provide work surfaces that comply with ADAAG 804.3, including a lower height for a specified section (*i.e.*, at least 30 inches wide minimum) of the counter.

**(115) Secondary Accessible Means of Entry to Pools (NC/ALT) &**

**(116) Secondary Accessible Means of Entry to Pools (BR)**

ABRA–REC Chapter 10. ADAAG 242.2; 1009.2-1009.6.

Larger swimming pools with over 300 linear feet of pool wall will be required to provide – in addition to an accessible primary entry via pool lift or sloped entry (see Requirement ## 79 & 112) – a second accessible means of entry. This secondary accessible entry may be a transfer wall, transfer system, pool stairs, pool lift, or sloped entry.

**(117) Social Service Establishments – Roll-In Shower**

DOJ Final Rules 35.151(e)(2); 36.406(d)(2); ADAAG 608.2.2; 608.2.3.

Group homes, halfway houses, shelters, or similar social service establishments with more than 50 beds and that have common use bathing facilities will be required to provide at least one roll-in shower that complies with ADAAG 608.2.2 or 608.2.3. When separate common use shower facilities are provided for men and women, one roll-in shower must be provided for each gender. The 1991 Standards currently permit such facilities the option of choosing among several different types and configurations of accessible bathing facilities, including roll-in showers. Under the Final Rule, this choice is eliminated and covered social service establishments must provide roll-in showers.

## APPENDIX 3: COST ESTIMATION DATA

### A. Numbers of Facilities

The following table shows the data collected on the numbers of facilities in each facility group. Generally, this data is collected from the 2007 U.S. Economic Census for private facilities and the Census of Employment and Wages for public facilities. Some facilities, such as stadiums and convention centers, have other sources as noted in the table below. Data for all facilities were adjusted to estimates for 2010 using growth rates from the February 2010 McGraw-Hill Dodge Construction Potentials Bulletin.

Facility Group	Facility data	Source
Inns	16,893	% of Traveler Accommodations with less than 10 - 24 guestrooms from Table 10 of the 2002 Accommodation & Food Services Subject Series: Miscellaneous Subjects Report applied to 2007 Economic Census data for NAICS 7211
Hotels	15,111	% of Traveler Accommodations with less than 10 - 24 guestrooms from Table 10 of the 2002 Accommodation & Food Services Subject Series: Miscellaneous Subjects Report applied to 2007 Economic Census data for NAICS 7211
Motels	21,017	% of Traveler Accommodations with less than 10 - 24 guestrooms from Table 10 of the 2002 Accommodation & Food Services Subject Series: Miscellaneous Subjects Report applied to 2007 Economic Census data for NAICS 7211
Restaurants	566,020	2007 Economic Census, NAICS Code: 722
Motion Picture House	4,825	2007 Economic Census, NAICS Code: 512131
Theatre / Concert Hall	9,073	2007 Economic Census, NAICS Code: 7111
Stadiums	431	Data from worldstadiums.com -- 2007 estimate of existing stadiums: 1,725. In June 2000, it was reported that 75 percent of stadiums were publicly owned. (Coates and Humphreys, "The Stadium Gambit and Local Economic Development.")
Auditoriums	2,597	2007 Economic Census, NAICS Code: 71131
Convention Centers	167	Tradeshaw Week Major Exhibit Hall Directory reports there are 417 exhibit halls in the U.S. in 2006, 38% of which are privately owned.
Single Level Stores	811,257	2007 Economic Census, NAICS Code: 441, 442, 443, 444, 445, 448, 451, 453
Shopping Malls	10,077	2007 Economic Census, NAICS Code: 5311203
Indoor Service Establishments	3,851,332	2007 Economic Census, NAICS Code: 446, 447, 522, 523, 524, 525, 541, 5615, 812
Offices of Health Care Providers	547,709	2007 Economic Census, NAICS Code: 621
Hospitals	3,905	American Hospital Association in 2005 estimates 4,400 privately owned hospitals.
Nursing Homes	14,900	In 2004, the CDC's National Nursing Home Survey estimated 14,900 privately owned nursing homes.
Terminal (private airports)	13,900	Oct 25, 2007 Federal Aviation Administration estimate of privately owned airports
Depots	289	Total estimate from Greyhound (2004) and of private train depots (current) = 289
Museums, Historical Sites & Libraries	4,598	2007 Economic Census, NAICS Code: 71211

Facility Group	Facility data	Source
Parks or zoos	1,288	2007 Economic Census, NAICS Code: 71213 & 71219
Amusement Parks	527	2007 Economic Census, NAICS Code: 71311
Nursery schools - Daycare	74,151	2007 Economic Census, NAICS Code: 6244
Elementary Private Schools	17,200	2002 Estimate of elementary private schools: <a href="http://nces.ed.gov/pubs2006/2006319.pdf">http://nces.ed.gov/pubs2006/2006319.pdf</a>
Secondary Private Schools	2,694	2003 Estimate of secondary private schools: <a href="http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006319">http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006319</a>
Undergraduate and Postgraduate Private Schools	2,441	2003 Estimate of postgraduate schools: <a href="http://nces.ed.gov/programs/digest/d05/tables/dt05_213.asp">http://nces.ed.gov/programs/digest/d05/tables/dt05_213.asp</a>
Ski Facilities	391	2007 Economic Census, NAICS Code: 71392
Homeless Shelter	8,459	Estimated 87% of 2007 Economic Census, NAICS Code: 62422, 62423 to be private facilities
Food Banks	4,229	2007 Economic Census, NAICS Code: 62421
Social Service Establishments	64,288	2007 Economic Census, NAICS Code: 6241, 6243
Exercise Facilities	31,650	2007 Economic Census, NAICS Code: 71394
Aquatic Centers /Swimming Pools	12,004	2007 Economic Census, NAICS Code: 61162
Bowling Alleys	4,550	2007 Economic Census, NAICS Code: 71395
Golf Courses (private with public access)	8,759	National Golf Estimate for 2000
Golf Courses (private only)	4,290	National Golf Estimate for 2000
Miniature golf courses	8,750	From telephone interview with Steve Hicks, president of The Miniature Golf Association U.S. (MGAUS)
Recreational Boating Facilities	4,800	2001 National Marine Manufacturers Assoc. (NMMA) estimate; Access Board assumes that 40% are privately owned
Fishing Piers and Platforms	1,583	2007 HDR estimates, based on Michael Thomas and Nicholas Stratis, "Assessing the Economic Impacts and Value of Florida's Public Piers and Boat Ramps" and conversation with the American Sportfishing Association and National Marine Fisheries Service.
Shooting Facilities	4,945	2007 Economic Census, NAICS Code: 1/3 of 7139908
Office Buildings	742,000	824,000 = estimate from EIA's 2003 Commercial Building Energy Consumption Survey
Elementary Public Schools	65,228	2003 estimate of elementary public schools: National Center for Education Statistics
Secondary Public Schools	22,180	2003 estimate of secondary public schools: National Center for Education Statistics
Undergraduate, postgraduate public schools	1,699	2003 estimate of postgraduate schools: <a href="http://nces.ed.gov/programs/digest/d05/tables/dt05_213.asp">http://nces.ed.gov/programs/digest/d05/tables/dt05_213.asp</a>
Public Housing	25,642	2000 HUD Survey results of 1,282,099 public housing units / 50 units per community = 25,642
State and Local Judicial Facilities (courthouses)	6,305	Based on a survey of the number of courthouses for five largest states and 5 smallest plus six in the middle, based on population. The average number of courthouses per person was then applied to the total US population.
State and Local Detention Facilities (jails)	3,365	Sourcebook of Criminal Justice Statistics 2003, Table 1.98; Census of Jails, 1999, App. Table 1
State and Local Correctional Facilities (prisons)	1,190	Bureau of Justice Statistics, Census of State and Federal Correctional Facilities, 2005, October 2008; in Appendix Table 2
Parking Garages	12,984	2007 Economic Census, NAICS Code: 81293
Self Service Storage Facilities	13,994	2007 Economic Census, NAICS Code: 53113

Facility Group	Facility data	Source
Theatre / Concert Halls (public)	6	2009 Quarterly Census of Employment and Wages, NAICS 711110 data extracted April 5, 2010
Stadiums (public)	1,294	75% of stadiums are assumed to be publicly owned. (2007 estimate of stadiums in U.S.)
Auditoriums (public)	143	2009 Quarterly Census of Employment and Wages, NAICS 71131 data extracted April 5, 2010
Convention Centers (public)	250	Tradeshow Week Major Exhibit Hall Directory reports there are 417 exhibit halls in the U.S. in 2006, 60% of which are publicly owned.
Hospitals (public)	1,110	American Hospital Association in 2005 estimate.
Nursing Homes (public)	1,200	2004 CDC's National Nursing Home Survey estimate
Museums, Historical Sites & Libraries (public)	9,558	2007 Number of Public Libraries = 9,214 ( <a href="http://www.ala.org/ala/alalibrary/libraryfactsheet/alalibraryfactsheet1.cfm">http://www.ala.org/ala/alalibrary/libraryfactsheet/alalibraryfactsheet1.cfm</a> ) and 2009 Quarterly Census of Employment and Wages, NAICS 71212 (historical sites) 71211 (Museums) and extracted April 5, 2010
Parks or zoos (public)	111,025	From Access Board and Census of Earnings and Wages
Homeless Shelter (public)	1,264	Estimated 13% of 2002 Economic Census, NAICS Code: 62422, 62423 as public facilities
Exercise Facilities (public)	1,184	2009 Quarterly Census of Employment and Wages, NAICS 713940 Fitness and recreational sports centers 2009 Q3 extracted April 5, 2010
Social Service Establishments (public)	24,879	Assuming 99,516 buildings in 2002, estimated from 2002 Census of Governments, assuming 3 buildings per County Government, 2 building per Municipal Government, 1 per Township Government and 1 per special District Governments. Assume 75% are Office Buildings and 25% are separate social services establishments only.
Aquatic Centers /Swimming Pools (public)	1,637	2002 Economic Census, NAICS Code: 61162
Miniature golf courses (public)	875	From telephone interview with Steve Hicks, president of The Miniature Golf Association U.S. (MGAUS)
Recreational Boating Facilities (public)	7,200	2001 National Marine Manufacturers Assoc. (NMMA) estimate; Access Board assumes that 60% are publicly owned
Fishing Piers and Platforms (public)	1,583	2007 HDR estimates, based on Michael Thomas and Nicholas Stratis, "Assessing the Economic Impacts and Value of Florida's Public Piers and Boat Ramps" and conversation with the American Sportfishing Association and National Marine Fisheries Service.
Office Buildings (public)	74,637	Assuming 99,516 buildings in 2002, estimated from 2002 Census of Governments, assuming 3 buildings per County Government, 2 building per Municipal Government, 1 per Township Government and 1 per special District Governments. Assume 75% are Office Buildings and 25% are separate social services establishments only.
Parking Garages (public)	121	2009 Quarterly Census of Employment and Wages, NAICS 81293 Parking lots and garages 2009 Q3 extracted April 5, 2010
Golf Courses (public)	2,438	National Golf Estimate for 2000
Restaurants (public)	7	2009 Quarterly Census of Employment and Wages, NAICS 722211 Limited-service restaurants 2009 Q3 extracted April 5, 2010
Amusement Parks (public)	11	2009 Quarterly Census of Employment and Wages, NAICS 713110 Amusement and theme parks 2009 Q3 extracted April 5, 2010

## B. Annual Growth Rates and Alteration Rates of Facilities

### 3B1: Annual Growth Rates

The following table lists the rates of new construction for each facility group. These are determined from the February 2010 Dodge Construction Potentials Bulletin, which counts the number of new construction and major alteration projects for certain facility types. These

projects are compared to the data on existing numbers of buildings to determine a growth rate per facility type. If no data is collected on the new construction data, a 1% growth rate is assumed. Facilities which posted growth rates greater than 1.2% were assumed not to be able to sustain such high rates of growth for 15 consecutive years and growth was capped at 1.2%. It is assumed that public facilities have the same growth rate as their counterparts in the private sector.

Facility Group	Average growth rates for new construction
Inns	0.12%
Hotels	0.12%
Motels	0.12%
Restaurants	0.05%
Motion Picture House	1.00%
Theatre / Concert Hall	1.00%
Stadiums	1.00%
Auditoriums	1.00%
Convention Centers	1.00%
Single Level Stores	0.05%
Shopping Malls	0.05%
Indoor Service Establishments	0.05%
Offices of Health Care Providers	0.13%
Hospitals	0.13%
Nursing Homes	0.13%
Terminal (private airports)	1.00%
Depots	1.00%
Museums, Historical Sites & Libraries	1.20%
Parks or zoos	1.00%
Amusement Parks	1.00%
Nursery schools - Daycare	1.00%
Elementary Private Schools	0.76%
Secondary Private Schools	0.76%
Undergraduate and Postgraduate Private Schools	0.76%
Ski Facilities	1.00%
Homeless Shelter	1.00%
Food Banks	1.00%
Social Service Establishments	1.00%
Exercise Facilities	1.00%
Aquatic Centers /Swimming Pools	1.00%
Bowling Alleys	1.00%
Golf Courses (private with public access)	1.00%
Golf Courses (private only)	1.00%
Miniature golf courses	1.00%
Recreational Boating Facilities	1.00%
Fishing Piers and Platforms	1.00%
Shooting Facilities	1.00%
Office Buildings	0.03%
Elementary Public Schools	0.76%
Secondary Public Schools	0.76%

Facility Group	Average growth rates for new construction
Undergraduate, postgraduate public schools	0.76%
Public Housing	1.00%
State and Local Judicial Facilities (courthouses)	0.56%
State and Local Detention Facilities (jails)	0.56%
State and Local Correctional Facilities (prisons)	0.56%
Parking Garages	1.00%
Self Service Storage Facilities	1.00%

### 3B2: Facility Alteration Rates

The following tables show the alterations rates used for the alterations schedule of the facility types included in the Final RIA. The first table below shows the alterations rates calculated from historical data on when buildings were constructed for specified building types in the EIA's 2003 Commercial Buildings Energy Consumption Survey and given the alterations schedule shown on the second row (e.g. 15 years for lodging facilities). The second table shows how the assumptions made for each of these building types applied to each of the facility types.

Category	Lodging	Strip shopping mall	Enclosed mall	Public order and safety	Outpatient health care	Nursing	Inpatient health care	Office	Average
Alterations	15 years	40 years	40 years	40 years	40 years	40 years	40 years	40 years	40 years
2010	6.845%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2011	6.845%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2012	6.845%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2013	6.845%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2014	6.845%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2015	5.500%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2016	5.500%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2017	5.500%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2018	5.500%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2019	5.533%	2.431%	4.258%	1.569%	1.315%	2.728%	2.308%	2.014%	1.993%
2020	6.976%	2.832%	1.941%	2.007%	1.564%	1.221%	2.237%	2.097%	2.114%
2021	7.760%	2.894%	1.941%	2.211%	1.668%	1.256%	2.381%	2.495%	2.401%
2022	7.760%	2.894%	1.941%	2.211%	1.668%	1.256%	2.381%	2.495%	2.401%
2023	7.760%	2.894%	1.941%	2.211%	1.668%	1.256%	2.381%	2.495%	2.401%
2024	7.760%	2.894%	1.941%	2.211%	1.668%	1.256%	2.381%	2.495%	2.401%
2025	7.843%	2.894%	1.941%	2.211%	1.668%	1.256%	2.381%	2.495%	2.401%
2026	7.843%	3.086%	1.985%	2.724%	2.605%	1.672%	4.084%	2.730%	2.746%
2027	7.843%	3.086%	1.985%	2.724%	2.605%	1.672%	4.084%	2.730%	2.746%
2028	7.843%	3.086%	1.985%	2.724%	2.605%	1.672%	4.084%	2.730%	2.746%
2029	7.843%	3.086%	1.985%	2.724%	2.605%	1.672%	4.084%	2.730%	2.746%
2030	6.498%	2.201%	0.539%	3.406%	3.958%	3.067%	2.499%	2.604%	2.746%



Type
Lodging
Strip shopping mall
Enclosed mall
Public order and safety
Outpatient health care
Nursing
Inpatient health care
Office
Average

Facilities with different than "Average" Alteration Schedules		
Inns	Hotels	Motels
Single Level Stores		
Shopping Malls		
State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	
Offices of Health Care Providers		
Nursing Homes		
Hospitals		
Office Buildings		
All Other Facilities		

### C. Assumptions With Respect to Estimated Typical Facility Size

This table includes with the Department's architects' assumptions on the typical facility size of each facility grouping in order to determine the estimated number of elements per facility. These assumptions were reviewed by the Cost RAP panelists. The estimated typical facility size was then used to infer the number of elements now subject to new or revised requirements (number of bathrooms, handrails, etc). The publicly owned counterparts of the facilities listed below are assumed to be the same facility size.

Item	Facility Type	Assumptions (Units, Space, Seats, Rooms, Acres, Etc)	Median Size
A	Inns	Rooms: 5-30; 2 story, no elevator	16 rooms
B	Hotels	Rooms: 50-1,000; 8 stories	150 rooms
C	Motels	Rooms: 20-150; 2 story	80 rooms
D	Restaurants, bars, or other establishments serving food or drink	Seats: 10-300	100 seats
E	Motion Picture Houses	Seats: 50-300/screen X 6 screens (3 screens have between 150 and 300 seats)	800-1000 seats total
F	Theatre / Concert Hall	Seats: 500-2,000; 2 story	800-1000 seats
G	Stadiums	Seats: 5,000-80,000; 3 story, 10 hospitality suites	25,000 seats Differs for outdoor / indoor
H	Auditoriums	Seats: 35-250; 1 story	100 seats
I	Convention Centers	SF: 25,000-1,000,000; 2 story, 5,000 occupants, four exhibit spaces @ 75,000 ea., 75,000 SF administrative space	375,000 SF
J	Single Level Stores (including bakeries, grocery stores, clothing stores, hardware stores, or other single-level sales or rental establishments)	SF: 100-200,000	25,000 SF
K	Shopping Malls	SF: 200,000-4,000,000; 2 story, 3 anchor stores	750,000 SF
L	Indoor Service Establishments (including laundromats, dry cleaners, banks, barber shops, beauty shops, and travel services)	SF: 100-10,000; 1 story	5,000 SF

Item	Facility Type	Assumptions (Units, Space, Seats, Rooms, Seats, Acres, Etc)	Median Size
M	Offices of Health Care Providers	SF: 20 rooms @ 150 ea.	3,000 SF
N	Hospitals	Beds; four story	400 beds in small MSA
O	Nursing Homes	Beds; two story	150 beds
P	Terminals (private airports)	SF (airport); three story, two gate piers	750,000 SF
Q	Depots	SF (rail, bus); two story	25,000 SF
R	Museums, Historical Sites & Libraries	SF: 85,000-350,000; 2 story, 100 seat auditorium	200,000 SF
S	Parks or zoos	Acre; 18 buildings	800 acres
T	Amusement Parks	Acre (by comparison to parks); 30 rides, 2 theaters	500 acres
U	Nursery schools -Day care	SF: 2 rooms @ 250 + 500	1,000 SF
V	Elementary Private Schools	SF: 20 rooms @ 200 + 800; 300 students	5,000 SF
W	Secondary Private schools	SF: 2 x elem.; 2 story, 700 students	10,000 SF
X	Undergraduate and Postgraduate Private Schools	SF: 4 x 2 <sup>nd</sup> ary + dorm + athletic facility 4 ed bldgs + 4 dorms (2,400 students, 1,200 on site)	160,000 SF
Y	Ski Facilities	SF: 25 people x 50/SF	1,250 SF
Z	Homeless Shelter	SF: 20 people x 50/SF	1,000 SF
AA	Food Banks	SF	2,500 SF
AB	Social Service Establishments	SF	1,000 SF
AC	Exercise Facilities	SF: 5,000 to 40,000	20,000 SF
AD	Aquatic Centers / Swimming Pools	SF; two pools and one wading pool	20,000 SF
AE	Bowling Alleys	SF: 20 lanes + support	9,000 SF
AF	Golf Courses (private with public access)	Course length in yards for 18 holes	6,000 SF
AG	Golf Courses (private only)	Course length in yards for 18 holes	6,000 SF
AH	Miniature Golf Courses	Acres	1 acre
AI	Recreational Boating Facilities	Boat slips	250 slips

Item	Facility Type	Assumptions (Units, Space, Seats, Rooms, Seats, Acres, Etc)	Median Size
AJ	Fishing Piers and Platforms	SF	150 SF
AK	Shooting Facilities	SF	5,000 SF
AM	Office Buildings	SF (from Access Board); 4 story	200,000 SF
AN	Elementary Public Schools	SF: 30 rooms @ 200 + 1,000, 450 students	70,000 SF
AO	Secondary Public Schools	SF: 2 x private 2 <sup>nd</sup> ary, 2 story, 1,400 students	200,000 SF
AP	Undergraduate, postgraduate public schools	SF: 20 educational bldgs + 10 dorms + athletic facility (9,600 students, 4,800 on site)	680,000 SF
AQ	Public Housing	Dwelling units; 5 story	100 units
AR	State and Local Judicial Facilities (courthouses)	SF: 4 courtroom courthouse; 3 story	15,000 SF
AS	State and Local Detention Facilities (jails)	20 cells @ 80 sf/cell + admin; 2 story	2,400 SF
AT	State and Local Correctional Facilities (prisons)	SF: 750 inmates @ 1.66 per cell = 450 cells; 6 cell blocks; 2-story cell blocks	120,000 SF
AU	Parking Garages	4 story	4 story
AV	Self Service Storage Facilities	2 story, 200 units, 5 unit types (sizes)	200 units

## D. Description of Element

This table describes the elements that are subject to a requirement in terms of a unit, in order to determine the unit cost for each requirement. The unit is defined by the Department's architects. For those elements marked "N/Q", it is assumed they are not quantifiable.

ID	Requirement	Element
1	Public Entrances	60% of entrances at newly constructed facilities instead of equal to number of required exits; one accessible door
2	Maneuvering clearance/standby power for auto doors	hinged, power operated doors
3	Automatic Door Break-Out Openings	automatic sliding door panels
4	Thresholds at Doorways	exterior sliding doors
5	Door and Gate Surfaces	gates and exterior metal frame, glass panel doors ("storefront")
6	Location of Accessible Routes	N/Q
7	Common Use Circulation Paths in Employee Work Areas	work areas greater than 1,000 sf
8	Accessible Means of Egress	difference in number required between ADA Standards and 2004 ADAAG

ID	Requirement	Element
9-10	Stairs	egress stairs in buildings over two stories, or in buildings not qualifying for the elevator requirement exception
11	Handrails along walkways	N/Q
12	Handrails	bottom, wall mounted handrails per egress stair run in buildings over two stories, or in buildings not qualifying for the elevator requirement exception
13	Accessible Routes from Site Arrival Points and Within Sites	routes accessible by vehicle only, platform
14	Standby Power for Platform Lifts	Lift used for accessible egress
15	Power-Operated Doors for Platform Lifts	lifts with side doors serving more than 2 stops
16	Alterations to Existing Elevators	elevators per bank minus one
17	Platform Lifts in Hotel Rooms and Residential Dwelling Units	locations where provided by choice (not because required)
18	“LULA” and Private Residence Elevators	occurrence of LULA installation when elevator is not required
19	Van Accessible Parking Spaces	tabular value based on parking provided from 2004 ADAAG minus tabular value based on parking provided from ADA Standards
20	Valet Parking and Mechanical Access Parking Garages	accessible valet spaces OR passenger loading zones at mechanical access garages
22	Direct Access Entrances from Parking Structures	total minus one
23	Passenger Loading Zones	passenger loading zones
24	Parking Spaces	passenger loading zones (option for provision of instead of parking spaces)
25	Parking Spaces (Signs)	space no longer required to have sign (or accessible space sign)
26	Passenger Loading Zones at Medical and Long-Term Care Facilities	Accessible loading zone
27	Ambulatory Accessible Toilet Compartments	men’s toilet rooms where number of urinals plus toilets brings total waste repository fixture count to more than 5
29	Shower Spray Controls	accessible showers
30	Urinals	single urinal toilet rooms
31	Multiple Single-User Toilet Rooms	50% of clustered toilet rooms by gender
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors	single user toilet and bath rooms
33	Water Closet Location and Rear Wall Grab Bar	N/Q
34	Patient Toilet Rooms	ICU/CCU toilet rooms
35	Drinking Fountains	side approach fountains
36	Sinks	accessible sinks minus 1 - when 20 or more are present
37	Side Reach	50% of all “reachable” elements (excluding light switches and most outlets)
38 / 39	Sales and Service Counters	sales / service counters requiring forward approach
40 -41	Washing Machines and Clothes Dryers	where 4 or more appliances of each type are present
42	Self-Service Storage Facility Spaces	5% of storage facilities present (by type) minus 1

ID	Requirement	Element
43	Limited Access Spaces and Machinery Spaces	spaces to which access is no longer required by ADAAG
44	Operable Parts	occurrence of exceptions listed under 205.1 (3, 4, 5, 6, 7, 8)
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)	comparable vanity and required water closet clearances– assumed that bathroom has an out-swinging door
46	Operable Windows	public access windows in accessible spaces
47 - 48	Dwelling Units with Communication Features [1991] / [UFAS]	all
49	Galley Kitchen Clearances	increased clearance requirements to 60 inches
50	Shower Compartments	accessible showers
51	Location of accessible routes to stages	routes
52	Wheelchair space overlap in assembly areas	wheelchair spaces
53	Lawn seating in assembly areas	difference in number required between Standards and ADAAG
54	Aisle stairs and aisle ramps in assembly areas	stairs not currently required to meet ADA Standards / ramps not required to be accessible
55	Wheelchair spaces in assembly areas	tabular value based on seating capacity from Standards minus tabular value based on seating capacity from ADAAG/ABAAG
56	Accessible Routes to Restaurants and Cafeteria - tier dining in sports facilities	dining tiers
57	Accessible Routes to Press Boxes	boxes at 500 sf (total) or smaller
58	Public TTYs	all banks of 4 or more telephones minus 1 (bank)
59	Public telephone volume controls	75% of phones
60	Two-way communication systems	systems
61	ATM and fare machines	ATMs and transportation (e.g. metro) ticket vendors
62	Assistive listening systems (technical)	number of hearing-aid compliant receivers and related accessories
63	Visual alarms in alterations to existing facilities	N/Q
64 - 65	Detectable warnings	at curb ramps, hazardous vehicular ways, and reflecting pools
66	Assistive listening systems (scoping)	4% of seats minus tabular value of seating capacity; receivers required by ADAAG
67	Accessible courtroom stations	anticipated combination of stations by courtroom size
68	Accessible witness stands	stands
69	Accessible/adaptable raised courtroom stations	judges bench, clerk stations
70	Accessible route to exercise machines and equipment	route per exercise space
71	Accessible exercise machines and equipment	1 of each type of machine/equipment
72 & 111	Accessible saunas and steam rooms	accessible amenities
73	Accessible lockers	5% of lockers present (by type) minus 1
74	Accessible dressing, fitting, or locker rooms	Accessible door and floor space
75	Wheelchair space in team or player seating areas	wheelchair spaces
76	Accessible route connecting both sides of court	Accessible route

<b>ID</b>	<b>Requirement</b>	<b>Element</b>
77	Accessible route to bowling lanes	Accessible route to 5% of lanes
78	Turning space at shooting facilities with firing positions	5% of spaces provided
79 & 112	Primary Accessible means of entry to pools	1 entry at pools less than 300 ft perimeter, 2 where larger
80	Sloped accessible means of entry to wading pools	Wading pool
81	Accessible means of entry to spas	spas
82	Accessible route to boat slips and boarding piers	tabular value of slips present plus 5% of piers present
83-84	Accessible boarding piers at boat launch ramps	minimum 1 or 5% of total present
85-86	Accessible boat slips	tabular value
87	Accessible route to fishing piers and platforms	Accessible route
88	Accessible fishing piers and platforms	piers and platforms
89	Accessible route connecting accessible elements	cart path
90-91	Accessible teeing grounds, putting greens, weather shelters at golf courses	Accessible entrance/exit to amenities provided
92	Accessible practice greens/grounds/stations at driving ranges	Accessible entrance/exit to each amenity provided
93	Accessible route to mini golf holes	Accessible route to accessible holes
94	Accessible mini golf holes	50% of holes present
95	Accessible route to rides	Accessible route to ride
96	Wheelchair space, transfer seat or device for each ride	Clear area for ride entry and transfer seat/device
97	Maneuvering space in each loading/unloading area	Clear area for loading/unloading
98	Signs	Signs
99, 101 & 103	Accessible route to play components	Accessible route to ground and elevated components required to be accessible
100, 102 & 104	Accessible play components	Accessible ground or elevated components and any required transfer system or ramp
106	Post Secondary School Multi-Story Dorm Facility	Elevator (in New Construction only)
107	Mobility Accessible Prison Cell	Accessible prison cells
108	Communication Accessible Prison Cell	Accessible prison cells
109	Social Service Establishments – Elevator Access (NC)	Elevator
110	Social Service Establishments – Clear Floor Space around Beds	Floor Clearance around Beds
113	Housing at Places of Education – Kitchen Turning Space	Enlarged turning spaces
114	Housing at Places of Education – Kitchen Work Surfaces	Lowered section of counter
115 & 116	Secondary Accessible Means of Entry into Pools	Secondary entrance to pool
117	Social Service Establishments – Roll-in Shower	A roll in shower

## E. Number of Elements Per Typical Facility

This table shows the most likely values of the estimated number of elements in a typical facility that are likely to be impacted by the requirement. The high and the low values are assumed to be plus and minus 20 percent of the most likely value.

### 3E1: Number of Elements per Typical Private Facility

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
#	Requirement																					
1	Public Entrances							1				5										
2	Maneuvering Clearance or Standby Power for Automatic Doors									2						2						
3	Automatic Door Break-Out Openings		4	2											8		48					
4	Thresholds at Doorways	1	7	5																		
5	Door and Gate Surfaces	1	4	2		3	3	13	3	8	1	14	1	2	8	4		4	4	6	2	2
6	Location of Accessible Routes																					



		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
7	Common Use Circulation Paths in Employee Work Areas					1		1		2					1		2		1	2	2	
8	Accessible Means of Egress																					
9	Stairs (NC)		16	4			2	24	2	6		18		2	12		12		3			
10	Stairs (ALT/BR)		16	4			2	24	2	6		18		2	12		12		3			
11	Handrails Along Walkways																					
12	Handrails	4	32	8		6	4	48	2	12		27		4	24	4	24	10	6	4	30	
13	Accessible Routes from Site Arrival Points and Within Sites			1				2								1	1			1	1	
14	Standby Power for Platform Lifts							2														
15	Power-Operated Doors for Platform Lifts							2														
16	Alterations to Existing Elevators		1					1		2					3	1	3					
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units																					

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
18	"LULA" and Private Residence Elevators																					
19	Van Accessible Parking Spaces							1		1		1			1		6			1	6	
20	Valet Parking Garages		2		1		2										2					
21	Mechanical Access Parking Garages																					
22	Direct Access Entrances from Parking Structures									1		2					1					
23	Passenger Loading Zones	1	1	1	1	1	1	2	1	1		1			2	1	8	1	1	1	1	1
24	Parking Spaces		1		1	1	1	1		1		1			1	1	1		1	1	1	
25	Parking Spaces (Signs)																					
26	Passenger Loading Zones (Medical / Long-Term Care)														1	1						
27	Ambulatory Accessible Toilet Compartments					1	2		1	1		1			1		1			1	2	

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
28	Water closet clearance in single-user toilet rooms - out swinging door						4	20					2	3	10	38	2			1	2	2
29	Shower Spray Controls		2	1			4	9							12	40	2			2	2	
30	Urinals	1		1	1						1		1	1		1		1	1			
31	Multiple Single-User Toilet Rooms						3							3	1							
32	Water closet clearance in single-user toilet rooms - in swinging door				2	2		8	2	4	2	2			8	2	2	2	4	2	2	
33	Water Closet Location and Rear Grab Bar	1	7	5																		
34	Patient Toilet Rooms														2							
35	Drinking Fountains																					
36	Sinks																					
37	Side Reach	8	30	23	3	6	12	110	4	48	5	16	6	10	51	86	60	6	13	21	22	14
38	Sales and Service Counters (NC)	1	2	1	1	2	2	1	7		3	1	1				20	3	3	13	30	
39	Sales and Service Counters (Alt)	1	2	1	1	2	2	1	7		3	1	1				20	3	3	13	30	

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
40	Washing Machines and Clothes Dryers (technical)																					
41	Washing Machines and Clothes Dryers (Scoping)																					
42	Self-Service Storage Facility Spaces																					
43	Limited Access Spaces and Machinery Spaces		3		1	2	2	1	1	2	1	8		1	3	2	3	1	2	4	1	
44	Operable Parts	1								120				1	3	1						1
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)	1	7	5																		
46	Operable Windows	1	7	5																		
47	Dwelling Units with Communication Features [1991]																					

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
48	Dwelling Units with Communication Features [UFAS]																					
49	Galley Kitchen Clearances																					
50	Shower Compartments with Mobility Features		2	1			4	9							12	40	2			2	2	
51	Location of Accessible Route to Stages						1		1	2											2	
52	Wheelchair Space Overlap in Assembly Areas					26	8	136	4						5				4		11	
53	Lawn Seating in Assembly Areas																					
54	Handrails on Aisle Ramps in Assembly Areas					6	2	8	2										1	1	2	
55	Wheelchair Spaces in Assembly Areas					3	1	115														
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)							1														

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
57	Accessible Route to Press Boxes																					
58	Public TTYS							1		1		1					2					
59	Public Telephone Volume Controls		3			3	3	1		12		4			6	1	22	3			3	
60	Two-Way Communication Systems at Entrances			1																		
61	ATMs and Fare Machines		1					1		1		1	1									
62	Assistive Listening Systems (technical)		2			9	8	72	2	22					2				2		8	
63	Visible Alarms in Alterations to Existing Facilities	1																				
64	Detectable Warnings (scoping)	1	3	6	1	1	1	4	1	4	1	4	1	2	4	1	6	3	2	4	8	1
65	Detectable Warnings (technical)																				1	

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
66	Assistive Listening Systems (scoping)					3	2	715		85					6				2			
67	Accessible Courtroom Stations																					
68	Accessible Attorney Areas and Witness Stands																					
69	Raised Courtroom Stations Not for Members of the Public																					
70	Accessible Route to Exercise Machines and Equipment		1	1											1							
71	Accessible Exercise Machines and Equipment		3	3											10							
72	Accessible Saunas and Steam Rooms (NC)		1					2														
73	Accessible Lockers							4													4	

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms										1											
75	Wheelchair Spaces in Team or Player Seating Areas							2														
76	Accessible Route in Court Sport Facilities																					
77	Accessible Route to Bowling Lanes																					
78	Shooting Facilities with Firing Positions																					
79	Primary Accessible Means of Entry to Pools (NC/ALT)		1	1																		
80	Accessible Means of Entry to Wading Pools																					
81	Accessible Means of Entry to Spas		1					1							1	1						



		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
82	Accessible Route for Boating Facilities																					
83	Accessible Boarding Piers (NC)																			1		
84	Accessible Boarding Piers (ALT/BR)																			1		
85	Accessible Boat Slips (NC)																					
86	Accessible Boat Slips (Alt/BR)																					
87	Accessible Route to Fishing Piers																			1		
88	Accessible Fishing Piers and Platforms																			1		
89	Accessible Route to Golf Courses																					
90	Accessible Teeing Grounds, Putting Greens and Weather Stations at Golf Courses(Alt/BR)																					

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
91	Accessible Teeing Grounds, Putting Greens and Weather Stations at Golf Courses(NC)																					
92	Accessible Practice Grounds at Driving Ranges																					
93	Accessible Route to Mini Golf Holes																					
94	Accessible to Mini Golf Holes																					
95	Accessible Route to Amusement Rides																				30	
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride																				30	
97	Maneuvering Space in Load and Unload Area of Amusement Ride																				30	

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
98	Signs at Amusement Rides																				30	
99	Accessible Route to Play Components (BR)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)
100	Accessible Play Components (BR) <sup>81</sup>			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)
101	Accessible Route to Play Components (ALT)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)
102	Accessible Play Components (ALT)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)
103	Accessible Route to Play Components (NC)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)

<sup>81</sup> Consistent with the Access Board's regulatory analysis, play areas in this analysis have been modeled based on the following characteristics: "small" play areas are assumed to be located predominately at smaller facilities (i.e., child care centers, restaurants, motels, shopping malls) and to have approximately 8 play components; "medium" play areas are assumed to be located predominately at elementary schools and to have approximately 14 play components; and "large" play areas are assumed to be located predominately at parks and other large entertainment facilities (i.e., zoos or amusement parks) and to have approximately 28 play components. Accessible routes have been calculated to correspond to these respective play area sizes.

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
104	Accessible Play Components (NC)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)
106	Post Secondary School Multi-Story Dorm Facility																					
107	Mobility Accessible Prison Cell																					
108	Communication Accessible Prison Cell																					
109	Social Service Establishments – Elevator Access (NC)																					
110	Social Service Establishments – Clear Floor Space around Beds																					
111	Accessible Saunas and Steam Rooms (ALT/BR)		1					2														
112	Primary Accessible Means of Entry to Pools (BR)		1	1																		

		Inns	Hotels	Motels	Restaurants	Motion Picture House	Theatre / Concert Hall	Stadiums	Auditoriums	Convention Centers	Single Level Stores	Shopping Malls	Indoor Service Establishments	Offices of Health Care Providers	Hospitals	Nursing Homes	Terminal (private airports)	Depot	Museums, Historical Sites & Libraries	Parks or zoos	Amusement Parks	Nursery schools - Daycare
113	Housing at Places of Education – Kitchen Turning Space																					
114	Housing at Places of Education – Kitchen Work Surfaces																					
115	Secondary Accessible Means of Entry into Pools (NC/ALT)																					
116	Secondary Accessible Means of Entry into Pools (BR)																					
117	Social Service Establishments – Roll-in Shower																					

### 3E2: Number of Elements per Typical Public Facility

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
#	Requirement																			
1	Public Entrances																			
2	Maneuvering Clearance or Standby Power for Automatic Doors																			
3	Automatic Door Break-Out Openings																			
4	Thresholds at Doorways																			
5	Door and Gate Surfaces	4	8	48	4	2	1	1	4	4	4	2	2				2	4		2
6	Location of Accessible Routes																			
7	Common Use Circulation Paths in Employee Work Areas																			
8	Accessible Means of Egress																			
9	Stairs (NC)			48														6	6	2
10	Stairs (ALT/BR)			48														6	6	2
11	Handrails Along Walkways																			
12	Handrails		8	96					4	4				4				18	12	4
13	Accessible Routes from Site Arrival Points and Within Sites											1	1		1		1			1
14	Standby Power for Platform Lifts																			
15	Power-Operated Doors for Platform Lifts																			
16	Alterations to Existing Elevators			1														3		1

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units																			
18	“LULA” and Private Residence Elevators																			
19	Van Accessible Parking Spaces																			
20	Valet Parking Garages																			
21	Mechanical Access Parking Garages																		1	
22	Direct Access Entrances from Parking Structures																			
23	Passenger Loading Zones	1	1	2	1													1		
24	Parking Spaces			1			1											1		
25	Parking Spaces (Signs)																			
26	Passenger Loading Zones (Medical / Long-Term Care)																			
27	Ambulatory Accessible Toilet Compartments		1	2					1	1										
28	Water closet clearance in single-user toilet rooms - out swinging door	1	4	4	1	2	1					2	2							
29	Shower Spray Controls		4	60		2			2	2			2							
30	Urinals			4	1									1						
31	Multiple Single-User Toilet Rooms																			

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
32	Water closet clearance in single-user toilet rooms - in swinging door	4	4	10				2				2	4	2	2					
33	Water Closet Location and Rear Grab Bar																			
34	Patient Toilet Rooms																			
35	Drinking Fountains			2						1										
36	Sinks																			
37	Side Reach	31	62	263		2	4	5	10	11	5	23	25	4	5			38		7
38	Sales and Service Counters (NC)																			1
39	Sales and Service Counters (Alt)																			1
40	Washing Machines and Clothes Dryers (technical)			8																
41	Washing Machines and Clothes Dryers (Scoping)			8																
42	Self-Service Storage Facility Spaces																			3
43	Limited Access Spaces and Machinery Spaces	1	1	8			1		1	1	1	1	1		1		1	2		
44	Operable Parts	1	12	20	1	1									10			8		
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances) s																			
46	Operable Windows			22																



		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
47	Dwelling Units with Communication Features [1991]																			
48	Dwelling Units with Communication Features [UFAS]																			
49	Galley Kitchen Clearances			16																
50	Shower Compartments with Mobility Features		4	60		2			2	2			2							
51	Location of Accessible Route to Stages		1	5																
52	Wheelchair Space Overlap in Assembly Areas		6	27					4											
53	Lawn Seating in Assembly Areas																			
54	Handrails on Aisle Ramps in Assembly Areas		1	4																
55	Wheelchair Spaces in Assembly Areas			2																
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)																			
57	Accessible Route to Press Boxes		1	2																
58	Public TTYS																			
59	Public Telephone Volume Controls			10																

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
60	Two-Way Communication Systems at Entrances																			
61	ATMs and Fare Machines																			
62	Assistive Listening Systems (technical)		4	16																
63	Visible Alarms in Alterations to Existing Facilities																			
64	Detectable Warnings (scoping)	2	4	20	1	1	1	1	2	2	1	1	1	1	1		1	2	4	1
65	Detectable Warnings (technical)																			
66	Assistive Listening Systems (scoping)			9																
67	Accessible Courtroom Stations																			
68	Accessible Attorney Areas and Witness Stands																			
69	Raised Courtroom Stations Not for Members of the Public																			
70	Accessible Route to Exercise Machines and Equipment		2	2					3											
71	Accessible Exercise Machines and Equipment		10	20					25											
72	Accessible Saunas and Steam Rooms (NC)			2					4	2										
73	Accessible Lockers		44	19					4	4			2							
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms		1	2					1	1			1							

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
75	Wheelchair Spaces in Team or Player Seating Areas		2	6					2	2	2									
76	Accessible Route in Court Sport Facilities																			
77	Accessible Route to Bowling Lanes										1									
78	Shooting Facilities with Firing Positions																1			
79	Primary Accessible Means of Entry to Pools (NC/ALT)		1	2						2										
80	Accessible Means of Entry to Wading Pools									1										
81	Accessible Means of Entry to Spas			1					1	1										
82	Accessible Route for Boating Facilities														2					
83	Accessible Boarding Piers (NC)														2					
84	Accessible Boarding Piers (ALT/BR)														2					
85	Accessible Boat Slips (NC)														5					
86	Accessible Boat Slips (Alt/BR)														5					
87	Accessible Route to Fishing Piers															1				
88	Accessible Fishing Piers and Platforms															1				
89	Accessible Route to Golf Courses											1	1							

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
90	Accessible Teeing Grounds, Putting Greens and Weather Stations at Golf Courses (Alt/BR)											6	6							
91	Accessible Teeing Grounds, Putting Greens and Weather Stations at Golf Courses (NC)											6	6							
92	Accessible Practice Grounds at Driving Ranges											1	1							
93	Accessible Route to Mini Golf Holes													2						
94	Accessible to Mini Golf Holes													1						
95	Accessible Route to Rides																			
96	Wheelchair Space , Transfer Seat or Transfer Device for Amusement Ride																			
97	Maneuvering Space in Load and Unload Area of Amusement Ride																			
98	Signs at Amusement Rides																			
99	Accessible Route to Play Components (BR) [1]	1 (med.)																		
100	Accessible Play Components (BR) [1]	1 (med.)																		
101	Accessible Route to Play Components (ALT) [1]	1 (med.)																		
102	Accessible Play Components (ALT) [1]	1 (med.)																		
103	Accessible Route to Play Components (NC) [1]	1 (med.)																		

		Elementary Private Schools	Secondary Private Schools	Undergraduate and Postgraduate Private Schools	Ski Facilities	Homeless Shelter	Food Banks	Social Service Establishments	Exercise Facilities	Aquatic centers /Swimming Pools	Bowling Alleys	Golf Courses (private public access)	Golf Courses (private only)	Miniature golf courses	Recreational Boating Facilities	Fishing Piers and Platforms	Shooting Facilities	Office Buildings	Parking Garages	Self Service Storage Facilities
104	Accessible Play Components (NC) [1]	1 (med.)																		
106	Post Secondary School Multi-Story Dorm Facility																			
107	Mobility Accessible Prison Cell																			
108	Communication Accessible Prison Cell																			
109	Social Service Establishments – Elevator Access (NC)					1														
110	Social Service Establishments – Clear Floor Space around Beds					1														
111	Accessible Saunas and Steam Rooms (ALT/BR)			1					2	1										
112	Primary Accessible Means of Entry to Pools (BR)		1	1						1										
113	Housing at Places of Education – Kitchen Turning Space			16																
114	Housing at Places of Education – Kitchen Work Surfaces			16																
115	Secondary Accessible Means of Entry into Pools (NC/ALT)		1	1																
116	Secondary Accessible Means of Entry into Pools (BR)		1	1																
117	Social Service Establishments – Roll-in Shower																			

[1] See Footnote 81.

### 3E2: Number of Elements per Typical Public Facility

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
#	Req.																											
1	Public Entrances									1																		
2	Maneuvering Clearance or Standby Power for Automatic Doors											2		2														
3	Automatic Door Break-Out Openings												8															
4	Thresholds at Doorways				5																							
5	Door and Gate Surfaces	4	8	180	4	8	4		3	13	3	8	8	4	4	6	2	4	1	4				8		2		2
6	Location of Accessible Routes																											

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
7	Common Use Circulation Paths in Employee Work Areas									1		2	1		1	2												2
8	Accessible Means of Egress																											
9	Stairs (NC)			270	16	6		16	2	24	2	6	12		3									6	6			
10	Stairs (ALT/BR)			270	16	6		16	2	24	2	6	12		3									6	6			
11	Handrails Along Walkways																											
12	Handrails		10	540	32	12	4	32	4	48	2	12	24	4	6	4		4		4	4			18	12			30
13	Accessible Routes from Site Arrival Points and Within Sites							1		2				1		1						1				1		1
14	Standby Power for Platform Lifts					4				2																		
15	Power-Operated Doors for Platform Lifts					2				2																		

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
16	Alterations to Existing Elevators			2	1	1				1		2	3	1										3				
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units																											
18	"LULA" and Private Residence Elevators																											
19	Van Accessible Parking Spaces			2						1		1	1			1												6
20	Valet Parking Garages								2																		1	
21	Mechanical Access Parking Garages																								1			
22	Direct Access Entrances from Parking Structures											1																
23	Passenger Loading Zones	1	1	4	1	1	1	1	1	2	1	1	2	1	1	1								1			1	1



		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
24	Parking Spaces		1	1	1	1	1	1	1	1		1	1	1	1	1								1			1	1
25	Parking Spaces (Signs)				4																							
26	Passenger Loading Zones (Medical / Long-Term Care)												1	1														
27	Ambulatory Accessible Toilet Compartmen ts		2	10					2		1	1	1			1		1		1								2
28	Water closet clearance in single-user toilet rooms - out swinging door	1	4	6	2	8			4	20			10	38		1	2									2		2
29	Shower Spray Controls		4	180	2		4	2	4	9			12	40		2	2	2		2								2
30	Urinals		1	6	1	1								1	1						1						1	
31	Multiple Single-User Toilet Rooms								3				1														1	

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
32	Water closet clearance in single-user toilet rooms - in swinging door	4	6	24		2				8	2	4	8	2	4	2			2		2	2				2	2	2
33	Water Closet Location and Rear Grab Bar																											
34	Patient Toilet Rooms												2															
35	Drinking Fountains			2																1				4				
36	Sinks																											
37	Side Reach	31	62	1,043	35	10	5	10	12	110	4	48	51	86	13	21	2	10	5	11	4	5		38		23	3	22
38	Sales and Service Counters (NC)								2	1	7				3	13											1	30
39	Sales and Service Counters (Alt)								2	1	7				3	13											1	30
40	Washing Machines and Clothes Dryers (technical)			20	2																							

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
41	Washing Machines and Clothes Dryers (Scoping)			20	2																							
42	Self-Service Storage Facility Spaces																											
43	Limited Access Spaces and Machinery Spaces	1	2	40	1	2	2	3	2	1	1	2	3	2	2	4		1		1		1		2		1	1	1
44	Operable Parts	1	12	30	7	8						120	3	1			1					10		8				
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)																											
46	Operable Windows			82	20																							
47	Dwelling Units with Communication Features [1991]				3																							

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
48	Dwelling Units with Communication Features [UFAS]				3																							
49	Galley Kitchen Clearances			40	2																							
50	Shower Compartments with Mobility Features		4	180	2		4	8	4	9			12	40		2	2	2		2								2
51	Location of Accessible Route to Stages		1	21					1		1	2																2
52	Wheelchair Space Overlap in Assembly Areas		7	161		8			8	136	4		5		4			4										11
53	Lawn Seating in Assembly Areas																											
54	Handrails on Aisle Ramps in Assembly Areas		1	8					2	8	2				1	1												2

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
55	Wheelchair Spaces in Assembly Areas			39					1	115																		
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)									1																		
57	Accessible Route to Press Boxes		1	2																								
58	Public TTYS					1				1		1																
59	Public Telephone Volume Controls			20	1	9			3	1		12	6	1														3
60	Two-Way Communication Systems at Entrances				1																							
61	ATMs and Fare Machines									1		1																
62	Assistive Listening Systems (technical)		6	59		2			8	72	2	22	2		2													8

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
63	Visible Alarms in Alterations to Existing Facilities																											
64	Detectable Warnings (scoping)	2	4	80		4	1	1	1	4	1	4	4	1	2	4	1	2	1	2	1	1		2	4	1	1	8
65	Detectable Warnings (technical)																											1
66	Assistive Listening Systems (scoping)			285					2	715		85	6		2													
67	Accessible Courtroom Stations					19																						
68	Accessible Attorney Areas and Witness Stands					4																						
69	Raised Courtroom Stations Not for Members of the Public					8																						

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
70	Accessible Route to Exercise Machines and Equipment		2	4				1					1					3										
71	Accessible Exercise Machines and Equipment		10	30				5					10					2 5										
72	Accessible Saunas and Steam Rooms (NC)			2						2								4		2								
73	Accessible Lockers		75	29						4								4		4								4
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms		1	2														1		1								
75	Wheelchair Spaces in Team or Player Seating Areas		4	10						2								2		2								

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
76	Accessible Route in Court Sport Facilities																											
77	Accessible Route to Bowling Lanes																											
78	Shooting Facilities with Firing Positions																											
79	Primary Accessible Means of Entry to Pools (NC/ALT)		1	2																1								
80	Accessible Means of Entry to Wading Pools																			1								
81	Accessible Means of Entry to Spas			1						1			1	1				1		1								
82	Accessible Route for Boating Facilities																					2						



		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
83	Accessible Boarding Piers (NC)															1						2						
84	Accessible Boarding Piers (ALT/BR)															1						2						
85	Accessible Boat Slips (NC)																					5						
86	Accessible Boat Slips (Alt/BR)																					5						
87	Accessible Route to Fishing Piers															1							1					
88	Accessible Fishing Piers and Platforms															1							1					
89	Accessible Route to Golf Courses																									1		

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
90	Accessible Teeing Grounds, Putting Greens, and Weather Stations at Golf Courses(Alt/ BR)																									6		
91	Accessible Teeing Grounds, Putting Greens, and Weather Stations at Golf Courses(NC)																									6		
92	Accessible Practice Grounds at Driving Ranges																									1		
93	Accessible Route to Mini Golf Holes																				2							
94	Accessible to Mini Golf Holes																				1							

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
95	Accessible Route to Amusement Rides																											30
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride																											30
97	Maneuvering Space in Load and Unload Area of Amusement Ride																											30
98	Signs at Amusement Rides																											30
99	Accessible Route to Play Components (BR) [1]	1 med.			1 med.											1 large											1 small	1 large
100	Accessible Play Components (BR) [1]	1 med.			1 med.											1 large											1 small	1 large

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
101	Accessible Route to Play Components (ALT) [1]	1 med.			1 med.											1 large											1 small	1 large
102	Accessible Play Components (ALT)	1 med.			1 med.											1 large											1 small	1 large
103	Accessible Route to Play Components (NC) [1]	1 med.			1 med.											1 large											1 small	1 large
104	Accessible Play Components (NC) [1]	1 med.			1 med.											1 large											1 small	1 large
106	Post Secondary School Multi-Story Dorm Facility			5																								
107	Mobility Accessible Prison Cell							9																				
108	Communication Accessible Prison Cell							9																				

		Elementary Public Schools	Secondary Public Schools	Undergraduate, postgraduate public schools	Public Housing	State and Local Judicial Facilities (courthouses)	State and Local Detention Facilities (jails)	State and Local Correctional Facilities (prisons)	Theatre / Concert Halls (public)	Stadiums (public)	Auditoriums (public)	Convention centers (public)	Hospitals (public)	Nursing Homes (public)	Museums, Historical Sites & Libraries (public)	Parks or zoos (public)	Homeless Shelter (public)	Exercise Facilities (public)	Social Service Establishments (public)	Aquatic centers /Swimming Pools (public)	Miniature golf courses (public)	Recreational Boating Facilities (public)	Fishing Piers and Platforms (public)	Office Buildings (public)	Parking Garages (public)	Golf Courses (public)	Restaurants (public)	Amusement Parks (public)
109	Social Service Establishments – Elevator Access (NC)																1		1									
110	Social Service Establishments – Clear Floor Space around Beds																1											
111	Accessible Saunas and Steam Rooms (ALT/BR)			1						2																		
112	Primary Accessible Means of Entry to Pools (BR)		1	1																1								
113	Housing at Places of Education – Kitchen Turning Space			40																								

			Elementary Public Schools																									
			Secondary Public Schools																									
			Undergraduate, postgraduate public schools	40																								
			Public Housing																									
			State and Local Judicial Facilities (courthouses)																									
			State and Local Detention Facilities (jails)																									
			State and Local Correctional Facilities (prisons)																									
			Theatre / Concert Halls (public)																									
			Stadiums (public)																									
			Auditoriums (public)																									
			Convention centers (public)																									
			Hospitals (public)																									
			Nursing Homes (public)																									
			Museums, Historical Sites & Libraries (public)																									
			Parks or zoos (public)																									
			Homeless Shelter (public)																									
			Exercise Facilities (public)																									
			Social Service Establishments (public)																									
			Aquatic centers /Swimming Pools (public)																									
			Miniature golf courses (public)																									
			Recreational Boating Facilities (public)																									
			Fishing Piers and Platforms (public)																									
			Office Buildings (public)																									
			Parking Garages (public)																									
			Golf Courses (public)																									
			Restaurants (public)																									
			Amusement Parks (public)																									

[1] See footnote 81.

## F. Likelihood of Element in a Typical Facility

This table represents the Cost RAP panelists' assumptions and HDR's assumptions regarding the likelihood that a typical individual facility will have each element *and* will be affected by the incremental change to the requirement. For example, it is assumed that large facilities such as stadiums will be affected by the requirement for public entrances and that 25% of all stadiums are large enough to have the number of public entrance doors that will be affected by the change.

The high and low values that create the range of the likelihood are plus and minus 10 percentage points of the most likely values if the most likely value is less than 50% or plus and minus 20 percentage points of the most likely values if the most likely value is greater than or equal to 50%.

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
1	Public Entrances	Large newly constructed facility (e.g., arenas, stadiums, convention centers, and shopping malls) will have multiple doors intended to be used as public entrances/exits.	25%
2	Maneuvering Clearance or Standby Power for Automatic Doors	Facility (a) with an occupant load of less than 50 persons (b) installs an in-swinging automatic door that serves as part of an accessible means of egress. Some of these small facilities may simply choose not to install an automatic door.	10%
3	Automatic Door Break-Out Openings	Facility (a) installs an automatic door that serves as part of a means of egress (b) that does not have standby power and (c) there are no manual swinging doors serving the same means of egress.	50%
4	Thresholds at Doorways	Newly constructed facility has exterior sliding doors that are part of an accessible route.	50%
5	Door and Gate Surfaces	Newly constructed facility has swinging doors or gates. Most new doors meet the requirement (but not gates.)	25%
6	Location of Accessible Routes	Facility is designed in such a way that it has a colorable claim that it is infeasible to locate the accessible route in the same area as the circulation path, but will now have to do it anyway.	10%
7	Common Use Circulation Paths in Employee Work Areas	Facility is or was designed to have common use circulation paths in employee work areas that do not overlap or serve as an exit for common use areas (such as employee toilet or locker rooms, break rooms, kitchenettes).  Several exceptions exempt common use circulation paths in employee work areas where it may be difficult to comply with the technical requirements for accessible routes due to the size or function of the area.	10%

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
8	Accessible Means of Egress	The current guidelines require the same number of accessible means of egress to be provided as the number of exits required by applicable building and fire codes.	10%
9	Stairs (NC)	Facility plans to install an elevator. (Assumed for all facilities with three or more stories.)	90%
10	Stairs (ALT/BR)	Facility has an elevator. (For Alt, assumed for all facilities with three or more stories.)	5%
11	Handrails Along Walkways	Facility chooses to install or replace handrails on non-ramp walkways, and the handrails do not comply. Such handrails are not common.	10%
12	Handrails	Facility has handrails (e.g., on ramps, non-ramp walkways, or stairs).	50%
13	Accessible Routes from Site Arrival Points and Within Sites	For NC, facility would not construct a pedestrian route but for the current requirement. For Alt, facility has or constructs a sidewalk.	80%
14	Standby Power for Platform Lifts	Facility has or will install a platform lift as part of an accessible means of egress.  The revision will primarily affect newly constructed performing arts centers and auditoriums that use platform lifts to provide an accessible route to the stage. Platform lifts are rarely used in the other places permitted in new construction.  For alterations and barrier removal, will only apply to platform lifts permitted to be used as part of an accessible means of egress as required under the current rule.	50%
15	Power-Operated Doors for Platform Lifts	Facility has or installs a platform lift that (a) either serves more than two landings (small %) or does not have doors on opposite sides (requires side entrance) and (b) has sufficient maneuvering clearance. Platform lifts typically serve only one or two landings and have self-closing manual doors on both ends.	20%
16	Alterations to Existing Elevators	Existing facility is large enough to have a bank of elevators (or more than one elevator responding to the same call button).  The revision is expected to have minimal impacts since all the elevators in a bank are typically upgraded at the same time when elevators are altered as part of a planned modernization project.	20%
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	Facility would have chosen to install an elevator rather than locate all accessible elements on one floor. Few rooms are two stories, and even fewer elect to have an elevator.	3%



#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
18	“LULA” and Private Residence Elevators	For the LULA, facility with two levels has or would install an elevator anyway. For the private residence elevators, dwelling unit has multiple stories (rare).	20%
19	Van Accessible Parking Spaces	Facility has (a) between 200-401 parking spaces in a lot and must put extra space in a different location than the current one; or (b) more than 600 spaces (one extra space). For facilities with more than 3200 spaces, extra spaces start adding up (one extra for every 1800 spaces over 3200).	90%
21	Mechanical Access Parking Garages	Parking facility with mechanical access has no accessible passenger loading zone.	40%
22	Direct Access Entrances from Parking Structures	Facility has an attached parking structure with more than one pedestrian connection and not all are accessible.	40%
24	Parking Spaces	Facility must have a parking lot with such spaces that is accessed by the public.	10%
25	Parking Spaces (Signs)	Facility must (a) have four or fewer parking spaces or (b) be a residential facility with assigned parking spaces.	10%
26	Passenger Loading Zones at Medical Care and Long-Term Care Facilities	Medical or long-term care facility offers periods of stay longer than 24 hours.	90%
27	Ambulatory Accessible Toilet Compartments	Facility has a men’s bathroom with fewer than six toilet compartments but more than six toilets and urinals combined.	50%
29	Shower Spray Controls	Facility has bathtubs or showers that are required to be accessible.  The revision will primarily affect bathtubs and shower compartments in newly constructed hotel guest rooms, patient sleeping rooms, and dwelling units with mobility features.	75%
30	Urinals	Facility has a men’s toilet room with only one urinal.	50%
31	Multiple Single-User Toilet Rooms	Facility has multiple single-user toilet rooms (typically provided for specimen collection in medical facilities).	50%
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors		50%

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
33	Water Closet Location and Rear Grab Bar	Facility has site constraints requiring the centerline of water closets to be 16 or 17 inches from the wall and/or requiring installation of a shorter grab bar (in latter case, because lavatory is recessed into the wall).	50%
34	Patient Toilet Rooms	Facility has critical care or ICU patient rooms that have toilet rooms.	90%
35	Drinking Fountains	Existing facility has a drinking fountain not used exclusively by children that provides a parallel approach. Most drinking fountains in facilities built since 1992 have forward approach.	20%
36	Sinks	Hotel guest room (or any transient lodging facility) has a kitchen sink or wet bar as well as a cooktop or range (previously, could have been parallel; will now have to be forward). Non-hotel facility has a wet bar or kitchen sink that is NOT in the same space as a cooktop or range (had to be forward before; can now be parallel).	50%
38	Sales and Service Counters (NC)	Facility has counters providing a forward approach. <i>For low end of range:</i> Existing facility would have to reduce the number of counters to make them 30" long.	30%
39	Sales and Service Counters (Alt)	Facility has counters providing a forward approach. <i>For low end of range:</i> Existing facility would have to reduce the number of counters to make them 30" long.	30%
40	Washing Machines and Clothes Dryers (technical)	Facility has washing machines or dryers available for public use that do not provide a forward reach and that have an obstruction that raises the side reach over 34" but not over 36". The revision was made to accommodate currently available machines.	20%
41	Washing Machines and Clothes Dryers (Scoping)	Facility has more than 3 washing machines or 3 dryers available for public use.	10%
43	Limited Access Spaces and Machinery Spaces	Facility has a space that either (a) has limited access but no machinery, (b) has machinery but no limited access, or (c) has both limited access and machinery but is still "occupiable."	10%
44	Operable Parts	Facility has these elements.	50%
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)	Transient lodging facility provides non-comparable vanity counter top space and fails to provide required water closet clearances in bathroom of mobility-accessible guest room.	90%

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
46	Operable Windows	Facility (not residential dwelling or transient lodging units not required to be mobility accessible, or employee work areas) installs or has a window intended to be opened by the room occupants (not employees) in rooms or spaces required to be accessible.  Will primarily affect hotel guest rooms, dorm rooms and patient sleeping rooms with mobility features where the building code or fire or life safety code requires a window in an accessible room to be operable, or the entity otherwise decides to make it operable.	50%
47	Dwelling Units with Communication Features [1991]	Facility is (a) private or (b) public but elected to comply with ADAAG, and chooses to install (or has) a voice communication system at entrances, an alarm system and/or visible alarms.	75%
48	Dwelling Units with Communication Features[UFAS]	Facility is public and elected to comply with UFAS, and installs (or has) a voice communication system at entrances, an alarm system and/or visual alarms. <sup>82</sup>	20%
49	Galley Kitchen Clearances	A facility's kitchen has only one entrance and includes a cooktop or conventional range.	50%
50	Shower Compartments with Mobility Features	Facility has transfer-type showers with molded compartments with rounded bottom edges and/or a 2 inch curb (where recessing it would disturb the slab) or "alternate" roll-in showers (either in non-hotel facilities or in hotels with controls not adjacent to the seat) or roll-in showers with a ½ inch curb.	50%
51	Location of Accessible Route to Stages	Facility has a stage that is directly connected to the seating area by fixed (not portable) stairs.	77% (at private elementary and secondary schools); 50% (all other facilities)
52	Wheelchair Space Overlap in Assembly Areas	Facility has wheelchair spaces overlapping circulation paths.	75%
53	Lawn Seating in Assembly Areas	Facility has, constructs or alters lawn or exterior seating area and/or the route to it.	10%
54	Handrails on Aisle Ramps in Assembly Areas	Facility has assembly areas with aisle ramps adjacent to seating that are part of an accessible route.	50%
55	Wheelchair Spaces in Assembly Areas	Facility has an assembly area with more than 500 seats in each type of seating.	50%

<sup>82</sup> In altered public housing facilities, the requirement only applies if the alteration is to a unit required to be accessible, and only when either a bathroom or a kitchen is substantially altered and at least one other room is also altered, or when the building has more than 15 units and has been vacated for purposes of alterations.

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	Newly constructed sports facility has tiered dining areas.	90%
57	Accessible Route to Press Boxes	Facility has a press box that is either (a) located on a bleacher with an entrance on only one level or (b) freestanding and elevated more than 12 feet high. (Small number of facilities.)	50%
58	Public TTYS	Private facility has 4+ public pay phones on more than one floor of a building, or in a bank of telephones (and there is not a TTY within 200 feet on the same floor), or in an exterior location. Public facility has 1 public pay phone on more than one floor of a building, or 4+ phones in a bank of telephones (and there is not a TTY within 200 feet on the same floor), or 4+ phones in an exterior location (if a public rest stop, need only be one). Bus and rail stations that have a public pay telephone at an entrance to the facility. Public rest stops that have at least one public pay phone.	3%
59	Public Telephone Volume Controls	Facility has and/or would have installed non-wheelchair accessible phones without volume controls. (New phones meeting these specifications are currently required under other Federal laws.) <sup>83</sup>	10%
60	Two-Way Communication Systems at entrances	Non-residential facility installs or replaces a two-way communication system at an entrance to the facility or a restricted area.	15%
62	Assistive Listening Systems (technical)	Facility is (a) an assembly area that provides audio amplification or (b) a courtroom, and, in new construction or an alteration, would have installed an assistive listening system that does not meet these specifications.	80%
63	Visible Alarms in Alterations to Existing Facilities	Existing facility that has a noncompliant alarm system undertakes an alteration project that would have been significant enough to amount to “an alteration of a room or space” under 4.1.6(1)(c) so that the entire space would have been required to be made accessible.	30%
64	Detectable Warnings (scoping)	Will primarily affect facilities with large parking lots.	90%
65	Detectable Warnings (technical)	Most rail transit facilities come under DOT’s jurisdiction. For purposes of this Final RIA, only rail facilities associated with places of public accommodation (e.g., monorails in amusement parks) have been considered.	90%

<sup>83</sup> Section 255 of the Telecommunications Act of 1998 and Section 508 of the Rehabilitation Act of 1973.

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
66	Assistive Listening Systems (scoping)	For exemption: Facility is an assembly area (other than a courtroom) with an occupant load of at least 50 people but no audio amplification system.  For reduced scoping: Facility is (a) an assembly area that provides audio amplification or (b) a courtroom, and has more than 500 seats	50%
67	Accessible Courtroom Stations	Courtroom has fixed (rather than movable) work stations.	100% of judicial facilities
68	Accessible Attorney Areas and Witness Stands	Courtroom has raised (rather than level) attorney areas and witness stands.	100% of judicial facilities
69	Raised Courtroom Stations not for members of the public	Courtroom has raised (rather than level) stations.	100% of judicial facilities
107	Mobility Accessible Prison Cells	Cells fail to provide required mobility features.	100% of prisons
108	Communication Accessible Prison Cells	Cells have a cell-specific communication feature (such as a dedicated receiver) which is not accessible	10% of prisons
113	Housing at Places of Education – Kitchen Turning Space	Kitchens within housing units containing accessible sleeping rooms with mobility features (including suites and clustered sleeping rooms)	50% of undergraduate facilities (public and private)
114	Housing at Places of Education – Kitchen Work Surfaces	Kitchens within housing units containing accessible sleeping rooms with mobility features (including suites and clustered sleeping rooms)	50% of undergraduate facilities (public and private)
115	Secondary Accessible Means of Entry into Pools (NC/ALT)	Pools over 300 linear feet	1% at Secondary Schools (public and private), 80% at private swimming pools, 40% at public swimming pools, 68% at private undergraduate, 37% at public undergraduate

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
116	Secondary Accessible Means of Entry into Pools (BR)	Pools over 300 linear feet	1% at Secondary Schools (public and private), 80% at private swimming pools, 40% at public swimming pools, 56% at private undergraduate, 15% at public undergraduate
117	Social Service Establishments – Roll-in Shower	Facilities with more than 50 beds covered by this part that provide common use bathing facilities	20% at public homeless shelters, 10% at public social service establishments

## **G. Likelihood of Element in a Typical Facility (Varying by Facility)**

For some requirements, the likelihood of an element at a facility and subject to change in order to become compliant under the Rule is assumed to vary by the type of facility (hotel versus store, etc.) These likelihoods also have a “most likely” value, as well as high and low values which are equal to plus and minus 5% of the most likely likelihood value.

The most likely value is presented in the table below; conditions for the likelihood are shown separately at the end of this table. The facility-requirement matches labeled as N/A represent that the requirement is not typically present in the facility, so the likelihood that a facility would have the element to comply does not apply.

The publicly owned counterparts of the facilities below generally are assumed to have an equal likelihood of an element both existing and requiring change to bring it into compliance with 2004 ADAAG (or other alternate baseline). However, the likelihood of change for the requirements for accessible means of entry to swimming pools (Req. ## 79 & 112), accessible saunas and steam rooms (Req. ## 72 & 111), and play areas (Req. ## 99-104) at public (Title II) facilities in this Appendix take into account estimates of pre-existing compliance (or, in the case of new construction or alterations, projected compliance) with 2004 ADAAG due to overlapping program access requirements. See Section 2.4.1. First, for public Aquatic Centers / Swimming Pools, the likelihood that an accessible means of entry would need to be added (via lift or sloped entry) in order to comply with 2004 ADAAG was reduced by 70% based on sources cited in the Access Board’s regulatory assessment for recreational facilities that about 70% of existing pools already provide one or more accessible means of pool entry. *Id.* Second, for saunas and steam rooms, this same percentage (70%) was used to scale back the likelihood for change both because saunas and steams rooms are frequently co-located with swimming pools at recreational facilities (and thus are assumed to share common accessibility levels and features) and because no public survey data exists for saunas. Third, a series of recently published surveys of play areas at large urban parks and school districts nationwide showed that the vast majority of existing play areas at these facilities, as well as play areas expected to be constructed or renovated over a five-tear planning horizon through 2011, already use (or plan to use) accessible surface materials that are compliant with 2004 ADAAG. See “Playgrounds in the Nation’s Largest Urban Park Districts,” Henderson Consulting Services, Inc. (March 2006); “Playgrounds in the Nation’s Largest School Districts,” Henderson Consulting Services, Inc. (March 2006) (both surveys available at <http://www.fibar.com/Playgrounds/news.htm>). Based on this survey data, the likelihoods for change for public play areas was scaled back by 50% for play areas built since 1992 (when the current ADA Standards for new construction took effect), and 25% for play areas built prior to 1992.

Facility Groups	Valet Parking Garages (Req. 20)	Passenger Loading Zones (Req. 23)	Water Closet ... Out-Swinging Doors (Req. 28)	Self-Service Storage Facility Spaces (Req. 42)	Exercise amenities (Reqs. 71-72)	Pools (Reqs. 79-80)	Spas (Req. 81)	Boating facilities (Reqs. 82-86)	Fishing facilities (Reqs. 87-88)	Accessible golf (Req. 89-92)	Accessible Mini-Golf (Reqs. 93-94)	Accessible amusement rides (Reqs. 95-98)	BR Play areas (Reqs. 99-100)	AL.T Play areas (Reqs. 101-102)	NC Play areas (Reqs. 103-104)	Post Secondary School Dorm Facility (Req. 106)	Social Service Establishments – Elevator Access (NC) (Req. 109)	Social Service Establishments – Clear Floor Space around Beds (Req. 110)	Accessible Saunas and Steam Rooms (AL.T/BR) (Req. 111)	Accessible Means of Entry to Pools (BR) (Reqs. 112, 113)	ATM and Fare Machines (Req. 61)
Inns	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hotels	5%	10%	50%	N/A	55%	20%	20%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12%	1%
Motels	N/A	10%	50%	N/A	55%	20%	20%	N/A	N/A	N/A	N/A	N/A	N/A	5%	3%	N/A	N/A	N/A	N/A	10%	N/A
Restaurants	0.1%	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5%	3%	N/A	N/A	N/A	N/A	N/A	N/A
Motion Picture House	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Theatre / Concert Hall	10%	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stadiums	N/A	50%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20%	N/A	1%
Auditoriums	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Convention Centers	N/A	90%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1%
Single Level Stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shopping Malls	N/A	90%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5%	3%	N/A	N/A	N/A	N/A	N/A	1%
Indoor Service Establishments	N/A	N/A	35%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3%
Offices of Health Care Providers	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hospitals	N/A	90%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nursing Homes	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Terminal	10%	30%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depot	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Museums	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parks or zoos	N/A	50%	50%	N/A	N/A	N/A	N/A	20%	20%	N/A	N/A	N/A	20%	5%	20%	N/A	N/A	N/A	N/A	N/A	N/A
Amusement Parks	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	25%	5%	25%	N/A	N/A	N/A	N/A	N/A	N/A
Nursery schools/Day Care	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5%	5%	50%	N/A	N/A	N/A	N/A	N/A	N/A
Elementary Private Schools	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75%	5%	95%	N/A	N/A	N/A	N/A	N/A	N/A



Facility Groups	Valet Parking Garages (Req. 20)	Passenger Loading Zones (Req. 23)	Water Closet ... Out-Swinging Doors (Req. 28)	Self-Service Storage Facility Spaces (Req. 42)	Exercise amenities (Reqs. 71-72)	Pools (Reqs. 79-80)	Spas (Req. 81)	Boating facilities (Reqs. 82-86)	Fishing facilities (Reqs. 87-88)	Accessible golf (Req. 89-92)	Accessible Mini-Golf (Reqs. 93-94)	Accessible amusement rides (Reqs. 95-98)	BR Play areas (Reqs. 99-100)	AL T Play areas (Reqs. 101-102)	NC Play areas (Reqs. 103-104)	Post Secondary School Dorm Facility (Req. 106)	Social Service Establishments – Elevator Access (NC) (Req. 109)	Social Service Establishments – Clear Floor Space around Beds (Req. 110)	Accessible Saunas and Steam Rooms (AL T/BR) (Req. 111)	Accessible Means of Entry to Pools (BR) (Reqs. 112, 113)	ATM and Fare Machines (Req. 61)
Secondary Private Schools	N/A	10%	50%	N/A	20%	10%	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1%	N/A
Undergraduate and Postgraduate Private Schools	N/A	10%	50%	N/A	75%	70%	70%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75%	56%	N/A
Ski Facilities	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Homeless Shelter	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	100%	N/A	N/A	N/A
Food Banks	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social Service Establishment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Exercise Facilities	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A
Aquatic Centers /Swimming Pools	N/A	N/A	N/A	N/A	N/A	100%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20%	60%	N/A
Bowling Alleys	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Golf Courses (semi private)	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Golf Courses (private)	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Miniature golf courses	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Recreational Boating Facilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fishing Piers and Platforms	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shooting Facilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Office Buildings	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Public elementary schools	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40%	3%	48%	N/A	N/A	N/A	N/A	N/A	N/A

Facility Groups	Valet Parking Garages (Req. 20)	Passenger Loading Zones (Req. 23)	Water Closet ... Out-Swinging Doors (Req. 28)	Self-Service Storage Facility Spaces (Req. 42)	Exercise amenities (Reqs. 71-72)	Pools (Reqs. 79-80)	Spas (Req. 81)	Boating facilities (Reqs. 82-86)	Fishing facilities (Reqs. 87-88)	Accessible golf (Req. 89-92)	Accessible Mini-Golf (Reqs. 93-94)	Accessible amusement rides (Reqs. 95-98)	BR Play areas (Reqs. 99-100)	AL T Play areas (Reqs. 101-102)	NC Play areas (Reqs. 103-104)	Post Secondary School Dorm Facility (Req. 106)	Social Service Establishments – Elevator Access (NC) (Req. 109)	Social Service Establishments – Clear Floor Space around Beds (Req. 110)	Accessible Saunas and Steam Rooms (AL T/BR) (Req. 111)	Accessible Means of Entry to Pools (BR) (Reqs. 112, 113)	ATM and Fare Machines (Req. 61)
Public secondary schools	N/A	10%	50%	N/A	10%	10%	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.3%	N/A
Public post secondary schools	N/A	10%	50%	N/A	80%	70%	70%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	95%	N/A	N/A	20%	50%	N/A
Public Housing	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27%	3%	25%	N/A	N/A	N/A	N/A	N/A	N/A
State and Local Judicial Facilities	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State and Local Detention Facilities	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State and Local Correctional Facilities	N/A	10%	N/A	N/A	75%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parking Garages	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Self Service Storage Facilities	N/A	N/A	N/A	90%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Theatre / Concert Halls (public)	10%	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stadiums (public)	N/A	50%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5%	N/A	1%
Auditoriums (public)	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Convention Centers (public)	N/A	90%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1%
Hospitals (public)	N/A	90%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nursing Homes (public)	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Museums & libraries (public)	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parks or zoos (public)	N/A	50%	50%	N/A	N/A	N/A	N/A	20%	20%	N/A	N/A	N/A	11%	3%	10%	N/A	N/A	N/A	N/A	N/A	N/A

Facility Groups	Valet Parking Garages (Req. 20)	Passenger Loading Zones (Req. 23)	Water Closet ... Out-Swinging Doors (Req. 28)	Self-Service Storage Facility Spaces (Req. 42)	Exercise amenities (Reqs. 71-72)	Pools (Reqs. 79-80)	Spas (Req. 81)	Boating facilities (Reqs. 82-86)	Fishing facilities (Reqs. 87-88)	Accessible golf (Req. 89-92)	Accessible Mini-Golf (Reqs. 93-94)	Accessible amusement rides (Reqs. 95-98)	BR Play areas (Reqs. 99-100)	AL T Play areas (Reqs. 101-102)	NC Play areas (Reqs. 103-104)	Post Secondary School Dorm Facility (Req. 106)	Social Service Establishments – Elevator Access (NC) (Req. 109)	Social Service Establishments – Clear Floor Space around Beds (Req. 110)	Accessible Saunas and Steam Rooms (AL T/BR) (Req. 111)	Accessible Means of Entry to Pools (BR) (Reqs. 112, 113)	ATM and Fare Machines (Req. 61)
Homeless Shelter (public)	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	100%	N/A	N/A	N/A
Exercise Facilities (public)	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	27%	N/A	N/A
Social Service Establishments (public)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aquatic Centers /Swimming Pools (public)	N/A	N/A	N/A	N/A	N/A	100 %	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5%	16%	N/A
Miniature golf courses (public)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Recreational Boating Facilities (public)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fishing Piers and Platforms (public)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Office Buildings (public)	N/A	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parking Garages (public)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Golf Courses (public)	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Restaurants (public)	0.1%	10%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3%	2%	N/A	N/A	N/A	N/A	N/A	N/A
Amusement Parks (public)	N/A	10%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100%	13%	3%	13%	N/A	N/A	N/A	N/A	N/A	N/A

Conditions for change for the above requirements:

Requirement Number:

70. Accessible Route to Exercise Machines and Equipment: Facility provides accessible exercise machines but they are not on an accessible route. At hotels and motels, these likelihoods are an average of estimates by DOJ architects concerning the likelihood that transient lodging facilities would have exercise facilities that would need a change to become compliant and the survey data submitted by commenters on lodging facilities that have exercise facilities (irrespective of whether they are likely already accessible or not).

71. Accessible Exercise Machines and Equipment: Facility provides exercise machines but they lack adequate clear floor space. Again, at hotels and motels, these likelihoods are an average of the estimated likelihood value by DOJ architects used in the Initial RIA and survey data submitted by commenters on lodging facilities that have exercise facilities (irrespective of whether they are likely already accessible or not).

72. Accessible Saunas and Steam Rooms (NC): Facility provides a sauna or steam room.

73. Accessible Lockers: Facility provides lockers. Alternate conditions: Facility provides more than 20 of each type of locker (per cluster or facility).

74. Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms: Facility provides dressing rooms, fitting rooms or locker rooms. In existing facilities, the change will apply to dressing and fitting rooms that provide a curtain instead of a door (if they have a door, they would already meet floor space requirements). Alternate conditions: Facility provides more than 20 dressing rooms, fitting rooms or locker rooms (per cluster or facility).

75. Wheelchair Spaces in Team or Player Seating Areas: Facility provides team or player seating area.

76. Accessible Route in Court Sport Facilities: Facility has court with no accessible route connecting both sides of the court.

77. Accessible Route to Bowling Lanes conditions: Facility has more than 20 of each type of bowling lane.

78. Shooting Facilities with Firing Positions conditions: Facility has more than 20 of each type of firing position.

79. Primary Accessible Means of Entry to Pools (NC/ALT): Facility has or would have installed a pool with only inaccessible steps or ladders. Will apply to hotels and schools only with respect to the proportion that have pools.

80. Accessible Means of Entry to Wading Pools: Facility has or would have installed a wading pool with only steps.

81. Accessible Means of Entry to Spas: Newly constructed facility would have installed spa or hot tub with only steps or seating areas. Existing facility has such a spa (most common in hotel hot tubs). Will only apply to facilities that have spas or hot tubs.

82. Accessible Route to Boating Facilities: Facility has or would have been built with no accessible route.

87. Accessible Route to Fishing Piers: Facility has or would have been built with no accessible route.
88. Accessible Fishing Piers and Platforms: Facility has fishing piers or platforms with railings, guards or handrails.
89. Accessible Route to Golf Courses: Facility has or would have been built with no accessible route.
90. Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR): Existing facility has a putting green, weather shelter, and/or teeing ground. *For low end of range:* Terrain is such that it is infeasible to make forward teeing ground accessible.
91. Accessible Teeing Grounds, Putting Greens, and Weather Stations (NC): Newly constructed facility will install a putting green, weather shelter, and/or teeing ground.
92. Accessible Practice Putting Greens, Practice Teeing Grounds, and Teeing Stations at Driving Ranges: Facility has or will construct a practice putting green, practice teeing ground, and/or teeing stations at driving range.
99. Accessible Route to Play Components (BR): Will only apply to facilities with “medium” or “large” existing play areas that are assumed to exceed 1,000 square feet. (“Small” play areas are assumed to be 1,000 square feet or less in size and, therefore, are exempt from regulatory barrier removal requirements.)
100. Accessible Play Components (BR): Will only apply to facilities with “medium” or “large” existing play areas that are assumed to exceed 1,000 square feet. (“Small” play areas are assumed to occupy 1,000 square feet or less and, therefore, are exempt from regulatory barrier removal requirements.)
101. Accessible Route to Play Components (ALT): Applies to facilities with “small,” “medium,” or “large” existing play areas undergoing alterations.
102. Accessible Play Components (ALT): Applies to facilities with “small,” “medium,” or “large” existing play areas undergoing alterations.
103. Accessible Route to Play Components (NC): Applies to facilities with “small,” “medium,” or “large” newly constructed play areas.
104. Accessible Play Components (NC): Applies to facilities with “small,” “medium,” or “large” newly constructed play areas.
106. Post Secondary Multi-Story Dorm Facility
109. Social Service Establishments – Elevator Access (NC)
110. Social Service Establishments – Clear Floor Space around Beds
111. Accessible Saunas and Steam Rooms (ALT/BR): Will only apply to facilities that have existing saunas or steam rooms seating more than two persons.
112. Primary Accessible Means of Entry to Pools (BR): Will only apply to existing swimming pools at public (Title II) facilities and to existing private (Title III-covered) swimming pools with more than 300 linear feet of pool wall.

## H. Unit Costs

Unit costs were developed per requirement to represent the high, median and low costs of compliance for an average facility based on the minimum additional cost required to bring a facility into compliance with 2004 ADAAG from the previous 1991 Standards. If current fire and safety standards exceed the 1991 Standards, then fire and safety are used as the baseline to calculate incremental costs. Not all costs will apply to all facilities. Less stringent requirements would not generate cost savings for existing facilities.

Two notes with respect to unit costs for barrier removal listed in this table bear notation. First, since existing Title-II covered facilities/requirements must comply with program access requirements only, “barrier removal” costs with respect to such facilities or requirements is technically a misnomer. However, for ease of reference, unit costs for modifications to existing such facilities/requirements – irrespective of whether covered by Title II or III – are simply herein referred to as “Barrier Removal Costs.” Second, when a requirement is less stringent in 2004 ADAAG (as compared to the 1991 Standards), it is listed in this table as having zero costs for BR on the common sense assumption that facilities would not undertake to remove an element that was only no longer necessary.

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
1	Public Entrances	(\$155)	(\$207)	(\$259)	na	na	na	na	na	na	Increase in door size design and operation; Directional & identification signage	3'-0" width door & signage

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
2	Maneuvering / Standby Power - Auto Doors	\$362	\$518	\$621	\$362	\$518	\$621	\$362	\$518	\$621	Additional wiring required to connect automatic doors to emergency power system. Assumes emergency power system is in place & only wiring is necessary.	Connection to emergency power system
3	Automatic Door Break-Out Openings	\$0	\$0	\$0	\$259	\$311	\$362	\$1,553	\$2,070	\$2,588	Door, frame & hardware design and operation changes	2'-8" width clear
4	Thresholds at Doorways	\$0	\$155	\$311	na	na	na	na	na	na	Change in threshold requirements for sliding doors	3'-0" width door
5	Door and Gate Surfaces	\$207	\$285	\$518	na	na	na	na	na	na	Provide 10" smooth surface @ bottom of door (kick plates @ low end, door or gate design change @ high end)	3'-0" width door or gate

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
6	Location of Accessible Routes	\$0	\$1,035	\$2,070	na	na	na	na	na	na	Design cost impacts to incorporate path into design. Assumes no real construction hard cost impacts.	range - 25', 50' & 100' travel distance
7	Common Use Circulation Paths	\$0	\$0	\$0	\$0	\$0	\$0	na	na	na	Because the life safety requirements for circulation meet the accessibility standard this will have no cost impact.	100' travel distance
8	Accessible Means of Egress	\$0	\$414	\$828	na	na	na	na	na	na	Signage costs associated with compliance and path for variable distance from building. Other construction hard costs are not impacted because safety requirements already mandate the egress requirement.	range - 0', 50', & 100' travel distance



Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
9	Stairs (NC)	\$0	\$0	\$0	na	na	na	na	na	na	No additional costs for redesign of handrails or treads and risers.	1 run - floor to floor
10	Stairs (ALT/BR)	\$0	\$0	\$0	\$3,105	\$7,763	\$15,525	\$3,105	\$7,763	\$15,525	Cost to add extensions to handrails for low end estimate, to add handrails for middle, and to remove and replace at high end.	1 run - floor to floor
11	Handrails along Walkways	\$0	\$0	\$0	\$0	\$259	\$2,588	\$0	\$259	\$2,588	Railing design and features; low end estimate to remove 50 feet of chain or railing, high end to replace.	50' travel distance
12	Handrails	\$0	(\$52)	(\$104)	\$0	\$0	\$0	\$0	\$0	\$0	Cost for handrail changes only. NC is savings realized from shorter extensions. No need to replace in ALT so no cost.	1 run - floor to floor
13	Accessible Routes from Site Arrival	(\$1,035)	(\$2,070)	(\$12,420)	\$0	\$0	\$0	na	na	na	Horizontal surface construction materials and accessible path of travel	range - 50' - 100' - 600'+ travel distance

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
14	Standby Power for Platform Lifts	\$0	\$414	\$725	\$0	\$518	\$828	\$0	\$621	\$2,588	Lowest cost assumes lift with existing battery; medium assumes wiring to existing power source; high assumes new battery & rewiring required.	1 backup system
15	Power Operated Doors for Platform Lifts	\$0	\$0	\$0	\$1,553	\$2,588	\$3,623	\$1,553	\$2,588	\$3,623	This type of lift would generally not be incorporated into NC designs. The cost for Alt/BR Is for the new doors & wiring involved.	1 door set equipment
16	Alterations to Existing Elevators	na	na	na	\$259	\$1,553	\$2,588	na	na	na	Low cost is for new hoist way marker; median cost is for emergency communication equipment; high cost is for new control panel.	
17	Platform Lifts in Hotel Guest Rooms	(\$17,595)	(\$20,700)	(\$23,805)	(\$17,595)	(\$20,700)	(\$23,805)	na	na	na	Cost difference between a 2 stop elevator & lift	1 lift - 2 stops vs. elevator

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
18	LULA Elevators	(\$17,595)	(\$20,700)	(\$23,805)	(\$17,595)	(\$20,700)	(\$23,805)	na	na	na	Cost difference between a 2 stop elevator & a LULA or residential elevator	1 lift - 2 stops vs. elevator
19	Van Accessible Parking Spaces	\$155	\$207	\$466	\$155	\$207	\$466	\$155	\$207	\$466	Low cost is for striping & sign only; High cost is for additional paving, striping & signage.	Van space is 16'-0" wide x 20'-0" long, difference in aisle space is 3 ft by 20 ft
20	Valet Parking / Garages	\$155	\$259	\$1,242	\$155	\$259	\$673	\$569	\$1,553	\$2,588	Low cost is for striping & sign only; High cost is for additional paving, striping & signage. BR includes cost of removing curbs, etc.	5'-0" wide x 20'-0" long
21	Valet Parking / Mechanical Access	\$155	\$259	\$1,242	\$155	\$259	\$673	\$569	\$1,553	\$2,588	Low cost is for striping & sign only; High cost is for additional paving, striping & signage. BR includes cost of removing curbs, etc.	5'-0" wide x 20'-0" long

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
22	Direct Access Entrances - Parking	\$0	\$0	\$0	na	na	na	na	na	na	The cost of incorporating accessible access to entrances would be part of the design solution & therefore have no cost impact to NC. If there is an access issue in an existing facility the cost to correct the problem would be prohibitive & therefore would not be done as part of an Alt or BR.	range - 30', 75', & 125' travel distance
23	Passenger Loading Zones	\$414	\$673	\$1,242	\$673	\$932	\$1,760	\$673	\$932	\$1,760	Costs include striping, signage & curb cut.	13'-0" wide x 20'-0" long
24	Parking Spaces (addition of loading zones)	\$414	\$673	\$1,242	\$673	\$932	\$1,760	\$673	\$932	\$1,760	Cost to provide loading zone, including include striping, signage & curb cut.	13'-0" wide x 20'-0" long

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
25	Parking Spaces - Signs	(\$104)	(\$104)	(\$155)	(\$104)	(\$104)	(\$155)	na	na	na	Revision is exemption for signage. This is credit for NC & Alt. Since the regulation is less stringent there should be no BR cost.	1 signage
26	Passenger Loading Zones (Medical)	(\$15,525)	(\$51,750)	(\$103,500)	(\$15,525)	(\$31,050)	(\$51,750)	na	na	na	Deleting the cost of a canopy at loading zones	Canopy 20'x20' & 30'x35'
27	Ambulatory Accessible Toilets	\$362	\$466	\$569	\$362	\$466	\$569	\$414	\$621	\$673	Cost of grab bars & reworking the toilet partition.	Revised HC Toilet Partition w/Grab Bars
28	Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors	\$104	\$129	\$155	\$2,070	\$3,105	\$3,623	\$2,588	\$3,623	\$3,933	NC: cost of added plumbing wall minus space savings; Alt: cost of reworked walls and relocation of fixtures; BR: Same as Alt plus add'l costs for demolition and restoration of finishes.	NC: space savings (1.25 sf), but plumbing required along additional wall; Alt/BR: 6.4 sf (on avg) add'l space required
29	Shower Spray Controls	\$155	\$207	\$259	\$155	\$207	\$259	\$181	\$233	\$285	Cost for shower spray unit with on/off control.	1 fixture

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
30	Urinals	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Because this is a less stringent requirement & there is virtually no difference in the cost of fixtures, there is no cost impact.	1 fixture - adjust mounting height
31	Multiple Single-User Toilet Rooms	(\$1,656)	(\$2,070)	(\$2,484)	(\$414)	(\$828)	(\$1,242)	na	na	na	Costs assume the reduction in space required to be dedicated to the HC toilet room.	reduced space requirement & grab bars
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors	\$155	\$207	\$259	\$2,122	\$3,209	\$3,726	\$2,639	\$3,726	\$4,037	NC: cost of added plumbing wall; Alt: cost of reworked walls and relocation of fixtures; BR: Same as Alt plus add'l costs for demolition and restoration of finishes.	NC: no space impact; Alt/BR: 6.7 sf (on avg) add'l space required
33	Water Closet Location / Rear Grab Bar	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	This is strictly a design issue with no impact on cost.	1 equipment
34	Patient Toilet Rooms	(\$1,811)	(\$2,225)	(\$2,691)	(\$569)	(\$983)	(\$1,397)	na	na	na	Room design changes make it smaller without the grab bars, this a no cost issue.	1 room

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
35	Drinking Fountains	\$0	\$0	\$0	\$466	\$673	\$932	\$2,070	\$2,588	\$3,002	Cost of fixture is additional + cost of space required. BR assumes demolition added.	1 fixture
36	Sinks, in Hotels	\$0	\$0	\$0	\$518	\$725	\$1,035	\$776	\$983	\$1,087	No cost impact to NC, cabinet credit offsets counter & pipe insulation. Alt/BR is to remove cabinet & lower counter & sink, & provide pipe insulation.	1 fixture
37	Side Reach	\$0	\$0	\$0	\$0	\$155	\$1,553	\$52	\$155	\$1,553	The medium estimate costs moving a non-electrical bathroom element; the high cost assumes adding a hand dryer; the low cost assumes adding a coat hook or paper towel dispenser. Assumed to be a design issue under new construction.	1 fixture/element

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
38	Sales and Service Counters (NC)	(\$104)	(\$207)	(\$311)	na	na	na	na	na	na	Costs for shorter counters -- 30" instead of 36"	6" to 1'-0" length of counter & base
39	Sales and Service Counters (Alt)	na	na	na	(\$104)	(\$207)	(\$311)	na	na	na	Costs for shorter counters -- 24" instead of 36"	12' length of counter & base
40	Washing Machines	\$259	\$518	\$725	\$259	\$518	\$725	\$259	\$518	\$725	Cost of the accessible washing machine	1 equipment
41	Clothes Dryers	\$207	\$311	\$414	\$207	\$311	\$414	\$207	\$311	\$414	Cost of the accessible clothes dryer	1 equipment
42	Self-Service Storage Facility Spaces	\$0	\$0	\$0	\$362	\$518	\$776	\$362	\$518	\$776	Costs may require moving door for clearances, or installing an overhead door opener.	spaces by size of facility
43	Limited Access Spaces	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	The change increases the number of exempted spaces; therefore, door, hardware, & design changes have no cost impact.	3'-0" width door



Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
44	Operable Parts	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	There is no cost impact for these elements in NC; they would not have to be changed in either Alt or BR, so there is no cost impact there either.	elements
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)	\$0	\$0	\$0	\$104	\$1,485	\$4,823	\$104	\$1,941	\$5,279	Incremental costs include added vanity space & added floor space for clearances	Alt/BR: Low – install add'l shelving; Med – relocate 2 fixtures, construct new plumbing chase, and install shelving; High – same as Med plus costs of relocating door and expanding bathroom footprint (8.13 sf) by shifting bath wall 15" into guest room sleeping area
46	Operable Windows	\$0	\$0	\$0	\$362	\$518	\$569	\$621	\$725	\$828	There is no cost impact in NC; Alt/BR will encounter cost of hardware as a minimum.	1 window - 2'-0" width & clear space

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
47	Dwelling Units with Communication Features [1991]	\$466	\$569	\$1,035	\$466	\$518	\$1,035	na	na	na	Equipment and hardware design and operation (High cost - communication at each unit; Low cost - communication at main) visible signal assumed to be required at units.	elements
48	Dwelling Units with Communication Features [UFAS]	\$466	\$569	\$1,035	\$466	\$518	\$1,035	na	na	na	Equipment and hardware design and operation (High cost - communication at each unit; Low cost - communication at main) visible signal assumed to be required at units.	
49	Galley Kitchen Clearances	\$673	\$1,035	\$1,553	\$673	\$1,035	\$1,553	\$828	\$1,242	\$1,760	Costs to increase the circulation area of a galley kitchen	Adding 13 SF of room area

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
50	Shower Compartments	\$0	\$0	\$0	(\$362)	(\$518)	(\$725)	(\$362)	(\$518)	(\$725)	Cost range includes cost of reworking plumbing & possibly replacing a molded shower enclosure. BR costs include removal of curbs.	Shower Stall without curbs exceeding 1/2"
51	Location of Accessible Route to Stages	\$0	\$0	\$0	\$8,280	\$15,525	\$31,050	\$8,798	\$20,700	\$36,225	Low cost includes the cost of a platform lift; high cost is for a ramp. NC has no cost impact since it is only the location of the access that has changed.	1 lift or ramp
52	Wheelchair Space Overlap	\$0	\$0	\$0	\$518	\$673	\$932	\$880	\$1,242	\$1,397	There is no cost impact for compliance in NC. The costs in Alt/BR are for additional space required.	5'-0" x 5'-0" area minimum - could affect aisle
53	Lawn Seating	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	There are no cost impacts for providing direct access to lawn seating since the accessible route does not have run through the seating area.	range - 3'-0" wide by 0' - 50' - 100' length

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
54	Aisle Stairs and Ramps	(\$776)	(\$1,811)	(\$2,588)	(\$776)	(\$1,811)	(\$2,588)	\$0	\$0	\$0	Reduced handrail requirements will affect NC/Alt.	50' length of handrail
55	Wheelchair Spaces in Assembly Areas	(\$621)	(\$1,294)	(\$1,967)	(\$259)	(\$673)	(\$1,967)	na	na	na	Cost of wheelchair seating in stadium seating (low cost) & luxury box seating (high cost).	5'-0" x 5'-0" area
56	Accessible Routes to Tiered Dining	(\$5,693)	(\$10,350)	(\$25,875)	na	na	na	na	na	na	The cost savings included in the NC are for raising a tier & ramping to that tier, or a wall mounted lift that makes as many as four stops.	1 equipment (range - ramp or lift)
57	Accessible Routes to Press Boxes	(\$12,420)	(\$17,595)	(\$20,700)	(\$12,420)	(\$17,595)	(\$20,700)	na	na	na	Cost for lift and space needed to install	One lift
58	Public TTYs	\$1,967	\$2,401	\$2,691	\$1,967	\$2,401	\$2,691	\$2,070	\$2,588	\$2,795	Cost of one TTY phone	1 equipment
59	Public Telephone Volume Controls	\$0	\$0	\$0	\$259	\$362	\$414	\$259	\$362	\$414	There is no cost impact to NC.	1 public phone with volume controls

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
60	Two-Way Communication Systems	\$1,035	\$1,449	\$3,105	\$1,035	\$1,449	\$3,105	na	na	na	Cost to add visual signal to secured entrances equipped with audible signals	1 system
61	Automated Teller Machines / Fare Machines	\$1,035	\$2,070	\$3,105	\$1,035	\$2,070	\$3,105	\$1,035	\$2,070	\$3,105	Cost of one conversion kit for ATM machines and installation	1 kit
62	Assistive Listening Systems (technical)	\$31	\$75	\$119	\$31	\$75	\$119	na	na	na	Based on incremental range of costs for FM/IR receiver and accessory combinations	Number of receivers
63	Visible Alarms and Alterations	na	na	na	\$0	\$0	\$0	na	na	na	This work would only be done when the entire Fire Alarm System was being upgraded & therefore the cost of this work has not been included here.	1 system
64	Detectable Warnings	(\$207)	(\$259)	(\$311)	(\$207)	(\$259)	(\$311)	na	na	na	Credit detectable horizontal surface construction materials no longer required	3'-0" length x 6'-0" width

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
65	Detectable Warnings @ Platform Edges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Detectable horizontal surface construction material specification changes should have no cost impact	3'-0" length x 6'-0" width
66	Assistive Listening Systems (scoping)	(\$1,035)	(\$1,294)	(\$1,553)	(\$1,035)	(\$1,294)	(\$1,553)	na	na	na	The cost impact is less than the previous requirements credit the cost of 1 receiver	1 device - receiver
67	Forward Approach - Courtrooms	\$0	\$0	\$0	\$0	\$0	\$0	\$518	\$1,035	\$1,553	This should have no cost impact to NC/Alt, & minimal cost impact to BR	Accessibility Space Required
68	Attorney Areas and Witness Stands	\$2,588	\$15,525	\$25,875	\$2,588	\$15,525	\$25,875	\$3,623	\$18,630	\$31,050	Low cost is for a small ramp, high cost is for a power lift with emergency power connections or battery.	1 equipment with power backup
69	Raised Courtroom Stations	\$5,175	\$7,763	\$10,350	\$1,294	\$1,967	\$2,588	na	na	na	Costs are for the additional space required & the conduit for the future wiring required for a lift. This is for NC or Alt. only.	Accessibility Space Required

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
70	Exercise— Accessible route	na	na	na	na	na	na	\$259	\$518	\$1,035	Because of the existing life/safety requirements for exiting this should be a no cost design issue in NC/Alt.	travel distance varies by equipment distribution
71	Exercise— Accessible machines	\$414	\$1,553	\$2,381	\$414	\$621	\$828	\$518	\$725	\$1,035	This is a design issue when laying out the location of the machines in both NC/Alt on the low cost end. The high cost end will add SF to the building because of the number of differing types of equipment. Cost in BR for reorganization of equipment location.	Accessibility Space Required

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
72	Saunas and Steam Rooms (NC)	\$0	\$0	\$0	na	na	na	na	na	na	Assumes no cost to NC because the sauna would be designed to accessibility standards & the cost of an accessible bench is no more than a regular bench.	Accessibility Space Required
73	Accessible Lockers	\$0	\$0	\$0	\$259	\$414	\$621	\$362	\$518	\$725	Costs include all finishes in the accessibility space required. The NC/Alt should have no real impact because it will be a design around issue.	Accessibility Space Required



Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
74	Accessible Dressing Rooms	\$0	\$0	\$0	\$0	\$0	\$0	\$1,035	\$1,553	\$2,070	BR costs include reworking an existing space to accommodate the accessibility space requirements. The NC/Alt should have no real impact because it will be a design around issue.	3'-0" wide door & space issues
75	Wheelchair Space in Team Seating	\$0	\$0	\$0	\$0	\$0	\$0	\$155	\$259	\$518	This is a no cost item in NC/Alt. The cost in BR is for moving benches, etc. to accommodate the required accessibility & path of travel.	5'-0" x 5'-0" area
76	Court Sport— Accessible route	\$621	\$1,553	\$2,174	\$621	\$1,553	\$2,174	\$932	\$1,863	\$2,588	NC/Alt & BR cost of new pavement to provide an accessible path of travel	3'-0" wide x 100' length

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
77	Accessible route to bowling lanes	\$0	\$0	\$0	\$0	\$0	\$0	\$518	\$1,035	\$1,553	No cost impact on NC/Alt. BR cost impact is only the cost to rework the furniture layout to provide accessibility. This assumes ramps have already been provided or are covered elsewhere.	3'-0" wide x 50' length
78	Shooting Facilities	\$0	\$311	\$518	\$0	\$311	\$518	\$311	\$518	\$725	Costs are for the additional space required. No additional costs should be incurred for providing compliant counters, etc.	1 location
79	Primary Accessible Entry to Swimming Pools (NC/ALT)	\$5,175	\$10,350	\$18,630	\$8,280	\$15,525	\$23,805	na	na	na	The range of costs for pool lift equipment and installation	1 lift

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
80	Sloped Accessible Entry to Wading Pools	\$23,288	\$147,488	\$150,075	\$25,875	\$150,593	\$155,250	\$25,875	\$150,593	\$155,250	Cost of ramp complete with handrails & surfacing for wading pool of 33x10, 58x30, and 69x40. Given the amount of space required for proper slope, not possible for smaller sizes.	1 ramp
81	Accessible Means of Entry to Spas	\$3,623	\$4,658	\$6,210	\$5,175	\$6,210	\$8,280	\$5,175	\$6,210	\$8,280	Cost of either steps with rail or a lift	1 item
82	Boating—Accessible route	\$1,035	\$1,553	\$2,070	\$1,035	\$1,553	\$2,070	na	na	na	Additional horizontal surface construction materials for the accessible path of travel. This is assuming that BR will be exempted.	200' travel distance

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
83	Boating — Accessible piers	\$569	\$776	\$880	na	na	na	na	na	na	Cost to provide 100' of accessible slip (difference between accessible & non-accessible). It is assumed that this would not be feasible in Alt/BR.	5'-0" wide x 100' length
84	Accessible Boarding Piers (ALT/BR)	na	na	na	\$0	\$0	\$0	\$0	\$0	\$0	Cost to provide 100' of accessible slip (difference between accessible & non-accessible). It is assumed that this would not be feasible in Alt/BR	5'-0" wide x 100' length
85	Boating— Accessible slips (NC)	\$259	\$311	\$414	na	na	na	na	na	na	Cost to provide 1 40' accessible slip (difference between accessible & non-accessible).	1 location
86	Boating— Accessible slips (ALT/BR)	na	na	na	\$0	\$0	\$0	\$0	\$0	\$0	Cost to provide 1 40' accessible slip (difference between accessible & non-accessible).	

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
87	Accessible Route to Fishing Piers & Platforms	\$259	\$311	\$362	\$259	\$311	\$362	\$362	\$518	\$621	Cost to provide 100' of accessible route (difference between accessible & non-accessible).	100' travel distance
88	Accessible Fishing Piers	\$1,035	\$1,553	\$2,070	\$1,035	\$1,553	\$2,070	\$5,175	\$7,245	\$10,350	Cost to provide lower railing & 30" x 12" edge extension in 25% of 100' of pier	30" x 12" edge of pier ext. & rail
89	Golf Courses— Accessible route	\$0	\$1,035	\$2,588	\$0	\$1,035	\$2,588	\$1,035	\$2,070	\$3,105	Cost of accessible path, low cost assumes that NC/Alt/BR paths will be compliant & only mid & high will have costs. Med cost is for asphalt, high cost is for concrete path.	5'-0" wide x 100' length
90	Accessible Teeing Grounds, Putting Greens, and Weather Stations (Alt/BR)	na	na	na	\$290	\$580	\$725	\$311	\$362	\$621	Re-grading & landscaping to provide golf access to golf element (tee, putting green, or weather station)	70' long x 4' wide, (grass, dirt, packed dirt, or gravel)

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
91	Accessible Teeing Grounds, Putting Greens, and Weather Stations (NC)	\$0	\$0	\$0	na	na	na	na	na	na	Not expected to be an additional incremental cost in new construction.	70' long x 4' wide, (grass, dirt, packed dirt, gravel, etc but not concrete)
92	Golf— Accessible practice areas at Driving Ranges	\$0	\$0	\$0	\$0	\$1,035	\$2,588	\$1,035	\$1,553	\$3,105	Re-grading & landscaping to provide access to practice area	200' travel distance
93	Mini Golf — Accessible route	\$725	\$1,035	\$1,139	\$725	\$1,035	\$1,139	\$2,588	\$3,623	\$4,140	NC/Alt & BR cost of new pavement to provide an accessible path of travel between holes and to course exit/entrance.	200' travel distance
94	Mini Golf — Accessible holes	\$4,658	\$9,315	\$10,350	\$4,658	\$9,315	\$10,350	\$15,525	\$25,875	\$41,400	NC/Alt & BR cost of new surfacing to provide an accessible path of travel from tee to hole. BR includes costs to re-grade & remove obstacles.	9 holes (50% of an 18-hole course)

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
95	Amusement Rides— Accessible route	\$0	\$5,175	\$36,225	\$0	\$5,175	\$36,225	\$0	\$7,763	\$51,750	Low cost assumes little to no cost, med a ramp, & high an elevator or lift.	50' travel distance
96	Amusement Rides— wheelchair space	\$311	\$1,035	\$2,588	na	na	na	na	na	na	Construction of location for loading, unloading, & transfer area. NC only Alt/BR are exempt. Low cost for area & bench, high cost for transfer seat.	5'-0" x 5'-0" area
97	Amusement Rides— Maneuvering space	\$0	\$362	\$518	\$0	\$362	\$518	\$518	\$776	\$1,035	This should be a no cost item at the low end of NC/Alt & minimal at the high end.	5'-0" x 5'-0" area
98	Amusement Rides -- Signs	\$155	\$259	\$518	\$155	\$259	\$518	\$155	\$259	\$518	Detectable sign design and surface construction	1 sign
99	Play Areas— Accessible route (BR)	na	na	na	na	na	na	\$1,178 (sm) \$1,178 (med) \$1,178 (lg)	\$1,413 (sm) \$2,572 (med) \$4,709 (lg)	\$2,260 (sm) \$3,323 (med) \$5,107 (lg)	Incremental cost to add accessible route of 60% mat/ 40%. Engineered wood fiber to added components, transfer system or ramp	See endnote for Play Areas at end of Unit Cost table.

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
100	Play Areas— Accessible play components (BR)	na	na	na	na	na	na	\$362 (sm) \$569 (med) \$2,277 (lg)	\$569 (sm) \$1,139 (med) \$3,053 (lg)	\$932 (sm) \$1,708 (med) \$5,330(lg)	Incremental costs to add additional ground components or access to elevated play components required to satisfy BR requirements.	See endnote for Play Areas at end of Unit Cost table.
101	Play Areas— Accessible route (ALT)	na	na	na	\$0 (sm) \$0 (med) \$0 (lg)	\$1,413 (sm) \$2,543 (med) \$4,709 (lg)	\$7,651 (sm) \$16,167 (med) \$33,358 (lg)	na	na	na	Same unit cost assumptions for surface materials used on accessible route(s) as per Req. # 99.	See endnote for Play Areas at end of Unit Cost table.
102	Play Areas— Accessible play components (ALT)	na	na	na	\$0 (sm) \$0 (med) \$0 (lg)	\$518 (sm) \$1,035 (med) \$2,070 (lg)	\$1,035 (sm) \$1,139 (med) \$3,002 (lg)	na	na	na	Incremental costs to add any additional ground components required to satisfy BR requirements.	See endnote for Play Areas at end of Unit Cost table.
103	Play Areas— Accessible route (NC)	\$861 (sm) \$1,819 (med) \$3,033 (lg)	\$4,973 (sm) \$10,508 (med) \$22,744 (lg)	\$7,651 (sm) \$16,167 (med) \$33,358 (lg)	na	na	na	na	na	na	Same unit cost assumptions for surface materials used on accessible route(s) as per Req. # 99.	See endnote for Play Areas at end of Unit Cost table.



Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
104	Play Areas— Accessible play components (NC)	\$0 (sm) \$0 (med) \$0 (lg)	\$518 (sm) \$1,035 (med) \$2,070 (lg)	\$5180 (sm) \$1,139 (med) \$3,002 (lg)	na	na	na	na	na	na	Incremental costs to add any additional ground components required to satisfy BR requirements.	See endnote for Play Areas at end of Unit Cost table.
106	Post Secondary School Multi-Story Dorm Facility - Elevator	\$72,450	\$77,625	\$82,800	\$0	\$0	\$0	\$0	\$0	\$0	NC cost assumes adding an elevator to the building. Low cost is for a 2 story compliant hydraulic elevator, complete with pit, shaft walls, & machine room; .the cost to add an elevator to an existing building would be excessive & is being considered as exempt.	1 elevator

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
107	Mobility Accessible Prison Cell	(\$15,525)	(\$20,700)	(\$25,875)	(\$25,875)	(\$31,050)	(\$36,225)	\$0	\$0	\$0	NC costs are for the incremental added square footage, & the ADA accessible toilet. Alt costs include the burden of retro-fitting masonry or concrete walls.	1 cell
108	Communication Accessible Prison Cell	\$5,175	\$6,210	\$7,245	\$6,210	\$7,245	\$8,280	\$6,210	\$7,245	\$8,280	NC/Alt include the cost to install a security type communication system	1 communication system per cell
109	Social Service Establishments – Elevator Access (NC)	(\$72,450)	(\$155,250)	(\$258,750)	\$0	\$0	\$0	\$0	\$0	\$0	NC eliminates the need for an elevator (See item 106 for description of elevator). Assumes no impact to Alt/BR	1 elevator
110	Social Service Establishments – Clear Floor Space around Beds	\$2,588	\$3,623	\$4,658	\$1,035	\$1,553	\$2,070	\$0	\$0	\$0	NC/Alt includes the cost of the incremental additional space requirements.	1 Room

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
111	Accessible Saunas and Steam Rooms (ALT/BR)	na	na	na	\$0	\$0	\$0	\$7,245	\$10,350	\$20,700	Assumes no cost to Alt because the sauna would be designed to accessibility standards & the cost of an accessible bench is no more than a regular bench.	Accessibility Space Required
112	Primary Accessible Means of Entry to Pools (BR)	na	na	na	na	na	na	\$8,280	\$15,525	\$23,805	The range of pool lift equipment and installation costs	1 lift
113	Housing at Place of Education (aka college dormitories): Turning Space in Kitchen	\$0	\$43	\$94	\$0	\$43	\$90	\$499	\$674	\$768	Cost of providing larger turning space and any needed changes to cabinets and counters; costs assume average of modifications for Pass Through and U- Shaped kitchen layouts.	1 kitchen – 60” diameter circular turning space or T- Shaped space with 36” min. width

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
114	Housing at Place of Education (aka college dormitories) - Work Surface in Kitchens	(\$516)	\$0	\$3,079	(\$516)	\$0	\$3,079	\$244	\$279	\$2,209	Cost of lower counter (34" max. above finished floor) and clear floor space; high end estimate includes increasing footprint by 14.5 sq ft	1 kitchen – 30" min. counter length at compliant height and with required clear floor space
115	Secondary Entrance for Pools (NC/ALT)	\$1,120	\$2,631	\$4,972	\$1,940	\$3,491	\$5,792	na	na	na	The cost to add accessible pool stairs	One set of accessible pool stairs
116	Secondary Entrance for Pools (BR)	na	na	na	na	na	na	\$1,940	\$3,491	\$5,792	The cost to add accessible pool stairs to existing pools	One set of accessible pool stairs

Requirement		New Construction Cost - ADAAG			Alterations Cost - ADAAG			Barrier Removal Cost - ADAAG			Unit Cost Assumptions Criteria	Unit Description
		L	M	H	L	M	H	L	M	H		
117	Roll-In Showers at Social Service Establishments	\$156	\$167	\$184	\$156	\$167	\$184	\$1,120	\$1,385	\$1,689	NC/ALT: average cost of adding a seat or changing Transfer Shower to a roll-in shower with seat; BR: average of NC/ALT costs adjusted for 10% likelihood that required modifications would include converting a bathtub with seat into a roll-in shower with seat.	1 Roll-In Shower with Seat

[1] As applied to public or private facilities that comply with ADAAG's transient lodging provisions, which are more stringent than the new (less stringent) requirements for dwelling units.

[2] As applied to public dwelling units that comply with UFAS, which is less stringent than the new (more stringent) requirements for dwelling units.

Source: The Austin Company in consultation with the Department and HDR.

### Notes on Unit Descriptions for Play Areas:

#### Accessible play components:

*Small playground:*

#### Under New Construction:

- Low cost -- no cost

- Medium cost – cost to add **one** ground component
- High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 24” deck

Under Alterations:

- Low cost -- no cost
- Medium cost – cost to add **one** ground component
- High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 24” deck

Under Barrier Removal:

- Low cost – cost to add a transfer system to a 24” deck
- Medium cost – cost to add **one** ground component
- High cost – cost to add both transfer system and **one** ground component

*Medium sized playground:*

Under New Construction:

- Low cost -- no cost
- Medium cost – cost to add **two** ground components
- High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 36” deck plus the cost of adding one additional ground component

Under Alterations:

- Low cost -- no cost
- Medium cost – cost to add **two** ground components
- High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 36” deck plus the cost of adding one additional ground component

Under Barrier Removal:

- Low cost – cost to add a transfer system to a 36” deck
- Medium cost – cost to add **two** ground components
- High cost – cost to add both transfer system and **two** ground component

*Large sized playground:*

Under New Construction:

- Low cost -- no cost
- Medium cost – cost to add **four** ground components
- High cost – incremental cost for substituting stairs/ladder on a composite play structure with a ramp to a 12 or 16” platform from grade

Under Alterations:

- Low cost -- no cost
- Medium cost – cost to add **four** ground components
- High cost – incremental cost for substituting stairs/ladder on a composite play structure with a ramp to a 12 or 16” platform from grade

Under Barrier Removal:

- Low cost – cost to add **four** ground components
- Medium cost – cost to add **a ramp**
- High cost – cost to add both **a ramp** system and **four** ground components

**Accessible routes to play components:**

For small play area, sq ft to be covered:

New construction –308 (low, medium and high);

Alterations – low, 0; medium 70; high, 308,

Barrier removal 50, 70 or 120 (low, medium and high).

For medium play area, sq ft to be covered

New construction –710 (low, medium and high);

Alterations – low, 0; medium 140; high, 710;

Barrier removal 50, 140 or 190 (low, medium and high).

For large play area, sq ft to be covered

New construction –1,095 (low, medium and high);

Alterations – low, 0; medium, 280; high, 1,095;

Barrier removal 50, 280, or 330 (low, medium and high).



## I. Operation and Maintenance Cost

These two tables present the Operation and Maintenance (O&M) costs. The first table lists general O&M costs by category or type of equipment. The second table applies these costs to specific elements in terms of the incremental O&M costs per element due to the requirements. Costs continue for 40 years.

Standard Operation and Maintenance (O&M) costs				
Maintenance Type	Operating Cost Low- Med- High			Explanation
Standard Maintenance	2%	3%	4%	Conforms to a standard commercial/ federal benchmark that maintenance costs represent 2-4% of initial cost
High Use Maintenance	2%	3%	5%	Addresses application (exterior/high use) as well as conforms to benchmark for grounds, hardscape and exterior equipment maintenance
Extraordinary Wear/Tear	3%	5%	7%	Addresses type of use and length of use (24/7). Also reflects higher costs arising from user population (students, prisoners – need for escorts, added security etc.).
Equipment Maintenance	4%	5%	6%	Addresses items with electronic control units, software-driven controllers, specialty use/applications which almost always require either specialty annual maintenance contracts or corrective service performed by skilled technicians. Both are contributors to higher maintenance costs.

### Sources:

1. Operational Guidelines for Grounds Management 2001 – Association of Higher Education Facilities Officers; National Recreation and Park Association; Professional Grounds Management Society
2. Maintenance Staffing Guidelines for Educational Facilities 2002 – Association of Higher Education Facilities Officers
3. Stewardship of Federal Facilities 1998 – National Research Council
4. Investments in Federal Facilities 2004 -- National Research Council
5. Benchmarks IV Research Report Number 25 2004 -- International Facility Management Association
6. Facility Management Handbook 2<sup>nd</sup> Edition 1999 – David G. Cotts,
7. Proprietary Corporate Facility Management Benchmarking Information

Incremental Operation and Maintenance Costs per Requirement					
Interior/ Exterior	ID	Requirement	Incremental Annual Cost of O&M ( % of unit cost) Low - Med - High		
Ext	1	Public Entrances	0.00%	0.00%	0.00%
Int/Ext	2	Maneuvering Clearance or Standby Power for Automatic Doors	2.00%	3.00%	4.00%
Int/Ext	3	Automatic Door Break-Out Openings	0.00%	0.00%	0.00%

Incremental Operation and Maintenance Costs per Requirement					
Interior/ Exterior	ID	Requirement	Incremental Annual Cost of O&M (% of unit cost) Low - Med - High		
Int/Ext	4	Thresholds at Doorways	0.00%	0.00%	0.00%
Ext	5	Door and Gate Surfaces	2.00%	3.00%	5.00%
Int/Ext	6	Location of Accessible Routes	2.00%	3.00%	5.00%
Int	7	Common Use Circulation Paths in Employee Work Areas	2.00%	3.00%	5.00%
Int	8	Accessible Means of Egress	2.00%	3.00%	5.00%
Int	9	Stairs (NC)	2.00%	3.00%	5.00%
Int	10	Stairs (ALT/BR)	2.00%	3.00%	5.00%
Ext	11	Handrails Along Walkways	0.00%	0.00%	0.00%
Int	12	Handrails	0.00%	0.00%	0.00%
Ext	13	Accessible Routes from Site Arrival Points and Within Sites	0.00%	0.00%	0.00%
Int/Ext	14	Standby Power for Platform Lifts	0.00%	0.00%	0.00%
Int/Ext	15	Power-Operated Doors for Platform Lifts	2.00%	3.00%	5.00%
Int/Ext	16	Alterations to Existing Elevators	2.00%	3.00%	5.00%
Int	17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	2.00%	3.00%	5.00%
Int	18	“LULA” and Private Residence Elevators	0.00%	0.00%	0.00%
Ext	19	Van Accessible Parking Spaces	0.00%	0.00%	0.00%
Ext	20	Valet Parking Garages	0.00%	0.00%	0.00%
Ext	21	Mechanical Access Parking Garages	0.00%	0.00%	0.00%
Ext	22	Direct Access Entrances from Parking Structures	0.00%	0.00%	0.00%
Int/Ext	23	Passenger Loading Zones	0.00%	0.00%	0.00%
Ext	24	Parking Spaces	0.00%	0.00%	0.00%
Ext	25	Parking Spaces (Signs)	2.00%	3.00%	5.00%
Ext	26	Passenger Loading Zones at Medical Care and Long-Term Care Facilities	2.00%	3.00%	5.00%
Int	27	Ambulatory Accessible Toilet Compartments	4.00%	5.00%	6.00%
Int	28	Water Closet Clearance in Single-User Toilet Rooms	0.00%	0.00%	0.00%
Int	29	Shower Spray Controls	0.00%	0.00%	0.00%
Int	30	Urinals	0.00%	0.00%	0.00%
Int	31	Multiple Single-User Toilet Rooms	0.00%	0.00%	0.00%
Int	32	Toilet Room Doors	0.00%	0.00%	0.00%
Int	33	Water Closet Location and Rear Grab Bar	0.00%	0.00%	0.00%
Int	34	Patient Toilet Rooms	0.00%	0.00%	0.00%
Int	35	Drinking Fountains	0.00%	0.00%	0.00%
Int	36	Sinks	0.00%	0.00%	0.00%
Int	37	Side Reach	0.00%	0.00%	0.00%
Int	38	Sales and Service Counters (NC)	0.00%	0.00%	0.00%
Int	39	Sales and Service Counters (Alt)	0.00%	0.00%	0.00%
Int	40	Washing Machines and Clothes Dryers (technical)	0.00%	0.00%	0.00%
Int	41	Washing Machines and Clothes Dryers (Scoping)	0.00%	0.00%	0.00%
Ext	42	Self-Service Storage Facility Spaces	2.00%	3.00%	4.00%
Int/Ext	43	Limited Access Spaces and Machinery Spaces	0.00%	0.00%	0.00%
Int/Ext	44	Operable Parts	0.00%	0.00%	0.00%
Int	45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)	0.00%	0.00%	0.00%

Incremental Operation and Maintenance Costs per Requirement					
Interior/ Exterior	ID	Requirement	Incremental Annual Cost of O&M (% of unit cost) Low - Med - High		
Int	46	Operable Windows	0.00%	0.00%	0.00%
Ext	47	Dwelling Units with Communication Features [1991] <sup>1</sup>	4.00%	5.00%	6.00%
Ext	48	Dwelling Units with Communication Features [UFAS] <sup>2</sup>	4.00%	5.00%	6.00%
Int	49	Galley Kitchen Clearances	0.00%	0.00%	0.00%
Int	50	Shower Compartments with Mobility Features	0.00%	0.00%	0.00%
Int	51	Location of Accessible Route to Stages	2.00%	3.00%	4.00%
Int	52	Wheelchair Space Overlap in Assembly Areas	0.00%	0.00%	0.00%
Ext	53	Lawn Seating in Assembly Areas	2.00%	3.00%	5.00%
Int	54	Handrails on Aisle Ramps in Assembly Areas	0.00%	0.00%	0.00%
Int	55	Wheelchair Spaces in Assembly Areas	0.00%	0.00%	0.00%
Int	56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	0.00%	0.00%	0.00%
Int	57	Accessible Route to Press Boxes	0.00%	0.00%	0.00%
Int/Ext	58	Public TTYS	0.00%	0.00%	0.00%
Int/Ext	59	Public Telephone Volume Controls	0.00%	0.00%	0.00%
Ext	60	Two-Way Communication Systems at entrances	4.00%	5.00%	6.00%
Ext	61	ATMs and Fare Machines	4.00%	5.00%	6.00%
Int/Ext	62	Assistive Listening Systems (technical)	4.00%	5.00%	6.00%
Int/Ext	63	Visible Alarms in Alterations to Existing Facilities	4.00%	5.00%	6.00%
Int/Ext	64	Detectable Warnings (scoping)	0.00%	0.00%	0.00%
Int/Ext	65	Detectable Warnings (technical)	0.00%	0.00%	0.00%
Int/Ext	66	Assistive Listening Systems (scoping)	0.00%	0.00%	0.00%
Int	67	Accessible Courtroom Stations	0.00%	0.00%	0.00%
Int	68	Accessible Attorney Areas and Witness Stands	0.00%	0.00%	0.00%
Int	69	Raised Courtroom Stations Not for Members of the Public	0.00%	0.00%	0.00%
Int	70	Accessible Route to Exercise Machines and Equipment	2.00%	3.00%	4.00%
Int	71	Accessible Exercise Machines and Equipment	2.00%	3.00%	4.00%
Int	72	Accessible Saunas and Steam Rooms (NC)	2.00%	3.00%	4.00%
Int	73	Accessible Lockers	0.00%	0.00%	0.00%
Int	74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	2.00%	3.00%	4.00%
Int	75	Wheelchair Spaces in Team or Player Seating Areas	0.00%	0.00%	0.00%
Int	76	Accessible Route in Court Sport Facilities	2.00%	3.00%	4.00%
Int	77	Accessible Route to Bowling Lanes	0.00%	0.00%	0.00%
Int/Ext	78	Shooting Facilities with Firing Positions	0.00%	0.00%	0.00%
Ext	79	Primary Accessible Means of Entry to Pools (NC/ALT)	2.00%	3.00%	5.00%
Ext	80	Accessible Means of Entry to Wading Pools	2.00%	3.00%	5.00%
Ext	81	Accessible Means of Entry to Spas	2.00%	3.00%	5.00%
Ext	82	Accessible Route to Boating Facilities	2.00%	3.00%	5.00%
Ext	83	Accessible Boarding Piers (NC)	2.00%	3.00%	5.00%
Ext	84	Accessible Boarding Piers (ALT/BR)	2.00%	3.00%	5.00%
Ext	85	Accessible Boat Slips (NC)	0.00%	0.00%	0.00%
Ext	86	Accessible Boat Slips (Alt/BR)	0.00%	0.00%	0.00%

Incremental Operation and Maintenance Costs per Requirement					
Interior/ Exterior	ID	Requirement	Incremental Annual Cost of O&M (% of unit cost)		
			Low	Med	High
Ext	87	Accessible Route to Fishing Piers	0.00%	0.00%	0.00%
Ext	88	Accessible Fishing Piers and Platforms	0.00%	0.00%	0.00%
Ext	89	Accessible Route to golf courses	2.00%	3.00%	5.00%
Ext	90	Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (ALT/BR)	2.00%	3.00%	5.00%
Ext	91	Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (NC)	2.00%	3.00%	5.00%
Ext	92	Accessible Practice Grounds (Teeing Grounds, Putting Greens, and Teeing Stations) at Driving Ranges	0.00%	0.00%	0.00%
Ext	93	Accessible Route to Holes (mini golf)	0.00%	0.00%	0.00%
Ext	94	Accessible Holes (mini golf)	0.00%	0.00%	0.00%
Ext	95	Accessible Route to Amusement Rides	0.00%	0.00%	0.00%
Int/Ext	96	Wheelchair Space, Transfer Seat or Transfer Device of Amusement Ride	0.00%	0.00%	0.00%
Ext	97	Maneuvering Space in Load and Unload Area of Amusement Ride	0.00%	0.00%	0.00%
Int/Ext	98	Signs at Amusement Rides	0.00%	0.00%	0.00%
Int/Ext	99	Accessible Route to Play Components (BR)	0.00%	0.00%	0.00%
Int/Ext	100	Accessible Play Components (BR)	0.00%	0.00%	0.00%
Int/Ext	101	Accessible Route to Play Components (ALT)	0.00%	0.00%	0.00%
Int/Ext	102	Accessible Play Components (ALT)	0.00%	0.00%	0.00%
Int/Ext	103	Accessible Route to Play Components (NC)	0.00%	0.00%	0.00%
Int/Ext	104	Accessible Play Components (NC)	0.00%	0.00%	0.00%
Int/Ext	106	Post Secondary School Multi-Story Dorm Facility	3.00%	5.00%	7.00%
Int	107	Mobility Accessible Prison Cell	0.00%	0.00%	0.00%
Int	108	Communication Accessible Prison Cell	0.00%	0.00%	0.00%
Ext	109	Social Service Establishments – Elevator Access (NC)	0.00%	0.00%	0.00%
Ext	110	Social Service Establishments – Clear Floor Space around Beds	0.00%	0.00%	0.00%
Int	111	Accessible Saunas and Steam Rooms (ALT/BR)	2.00%	3.00%	4.00%
Ext	112	Primary Accessible Means of Entry to Pools (BR)	2.00%	3.00%	5.00%

[1] As applied to public or private facilities that comply with ADAAG's transient lodging provisions, which are more stringent than the new (less stringent) requirements for dwelling units.

[2] As applied to public dwelling units that comply with UFAS, which is less stringent than the new (more stringent) requirements for dwelling units.

*Source: Prepared by McKnight Associates using above-noted documents, and adjusted for selected requirements as follows: 1) zero O&M costs were assigned to those requirements which would not have any incremental O&M costs (above table); 2) O&M costs for requirements #2 (Maneuvering Clearance or Standby Power for Automatic Doors), #15 (Power-Operated Doors for Platform Lifts), #16 (Alterations to Existing Elevators), and #17 (Platform Lifts in Hotel Guest Rooms and Dwelling Units) were decreased slightly to reflect only the incremental costs of adjustments to existing elements; and 3) the O&M costs for #27, (Ambulatory Accessible Toilet Compartments) was increased slightly to reflect unit maintenance of added elements.*

## J. Facility Space Cost

This chart lists those facilities in which it was determined that the requirements which have a change in productive space that would directly impact sales/revenue. Space values for non-office facilities are calculated using construction cost per sq. ft. for facility scaled by the ratio of income per SF of office space to construction cost per SF of office space. The 2005 Construction Cost per square foot estimates from RS Means are escalated to 2009 estimates using the U.S. Bureau of Labor Statistics' Producer Price Index for New Construction. Only facilities that list a space cost proxy are assumed to have sales revenue impacted by a change in productive space brought about by the requirements. The space costs per facility listed here are the assumed most likely costs, the high and low costs are plus and minus 20 percent of the most likely costs.

Note that for the Valet Parking requirement (Req. # 20), approximately one-fifth of the space cost proxy is used, since the space cost proxy represents the value of space inside the related facility, rather than the value of parking spaces.

Facility Group	Construction Cost per sq ft (2005)	Space cost proxy
Restaurants	\$159.95	\$26.90
Motion Picture House	\$112.70	\$18.96
Theatre / Concert Hall	\$125.10	\$21.04
Stadiums	\$125.10	\$21.04
Auditoriums	\$125.10	\$21.04
Single Level Stores	\$83.70	\$14.08
Multi-level stores	\$99.40	\$16.72
Indoor Service Establishments	\$87.30	\$14.68

*Source: Calculated using RSMeans Square Foot Costs, 2005 and The Building Owners and Managers Association (BOMA) 2006 Experience Exchange Report: U.S. Office Market Highlights.*

## K. Changes in Productive Space Per Requirement

This table shows the amount of space (sq ft) that is an incremental change brought about by these requirements. Changes in productive space are included only if the change is likely to have a direct impact on sales/revenues. Other requirements not listed here are assumed to have zero impact on productive space.

#	Requirement	Space BR/Alt			Space NC		
		Low	Med	High	Low	Med	High
2	Maneuvering Clearance or Standby Power for Automatic Doors	37.5	62.5	88	30	50	70
19	Van Accessible Parking Spaces	125	126	127	99	100	101
20	Valet Parking Garages	187.5	250	312.5	150	200	250
27	Ambulatory Accessible Toilet Compartments	25	37.5	50	20	30	40
28	Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors <sup>84</sup>	4.6	6.4	14.5	0.00	-0.60	-1.25
30	Urinals	0	0	0	-10	-15	-20
31	Multiple Single-User Toilet Rooms	0	0	0	0	-5	-10
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors	2.5	6.7	17	1.5	2.25	3
38	Sales and Service Counters (NC)	0	0	0	-0.5	-1	-1.5
39	Sales and Service Counters (Alt)	-1	-2	-3	0	0	0
42	Self-Service Storage Facility Spaces	125	187.5	250	100	150	200
45	Bathrooms in Accessible Guest Rooms (vanities with water closet clearances)	0	0	8.125	0	0	0
49	Galley Kitchen Clearances	0	0	0	200	250	300
52	Wheelchair Space Overlap in Assembly Areas	12.5	37.5	62.5	0	0	0
53	Lawn Seating in Assembly Areas	50	75	100	40	60	80
55	Wheelchair Spaces in Assembly Areas	0	0	0	-10	-30	-50
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	0	0	0	-100	-150	-200
57	Accessible Route to Press Boxes	-125	-375	-875	-100	-300	-700
72	Accessible Saunas and Steam Rooms (NC)	0	0	0	30	50	70
73	Accessible Lockers	6.25	12.5	18.8	5	10	15
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	12.5	25	37.5	10	20	30
76	Accessible Route in Court Sport Facilities	25	37.5	50	20	30	40
77	Accessible Route to Bowling Lanes	12.5	18.75	25	10	15	20
78	Shooting Facilities with Firing Positions	12.5	18.75	25	0	0	0
85	Accessible Boat Slips (NC)	0	0	0	10	15	20

<sup>84</sup> The Department is publishing figures which illustrate and compare two different layouts for single-user toilet rooms with out-swinging doors. The first presents a layout typically used in new construction; this layout does not comply with 2004 ADAAG water closet clearance requirements. The second is the Department's presentation of a layout that complies with the 2004 ADAAG requirement for increased water closet clearance, but also uses less overall floor space. The Department expects that the publication of these illustrations together with technical assistance materials will result in many new facilities using the second layout and its reduced space costs. Thus, this requirement is costed with savings in productive space for NC but costs in productive space in ALT and BR on the understanding that a change to such a layout (requiring moving walls) is not be financially feasible in ALT or BR.

#	Requirement	Space BR/Alt			Space NC		
		Low	Med	High	Low	Med	High
86	Accessible Boat Slips (Alt/BR)	12.5	18.75	25	0	0	0
94	Accessible Mini Golf Holes	12.5	18.75	25	10	15	20
111	Accessible Saunas and Steam Rooms (Alt/BR)	37.5	62.5	88	0	0	0

## L. Years Before Replacement

Most elements should last for the life of the building (which is assumed to be 40 years). Those that do not are noted below. It is assumed that the replacement costs for these elements are 100 percent of the alterations costs. For the requirements which are assumed to be replaced more than every 40 years, the most likely year before replacement value is shown below. The high and low values are assumed to be plus and minus 10 percent of the most likely value.

#	Requirement	Years Before Replacement
14	Standby Power for Platform Lifts	4
15	Power-Operated Doors for Platform Lifts	4
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	4
60	Two-Way Communication Systems at entrances	4
108	Communication Accessible Prison Cell	4
16	Alterations to Existing Elevators	10
18	“LULA” and Private Residence Elevators	10
40	Washing Machines and Clothes Dryers (technical)	10
41	Washing Machines and Clothes Dryers (Scoping)	10
58	Public TTYS	10
59	Public Telephone Volume Controls	10
62	Assistive Listening Systems (technical)	10
79	Accessible Means of Entry to Pools	10
81	Accessible Means of Entry to Spas	10
99, 101, 103	Accessible Routes to Play Components	20
100, 102, 104	Accessible Play Components	20

Source: HDR and The Austin Company.

## M. Transaction Costs

In response to public comments, this Final RIA includes a stress test that assesses the relative impact (per facility group) of including a cost element that monetizes estimated indirect costs for facility owners or operators to read the Final Rules or technical assistance materials in order to determine whether there are elements at their respective existing facilities that are subject to change under one or more supplemental requirements. This indirect cost is analyzed in the sensitivity analysis, Section 6.3. The value of time of a facility owner is measured by the U.S. Bureau of Labor Statistics’ average hourly wage for a management occupation. In May 2008, this was found to be \$48.23.

## N. Example of Cost Estimation

This section presents individual calculations of the costs resulting from the Final Rules implementation at indoor service establishments. The results presented here may not match those in the Final RIA due to rounding.

According to the 2007 Economic Census, there are 3.8 million indoor service establishments.

The following eight requirements are assumed to be present in a typical indoor service establishment and will require a change to become compliant.

Req ID	Requirement
5	Door and Gate Surfaces
28	Water closet clearance in single-user toilet rooms - out swinging door
30	Urinals
37	Side Reach
38	Sales and Service Counters (NC)
39	Sales and Service Counters (Alt)
61	ATMs and Fare Machines
64	Detectable Warnings (scoping)

Costs are calculated for barrier removal, alterations and new construction each as described above:

$$\text{Cost}_{ijkl} = [\# \text{ of facilities}_{ij}] \cdot [\# \text{ of elements per facility}_{ik}] \cdot [\text{likelihood of a requirement at facility}_{ik}] \cdot [\text{unit cost per element}_{jkl}]$$

Where the subscripts are defined as:

*i* denotes the facility;

*j* denotes the type of construction;

*k* denotes the type of requirement; and

*l* denotes the category of cost (capital, O&M, productive space, or replacement).

The components of this equation are listed below.

Req ID	Requirement	Unit Cost Per Element (Expected Value)			Number of Elements Per Facility	Likelihood of Req
		BR	Alt	NC		
5	Door and Gate Surfaces	\$0	\$0	\$310	1	25%
28	Water closet clearance in single-user toilet rooms - out swinging door	\$3,502	\$3,108	\$129	2	35%
30	Urinals	\$0	\$0	\$0	1	50%
37	Side Reach	\$371	\$362	\$0	6	35%
38	Sales and Service Counters (NC)	\$0	\$0	(\$207)	1	30%
39	Sales and Service Counters (Alt)	\$0	(\$207)	\$0	1	30%
61	ATMs and Fare Machines	\$2,070	\$2,070	\$2,070	1	3%
64	Detectable Warnings (scoping)	\$0	(\$258)	(\$258)	1	88%

Note: Negative costs are cost savings.

For the first requirement listed, Door and Gate Surfaces, for indoor service establishments, the equation is as follows:



Total Capital Cost =

$[(3.8 \text{ million indoor service establishments} \cdot 1 \text{ Element per Facility} \cdot 25\% \text{ Likelihood of Occurrence} \cdot \$0 \text{ BR Costs} \cdot 50\% \text{ of elements being readily achievable})] \cdot 0 \text{ Safe Harbor Factor} +$

$(3.8 \text{ million} \cdot 1 \cdot 25\% \cdot \$0 \text{ Alt Costs} \cdot 2\% \text{ of existing buildings being altered}) +$

$(3.8 \text{ million} \cdot 1 \cdot 25\% \cdot \$310 \text{ NC Costs} \cdot 0.2\% \text{ of existing buildings are newly constructed}) =$

Total Capital Cost = \$0.59 million

Repeating this calculation for the other seven requirements at indoor service establishments yields \$170 million in capital costs. Although some requirements have a BR cost for compliance at indoor service establishments, in the primary baseline scenario safe harbor is assumed and these costs are dropped out.

Req ID	Requirement	Capital Costs (millions)			Total (millions)
		BR	Alt	NC	
5	Door and Gate Surfaces	\$0	\$0	\$1	<b>\$1</b>
28	Water closet clearance in single-user toilet rooms - out swinging door	\$0	\$163	\$0.2	<b>\$163</b>
30	Urinals	\$0	\$0	\$0	<b>\$0</b>
37	Side Reach	\$0	\$59	\$0	<b>\$59</b>
38	Sales and Service Counters (NC)	\$0	\$0	(\$0.1)	<b>(\$0.1)</b>
39	Sales and Service Counters (Alt)	\$0	(\$5)	\$0	<b>(\$5)</b>
61	ATMs and Fare Machines	\$0	\$5	\$0.1	<b>\$5</b>
64	Detectable Warnings (scoping)	\$0	(\$18)	(\$0.4)	<b>(\$18)</b>
<b>Total</b>					<b>\$204</b>

Note: Negative costs are cost savings.

The next costs to consider in the total cost estimate for these eight requirements are the recurring costs, O&M and loss of productive space. O&M costs, as described above, are commonly expressed as a percentage of the capital construction costs and are applied to each type of construction cost. These annual O&M costs are estimated by multiplying the O&M percentage of capital costs by each type of total capital construction cost.

Req ID	Requirement	O&M	O&M (millions)		
			BR	Alt	NC
5	Door and Gate Surfaces	3%	\$0	\$0	\$0.01
28	Water closet clearance in single-user toilet rooms - out swinging door	0%	\$0	\$0	\$0
30	Urinals	0%	\$0	\$0	\$0
37	Side Reach	0%	\$0	\$0	\$0
38	Sales and Service Counters (NC)	0%	\$0	\$0	\$0
39	Sales and Service Counters (Alt)	0%	\$0	\$0	\$0
61	ATMs and Fare Machines	5%	\$0	\$0.2	\$0.02
64	Detectable Warnings (scoping)	0%	\$0	\$0	\$0
<b>Total</b>			<b>\$0</b>	<b>\$0.2</b>	<b>\$0.03</b>

The other recurring cost to facilities is the loss of productive space. The value of space for indoor service establishments is assumed to be \$18 per square foot (sf). Each element is assumed to either impact the productive space of all facilities or not. For indoor service establishments, the water closet clearance in single user toilet rooms – out swinging doors is assumed to take away, on average, 6.4 square feet in barrier removal and alterations. In new construction, this requirement can save 0.6 square feet of productive space. The cost of lost productive space is calculated by multiplying the estimated space impact per requirement times the number of elements in each facility times the likelihood of a requirement at the facility times the number of facilities.

Req ID	Requirement	Space Impacts (sf)			Cost of Lost Productive Space (millions)
		BR	Alt	NC	
5	Door and Gate Surfaces	0	0	0	\$0
28	Water closet clearance in single-user toilet rooms - out swinging door	6.4	6.4	-0.6	\$484
30	Urinals	0	0	-15	(\$425)
37	Side Reach	0	0	0	\$0
38	Sales and Service Counters (NC)	0	0	-1	(\$17)
39	Sales and Service Counters (Alt)	-2	-2	0	(\$68)
61	ATMs and Fare Machines	0	0	0	\$0
64	Detectable Warnings (scoping)	0	0	0	\$0
<b>Total</b>					<b>(\$26)</b>

Note: Negative costs are cost savings.

All of the elements facing construction costs at indoor service establishments are assumed to not need replacing during the 40 year lifecycle of a building.

The annual total cost for all indoor service establishments is the sum of total construction costs, total space costs, and total O&M costs.

$$\begin{aligned}
 \text{Annual Total Cost} &= \text{Construction costs} + \text{Space costs} + \text{O\&M costs} + \text{Replacement Costs} \\
 &= \$170 \text{ million Construction} + \$22 \text{ million Space} + \$0.2 \text{ million O\&M} + \$0 \\
 &\quad \text{Replacement} \\
 &= \$148 \text{ million}
 \end{aligned}$$

The present value of total annual costs for indoor service establishments over the 40 year planning period is \$2.2 B. The net present value of costs and benefits for indoor service establishments is \$1.8 B.

## APPENDIX 4: BENEFITS ESTIMATION DATA

### A. Average Visits by Adults per Facility

The following table shows the estimated annual visits made by an average adult. Industry-specific data was found for many facilities (see following table for source and calculation notes). For other facilities, the number of visits was estimated using the methodology described in Section 4.2.1.

Facility Group	Annual visits made by average U.S. adult
Inns	1.41
Hotels	2.08
Motels	1.87
Restaurants	158.81
Motion Picture House	3.59
Theatre / Concert Hall	1.06
Stadiums	0.57
Auditoriums	0.52
Convention Centers	0.15
Single Level Stores	63.24
Shopping Malls	8.47
Indoor Service Establishments	83.13
Offices of Health Care Providers	2.80
Hospitals	0.24
Nursing Homes	1.76
Terminal (private airports)	0.00
Depots	0.08
Museums, Historical Sites & Libraries	5.75
Parks or zoos	0.29
Amusement Parks	0.87
Nursery schools - Daycare	10.97
Elementary Private Schools	1.74
Secondary Private Schools	0.55
Undergraduate and Postgraduate Private Schools	2.93
Ski Facilities	0.15
Homeless Shelter	0.34
Food Banks	0.68
Social Service Establishments	3.36
Exercise Facilities	4.93
Aquatic Centers /Swimming Pools	1.33
Bowling Alleys	0.79
Golf Courses (private with public access)	0.91
Golf Courses (private only)	0.21
Miniature golf courses	1.70
Recreational Boating Facilities	0.14
Fishing Piers and Platforms	0.02
Shooting Facilities	0.10
Office Buildings	0.25
Elementary Public Schools	11.34
Secondary Public Schools	14.92

Facility Group	Annual visits made by average U.S. adult
Undergraduate, postgraduate public schools	0.04
Public Housing	0.26
State and Local Judicial Facilities (courthouses)	0.01
State and Local Detention Facilities (jails)	0.04
State and Local Correctional Facilities (prisons)	3.03
Parking Garages	5.14
Self Service Storage Facilities	0.17
Theatre / Concert Halls (public)	0.00
Stadiums (public)	1.71
Auditoriums (public)	0.03
Convention Centers (public)	0.23
Hospitals (public)	0.06
Nursing Homes (public)	0.16
Museums, Historical Sites & Libraries (public)	11.14
Parks or zoos (public)	4.48
Homeless Shelter (public)	0.05
Exercise Facilities (public)	0.18
Social Service Establishments (public)	1.37
Aquatic Centers /Swimming Pools (public)	0.19
Miniature golf courses (public)	0.17
Recreational Boating Facilities (public)	0.21
Fishing Piers and Platforms (public)	0.02
Office Buildings (public)	0.83
Parking Garages (public)	0.05
Golf Courses (public)	0.02
Restaurants (public)	0.01
Amusement Parks (public)	0.02

For those facilities for which industry-specific data on total or average visits was found, the following table details the source and calculations behind the estimates for the average number of visits by an adult.

Facility Type	Source	Notes
Inns	American Hotel and Lodging Association (rooms and occupancy) and D.K. Shifflet & Associates, Ltd. (average visitor – to estimate number of people per room)	Number of occupied rooms (facilities <75 rooms) adjusted for average number of occupants (leisure and business)
Hotels	American Hotel and Lodging Association (rooms and occupancy) and D.K. Shifflet & Associates, Ltd. (average visitor - to estimate number of people per room)	Number of occupied rooms (facilities 150+ rooms) adjusted for average number of occupants (leisure and business)
Motels	American Hotel and Lodging Association (rooms and occupancy) and D.K. Shifflet & Associates, Ltd. (average visitor - to estimate number of people per room)	Number of occupied rooms (facilities 75-150 rooms) adjusted for average number of occupants (leisure and business)
Restaurants	HDR estimates and the National Restaurant Association, "Meal Consumption Behavior"	Adjusted NRA data for number of meals commercially prepared to estimate meals by adults and restaurants; reflected in market price
Motion Picture House	U.S. Census, Statistical Abstract of the United States: 2007, table 1229	Adjusted by population 18 and over
Multi-level stores	International Council Of Shopping Centers, "2003 Mall Shopping Patterns" and HDR	Annualized quarterly visits and adjusted to estimate multi-level facilities only

Facility Type	Source	Notes
Offices of Health Care Providers	Catharine W. Burt, et al., "Ambulatory Medical Care Utilization Estimates for 2005," Center for Disease Control, Division of Health Care Statistics.	For population 15+ years
Hospitals	Catharine W. Burt, et al., "Ambulatory Medical Care Utilization Estimates for 2005," Center for Disease Control, Division of Health Care Statistics.	Allocated total visits to reflect proportion of hospital that are private (calculated from American Hospital Association, "Fast Facts"); For population 15+ years
Nursing Homes	Center for Disease Control, National Center for Health Statistics, "National Nursing Home Survey" (NNHS)	Adjusted beds by occupancy rate
Terminal	Federal Aviation Administration, All Enplanements for General Aviation: 2005.	Enplanements at general aviation depots and fields
Depot	U.S. Department of Transportation, "Highlights of the 2001 National Household Travel Survey" (bus trips) and websites of the Leatherstocking Historical Railway, The Adirondack Railway Preservation Society, Grand Canyon Railway, Delaware and Ulster Railways, Strasburg Railroad, Catskill Mountain Rail Rd (private railways)	Estimated long distance bus trips (assumed one quarter of total) and visits to private railways
Parks or zoos	Zoos: number of zoos from the American Zoological Society and total visits from the American Association of Museums. Parks: The National Association of State Park Directors	Total visits calculated and adjusted for adults in the U.S.
Amusement Parks	"Amusement Park and Attractions Industry Statistics, "International Association of Amusement Parks and Attractions, for 2006.	Number of person trips, adjusted for adults
Nursery schools/Day Care	Number of children preschoolers and children under 5: U.S. Census Bureau "Who's Minding the Kids? Child Care Arrangements: Spring 1999;" Detailed Tables (PPL-168)	Assumed 5 days a week for 49 weeks a year.
Fishing Piers and Platforms	HDR estimates, based on Michael Thomas and Nicholas Stratis, "Assessing the Economic Impacts and Value of Florida's Public Piers and Boat Ramps" and conversation with the American Sportfishing Association	Total visits calculated and adjusted for adults in the U.S.
Elementary Private Schools	U.S. Department of Education, National Center for Education Statistics, "Characteristics of Private Schools in the United States: Results From the 2003–2004 Private School Universe Survey".	Number of students time average school year
Secondary Private Schools	U.S. Department of Education, National Center for Education Statistics, "Characteristics of Private Schools in the United States: Results From the 2003–2004 Private School Universe Survey".	Number of students time average school year
Undergraduate and Postgraduate Private Schools	U.S. Department of Education, National Center for Education Statistics, "Digest of Education Statistics: 2005 Edition"	Assumed that full-time students (both living on campus and living off-campus) averaged visits 6 days a week and part-time students averaged 3 visits a week; all for 34 weeks a year.
Ski Facilities	U.S. Census, Statistical Abstract of the United States: 2007, table 1229	Adjusted by population 18 and over
Homeless Shelter	Department of Housing and Urban Development, "The Annual Homeless Assessment Report to Congress," February 2007	Averaged three one-day estimates in same year of number of people in shelters; assumed 365 days, adjusted for adults; allocate total visits to reflect percentage of facilities that are private (from same report)
Food Banks	U.S. Department of Agriculture, "The Emergency Food System" Vol. II , table 3.2 (page 49) and Executive Summary, page iv	Adjusted for adult population

Facility Type	Source	Notes
Public Housing	<a href="http://www.hud.gov/renting/phprog.cfm">http://www.hud.gov/renting/phprog.cfm</a>	1.2 million households live in public housing. This is multiplied by 365 days a year and 8 hours per day to make consistent with daily visits.
Theatre / Concert Halls (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for details)
Stadiums (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Auditoriums (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Convention Centers (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Hospitals (public)	Catharine W. Burt, et al., “Ambulatory Medical Care Utilization Estimates for 2005,” Center for Disease Control, Division of Health Care Statistics.	Allocated total visits to reflect proportion of hospital that are public (calculated from American Hospital Association, “Fast Facts”); For population 15+ years
Nursing Homes (public)	Center for Disease Control, National Center for Health Statistics, “National Nursing Home Survey” (NNHS)	Adjusted beds by occupancy rate
Museums, Historical Sites & Libraries (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Parks or zoos (public)	American Association of Museums, 2006 Museum Financial Information survey	Used estimates for zoos and historical sites (latter as proxy)
Homeless Shelter (public)	Department of Housing and Urban Development, “The Annual Homeless Assessment Report to Congress,” February 2007	Averaged three one-day estimates in same year of number of people in shelters; assumed 365 days, adjusted for adults; allocate total visits to reflect percentage of facilities that are private (from same report)
Exercise Facilities (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Social Service Establishments (public)	Facilities (service) estimated from Energy Information Administration, Commercial Buildings Energy Consumption Survey	Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Aquatic Centers /Swimming Pools (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Miniature golf courses (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Recreational Boating Facilities (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)

Facility Type	Source	Notes
Fishing Piers and Platforms (public)	HDR estimates, based on Michael Thomas and Nicholas Stratis, "Assessing the Economic Impacts and Value of Florida's Public Piers and Boat Ramps" and conversation with the American Sportfishing Association.	Total visits calculated and adjusted for adults in the U.S.
Office Buildings (public)	Facilities (administrative) estimated from Energy Information Administration, Commercial Buildings Energy Consumption Survey	Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Parking Garages (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Golf Courses (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)
Restaurants (public)	HDR estimates and the National Restaurant Association, "Meal Consumption Behavior"	Adjusted NRA data for number of meals commercially prepared to estimate meals by adults and restaurants; reflected in market price
Amusement Parks (public)		Assumed same ratio of visit per facility as per private facility group (which was calculated using receipts – see Chapter 4.2.1 for discussion of methodology)

NB: All data was adjusted to 2010. When adjusted for the adult population, the percent of the U.S. population 18 years of age and older was used to make the adjustment.

## B. Total U.S. Population

The 2010 population estimates are based on the U.S. Census projections of population age groups for July 1, 2009.

The visits made to school facilities are based on the age group that attends the specific school facility group. The number of visits due to new independent access at recreational facilities is based on the total U.S. population 18 years and older, adjusted for disability type.

US Census Estimates	Cumulative Growth Rate	Population Estimate
July 1, 2009	N/A	307,006,550
July 1, 2008	1%	304,374,846
July 1, 2007	2%	301,579,895
July 1, 2006	3%	298,593,212
July 1, 2005	4%	295,753,151
July 1, 2004	5%	293,045,739
July 1, 2003	6%	290,326,418
July 1, 2002	7%	287,803,914
July 1, 2001	8%	285,081,556
July 1, 2000	9%	282,171,957

Source: U.S. Census Bureau

## C. Total Sales per Facility

This table shows total sales receipts per facility group, as well as the applicable North American Industry Classification System (NAICS) code and description as defined in 2007 U.S. Economic Census.

Facility Group Name	NAICS Code	2007 Economic Census Sales Receipts / Revenues	NAICS Code Definition / Source
Inns	7211	\$4,513,259,963	% of Traveler Accommodations with less than 10 - 24 guestrooms from Table 10 of the 2002 Accommodation & Food Services Subject Series: Miscellaneous Subjects Report applied to 2007 Economic Census data for NAICS 7211
Hotels	7211	\$165,528,539,983	% of Traveler Accommodations with 25-99 guestrooms from Table 10 of the 2002 Accommodation & Food Services Subject Series: Miscellaneous Subjects Report applied to 2007 Economic Census data for NAICS 7211
Motels	7211	\$10,266,379,054	% of Traveler Accommodations with 100+ guestrooms from Table 10 of the 2002 Accommodation & Food Services Subject Series: Miscellaneous Subjects Report applied to 2007 Economic Census data for NAICS 7211
Restaurant / Bar, other establishments serving food or drink	722	\$433,400,775,000	Food Services and Drinking Places
Motion Picture House	512131	\$12,247,794,000	Motion Picture Theater
Theatre / Concert Hall	7111	\$13,752,688,000	Performing Arts Companies
Stadiums	7112	\$30,009,103,000	NAICS 7112: Spectator Sports multiplied by the estimate of privately owned stadiums. In June 2000, it was reported that 75% of stadiums were publicly owned. (Coates and Humphreys, "The Stadium Gambit and Local Economic Development.")
Auditorium, lecture hall, other place of public gathering	71131	\$10,355,742,000	Promoters of Performing Arts, Sports, and Similar Events with Facilities
Convention Center	561920	\$11,288,482,000	Convention and trade show organizers multiplied by the estimate from Tradeshow Week Major Exhibit Hall Directory of privately owned convention centers, 38%.
Bakery / Grocery Store	445	\$539,523,919,000	Food and Beverage Stores
Clothing Store	448	\$215,411,891,000	Clothing and Clothing Accessories Stores
Hardware Store	444	\$320,065,312,000	Building Material and Garden Equipment and Supplies Dealers
Motor vehicle & parts dealers	441	\$892,649,300,000	Motor vehicle & parts dealers
Furniture & home furnishings stores	442	\$107,804,538,000	Furniture & home furnishings stores



Facility Group Name	NAICS Code	2007 Economic Census Sales Receipts / Revenues	NAICS Code Definition / Source
Electronics & appliance stores	443	\$108,989,028,000	Electronics & appliance stores
Sporting goods, hobby and music stores	451	\$80,792,697,000	Sporting goods, hobby and music stores
General merchandise stores	452	\$578,007,698,000	General merchandise stores
Miscellaneous store retailers	453	\$103,500,445,000	Miscellaneous store retailers
Shopping Malls	5311203	\$35,164,343,000	Lessors of shopping centers and retail stores
Laundromats, Dry Cleaner, Shoe Repair, Funeral Parlor, Beauty Shop / Barber Shop	812	\$132,488,964,000	Personal and Laundry Services (less parking garages, see Parking Garage facility group). Includes 2007 Non Employer data receipts
Pharmacy	446	\$235,601,576,000	Health and Personal Care Stores
Banks / Insurance Professional, Scientific, and Technical Svcs	522, 523, 524, 525	\$3,066,112,638,000	Finance and Insurance Professional, Scientific, and Technical Services
Travel Services	541	\$1,297,070,647,000	Travel Arrangement and Reservation Services
Gas Stations	5615	\$41,334,818,000	Gasoline Stations
Professional Offices of healthcare providers	447	\$447,856,112,000	
	621	\$677,435,142,000	Ambulatory health care services
Hospitals	622	\$707,003,478,000	Hospitals
Nursing and Residential Facilities	623	\$167,962,335,000	Nursing and Residential Care Facilities
Museums, historical sites, & similar institutions	71211	\$8,902,673,000	Museums
Library			American Library Association
Zoos	71213	\$2,762,604,000	Zoos and Botanical Gardens
Parks	71219	\$584,128,000	Nature parks & similar institutions
Amusement Park	7131	\$13,373,596,000	Amusement Parks
Nursery schools/Day Care	6244	\$29,573,788,000	Child Day Care Services
Ski Facilities	71392	\$2,295,286,000	Ski Facilities
Homeless Shelter	62422	\$3,845,485,000	Community Housing Services
Emergency Relief services	62423	\$8,557,326,000	Emergency & other relief services
Food Banks	62421	\$5,834,558,000	Community food services
Family services	6241	\$61,823,270,000	Individual and family services
Vocational Rehab services	6243	\$11,606,773,000	Vocational rehabilitation services
Fitness & Recreational Sports Ctrs & Skiing Facilities	71394	\$21,580,073,000	Fitness and Recreational Sports Centers & Skiing Facilities
Aquatic Centers /Swimming Pools	61162	\$3,884,011,000	Sports and recreational instruction
Bowling Alley	71395	\$3,438,918,000	Bowling Centers

Facility Group Name	NAICS Code	2007 Economic Census Sales Receipts / Revenues	NAICS Code Definition / Source
Golf Course (semi-private: paid membership, but public access)	71391	\$21,210,858,000	Golf Courses and Country Clubs
Miniature Golf Course	7139908	\$2,480,719,000	All Other Amusement and Recreation Industries
Recreational Boating Facility	71393	\$4,071,080,000	Marinas
Fishing Pier or Platform	7139908	\$2,480,719,000	All Other Amusement and Recreation Industries
Shooting Facility	7139908	\$2,480,719,000	All Other Amusement and Recreation Industries
Parking Garages	81293	\$8,487,541,000	Parking lots & garages
Self Service Storage Facilities	53113	\$6,164,615,000	Lessors of miniwarehouses & self-storage units

*Source (unless otherwise noted): 2007 U.S. Economic Census*

## D. Consumer Price Index

The percentage change of the consumer price index (CPI) is applied to the 2007 Economic Census data to estimate the total sales receipts for 2010.

CPI: Annual Percentage Change	
<b>2002</b>	1.6%
<b>2003</b>	2.3%
<b>2004</b>	2.7%
<b>2005</b>	3.4%
<b>2006</b>	3.2%
<b>2007</b>	2.80%
<b>2008</b>	3.80%
<b>2009</b>	-0.40%

*Source: Bureau of Labor Statistics, U.S. Department of Labor*

## E. Percentage of Disability, by Type

The following table shows the percentage of the total U.S. population 15 years and older that reported a specific type of disability.

Disability Type	Percent of Total U.S. Population 15 Years and older
<b>Seeing/Hearing/Speaking</b>	
Difficulty seeing words/letters	3.40%
Difficulty hearing conversation	3.40%
Difficulty with speech	1.10%
Uses hearing aid	1.90%
<b>Walking/Using Stairs</b>	
Total with a disability	11.90%
Uses a wheelchair or similar device	1.40%
<b>Selected Physical Tasks</b>	
Difficulty reaching overhead	4.02%
Upper body limitation	8.20%

Source: U.S. Census Bureau, Survey of Income Program Participation, 2005.

## F. Income Adjustment Factors by Facility

Facilities either have a 60%, 100%, or 140% adjustment to the estimate of the base number of visit to demonstrate the homogeneity of its visitors' income and the impact of the lower average income for persons with disabilities on use of various facilities.

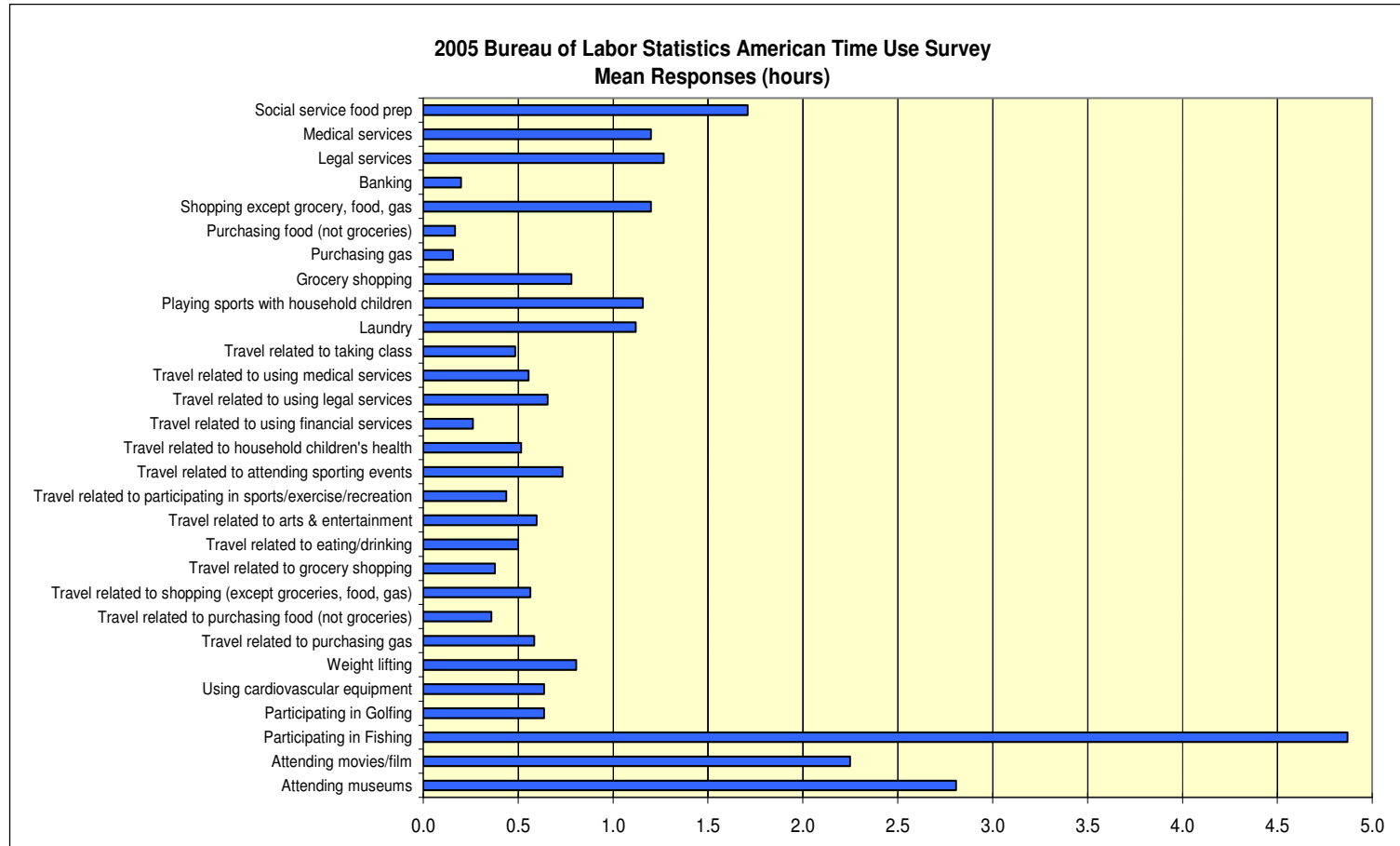
Facility Group	Income Adjustment
Inns	60%
Hotels	60%
Motels	100%
Restaurants	60%
Motion Picture House	60%
Theatre / Concert Hall	60%
Stadiums	60%
Auditoriums	60%
Convention Centers	60%
Single Level Stores	60%
Shopping Malls	60%
Indoor Service Establishments	60%
Offices of Health Care Providers	140%
Hospitals	140%
Nursing Homes	140%
Terminal (private airports)	60%
Depots	60%
Museums, Historical Sites & Libraries	60%

Facility Group	Income Adjustment
Parks or zoos	60%
Amusement Parks	60%
Nursery schools - Daycare	60%
Elementary Private Schools	140%
Secondary Private Schools	60%
Undergraduate and Postgraduate Private Schools	60%
Ski Facilities	60%
Homeless Shelter	140%
Food Banks	140%
Social Service Establishments	100%
Exercise Facilities	60%
Aquatic Centers /Swimming Pools	60%
Bowling Alleys	60%
Golf Courses (private with public access)	60%
Golf Courses (private only)	60%
Miniature golf courses	60%
Recreational Boating Facilities	60%
Fishing Piers and Platforms	60%
Shooting Facilities	60%
Office Buildings	100%
Elementary Public Schools	100%
Secondary Public Schools	100%
Undergraduate, postgraduate public schools	100%
Public Housing	140%
State and Local Judicial Facilities (courthouses)	100%
State and Local Detention Facilities (jails)	100%
State and Local Correctional Facilities (prisons)	100%
Parking Garages	60%
Self Service Storage Facilities	60%
Theatre / Concert Halls (public)	60%
Stadiums (public)	60%
Auditoriums (public)	60%
Convention Centers (public)	60%
Hospitals (public)	100%
Nursing Homes (public)	140%
Museums, Historical Sites & Libraries (public)	60%
Parks or zoos (public)	60%
Homeless Shelter (public)	140%
Exercise Facilities (public)	60%
Social Service Establishments (public)	100%
Aquatic Centers /Swimming Pools (public)	60%
Miniature golf courses (public)	60%
Recreational Boating Facilities (public)	60%
Fishing Piers and Platforms (public)	60%
Office Buildings (public)	100%
Parking Garages (public)	60%
Golf Courses (public)	60%
Restaurants (public)	60%
Amusement Parks (public)	60%

Source: HDR Estimates

## G. Time Use Survey

The Bureau of Labor Statistics publishes an annual American Time Use Survey (ATUS), where a sample of the population keeps a diary of time spent doing daily activities. The conditional responses shown in the chart below contributed to the estimates of Facility Use and Travel time, components of the generalized use cost of a facility.



The following table lists the facilities included in the use premium benefits due to the requirements that affect the primary use of a visit, as listed in the second column. The American Time Use Survey (ATUS) description and corresponding code that matches each facilities' primary function is listed in the third and fourth columns. The average time spent in these activities is listed in the last column.

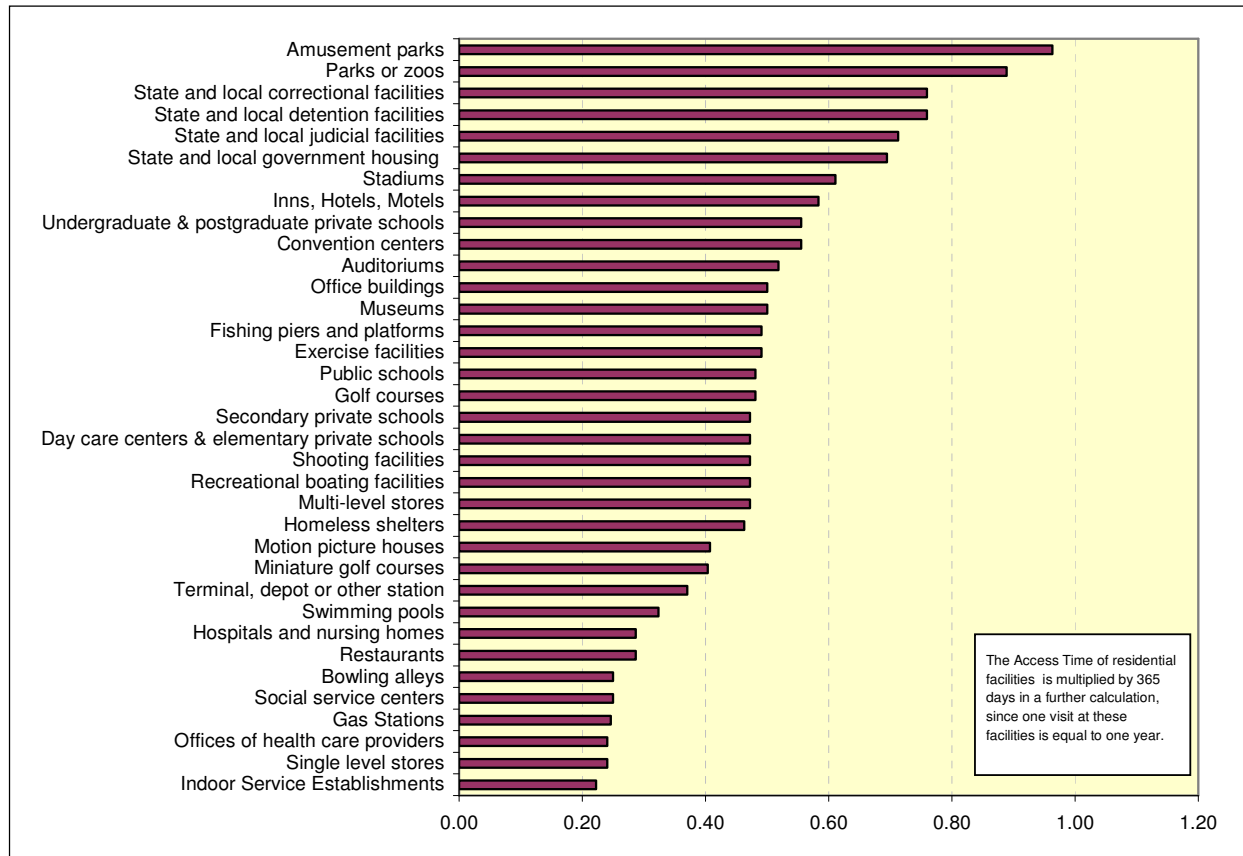
Facility	Reason for using facility as related to requirements	ATUS Description	ATUS code	Time (hrs)
Inns	bathroom	washing, dressing and grooming oneself	010201	0.9
Hotels	bathroom	washing, dressing and grooming oneself	010202	0.9
Motels	bathroom	washing, dressing and grooming oneself	010203	0.9
Motion Picture House	wheelchair space, listening	watching a movie	120403	2.3
Theatre / Concert Hall	wheelchair space, listening	attending performing arts	120401	2.3
Stadiums	wheelchair space, listening	watching baseball, basketball, football, and soccer	Average of 130203, 130203, 130213, 130224	2.6
Auditoriums	wheelchair space, listening	attending performing arts	120401	2.3
Convention Centers	wheelchair space, listening	taking a class for degree, certification, or licensure	060101	7.0
Museums, Historical Sites & Libraries	wheelchair space, listening	attending a museum	120402	2.8
Parks or zoos	play, fishing	average time spent playing (including playing sports) with household children, and fishing	Average of 030103 and 030105 plus 130112	6.3
Amusement Parks	wheelchair space, listening, play	average time spent playing sports (and not sports) with household children plus arts and entertainment not elsewhere classified, assuming 1 show is watched	Average of 030103 and 030105 plus 120499	0.9
Secondary Private Schools	wheelchair space, listening	taking a class for degree, certification, or licensure	060101	5.2
Undergraduate and Postgraduate Private Schools	wheelchair space, listening, bathrooms, kitchen	taking a class, and for on-campus residents only (1/2 of total visitors): washing, dressing and grooming oneself, food prep and kitchen clean up	060102, 01020, 020201, and 020203	7.0
Homeless Shelter	bathroom	washing, dressing and grooming oneself	010203	0.9
Exercise Facilities	exercise	using cardiovascular equipment and weightlifting/ strength training	130128 and 130133	1.4

<b>Facility</b>	<b>Reason for using facility as related to requirements</b>	<b>ATUS Description</b>	<b>ATUS code</b>	<b>Time (hrs)</b>
Miniature golf courses	minigolf	playing golf, assuming minigolf is 1/2 time golf game, and there are 4 players	130114	0.4
Fishing Piers and Platforms	fishing	fishing	130112	4.9
Elementary Public Schools	play	average time spent playing (including playing sports) with household children	Average of 030103 and 030105	1.4
Secondary Public Schools	wheelchair space, listening	taking a class for degree, certification, or licensure	060101	5.2
Undergraduate, postgraduate public schools	wheelchair space, listening, bathrooms, kitchen	taking a class, and for on-campus residents only (1/2 of total visitors): washing, dressing and grooming oneself, food prep and kitchen clean up	060102, 01020, 020201, and 020203	7.0
Public Housing	bathroom, kitchen	washing, dressing and grooming oneself, food and drink prep, and kitchen clean up	010201, 020201, and 020203	2.3
State and Local Detention Facilities (jails)	bathroom	washing, dressing and grooming oneself	010203	0.9
State and Local Correctional Facilities (prisons)	bathroom	washing, dressing and grooming oneself	010203	0.9
Theatre / Concert Halls (public)	wheelchair space, listening	attending performing arts	120401	2.3
Stadiums (public)	wheelchair space, listening	watching baseball, basketball, football, and soccer	Average of 130203, 130203, 130213, 130224	2.6
Auditoriums (public)	wheelchair space, listening	attending performing arts	120401	2.3
Convention Centers (public)	wheelchair space, listening	taking a class for degree, certification, or licensure	060101	7.0
Museums, Historical Sites & Libraries (public)	wheelchair space, listening	attending a museum	120402	2.8
Parks or zoos (public)	play, fishing	average time spent playing (including playing sports) with household children, and fishing	Average of 030103 and 030105 plus 130112	6.3
Homeless Shelter (public)	bathroom	washing, dressing and grooming oneself	10201	0.9
Exercise Facilities (public)	exercise	using cardiovascular equipment and weightlifting/ strength training	130128 and 130133	1.4
Miniature golf courses (public)	minigolf	playing golf, assuming minigolf is 1/2 time golf game, and there are 4 players	130114	0.4
Fishing Piers and Platforms (public)	fishing	fishing	130112	4.9

Facility	Reason for using facility as related to requirements	ATUS Description	ATUS code	Time (hrs)
Amusement Parks (public)	wheelchair space, listening, play	average time spent playing (including playing sports) with household children plus arts and entertainment not elsewhere classified, assuming 1 show is watched	Average of 030103 and 030105 plus 120499	0.9

## H. Total Access Time per Facility

The graph below shows the averages of the preliminary RAP estimates for the most likely total access time per facility. The panelist responses match a list of facilities that was later expanded to define costs per facility. It was assumed that facilities that were originally grouped into these facility groups had equal access times.





The following table presents the data of the average, minimum, maximum and median of the RAP panelist estimates of access time per facility. The final columns are the actual input used, the averages of the inputs.

TOTAL ACCESS TIME ESTIMATES IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
	Low	High	Most Likely	Low	High	Most Likely	Low	High	Most Likely	Low	High	Most Likely	Low	High	Most Likely
Inns, Hotels, Motels	0.38	0.91	0.58	0.33	0.67	0.33	0.67	1.50	0.83	0.33	0.67	0.50	0.38	0.91	0.58
Restaurants	0.19	0.40	0.29	0.17	0.25	0.25	0.33	0.67	0.50	0.17	0.33	0.25	0.19	0.40	0.29
Motion Picture Houses	0.28	0.54	0.41	0.17	0.33	0.25	0.33	1.00	0.50	0.33	0.50	0.42	0.28	0.54	0.41
Stadiums	0.43	0.87	0.61	0.33	0.67	0.50	0.67	1.50	0.75	0.33	0.83	0.67	0.43	0.87	0.61
Auditoriums	0.36	0.70	0.52	0.25	0.67	0.50	0.67	1.00	0.67	0.33	0.67	0.50	0.36	0.70	0.52
Convention Centers	0.36	0.76	0.56	0.08	0.33	0.50	0.67	1.00	0.67	0.33	0.67	0.50	0.36	0.76	0.56
Single Level Stores	0.10	0.29	0.24	0.08	0.25	0.08	0.17	0.42	0.67	0.08	0.25	0.17	0.10	0.29	0.24
Multi-level stores	0.31	0.68	0.47	0.17	0.25	0.25	0.67	1.17	0.67	0.33	0.67	0.50	0.31	0.68	0.47
Indoor Service Establishments	0.13	0.33	0.22	0.08	0.25	0.17	0.33	0.67	0.50	0.08	0.25	0.17	0.13	0.33	0.22
Terminal, depot or other station	0.15	0.53	0.37	0.08	0.25	0.17	0.50	1.00	0.75	0.08	0.50	0.33	0.15	0.53	0.37
Offices of Health Care Providers	0.14	0.36	0.24	0.08	0.25	0.17	0.50	1.00	0.67	0.08	0.25	0.17	0.14	0.36	0.24
Hospitals and nursing homes	0.16	0.43	0.29	0.08	0.25	0.17	0.50	1.00	0.67	0.08	0.25	0.17	0.16	0.43	0.29
Museums	0.29	0.66	0.50	0.08	0.25	0.25	0.33	1.00	0.75	0.33	0.67	0.50	0.29	0.66	0.50
Parks or zoos	0.39	1.30	0.89	0.17	0.50	0.50	0.50	1.50	1.00	0.50	1.50	1.00	0.39	1.30	0.89
Amusement Parks	0.48	1.35	0.96	0.33	0.67	0.67	0.50	1.50	1.50	0.50	1.50	1.00	0.48	1.35	0.96
Social Service Est.	0.16	0.36	0.25	0.08	0.25	0.17	0.17	0.67	0.33	0.17	0.33	0.25	0.16	0.36	0.25
Homeless Shelters	0.31	0.61	0.46	0.08	0.17	0.17	0.33	0.67	0.50	0.33	0.67	0.50	0.31	0.61	0.46
Exercise Facilities	0.33	0.65	0.49	0.17	0.33	0.25	0.50	0.83	0.67	0.33	0.67	0.50	0.33	0.65	0.49
Aquatic Centers /Swimming Pools	0.20	0.48	0.32	0.17	0.33	0.25	0.50	1.00	0.67	0.17	0.33	0.25	0.20	0.48	0.32
Bowling Alleys	0.17	0.35	0.25	0.17	0.33	0.25	0.17	0.50	0.25	0.17	0.33	0.25	0.17	0.35	0.25
Golf Courses	0.34	0.70	0.48	0.25	0.50	0.33	0.50	1.00	0.67	0.33	0.67	0.50	0.34	0.70	0.48

TOTAL ACCESS TIME ESTIMATES IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
	Low	High	Most Likely	Low	High	Most Likely	Low	High	Most Likely	Low	High	Most Likely	Low	High	Most Likely
Recreational Boating Facilities	0.31	0.67	0.47	0.17	0.33	0.25	0.33	1.00	0.50	0.33	0.67	0.50	0.31	0.67	0.47
Fishing Piers and Platforms	0.33	0.70	0.49	0.17	0.33	0.25	0.50	1.00	0.83	0.33	0.67	0.50	0.33	0.70	0.49
Miniature golf courses	0.26	0.54	0.40	0.08	0.17	0.13	0.33	0.67	0.50	0.33	0.67	0.50	0.26	0.54	0.40
Shooting Facilities	0.31	0.63	0.47	0.17	0.33	0.25	0.33	0.67	0.50	0.33	0.67	0.50	0.31	0.63	0.47
Day Care Centers & Elementary Private Schools	0.31	0.63	0.47	0.17	0.33	0.25	0.33	0.67	0.50	0.33	0.67	0.50	0.31	0.63	0.47
Secondary Private Schools	0.31	0.65	0.47	0.17	0.33	0.25	0.33	0.83	0.50	0.33	0.67	0.50	0.31	0.65	0.47
Undergraduate & postgraduate private schools	0.35	0.78	0.56	0.25	0.50	0.33	0.50	1.50	0.75	0.33	0.67	0.50	0.35	0.78	0.56
Public schools	0.29	0.63	0.48	0.17	0.33	0.25	0.33	0.67	0.75	0.33	0.67	0.50	0.29	0.63	0.48
Office Buildings	0.46	0.93	0.69	0.17	0.33	0.25	0.50	1.00	0.75	0.50	1.00	0.75	0.46	0.93	0.69
State and local government housing	0.46	0.93	0.69	0.17	0.33	0.25	0.50	1.00	0.75	0.50	1.00	0.75	0.46	0.93	0.69
State and Local Judicial Facilities	0.44	0.96	0.71	0.17	0.67	0.50	0.50	1.00	0.75	0.50	1.00	0.75	0.44	0.96	0.71
State and Local Detention Facilities	0.53	1.11	0.76	0.50	1.00	0.75	0.75	1.50	0.83	0.50	1.00	0.75	0.53	1.11	0.76
State and Local Correctional Facilities	0.53	1.11	0.76	0.50	1.00	0.75	0.75	1.50	0.83	0.50	1.00	0.75	0.53	1.11	0.76

## I. Market Price by Facility

The following table shows the estimated market price by facility group.

Facility Group	Market Price
Inns	\$75.00
Hotels	\$150.00
Motels	\$45.00
Restaurants	\$8.00
Motion Picture House	\$12.00
Theatre / Concert Hall	\$40.00
Stadiums	\$45.00
Auditoriums	\$40.00
Convention Centers	\$100.00
Single Level Stores	\$150.00
Shopping Malls	\$80.00
Indoor Service Establishments	\$225.00
Offices of Health Care Providers	\$400.00
Hospitals	\$500.00
Nursing Homes	\$240.00
Terminal (private airports)	\$100.00
Depots	\$5.00
Museums, Historical Sites & Libraries	\$4.00
Parks or zoos	\$4.00
Amusement Parks	\$60.00
Nursery schools - Daycare	\$50.00
Elementary Private Schools	\$55.00
Secondary Private Schools	\$55.00
Undergraduate and Postgraduate Private Schools	\$166.67
Ski Facilities	\$50.00
Homeless Shelter	\$50.00
Food Banks	\$25.00
Social Service Establishments	\$75.00
Exercise Facilities	\$15.00
Aquatic Centers /Swimming Pools	\$10.00
Bowling Alleys	\$15.00
Golf Courses (private with public access)	\$80.00
Golf Courses (private only)	\$100.00
Miniature golf courses	\$5.00
Recreational Boating Facilities	\$100.00
Fishing Piers and Platforms	\$30.00
Shooting Facilities	\$20.00
Office Buildings	\$10.00
Elementary Public Schools	\$55.56
Secondary Public Schools	\$55.56
Undergraduate, postgraduate public schools	\$83.33
Public Housing	\$10.00
State and Local Judicial Facilities (courthouses)	\$2.00
State and Local Detention Facilities (jails)	\$0.00
State and Local Correctional Facilities (prisons)	\$0.00
Parking Garages	\$5.00
Self Service Storage Facilities	\$100.00
Theatre / Concert Halls (public)	\$40.00

Facility Group	Market Price
Stadiums (public)	\$45.00
Auditoriums (public)	\$40.00
Convention Centers (public)	\$100.00
Offices of Health Care Providers (public)	\$400.00
Hospitals (public)	\$500.00
Nursing Homes (public)	\$240.00
Museums, Historical Sites & Libraries (public)	\$4.00
Parks or zoos (public)	\$4.00
Homeless Shelter (public)	\$50.00
Exercise Facilities (public)	\$15.00
Social Service Establishments (public)	\$75.00
Aquatic Centers /Swimming Pools (public)	\$10.00
Miniature golf courses (public)	\$5.00
Recreational Boating Facilities (public)	\$100.00
Fishing Piers and Platforms (public)	\$30.00
Office Buildings (public)	\$10.00
Parking Garages (public)	\$5.00
Golf Courses (public)	\$80.00
Restaurants (public)	\$8.00
Amusement Parks (public)	\$60.00

Source: HDR estimates

## J. Value of Time

### **4J1: Base Value of Times Per Facility**

The value of time is estimated per facility group are based on Bureau of Labor Statistics, U.S. Department of Labor; Average Hourly Earnings of Production Workers for 2008 of the total private sector, not seasonally adjusted. This is reported as \$20.32 an hour.

Facility Group	Value of time
Inns	\$8.50
Hotels	\$8.50
Motels	\$8.50
Restaurants	\$8.50
Motion Picture House	\$4.25
Theatre / Concert Hall	\$4.25
Stadiums	\$4.25
Auditoriums	\$4.25
Convention Centers	\$8.50
Single Level Stores	\$4.25
Shopping Malls	\$4.25
Indoor Service Establishments	\$4.25
Offices of Health Care Providers	\$8.50
Hospitals	\$4.25
Nursing Homes	\$4.25
Terminal (private airports)	\$8.50
Depots	\$8.50
Museums, Historical Sites & Libraries	\$4.25
Parks or zoos	\$4.25
Amusement Parks	\$4.25

Facility Group	Value of time
Nursery schools - Daycare	\$0.85
Elementary Private Schools	\$0.85
Secondary Private Schools	\$0.85
Undergraduate and Postgraduate Private Schools	\$8.50
Ski Facilities	\$4.25
Homeless Shelter	\$4.25
Food Banks	\$4.25
Social Service Establishments	\$4.25
Exercise Facilities	\$4.25
Aquatic Centers /Swimming Pools	\$4.25
Bowling Alleys	\$4.25
Golf Courses (private with public access)	\$4.25
Golf Courses (private only)	\$4.25
Miniature golf courses	\$4.25
Recreational Boating Facilities	\$4.25
Fishing Piers and Platforms	\$4.25
Shooting Facilities	\$4.25
Office Buildings	\$8.50
Elementary Public Schools	\$0.85
Secondary Public Schools	\$0.85
Undergraduate, postgraduate public schools	\$8.50
Public Housing	\$8.50
State and Local Judicial Facilities (courthouses)	\$8.50
State and Local Detention Facilities (jails)	\$0.10
State and Local Correctional Facilities (prisons)	\$0.10
Parking Garages	\$8.50
Self Service Storage Facilities	\$8.50
Theatre / Concert Halls (public)	\$4.25
Stadiums (public)	\$4.25
Auditoriums (public)	\$4.25
Convention Centers (public)	\$8.50
Offices of Health Care Providers (public)	\$8.50
Hospitals (public)	\$4.25
Nursing Homes (public)	\$4.25
Museums, Historical Sites & Libraries (public)	\$4.25
Parks or zoos (public)	\$4.25
Homeless Shelter (public)	\$4.25
Exercise Facilities (public)	\$4.25
Social Service Establishments (public)	\$4.25
Swimming pools (public)	\$4.25
Miniature golf courses (public)	\$4.25
Recreational Boating Facilities (public)	\$4.25
Fishing Piers and Platforms (public)	\$4.25
Office Buildings (public)	\$8.50
Parking Garages (public)	\$8.50
Golf Courses (public)	\$4.25
Restaurants (public)	\$8.50
Amusement Parks (public)	\$4.25

## **4J2: Time Premiums**

The basis for value of time premiums is developed from independent literature from the transportation field, in which extensive research has been conducted on the value people place on quicker/easier access from one place to another as well as some analysis on the value of improved comfort during that travel experience. We have used commonly-used estimates from this literature to develop premiums for both access and use time. Specifically:

1. Change in Access Time: An increased quality of experience from access time is based on the difference between walking and traveling in a segregated (accessible) vehicle. This serves as a proxy for valuing the improved ability to access a facility and its amenities.

In 2004, Marcus von Wartburg and W.G. Waters reviewed current literature on the value of time savings and concluded that weighting walking time at twice the value of in-vehicle travel time was “the common convention in many jurisdictions” and “is consistent with recent evidence.”<sup>85</sup> Indeed, the Federal Transportation Administration issued official guidance in 1997 for evaluating the costs and benefits of transit projects stating that access time should be valued at twice the rate for local personal travel.<sup>86</sup>

2. Value of Use Time: The premium associated with sitting compared to standing.

While there appears to be much less research on the quality of the travel experience (outside of research on congestion discomfort), two authors have explicitly presented estimates that can be used as proxies. William Waters presents data that the difference between the value of time sitting versus standing is 20% of the prevailing wage rate. An older study (P.B. Goodwin) presents average premiums of 50% for sitting versus standing in either a public or segregated vehicle. This analysis uses an average of the results from these two studies or 35%.

<b>Recommended Values for Travel Time for Seated and Standing Transit Passengers</b>	
<b>Activity</b>	<b>Value of time relative to prevailing wage rate</b>
Adult Transit Passenger -- seated	50%
Adult Transit Passenger -- standing	70%

Source: William Waters, *The Value of Times Savings for the Economic Valuation of Highway Investments in British Columbia*, BC Ministry of Transportation and Highways, 1992 as discussed in Transportation Cost and Benefit Analysis – Travel Time Costs, Victoria Transport Policy Institute, revised August 10, 2007.

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<sup>85</sup> Marcus von Wartburg and W.G. Waters II, “Chapter 2: Congestion Externalities and the Value of Travel Time Savings,” in *Towards Estimating the Social and Environmental Costs of Transportation in Canada*, Anming Khang, at al eds. Center for Transportation Studies, University of British Columbia, August 2004.

<sup>86</sup> Federal Register, Section 5309, “FTA New Starts Criteria,” November 12, 1997, Volume 62, number 218, pp 60756 – 69758.

Value of time Premiums Compared to Time Sitting in a Moving Vehicle (Sitting in Public Vehicle Time = 1)		
Travel Activity	Range of Value of Time Premiums	Mean Premium
<b>Traveling in a Public Vehicle</b>		
Sitting down	1	1
Standing up	1.5	1.5
<b>Traveling in a Segregated Vehicle</b>		
Sitting down	1.25	1.25
Standing up	1.87	1.87

Source: Adapted from P.B. Goodwin, Human Effort and the Value of Travel Time, Journal of Transport Economics and Policy, January 1976.

#### **4J3: Manager Value of Time**

The value of time for a manager to evaluate the new guidelines and determine if there is change in the facility he/she owns is based on the average wage rate for management occupations. This is reported by the U.S. Bureau of Labor Statistics in May 2008 to be \$48.23 an hour.

## K. Description of Benefits by Requirement

The following table describes the impact of the requirement in terms of time change and also describes the number of expected uses per hour or visit for each requirement in terms of the element it affects. The highlighted column defines the type of disability targeted by the requirement.

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
1	Public Entrances	Ambulatory	Time change due to the revision of the scoping requirement	Expected number of trips made to and from the public entrance
2	Maneuvering Clearance or Standby Power for Automatic Doors	Ambulatory	Time saving in using automatic doors rather than using an inaccessible door; or waiting for a person to provide assistance	Expected number of times entering building with automatic doors
3	Automatic Door Break-Out Openings	Ambulatory	Time saving in using accessible openings without assistance are available if automatic doors fail	Expected number of entrances/exits made into a facility in the event of an emergency
4	Thresholds at Doorways	Ambulatory	Time savings in traveling over lower threshold time	Expected number of entrances/exits made into a facility
5	Door and Gate Surfaces	Ambulatory	Time saving in opening door and not creating a trap or pinch point from uneven surfaces 10 inches above the bottom of the door; assumes that it is the time to overcome a trap or pinch point	Expected number of uses per hour of traveling through a door or gate; comparable to bathroom trips per hour
6	Location of Accessible Routes	Ambulatory	Time saving in using an accessible route in general circulation paths compared to more distant paths: assuming the route was once further away and now it is closer; additional time to go to destination; depends on size of facility	Expected number of trips made to and from destination
7	Common Use Circulation Paths in Employee Work Areas	Ambulatory (employees only)	Time saving of greater access in employee work areas: quantify existing employees but not potential increase in employees due to new access	Expected number of trips made in common use circulation paths
8	Accessible Means of Egress	Ambulatory	Time saving in using accessible means of egress as defined by IBC; assumed to be similar to public entrances.	Expected number of trips made into and out of a facility



Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
9-10	Stairs	Ambulatory	Time saving in using stairs with technical requirements including treads and risers rather than going more slowly or waiting for assistance	Expected number of times using stairs per hour
11	Handrails Along Walkways	Ambulatory	Time savings when using handrails along walkways rather than going more slowly or waiting for assistance	Expected number of times using handrails along walkways per hour
12	Handrails	Ambulatory	Time changes when using handrails with different accessibility features	Expected number of trips made to and from main destination of facility
13	Accessible Routes from Site Arrival Points Within Sites	Ambulatory	Time increase in moving around a facility in a car (including waiting for a car) or traveling independently more cautiously or less conveniently compared to having accessible buildings or elements connected through accessible routes	Expected number of trips made to and from sites within a facility visit
14	Standby Power for Lifts	Ambulatory	Time saving in using platform lift rather than requiring assistance or using circuitous route.	Expected use of platform lift in case of power outage
15	Power Operated Doors for Platform Lifts	Ambulatory	Time saving in using a power operated door independently that would close more securely than a manually closed door	Expected number of uses of a platform lift
16	Alterations to Existing Elevators	Seeing, Hearing and Wheelchair	Time saving in being able to take any elevator compared to waiting for one accessible elevator and not knowing whether the accessible had answered the call	Expected number of elevator uses per hour
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	Ambulatory	Time increase in using platform lift instead of an elevator	Expected number of uses per hour of a platform lift when staying or residing in a facility
18	Limited Use/Limited Application (LULA) and Private Residence Elevators	Ambulatory	Time increase in using LULA instead of regular elevator	Expected number of uses per hour of an elevator
19	Van Accessible Parking Spaces	Wheelchair only	Waiting time decrease for a van user to circle the lot, park further away or wait for a driver.	Expected number of trips made to and from parking space

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
20-21	Valet Parking and Mechanical Access Parking Garages	Ambulatory	Time saving in having an accessible loading zone at valet parking and mechanical access parking garages compared to using another accessible entrance to facility not at loading zone (assumes that main difference is the need to go to a different parking garage or drop off point, and then wait)	Expected number of trips made into and out of a facility
22	Direct Access Entrances from Parking Structures	Ambulatory	Time saving in more accessible facility entrance options; waiting for a space near the accessible entrance or waiting for driver if dropped off	Expected number of trips made to and from a parking structure
23	Passenger Loading Zones	Ambulatory	Waiting time decrease for an accessible passenger loading zone in every continuous 100 linear feet of loading zone space rather than at least one accessible passenger loading zone	Expected number of trips made into and out of a facility
24	Parking Spaces	Ambulatory	Time savings in using the lot's accessible loading zone rather than locating an accessible parking space or loading zone elsewhere within the site	Expected number of trips made to and from the accessible loading zone
25	Parking Spaces (Signs)	Ambulatory	Waiting time increase for parking spots to become open where accessible spaces are not reserved for use by persons with disabilities	Expected number of trips made to and from a parking space
26	Passenger Loading Zones at Medical Care and Long-Term Facilities	Ambulatory	Time increase of walking more carefully in a passenger loading zone during inclement weather	Expected number of entrances/exits made into a facility during inclement weather
27	Ambulatory Accessible Toilet Compartments	Ambulatory	Waiting time decrease for a toilet compartment in the men's bathroom	Expected number of bathroom uses per hour
28	Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors	Ambulatory	Time saving in having approximately 9 square feet to move around within a toilet room; similar to requirement #30	Expected number of bathroom uses per hour
29	Shower Spray Controls	Wheelchair and upper body limitation	Time saving in turning shower head on/off in hand held unit rather than reaching to on/off feature	Expected number of showers taken per visit

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
30	Urinals	Ambulatory	Time increase in traveling to a bathroom with an accessible urinal or waiting time for accessible toilet compartment to be available	Expected number of bathroom uses per hour
31	Multiple Single-User Toilet Rooms	Ambulatory	Waiting time increase for accessible single user toilet room where multiple single user toilet rooms are available	Expected number of bathroom uses per hour
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors	Wheelchair only	Time increase in navigating smaller dimensions of bathroom, going in and turning around to close door	Expected number of bathroom uses per hour
33	Water Closet Location and Rear Wall Grab Bar	Ambulatory	Time increase in using more caution when accessing and using shorter grab bar time	Expected number of bathroom uses per hour
34	Patient Toilet Rooms	Ambulatory	Time increase in traveling to an accessible toilet room from intensive care patient sleeping room	Expected number of bathroom uses per hour
35	Drinking Fountains	Wheelchair only	Time saving in forward approach access rather than parallel access	Expected number of uses per hour of a drinking fountain
36	Sinks	Wheelchair only (employees only)	Time saving in having accessible sink versus traveling to one that is accessible	Expected number of uses per hour of a sink
37	Side Reach	Wheelchair and having difficulty reaching overhead	Time saving of reaching to a lower maximum height on side reach parts such as paper towel dispensers in bathrooms, coat hooks, thermostats, fire-alarm pull stations, card readers, etc.	Expected number of uses per hour of certain operable parts
38-39	Sales and Service Counters	Wheelchair only	Waiting time increase for an accessible portion of the sales counter to be available, travel to an accessible counter, or any increase in the time to be served.	Expected number of times approaching a sales and service counter
40-41	Washing Machines and Clothes Dryers	Ambulatory and upper body limitation	Time increase due to less accessible washing machine or clothes dryer	Expected number of uses of washing machines and clothes dryers
42	Self-Service Storage Facilities	Ambulatory	Time saving from using accessible access rather than waiting for assistance to enter and exit	Expected number of uses of self-storage facility units

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
43	Limited Access Spaces and Machinery Spaces	Ambulatory	Waiting time increase for someone to provide service assistance	Expected number of trips made to and from limited access space/ service only space
44	Operable Parts	Wheelchair and upper body limitation	Time increase in finding assistance	Expected uses of operable parts while at a facility
45	Bathrooms in Accessible Guest Rooms (vanities and water closet clearances)	Ambulatory	Time saving in having more bathroom vanity space instead of using another countertop elsewhere in the room	Expected number of bathroom uses per hour
46	Operable Windows	Wheelchair and upper body limitation	Time saving in opening and closing an operable window compared to a non-operable window; or waiting for assistance.	Expected number of uses per hour of an operable window
47-48	Dwelling Units with Communication Features [1991 Standards]/[UFAS]	Hearing	Time saving in getting attention of resident faster with audible and visual signals at doorbell rather than only audible signals; similar to requirement #57	Expected number of unaccompanied entrances
49	Galley Kitchen Clearances	Wheelchair only	Time saving in having 13 additional square feet in a galley kitchen to turn around in instead of forward in and backing out	Expected number of uses per hour of a kitchen
50	Shower Compartments	Wheelchair only	Time increase due to lessened usability for some users	Expected number of showers taken
51	Location of Accessible Routes to Stages	Ambulatory	Time saving in using direct route to stage rather than circuitous backstage ramp; assumes that use of facility would not necessarily involve stage access so that the likelihood of requiring access scales down the potential use	Expected number of times access to the stage from general seating area would be required
52	Wheelchair Space Overlap in Assembly Areas	Wheelchair only	Time savings in having one's own seating area and maneuvering space and not having to move for general circulation	Expected likelihood of desiring a wheelchair space
53	Lawn Seating in Assembly Areas	Ambulatory	Time saving in accessing lawn seating area efficiently rather than without an accessible entrance; assumes that current access is possible but circuitous	Expected number of trips made back and forth to seating area

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
54	Handrails on Aisle Ramps in Assembly Areas	Ambulatory - non-wheelchair	Time savings for persons who use a walker or cane	Expected number of trips made to and from seating area in assembly areas
55	Wheelchair Spaces in Assembly Areas	Wheelchair only	Reduction in wheelchair spaces assuming there is a shortage of spaces would reduce the use of a facility	Expected reduction of number of uses of a facility
56	Accessible Routes to Tiered Dining Areas in Sports Facilities	Ambulatory	Time increase in traveling to an accessible tiered dining area in a sports facility	Expected number of trips made to and from a dining area in a sports facility
57	Accessible Route to Press Boxes	Ambulatory	Time increase to travel to a non-press box seat elsewhere	Expected number of trips made to and from a press box
58	Public TTYs	Hearing	Waiting time decrease for a public TTY phone when there are more available; assumes that a TTY conversation may take longer and phone calls on public phones are at most 5 minutes	Expected number of uses per hour of a public TTY phone
59	Public Telephone Volume Controls	Hearing	Time saving in using higher decibel requirement for public telephones rather than using Telephone Relay Service (involves calling a public service to provide translation) or TTY phone	Expected number of uses per hour of a public telephone
60	Two-Way Communication Systems at Entrances	Hearing	Time saving in using audible and visible signals to gain admission to a facility rather than only audible signals; or having to wait for assistance to enter	Expected number of unaccompanied entrances
61	ATMs and Fare Machines	Seeing	Time saving in using tactilely discernable keys and audible tones at ATM and fare machines as opposed to using a teller or some other service person	Expected number of uses of an ATM or fare machine per visit
62	Assistive Listening Systems (technical)	Hearing – persons using hearing aid	Time saving in using assistive listening systems with technical specifications compared to learning about what may have been missed if not heard; assumes this applies mostly to lectures and public speaking, not music (which if not heard the whole experience may be lost)	Likelihood of requiring the assistive listening system

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
63	Visible Alarms in Alterations to Existing Facilities	Hearing	Impact is only facilitating installation; there is no change in accessibility that would impact the access time	Expected requiring visible fire alarm before alteration; assumes low probability of a fire
64-65	Detectable Warnings	Seeing	Time increase of waiting for assistance to safely maneuver curb ramps, hazardous vehicular areas, and reflecting pools where detectable warnings are not required	Likelihood of traveling alone at curb ramps, hazardous vehicular areas and reflecting pools
66	Assistive Listening Systems (scoping)	Hearing	Waiting time increase for an assistive listening system, if there is regular turnover of devices and there is a shortage.	Likelihood of requiring the assistive listening system
67	Accessible Courtroom Stations	Wheelchair only (employees only)	Time saving in having a clear forward approach to all courtroom stations compared to more circuitous approach	Expected number of required uses of a courtroom station
68	Accessible Attorney Areas and Witness Stands	Wheelchair only	Time saving in using ramp, elevator or platform lift to attorney areas and witness stands compared to stairs; similar to requirement #65	Expected number of required uses of a courtroom station
69	Raised Courtroom Stations Not for Members of the Public	Ambulatory (judges and court personnel)	Time saving in having access to a raised station compared to more circuitous approach; similar to requirement #65	Expected number of required uses of a courtroom station
70	Accessible Route to Exercise Machines and Equipment	Ambulatory	Time savings in using an accessible route	Expected number of uses of the machines and equipment
71	Accessible Exercise Machines and Equipment	Ambulatory	Time saving in using accessible machines rather than waiting for assistance to access equipment	Expected number of uses of accessible machines and equipment
72 & 111	Accessible Saunas and Steam Rooms	Ambulatory	Time saving in using accessible sauna and steam room rather than waiting for assistance to enter and exit the room	Expected number of uses of saunas and steam rooms
73	Accessible Lockers	Ambulatory	Time saving in using accessible lockers rather than waiting for assistance to open and close lockers and maneuvers about them	Expected number of uses of locker rooms

Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
74	Accessible Dressing Rooms, Fitting Rooms or Locker Rooms	Ambulatory	For stadium and indoor sales establishments, results in time savings of changing and trying on clothes on location instead of traveling to and from home	Expected number of uses of fitting rooms per visit
75	Wheelchair Space in Team or Player Seating Areas	Wheelchair only	Time saving in having access to a wheelchair space rather creating a space; assumes that a space would be created as needed	Expected number of entrances of requiring a wheelchair space in team or player seating area
76	Accessible Route in Court Sport Facilities	Ambulatory	Time saving in using accessible route instead a circuitous route	Expected number of trips to and from the court floor area
77	Accessible Route to Bowling Lanes	Ambulatory	Time saving in using accessible bowling lanes rather than waiting for assistance to access bowling lanes	Expected number of trips made to and from bowling lanes at a bowling facility
78	Shooting Facilities with Firing Positions	Ambulatory	Time saving in using turning space instead of having to maneuver outside of firing position	Expected number of uses of each type of firing position
79 & 112	Primary Accessible Means of Entry to Pools	Ambulatory	Time saving in using accessible means of entry to pools rather than waiting for assistance with entering and exiting the pool	Expected number of entrances and exits into and out of a pool at pool facility
80	Accessible Means of Entry to Wading Pools	Ambulatory	Time saving in using sloped access to wading pools rather than waiting for assistance to enter and exit	Expected number of entrances and exits into and out of a wading pool while at a pool facility
81	Accessible Means of Entry to Spas	Ambulatory	Time saving in using accessible entry to spa rather than waiting for assistance	Expected number of entrances and exits of a spa
82	Accessible Route to Boating Facilities	Ambulatory	Time saving in using accessible routes to boat slips and boarding piers rather than waiting for assistance	Expected number of entrances and exits of boat slips and boarding piers
83-84	Accessible Boarding Piers (NC)/(Alt/BR)	Ambulatory	Time saving in using accessible boarding piers rather than waiting for assistance	Expected number of entrances and exits of piers
85-86	Accessible Boat Slips (NC)/(Alt/BR)	Ambulatory	Time saving in using accessible boat slip rather than waiting for assistance to access boat	Expected number of uses of a boat slip at a boating facility
87	Accessible Route to Fishing Piers	Ambulatory	Time saving in using accessible route rather than waiting for assistance to access fishing pier and platform	Expected number of entrances and exits of fishing pier and platform



Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
88	Accessible Fishing Piers and Platforms	Ambulatory	Time saving in using accessible fishing piers rather than waiting for assistance	Expected number of uses of fishing pier
89	Accessible Route to Golf Course	Ambulatory	Time saving in using accessible routes rather than waiting for assistance	Expected number of uses of elements and spaces in golf course
90-91	Accessible Teeing Grounds, Putting Greens, and Weather Stations (NC)/(Alt/BR)	Ambulatory	Time saving in using accessible elements from golf car rather than waiting for assistance to access areas or using more circuitous route	Expected number of uses of teeing grounds, putting greens, and weather stations at golf courses
92	Accessible Practice Putting Greens, Practice Teeing Grounds, and Teeing Stations at Driving Ranges	Ambulatory	Time saving in using accessible elements from golf car rather than waiting for assistance to access areas or using more circuitous route	Expected number of uses of practice putting greens, practice teeing grounds, and practice teeing stations in driving ranges
93	Accessible Routes to Mini Golf Holes	Ambulatory	Time saving in using accessible routes to holes rather than having assistance or using more circuitous route	Expected number of entrances and exits to holes
94	Accessible Mini Golf Holes	Ambulatory	Time saving in using accessible holes rather than waiting for assistance or using less straightforward approach to holes	Expected number of holes accessed at miniature golf courses
95	Accessible Route to Amusement Rides	Ambulatory	Time saving in using accessible routes rather than waiting for assistance or using more circuitous route	Expected number of rides used per visit of amusement park
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride	Wheelchair only	Time saving in using wheelchair space rather than waiting for assistance to move in and out of seat	Expected number of rides used per visit of amusement park
97	Maneuvering Space in Load and Unload Areas of Amusement Ride	Wheelchair only	Time saving in using wheelchair space rather than waiting for assistance to move in and out of seat	Expected number of rides used per visit of amusement park
98	Signs at Amusement Rides	Ambulatory	Time saving in waiting only in lines for accessible rides	Expected number of rides used per visit of amusement park
99, 101, 103	Accessible Route to Play Components	Ambulatory	Time saving in using accessible routes rather than waiting for assistance to access play components	Expected number of entrances and exits of play components



Index	Requirement	Type of Disability	Description of benefit/cost per use of an element at a facility	Expected number of uses per hour or per visit (given conditions related to requirement)
100, 102, 104	Accessible Play Components	Ambulatory	Time saving in using accessible play components rather than waiting for assistance	Expected number of uses of play components
106	Post Secondary School Multi-Story Dorm Facility	Ambulatory, hearing, and/or seeing	Time saved in accessing all levels of dorms rather than socializing elsewhere	Expected number of visits to other floors (visiting friends, study areas, etc. on other floors)
107	Mobility Accessible Prison Cell	Ambulatory, hearing, and/or seeing	Waiting time increase for assistance from detention officers rather than being able to access cell independently	Expected number of uses of accessible features inside the cell
108	Communication Accessible Prison Cell	Ambulatory, hearing, and/or seeing	Waiting time increase for assistance from detention officers rather than being able to access cell independently	Expected number of uses of accessible features inside the cell
109	Social Service Establishments – Elevator Access (NC)	Ambulatory	Benefits are not estimated	Benefits are not estimated
110	Social Service Establishments – Clear Floor Space around Beds	Ambulatory	Time saving in transferring into a bed independently compared to waiting for assistance	Expected number of uses of bed
113	Housing at Places of Education – Kitchen Turning Space	Ambulatory	Time saving in having additional square feet in a kitchen to turn around in instead of forward in and backing out	Expected number of uses per hour of a kitchen
114	Housing at Places of Education – Kitchen Work Surfaces	Ambulatory	Time saving for using an accessible portion of the counter that is available, instead of traveling to an accessible counter	Expected number of times approaching a kitchen counter
115 & 116	Secondary Accessible Means of Entry into Pools (NC/ALT)	Ambulatory	Half of the time saving in using accessible means of entry to pools rather than waiting for assistance with entering and exiting the pool	Half of the expected number of entrances and exits into and out of a pool at pool facility
117	Social Service Establishments – Roll-in Shower	Ambulatory	Time savings due to lessened usability for some users	Expected number of showers taken

## L. Time Change / Expected Number of Uses Input

The following charts are the verified RAP panel data of the changes in access time and expected number of uses per element based on the description of each requirement's impact. For requirements for which no data was collected specifically these tables show the estimates of the time change and expected number of uses in use, which are assumed to be equal to a requirement for which data was collected.

TIME CHANGE IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Public Entrances	-0.08	0.23	0.09	-0.25	0.00	0.00	0.08	0.33	0.25	-0.08	0.25	0.08	-0.08	0.23	0.09
Maneuvering Clearance or Standby Power for Automatic Doors	0.02	0.24	0.08	0.02	0.07	0.05	0.05	1.00	0.08	0.02	0.17	0.08	0.02	0.24	0.08
Automatic Door Break-Out Openings	0.02	0.31	0.08	0.02	0.17	0.08	0.02	0.33	0.08	0.02	0.33	0.08	0.02	0.31	0.08
Thresholds at Doorways	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02	0.01
Door and Gate Surfaces	0.02	0.05	0.03	0.02	0.05	0.03	0.02	0.05	0.03	0.02	0.05	0.03	0.02	0.05	0.03
Location of Accessible Routes	0.08	0.32	0.08	0.08	0.25	0.08	0.08	0.33	0.08	0.08	0.33	0.08	0.08	0.32	0.08
Common Use Circulation Paths in Employee Work Areas	0.03	0.35	0.19	0.03	0.17	0.08	0.03	1.67	0.83	0.03	0.17	0.08	0.03	0.35	0.19
Accessible Means of Egress	0.02	0.25	0.08	0.02	0.25	0.08	0.02	0.25	0.08	0.02	0.25	0.08	0.02	0.25	0.08
Stairs (NC)	0.02	0.19	0.09	0.02	0.17	0.08	0.02	0.33	0.17	0.02	0.17	0.08	0.02	0.19	0.09
Stairs (ALT/BR)													0.02	0.19	0.09
Handrails Along Walkways	0.17	0.32	0.24	0.17	0.25	0.17	0.17	0.33	0.25	0.17	0.33	0.25	0.17	0.32	0.24
Handrails	0.00	0.06	0.03	-0.08	0.02	0.00	0.17	0.33	0.25	-0.02	0.02	0.00	0.00	0.06	0.03
Accessible Routes from Site Arrival Points and Within Sites	0.17	1.00	0.37	0.17	1.00	0.33	0.17	1.00	0.67	0.17	1.00	0.33	0.17	1.00	0.37
Standby Power for Platform Lifts	0.14	0.40	0.19	0.08	0.17	0.12	0.33	1.50	0.50	0.08	0.17	0.12	0.14	0.40	0.19
Power-Operated Doors for Platform Lifts	0.08	0.18	0.11	0.05	0.08	0.07	0.08	0.33	0.12	0.08	0.17	0.12	0.08	0.18	0.11
Alterations to Existing Elevators	0.02	0.23	0.06	0.02	0.05	0.03	0.08	1.50	0.17	0.02	0.05	0.03	0.02	0.23	0.06
Platform Lifts in Hotel Guest Rooms and Dwelling Units	0.06	0.13	0.09	0.05	0.08	0.07	0.08	0.33	0.17	0.05	0.08	0.07	0.06	0.13	0.09
“LULA” and Private Residence Elevators	0.06	0.11	0.09	0.05	0.08	0.07	0.08	0.17	0.17	0.05	0.08	0.08	0.06	0.11	0.09
Van Accessible Parking Spaces	0.20	0.96	0.39	0.17	0.67	0.33	0.50	1.00	0.67	0.17	1.00	0.33	0.20	0.96	0.39
Valet Parking Garages	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33
Mechanical Access Parking Garages													0.17	1.00	0.33

TIME CHANGE IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Direct Access Entrances from Parking Structures	0.18	1.00	0.51	0.17	1.00	0.50	0.25	1.00	0.58	0.17	1.00	0.50	0.18	1.00	0.51
Passenger Loading Zones	0.19	0.44	0.31	0.17	0.33	0.25	0.33	1.00	0.50	0.17	0.33	0.25	0.19	0.44	0.31
Parking Spaces	0.09	0.41	0.20	0.08	0.33	0.08	0.17	1.00	0.50	0.08	0.33	0.17	0.09	0.41	0.20
Parking Spaces (Signs)	0.09	0.36	0.18	0.02	0.08	0.02	0.17	0.67	0.33	0.08	0.33	0.17	0.09	0.36	0.18
Passenger Loading Zones (Medical / Long-Term Care)	0.14	0.48	0.25	0.08	0.33	0.17	0.50	1.00	0.67	0.08	0.33	0.17	0.14	0.48	0.25
Ambulatory Accessible Toilet Compartments	0.16	0.33	0.25	0.08	0.33	0.25	0.17	0.33	0.25	0.17	0.33	0.25	0.16	0.33	0.25
Water closet clearance in single-user toilet rooms - out swinging door	0.02	0.33	0.09	0.02	0.33	0.08	0.02	0.33	0.17	0.02	0.33	0.08	0.02	0.33	0.09
Shower Spray Controls	0.02	0.09	0.06	0.02	0.08	0.05	0.08	0.17	0.12	0.02	0.08	0.05	0.02	0.09	0.06
Urinals	0.09	0.30	0.15	0.08	0.17	0.12	0.17	0.67	0.33	0.08	0.17	0.12	0.09	0.30	0.15
Multiple Single-User Toilet Rooms	0.04	0.48	0.20	0.02	0.33	0.17	0.17	0.50	0.33	0.02	0.50	0.17	0.04	0.48	0.20
Water closet clearance in single-user toilet rooms - in swinging door	0.03	0.48	0.15	0.02	0.33	0.03	0.17	0.50	0.25	0.02	0.50	0.17	0.03	0.48	0.15
Water Closet Location and Rear Grab Bar	0.01	0.10	0.02	0.00	0.03	0.00	0.03	0.50	0.05	0.00	0.03	0.02	0.01	0.10	0.02
Patient Toilet Rooms	0.02	0.43	0.21	0.02	0.33	0.08	0.03	0.75	0.33	0.02	0.33	0.17	0.02	0.43	0.21
Drinking Fountains	0.02	0.04	0.03	0.02	0.03	0.03	0.02	0.08	0.03	0.02	0.03	0.03	0.02	0.04	0.03
Sinks	0.02	0.06	0.03	0.02	0.05	0.02	0.02	0.17	0.03	0.02	0.05	0.03	0.02	0.06	0.03
Side Reach	0.02	0.20	0.07	0.02	0.17	0.02	0.02	0.33	0.17	0.02	0.17	0.03	0.02	0.20	0.07
Sales and Service Counters (NC)	0.17	1.00	0.27	0.17	1.00	0.17	0.17	1.00	0.42	0.17	1.00	0.25	0.17	1.00	0.27
Sales and Service Counters (Alt)													0.17	1.00	0.27
Washing Machines and Clothes Dryers (technical)	0.10	0.39	0.25	0.08	0.25	0.17	0.25	0.75	0.50	0.08	0.29	0.17	0.10	0.39	0.25
Washing Machines and Clothes Dryers (Scoping)													0.10	0.39	0.25
Self-Service Storage Facility Spaces	0.15	0.15	0.15	0.00	0.01	0.00	0.17	0.25	0.17	0.08	0.13	0.00	0.16	0.25	0.17
Limited Access Spaces and Machinery Spaces	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33
Operable Parts	0.17	0.41	0.25	0.17	0.33	0.25	0.17	1.00	0.25	0.17	0.33	0.25	0.17	0.41	0.25
Bathrooms with vanities and water closet clearance out-swinging doors	0.02	0.12	0.05	0.02	0.05	0.03	0.02	0.33	0.08	0.02	0.08	0.03	0.02	0.12	0.05
Operable Windows	0.02	0.33	0.18	0.02	0.33	0.17	0.02	0.33	0.25	0.02	0.33	0.17	0.02	0.33	0.18

TIME CHANGE IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Dwelling Units with Communication Features [1991]	0.02	1.00	0.31	0.02	1.00	0.17	0.02	1.00	0.67	0.02	1.00	0.25	0.02	1.00	0.31
Dwelling Units with Communication Features [UFAS]													0.02	1.00	0.31
Galley Kitchen Clearances	0.02	0.11	0.07	0.02	0.05	0.03	0.05	0.33	0.25	0.02	0.08	0.04	0.02	0.11	0.07
Shower Compartments with Mobility Features	0.04	0.19	0.07	0.02	0.03	0.02	0.08	0.67	0.17	0.02	0.08	0.05	0.04	0.19	0.07
Location of Accessible Route to Stages	0.04	0.27	0.12	0.03	0.17	0.08	0.08	0.67	0.25	0.03	0.17	0.08	0.04	0.27	0.12
Wheelchair Space Overlap in Assembly Areas	0.03	0.08	0.05	0.03	0.08	0.05	0.03	0.08	0.05	0.03	0.08	0.05	0.03	0.08	0.05
Lawn Seating in Assembly Areas	0.06	0.24	0.13	0.03	0.17	0.08	0.17	0.50	0.20	0.03	0.17	0.14	0.06	0.24	0.13
Handrails on Aisle Ramps in Assembly Areas	0.16	0.50	0.32	0.08	0.50	0.25	0.17	0.50	0.33	0.17	0.50	0.33	0.16	0.50	0.32
Wheelchair Spaces in Assembly Areas	n/a														
Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	0.19	0.75	0.39	0.08	0.25	0.17	0.50	1.50	0.75	0.17	0.50	0.25	0.19	0.75	0.39
Accessible Route to Press Boxes	0.17	0.50	0.25	0.17	0.50	0.25	0.17	0.50	0.25	0.17	0.50	0.25	0.17	0.50	0.25
Public TTYS	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33	0.17	1.00	0.33
Public Telephone Volume Controls	0.09	0.21	0.15	0.08	0.17	0.13	0.17	0.33	0.25	0.08	0.17	0.13	0.09	0.21	0.15
Two-Way Communication Systems at Entrances	0.02	1.00	0.23	0.02	1.00	0.17	0.02	1.00	0.50	0.02	1.00	0.17	0.02	1.00	0.23
ATMs and Fare Machines	0.02	1.00	0.23	0.02	1.00	0.17	0.02	1.00	0.42	0.02	1.00	0.17	0.02	1.00	0.23
Assistive Listening Systems (technical)	0.08	1.13	0.47	0.08	1.00	0.25	0.08	2.00	2.00	0.08	1.00	0.25	0.08	1.13	0.47
Visible Alarms in Alterations to Existing Facilities	0.00	0.08	0.02	0.00	0.02	0.00	0.02	0.33	0.17	0.00	0.02	0.00	0.00	0.08	0.02
Detectable Warnings (scoping)	0.02	1.00	0.20	0.02	1.00	0.17	0.02	1.00	0.33	0.02	1.00	0.17	0.02	1.00	0.20
Detectable Warnings (technical)													0.02	1.00	0.20
Assistive Listening Systems (scoping)	0.02	1.13	0.32	0.02	1.00	0.17	0.02	2.00	1.00	0.02	1.00	0.17	0.02	1.13	0.32
Accessible Courtroom Stations	0.04	0.17	0.09	0.03	0.17	0.08	0.05	0.20	0.12	0.03	0.17	0.08	0.04	0.17	0.09
Accessible Attorney Areas and Witness Stands	0.04	0.21	0.10	0.03	0.17	0.08	0.07	0.50	0.17	0.03	0.17	0.08	0.04	0.21	0.10
Raised Courtroom Stations Not for Members of the Public	0.05	0.43	0.09	0.03	0.17	0.08	0.17	2.00	0.12	0.03	0.17	0.08	0.05	0.43	0.09
Primary Accessible Route to Exercise Machines and Equipment	0.17	0.50	0.25	0.17	0.50	0.25	0.17	0.50	0.25	0.17	0.50	0.25	0.17	0.50	0.25

TIME CHANGE IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Accessible Exercise Machines and Equipment	0.17	0.50	0.26	0.08	0.50	0.25	0.25	0.50	0.33	0.17	0.50	0.25	0.17	0.50	0.26
Accessible Saunas and Steam Rooms	0.09	0.63	0.29	0.08	0.50	0.25	0.17	1.00	0.50	0.08	0.50	0.25	0.09	0.63	0.29
Accessible Lockers	0.02	1.00	0.22	0.02	1.00	0.17	0.02	1.00	0.50	0.02	1.00	0.17	0.02	1.00	0.22
Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	0.02	0.94	0.23	0.02	0.50	0.17	0.02	1.00	0.33	0.02	1.00	0.17	0.02	0.94	0.23
Wheelchair Spaces in Team or Player Seating Areas	0.03	0.19	0.10	0.02	0.17	0.08	0.08	0.33	0.17	0.02	0.17	0.08	0.03	0.19	0.10
Accessible Route in Court Sport Facilities	0.10	0.19	0.15	0.08	0.17	0.13	0.17	0.33	0.25	0.08	0.17	0.13	0.10	0.19	0.15
Accessible Route to Bowling Lanes	0.09	0.52	0.21	0.08	0.50	0.17	0.17	0.67	0.33	0.08	0.50	0.17	0.09	0.52	0.21
Shooting Facilities with Firing Positions	0.06	0.12	0.09	0.05	0.08	0.07	0.10	0.17	0.13	0.05	0.08	0.07	0.06	0.12	0.09
Accessible Means of Entry to Pools	0.09	0.52	0.25	0.08	0.50	0.10	0.17	0.67	0.50	0.08	0.50	0.25	0.09	0.52	0.25
Accessible Means of Entry to Wading Pools	0.09	0.50	0.24	0.08	0.50	0.08	0.17	0.50	0.33	0.08	0.50	0.25	0.09	0.50	0.24
Accessible Means of Entry to Spas	0.10	0.55	0.27	0.08	0.50	0.17	0.17	0.75	0.33	0.08	0.50	0.25	0.10	0.55	0.27
Accessible Route to Boating Facilities	0.10	0.64	0.30	0.08	0.50	0.25	0.17	1.00	0.42	0.08	0.58	0.29	0.10	0.64	0.30
Accessible Boarding Piers (NC)	0.10	0.65	0.34	0.08	0.50	0.25	0.17	1.00	0.50	0.08	0.50	0.33	0.10	0.65	0.34
Accessible Boarding Piers (ALT/BR)													0.10	0.65	0.34
Accessible Boat Slips (NC)	0.11	0.56	0.32	0.08	0.50	0.25	0.25	0.75	0.50	0.08	0.50	0.25	0.11	0.56	0.32
Accessible Boat Slips (Alt/BR)													0.11	0.56	0.32
Accessible Route to Fishing Piers	0.10	0.56	0.31	0.08	0.50	0.25	0.17	0.75	0.42	0.08	0.50	0.29	0.10	0.56	0.31
Accessible Fishing Piers and Platforms	0.10	0.56	0.31	0.08	0.50	0.25	0.17	0.75	0.42	0.08	0.50	0.29	0.10	0.56	0.31
Accessible Route to Golf Courses	0.16	0.70	0.43	0.08	0.50	0.33	0.50	1.00	0.67	0.08	0.54	0.38	0.16	0.70	0.43
Accessible Teeing Grounds, Putting Greens and Weather Stations (Alt/BR)	0.56	1.13	0.71	0.50	1.00	0.67	1.00	2.00	1.00	0.50	1.00	0.67	0.56	1.13	0.71
Accessible Teeing Grounds, Putting Greens and Weather Stations (NC)													0.56	1.13	0.71
Accessible Practice Grounds at Driving Ranges	0.50	1.00	0.67	0.50	1.00	0.67	0.50	1.00	0.67	0.50	1.00	0.67	0.50	1.00	0.67
Accessible Route to Mini Golf Holes	0.50	1.13	0.71	0.50	1.00	0.67	0.50	2.00	1.00	0.50	1.00	0.67	0.50	1.13	0.71
Accessible to Mini Golf Holes	0.50	1.00	0.67	0.50	1.00	0.67	0.50	1.00	0.67	0.50	1.00	0.67	0.50	1.00	0.67
Accessible Route to Amusement Rides	0.50	0.96	0.66	0.33	0.67	0.50	0.67	1.00	0.75	0.50	1.00	0.67	0.50	0.96	0.66
Wheelchair Space , Transfer Seat or Transfer Device for Amusement Ride	0.44	0.94	0.55	0.25	0.50	0.33	0.50	1.00	0.58	0.50	1.00	0.58	0.44	0.94	0.55

TIME CHANGE IN HOURS	SUMMARY OF PANEL INPUTS												IN USE		
	AVERAGE			MIN			MAX			MEDIAN					
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Maneuvering Space in Load and Unload Area of Amusement Ride	0.44	0.94	0.55	0.25	0.50	0.33	0.50	1.00	0.58	0.50	1.00	0.58	0.44	0.94	0.55
Signs at Amusement Rides	0.09	0.67	0.28	0.08	0.50	0.25	0.17	1.50	0.42	0.08	0.50	0.25	0.09	0.67	0.28
Accessible Route to Play Components	0.35	0.52	0.43	0.33	0.50	0.42	0.50	0.67	0.50	0.33	0.50	0.42	0.35	0.52	0.43
Accessible Play Components	0.50	1.00	0.58	0.50	1.00	0.58	0.50	1.00	0.58	0.50	1.00	0.58	0.50	1.00	0.58
Post Secondary School Multi-Story Dorm Facility	0.15	0.15	0.15	0.00	0.00	0.00	0.33	0.50	0.42	0.08	0.17	0.00	0.00	2.62	1.00
Mobility Accessible Prison Cell	0.15	0.15	0.15	0.00	0.01	0.00	0.33	0.50	0.42	0.08	0.17	0.00	0.00	2.00	1.00
Communication Accessible Prison Cell	0.15	0.15	0.15	0.00	0.01	0.00	0.33	0.50	0.42	0.08	0.17	0.00	0.00	2.00	1.00
Social Service Establishments – Clear Floor Space around Beds													0.00	2.50	1.00
Housing at Places of Education – Kitchen Turning Space													0.02	0.11	0.07
Housing at Places of Education – Kitchen Work Surfaces													0.17	1.00	0.27
Secondary Accessible Means of Entry into Pools													0.05	0.26	0.13
Social Service Establishments – Roll-in Shower													0.04	0.19	0.07

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Public Entrances	100	400	213	100	400	200	100	400	300	100	400	200	100	400	213
Maneuvering Clearance or Standby Power for Automatic Doors	100	371	200	100	200	200	100	400	200	100	400	200	100	371	200
Automatic Door Break-Out Openings	1	4	2	1	4	2	1	4	2	1	4	2	1	4	2

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Thresholds at Doorways	100	222	181	100	200	100	100	400	200	100	200	200	100	222	181
Door and Gate Surfaces	1	10	5	1	10	5	1	10	5	1	10	5	1	10	5
Location of Accessible Routes	13	48	27	2	4	2	100	400	200	2	4	2	13	48	27
Common Use Circulation Paths in Employee Work Areas	46	164	116	2	10	5	200	600	500	2	20	8	46	164	116
Accessible Means of Egress	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Stairs (NC)	1	10	5	1	10	2	1	10	5	1	10	5	1	10	5
Stairs (ALT/BR)															
Handrails Along Walkways	1	10	5	1	10	5	1	10	5	1	10	5	1	10	5
Handrails	88	200	150	0	200	150	100	200	150	100	200	150	88	200	150
Accessible Routes from Site Arrival Points and Within Sites	43	128	69	20	60	30	200	600	300	20	60	30	43	128	69
Standby Power for Platform Lifts	2	9	5	1	5	3	2	10	5	2	10	5	2	9	5
Power-Operated Doors for Platform Lifts	40	98	51	20	60	30	200	400	200	20	60	30	40	98	51
Alterations to Existing Elevators	2	10	5	2	10	5	2	10	5	2	10	5	2	10	5
Platform Lifts in Hotel Guest Rooms and Dwelling Units	10	20	15	10	20	15	10	20	15	10	20	15	10	20	15
"LULA" and Private Residence Elevators	10	20	15	10	20	15	10	20	15	10	20	15	10	20	15
Van Accessible Parking Spaces	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Valet Parking Garages	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Mechanical Access Parking Garages	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Direct Access Entrances from Parking Structures	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Passenger Loading Zones	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Parking Spaces	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Parking Spaces (Signs)	125	406	222	100	350	200	300	500	400	100	400	200	125	406	222
Passenger Loading Zones (Medical / Long-Term Care)	138	419	238	100	350	200	400	600	500	100	400	200	138	419	238
Ambulatory Accessible Toilet Compartments	5	100	50	5	100	50	5	100	50	5	100	50	5	100	50
Water closet clearance in single-user toilet rooms - out swinging door	1	91	46	1	20	15	1	100	50	1	100	50	1	91	46
Shower Spray Controls	2	100	50	2	100	50	2	100	50	2	100	50	2	100	50

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Urinals	1	7	5	1	5	3	1	20	15	1	5	3	1	7	5
Multiple Single-User Toilet Rooms	1	7	5	1	5	3	1	20	15	1	5	3	1	7	5
Water closet clearance in single-user toilet rooms - in swinging door	1	7	5	1	5	3	1	20	15	1	5	3	1	7	5
Water Closet Location and Rear Grab Bar	2	11	6	1	10	3	3	20	15	2	10	3	2	11	6
Patient Toilet Rooms	1	7	4	1	5	3	4	15	5	1	5	3	1	7	4
Drinking Fountains	1	6	4	1	5	3	1	10	10	1	5	3	1	6	4
Sinks	1	5	2	1	5	2	1	5	2	1	5	2	1	5	2
Side Reach	1	20	15	1	5	2	1	80	80	1	5	2	1	20	15
Sales and Service Counters (NC)	100	200	150	100	200	150	100	200	150	100	200	150	100	200	150
Sales and Service Counters (Alt)															
Washing Machines and Clothes Dryers (technical)	113	250	175	100	200	150	200	400	300	100	200	150	113	250	175
Washing Machines and Clothes Dryers (Scoping)															
Self-Service Storage Facility Spaces															
Limited Access Spaces and Machinery Spaces	1	3	2	1	3	2	1	3	2	1	3	2	1	3	2
Operable Parts	1	50	20	1	50	20	1	50	20	1	50	20	1	50	20
Bathrooms with vanities and water closet clearance out-swinging doors	100	675	178	100	5	15	100	6,000	500	100	5	20	100	675	178
Operable Windows	12	49	29	1	2	2	100	400	200	1	2	2	12	49	29
Dwelling Units with Communication Features [1991]	100	200	150	100	200	150	100	200	150	100	200	150	100	200	150
Dwelling Units with Communication Features [UFAS]															
Galley Kitchen Clearances	1	75	24	1	5	2	5	400	150	1	5	2	1	75	24
Shower Compartments with Mobility Features	3	15	7	2	10	2	10	30	28	2	10	2	3	15	7
Location of Accessible Route to Stages	1	5	2	1	5	2	1	5	2	1	5	2	1	5	2
Wheelchair Space Overlap in Assembly Areas	13	133	34	2	100	10	100	400	200	2	100	10	13	133	34
Lawn Seating in Assembly Areas	24	156	60	2	100	10	200	600	400	2	100	10	24	156	60
Handrails on Aisle Ramps in Assembly Areas	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200



Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Wheelchair Spaces in Assembly Areas	n/a														
Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	89	400	200	3	400	200	100	400	200	100	400	200	89	400	200
Accessible Route to Press Boxes	43	76	47	20	30	25	200	400	200	20	30	25	43	76	47
Public TTYS	1	20	10	1	20	10	1	20	10	1	20	10	1	20	10
Public Telephone Volume Controls	1	2	2	1	2	2	2	4	3	1	2	2	1	2	2
Two-Way Communication Systems at Entrances	100	200	150	100	200	150	100	200	150	100	200	150	100	200	150
ATMs and Fare Machines	133	244	194	100	200	150	400	600	500	100	200	150	133	244	194
Assistive Listening Systems (technical)															
Visible Alarms in Alterations to Existing Facilities	2	10	4	0	10	0	2	10	5	2	10	5	2	10	4
Detectable Warnings (scoping)	6	17	12	5	10	6	10	56	50	5	10	6	6	17	12
Detectable Warnings (technical)															
Assistive Listening Systems (scoping)	5	10	8	5	10	8	5	10	8	5	10	8	5	10	8
Accessible Courtroom Stations	1	5	4	1	5	4	1	5	4	1	5	4	1	5	4
Accessible Attorney Areas and Witness Stands	1	5	4	1	5	4	1	5	4	1	5	4	1	5	4
Raised Courtroom Stations Not for Members of the Public	14	113	29	2	100	4	100	200	200	2	100	4	14	113	29
Accessible Route to Exercise Machines and Equipment	200	500	300	200	500	300	200	500	300	200	500	300	200	500	300
Accessible Exercise Machines and Equipment	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Accessible Saunas and Steam Rooms	5	21	20	5	10	8	5	100	100	5	10	8	5	21	20
Accessible Lockers	30	63	48	30	50	35	30	100	100	30	50	35	30	63	48
Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	40	98	45	30	80	35	100	200	100	30	80	35	40	98	45
Wheelchair Spaces in Team or Player Seating Areas	3	21	18	2	5	3	5	100	100	2	5	3	3	21	18
Accessible Route in Court Sport Facilities	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Accessible Route to Bowling Lanes	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Shooting Facilities with Firing Positions	100	267	192	100	200	150	100	600	400	100	200	150	100	267	192

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Accessible Means of Entry to Pools	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Accessible Means of Entry to Wading Pools	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Accessible Means of Entry to Spas	93	371	186	50	200	100	100	400	200	100	400	200	93	371	186
Accessible Route to Boating Facilities	100	400	225	100	400	200	100	400	400	100	400	200	100	400	225
Accessible Boarding Piers (NC)	100	400	225	100	400	200	100	400	400	100	400	200	100	400	225
Accessible Boarding Piers (ALT/BR)															
Accessible Boat Slips (NC)	100	400	225	100	400	200	100	400	400	100	400	200	100	400	225
Accessible Boat Slips (Alt/BR)															
Accessible Route to Fishing Piers	100	400	213	100	400	200	100	400	300	100	400	200	100	400	213
Accessible Fishing Piers and Platforms	100	400	200	100	400	200	100	400	200	100	400	200	100	400	200
Accessible Route to Golf Courses	400	600	500	400	600	500	400	600	500	400	600	500	400	600	500
Accessible Teeing Grounds, Putting Greens and Weather Stations (Alt/BR)	200	600	400	200	600	400	200	600	400	200	600	400	200	600	400
Accessible Teeing Grounds, Putting Greens and Weather Stations (NC)															
Accessible Practice Grounds at Driving Ranges	200	400	300	200	400	300	200	400	300	200	400	300	200	400	300
Accessible Route to Mini golf Holes	900	1,800	950	900	1,800	950	900	1,800	950	900	1,800	950	900	1,800	950
Accessible to Mini golf Holes	900	1,800	950	900	1,800	950	900	1,800	950	900	1,800	950	900	1,800	950
Accessible Route to Amusement Rides	78	173	113	20	30	25	300	900	500	20	30	25	78	173	113
Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride	58	153	89	10	20	15	300	900	500	10	20	15	58	153	89
Maneuvering Space in Load and Unload Area of Amusement Ride	21	43	38	10	20	15	100	200	200	10	20	15	21	43	38
Signs at Amusement Rides	17	33	21	5	10	8	100	200	100	5	10	8	17	33	21
Accessible Route to Play Components	43	85	53	20	40	25	200	400	250	20	40	25	43	85	53
Accessible Play Components	43	85	53	20	40	25	200	400	250	20	40	25	43	85	53
Post Secondary School Multi-Story Dorm Facility	0.2	0.4	0.3	0.0	0.0	0.0	0.3	0.5	0.4	0.1	0.2	0.0	0	0.3	0.2

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
Requirement	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
Mobility Accessible Prison Cell													0.000	0.417	0.250
Communication Accessible Prison Cell													0.000	0.417	0.250
Social Service Establishments – Clear Floor Space around Beds													0.000	0.292	0.208
Housing at Places of Education – Kitchen Turning Space													0.340	2.093	0.890
Housing at Places of Education – Kitchen Work Surfaces													1.000	2.000	1.500
Secondary Accessible Means of Entry into Pools													0.500	2.000	1.000
Social Service Establishments – Roll-in Shower													0.031	0.153	0.071

## M. Likelihood of Realizing Benefits

This table represents the assumptions regarding the likelihood that a typical user would experience the benefits from a changed element at each visit. For instance, some elements will only become active/used during a power outage; others are not likely to be encountered at every visit. The high and low values that create the range of the likelihood are plus and minus 10 percentage points of the most likely values if the most likely value is less than 50%, or plus and minus 20 percentage points of the most likely values if the most likely value is greater than or equal to 50%.

In consultation with the Department, HDR/HLB determined the likelihood of experiencing benefits from individual requirements grouped into one of several categories based upon the type of time savings resulting from each requirement and the likelihood that benefits would occur. The categories were then ranked from least likely to most likely and assigned conservative estimates of the likelihood of experiencing benefits. Essentially, the categories are:

- At the lowest end of the scale were time savings that would result from an emergency or power outage, such as the use of visible alarms in emergency situations. The estimate of 0.0001% was chosen to reflect the very low likelihood of such occurrence;
- The next category included technical and scoping requirements for washers and dryers. A likelihood of 0.02% was chosen to incorporate the percentage of laundromats in the facility grouping;
- Several requirements were grouped together with a 0.1% likelihood of experiencing benefits. These requirements mostly relate certain equipment usage requirements and several requirements in stadiums;
- Two requirements were given likelihoods of 1.0% (lawn seating in assembly areas and raised courtroom stations not for members of the public);
- A large number of requirements (more than 50), primarily those involving waiting time savings to use an element or access a facility, were given likelihoods of 5%;
- Several requirements were group in a category with a 25% likelihood of users experiencing benefits, including most relating to showers and bathrooms and travel pathways;
- Two requirements were given likelihoods of 50% (relating to shooting facilities and to dressing rooms); and
- A little more than a dozen requirements were grouped into a category of 90% likelihood of experiencing benefits, including those relating to stairs, side reach, vanities in lodging facilities, and galley kitchen clearances.

ID	Requirement	Most Likely	Comments
1	Public Entrances	25%	likelihood of approaching entrance and having to travel further distance to find accessible entrance
2	Maneuvering Clearance or Standby Power for Automatic Doors	0.0001%	probability of power outage
3	Automatic Door Break-Out Openings	0.0001%	if emergency occurs
4	Thresholds at Doorways	25%	likelihood of traveling through a doorway that is affected
5	Door and Gate Surfaces	90%	panelist input probably takes the likelihood of use into account
6	Location of Accessible Routes	90%	panelist input probably takes the likelihood of use into account
7	Common Use Circulation Paths in Employee Work Areas	25%	likelihood of traveling through a path that is affected
8	Accessible Means of Egress	25%	likelihood of traveling through a doorway that is affected
9	Stairs (NC)	90%	panelist input probably takes the likelihood of use into account
10	Stairs (ALT/BR)	90%	panelist input probably takes the likelihood of use into account
11	Handrails Along Walkways	90%	panelist input probably takes the likelihood of use into account
12	Handrails	5%	full access time estimate would be unlikely to occur during facility visit
13	Accessible Routes from Site Arrival Points and Within Sites	5%	full access time change benefits are realized only when waiting occurs
14	Standby Power for Platform Lifts	0.0001%	if power goes out
15	Power-Operated Doors for Platform Lifts	25%	likelihood of using platform lift in facility
16	Alterations to Existing Elevators	5%	full access time change benefits are realized only when waiting occurs
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	0.10%	likelihood of using platform lift and staying in a multi story hotel guest room
18	“LULA” and Private Residence Elevators	90%	panelist input probably takes the likelihood of use into account
19	Van Accessible Parking Spaces	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs
20	Valet Parking Garages	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs
21	Mechanical Access Parking Garages	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs
22	Direct Access Entrances from Parking Structures	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs
23	Passenger Loading Zones	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs
24	Parking Spaces	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs

ID	Requirement	Most Likely	Comments
25	Parking Spaces (Signs)	5%	assumes people arrive in other modes and do not need to park, full access time change benefits are realized only when waiting occurs
26	Passenger Loading Zones at Medical Care and Long-Term Care Facilities	25%	access time change benefits only occur during inclement weather
27	Ambulatory Accessible Toilet Compartments	5%	likelihood of using bathroom in any facility visit
28	Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors	25%	likelihood of using bathroom in any facility visit
29	Shower Spray Controls	25%	likelihood of using shower in any facility visit
30	Urinals	5%	full access time change benefits are realized only when waiting occurs
31	Multiple Single-User Toilet Rooms	5%	full access time change benefits are realized only when waiting occurs
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors	25%	likelihood of using bathroom in any facility visit
33	Water Closet Location and Rear Grab Bar	25%	likelihood of using bathroom in any facility visit
34	Patient Toilet Rooms	25%	likelihood of using bathroom in any facility visit
35	Drinking Fountains	90%	panelist input probably takes the likelihood of use into account
36	Sinks	90%	panelist input probably takes the likelihood of use into account
37	Side Reach	90%	full access time change benefits are realized only when waiting occurs
38	Sales and Service Counters (NC)	5%	full access time change benefits are realized only when waiting occurs
39	Sales and Service Counters (Alt)	5%	full access time change benefits are realized only when waiting occurs
40	Washing Machines and Clothes Dryers (technical)	0.020%	adjust for % of Laundromats in facility groups
41	Washing Machines and Clothes Dryers (Scoping)	0.020%	adjust for % of Laundromats in facility groups
42	Self-Service Storage Facility Spaces	25%	
43	Limited Access Spaces and Machinery Spaces	25%	likelihood of using limited access spaces as a visitor of a facility
44	Operable Parts	90%	panelist input probably takes the likelihood of use into account
45	Bathrooms with vanities and water closet clearance out-swinging doors	90%	panelist input probably takes the likelihood of use into account
46	Operable Windows	25%	accounts for seasonally adjusted
47	Dwelling Units with Communication Features [1991]	0.0001%	probability of power outage
48	Dwelling Units with Communication Features [UFAS]	0.0001%	probability of power outage
49	Galley Kitchen Clearances	90%	panelist input probably takes the likelihood of use into account
50	Shower Compartments with Mobility Features	25%	likelihood of using shower in any facility visit

ID	Requirement	Most Likely	Comments
51	Location of Accessible Route to Stages	0.10%	likelihood of person in audience is called to stage
52	Wheelchair Space Overlap in Assembly Areas	90%	panelist input probably takes the likelihood of use into account
53	Lawn Seating in Assembly Areas	1.0%	low likelihood of use of lawn compared to house seating
54	Handrails on Aisle Ramps in Assembly Areas	5%	panelist input probably takes the likelihood of use into account
55	Wheelchair Spaces in Assembly Areas	5%	does not affect access time
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	0.10%	likelihood of visiting tiered dining area during visit
57	Accessible Route to Press Boxes	0.10%	likelihood of visiting press box during visit
58	Public TTYS	0.10%	accounts for email and SMS
59	Public Telephone Volume Controls	0.10%	accounts for cell phone users
60	Two-Way Communication Systems at entrances	5.0%	full access time change benefits are realized only when waiting occurs
61	ATMs and Fare Machines	5.0%	full access time change benefits are realized only when waiting occurs
62	Assistive Listening Systems (technical)	0.10%	likelihood of using affected machines at a visit
63	Visible Alarms in Alterations to Existing Facilities	0.0001%	assumes benefit depends on alarm sounding
64	Detectable Warnings (scoping)	5%	full access time change benefits are realized only when waiting occurs
65	Detectable Warnings (technical)	5%	full access time change benefits are realized only when waiting occurs
66	Assistive Listening Systems (scoping)	5%	full access time change benefits are realized only when waiting occurs
67	Accessible Courtroom Stations	90%	panelist input probably takes the likelihood of use into account
68	Accessible Attorney Areas and Witness Stands	90%	panelist input probably takes the likelihood of use into account
69	Raised Courtroom Stations Not for Members of the Public	1.00%	must accounts for the number of users of court houses who would actually use the station; what about # of courtrooms in a courthouse
70	Accessible Route to Exercise Machines and Equipment	5%	full access time change benefits are realized only when waiting occurs
71	Accessible Exercise Machines and Equipment	5%	full access time change benefits are realized only when waiting occurs
72	Accessible Saunas and Steam Rooms (NC)	5%	full access time change benefits are realized only when waiting occurs
73	Accessible Lockers	5%	full access time change benefits are realized only when waiting occurs
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	50%	likelihood of using dressing room during facility visit
75	Wheelchair Spaces in Team or Player Seating Areas	0.10%	splits the difference between kids in school (high potential use) and low use for persons in a stadium
76	Accessible Route in Court Sport Facilities	0.10%	splits the difference between kids in school (high potential use) and low use for persons in a stadium
77	Accessible Route to Bowling Lanes	5%	full access time change benefits are realized only when waiting occurs

ID	Requirement	Most Likely	Comments
78	Shooting Facilities with Firing Positions	50%	likelihood of realizing full time savings benefits during visit
79	Primary Accessible Means of Entry to Pools (NC/ALT)	5%	full access time change benefits are realized only when waiting occurs
80	Accessible Means of Entry to Wading Pools	5%	full access time change benefits are realized only when waiting occurs
81	Accessible Means of Entry to Spas	5%	full access time change benefits are realized only when waiting occurs
82	Accessible Route to Boating Facilities	5%	full access time change benefits are realized only when waiting occurs
83	Accessible Boarding Piers (NC)	5%	full access time change benefits are realized only when waiting occurs
84	Accessible Boarding Piers (ALT/BR)	5%	full access time change benefits are realized only when waiting occurs
85	Accessible Boat Slips (NC)	5%	full access time change benefits are realized only when waiting occurs
86	Accessible Boat Slips (Alt/BR)	5%	full access time change benefits are realized only when waiting occurs
87	Accessible Route to Fishing Piers	5%	full access time change benefits are realized only when waiting occurs
88	Accessible Fishing Piers and Platforms	5%	full access time change benefits are realized only when waiting occurs
89	Accessible Route to Golf Courses	5%	full access time change benefits are realized only when waiting occurs
90	Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (ALT/BR)	5%	full access time change benefits are realized only when waiting occurs
91	Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (NC)	5%	full access time change benefits are realized only when waiting occurs
92	Accessible Practice Putting Greens, Practice Teeing Grounds, and Teeing Stations at Driving Ranges	5%	full access time change benefits are realized only when waiting occurs
93	Accessible Route to Mini Golf Holes	5%	full access time change benefits are realized only when waiting occurs
94	Accessible Mini Golf Holes	5%	full access time change benefits are realized only when waiting occurs
95	Accessible Route to Amusement Rides	5%	full access time change benefits are realized only when waiting occurs
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride	5%	full access time change benefits are realized only when waiting occurs
97	Maneuvering Space in Load and Unload Area of Amusement Ride	5%	full access time change benefits are realized only when waiting occurs
98	Signs at Amusement Rides	5%	full access time change benefits are realized only when waiting occurs
99	Accessible Route to Play Components (BR)	5%	full access time change benefits are realized only when waiting occurs; at Restaurants this is assumed to be 2%
100	Accessible Play Components (BR)	5%	full access time change benefits are realized only when waiting occurs; at Restaurants this is assumed to be 2%
101	Accessible Route to Play Components (ALT)	5%	full access time change benefits are realized only when waiting occurs; at Restaurants this is assumed to be 2%



ID	Requirement	Most Likely	Comments
102	Accessible Play Components (ALT)	5%	full access time change benefits are realized only when waiting occurs; at Restaurants this is assumed to be 2%
103	Accessible Route to Play Components (NC)	5%	full access time change benefits are realized only when waiting occurs; at Restaurants this is assumed to be 2%
104	Accessible Play Components (NC)	5%	full access time change benefits are realized only when waiting occurs; at Restaurants this is assumed to be 2%
106	Post Secondary School Multi-Story Dorm Facility	5%	likelihood of visiting dorm during facility visit
107	Mobility Accessible Prison Cell	90%	panelist input probably takes the likelihood of use into account
108	Communication Accessible Prison Cell	90%	panelist input probably takes the likelihood of use into account
109	Social Service Establishments – Elevator Access (NC)	90%	panelist input probably takes the likelihood of use into account
110	Social Service Establishments – Clear Floor Space around Beds	90%	panelist input probably takes the likelihood of use into account
111	Accessible Saunas and Steam Rooms (ALT/BR)	5%	full access time change benefits are realized only when waiting occurs
112	Primary Accessible Means of Entry to Pools (BR)	5%	full access time change benefits are realized only when waiting occurs
113	Housing at Places of Education – Kitchen Turning Space	90.0%	panelist input probably takes the likelihood of use into account
114	Housing at Places of Education – Kitchen Work Surfaces	5.0%	full access time change benefits are realized only when waiting occurs
115	Secondary Accessible Means of Entry into Pools (NC/ALT)	5.0%	full access time change benefits are realized only when waiting occurs
116	Secondary Accessible Means of Entry into Pools (BR)	5.0%	full access time change benefits are realized only when waiting occurs
117	Social Service Establishments – Roll-in Shower	25.0%	full access time change benefits are realized only when waiting occurs

## N. Total Access Time Change per Facility

This table shows the total time change per facility brought about by the applicable requirements change in access time.

	New Access Time	Current Access time	Use time	Time Savings / Current Access Time	Net Time Change
Inns	4.41	4.58	0.00	4.1%	0.18
Hotels	4.32	4.58	0.00	5.9%	0.26
Motels	4.36	4.58	0.00	5.3%	0.23
Restaurants	0.28	0.29	1.00	7.6%	0.01
Motion Picture House	0.42	0.41	2.25	6.6%	-0.01
Theatre / Concert Hall	1.39	0.00	2.25	4.1%	0.02
Stadiums	0.53	0.61	4.00	23.2%	0.08
Auditoriums	0.51	0.52	2.80	8.1%	0.01
Convention Centers	3.39	3.56	2.00	4.8%	0.17

	New Access Time	Current Access time	Use time	Time Savings / Current Access Time	Net Time Change
Single Level Stores	1.03	1.02	0.00	0.5%	-0.01
Shopping Malls	1.60	1.67	0.00	5.8%	0.07
Indoor Service Establishments	1.34	1.34	0.00	1.0%	0.00
Offices of Health Care Providers	1.43	1.44	0.50	1.3%	0.02
Hospitals	5.22	5.29	1.00	4.4%	0.06
Nursing Homes	7.33	7.29	7.00	1.7%	-0.04
Terminal (private airports)	0.77	0.87	0.00	13.6%	0.10
Depot	0.87	0.87	0.00	1.0%	0.00
Museums, Historical Sites & Libraries	2.30	2.30	1.00	1.7%	0.00
Parks or zoos	3.71	3.89	0.00	5.7%	0.18
Amusement Parks	6.38	6.96	2.00	9.1%	0.59
Nursery schools - Daycare	3.84	3.97	3.50	3.5%	0.13
Elementary Private Schools	3.64	3.97	3.50	8.5%	0.33
Secondary Private Schools	3.86	3.97	3.50	3.4%	0.11
Undergraduate and Postgraduate Private Schools	3.62	4.06	3.50	11.6%	0.43
Ski Facilities	3.32	3.34	2.00	0.8%	0.02
Homeless Shelter	6.39	6.46	0.00	3.8%	0.07
Food Banks	1.23	1.25	3.00	1.3%	0.02
Social Service Establishments	0.25	0.25	2.00	0.5%	0.00
Exercise Facilities	1.25	1.49	0.50	16.5%	0.24
Aquatic Centers /Swimming Pools	1.61	2.32	1.00	31.1%	0.72
Bowling Alleys	1.22	1.25	0.50	2.8%	0.03
Golf Courses (private public access)	4.28	4.48	1.00	4.7%	0.20
Golf Courses (private only)	4.28	4.48	1.00	4.9%	0.21
Miniature golf courses	0.78	0.90	1.00	13.9%	0.12
Recreational Boating Facilities	2.34	2.47	0.00	5.8%	0.14
Fishing Piers and Platforms	4.41	4.49	1.00	1.8%	0.08
Shooting Facilities	4.90	4.97	0.50	1.7%	0.07
Office Buildings	0.69	0.69	1.00	1.4%	0.01
Elementary Public Schools	3.78	3.98	3.50	5.1%	0.20
Secondary Public Schools	3.89	3.98	3.50	2.9%	0.09
Undergraduate, postgraduate public schools	3.55	3.98	3.50	11.6%	0.43
Public Housing	6.45	6.69	6.00	3.8%	0.25
State and Local Judicial Facilities (courthouses)	2.64	2.71	2.00	2.7%	0.07
State and Local Detention Facilities (jails)	6.97	7.00	7.00	0.6%	0.03
State and Local Correctional Facilities (prisons)	6.86	7.00	7.00	2.2%	0.14
Parking Garages	0.89	0.92	0.00	2.5%	0.02
Self Service Storage Facilities	0.84	0.92	0.00	10.2%	0.08
Theatre / Concert Halls (public)	1.39	1.41	2.25	4.1%	0.02
Stadiums (public)	0.54	0.61	4.00	21.3%	0.07
Auditoriums (public)	0.51	0.52	2.80	8.1%	0.01
Convention Centers (public)	3.39	3.56	2.00	4.8%	0.17

	New Access Time	Current Access time	Use time	Time Savings / Current Access Time	Net Time Change
Hospitals (public)	5.22	5.29	1.00	4.4%	0.06
Nursing Homes (public)	7.33	7.29	7.00	1.7%	-0.04
Museums, Historical Sites & Libraries (public)	2.30	2.30	1.00	1.7%	0.00
Parks or zoos (public)	3.74	3.89	0.00	4.8%	0.15
Homeless Shelter (public)	6.39	6.46	0.00	3.8%	0.07
Exercise Facilities (public)	1.30	1.49	0.50	12.8%	0.19
Social Service Establishments (public)	0.25	0.25	2.00	0.5%	0.00
Aquatic Centers /Swimming Pools (public)	1.74	2.32	1.00	25.3%	0.58
Miniature golf courses (public)	0.78	0.90	1.00	13.9%	0.12
Recreational Boating Facilities (public)	2.34	2.47	0.00	5.8%	0.14
Fishing Piers and Platforms (public)	4.41	4.49	1.00	1.8%	0.08
Office Buildings (public)	1.49	1.50	7.00	0.9%	0.01
Parking Garages (public)	0.89	0.92	0.00	2.5%	0.02
Golf Courses (public)	4.28	4.48	1.00	4.9%	0.21
Restaurants (public)	0.28	0.29	1.00	5.9%	0.01
Amusement Parks (public)	6.42	6.96	2.00	8.5%	0.54

## O. Elasticities

The table below shows the elasticities and proxy elasticities used to calculate the generalized use and access cost by facility group. The table also references the sources. The public counterparts of the facilities listed below are assumed to have the same price elasticity of demand.

Facility	Reported Elasticity	Service or Product Measured in Reported Elasticity	Elasticity Used in Model	Source (See notes below)
Inns, Hotels, Motels	0.7	Lodging	0.7	1
Restaurants	0.188	Restaurant meals	0.188	2
Motion Picture Houses, Theaters, Concert Halls	0.4	Movies	0.4	3
Theaters, Concert Halls	0.33	Major orchestras	0.33	4
Stadiums	0.338-0.798	Performance tickets	0.568	5
Auditoriums	0.16	Small orchestras	0.16	4
Convention Centers	0.338-0.798	Performance tickets	0.568	5
Single Level Stores	0.285	Food	0.285	6
Multi-level stores	0.713	Clothing	0.713	6
Indoor Service Establishments	1.02	Services	1.02	7
Terminal, depot or other station	0.7	Lodging	0.7	1
Hospitals	0.0161 – 0.0296 – 0.5037	Physiotherapy; General practitioner; specialists // Nursing Homes	0.183	8

Facility	Reported Elasticity	Service or Product Measured in Reported Elasticity	Elasticity Used in Model	Source (See notes below)
Offices of Health Care Providers	0.1690 – 0.2692 – 0.4002	Physician services	0.228	8
Nursing Homes	0.36 – 1.92	Persons with disability private payers of nursing home facility	0.78	9
Museums	0.25	Museums	0.25	10
Parks or zoos	0.297	Zoos and aquariums	0.297	11
Amusement Parks	0.883	Recreation	0.883	6
Social Service Establishments	1.02	Services	1.02	7
Homeless Shelters	0	No demand for homeless shelters	1.02	7
Exercise Facilities	0.813	Sporting goods	0.813	6
Aquatic Centers /Swimming Pools	0.813	Sporting goods	0.813	6
Bowling Alleys	0.813	Sporting goods	0.813	6
Golf Courses	1.8	Golf	1.8	12
Recreational Boating Facilities	0.62	Water trips at a State Park	0.62	13
Fishing Piers and Platforms	1.05	Improvements in quality in NC coastal fishing waters	1.05	14
Miniature golf courses	0.813	Sporting goods	0.813	5
Shooting Facilities	0.813	Sporting goods	0.813	5
Day Care Centers & Elementary Private Schools	0.6 – 0.8	Day care (associated with quality)	0.65	15, 16
Secondary Private Schools	0.6 – 0.8	Private education	0.65	15, 16
Undergraduate & postgraduate private schools	0.6	Higher education	0.6	17
Public schools	0.6 – 0.8	Private education	0.65	15, 16
Office Buildings	1.02	Services	1.02	7
State and local government housing	0.30 – 0.80 or 0.67 – 0.72	Housing	0.70	18, 19
State and Local Judicial Facilities	0	No demand for judicial facility visits	0	HDR assumption
State and Local Detention Facilities	0	No demand for detention facility visits	0	HDR assumption
State and Local Correctional Facilities	0	No demand for correctional facility visits	0	HDR assumption
Parking Garages	1.02	Services	1.02	7
Self-storage facilities	1.02	Services	1.02	7

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## P. Ease of Access (EOA) Adjustment by Facility

The Ease of Access Adjustment is used when calculating the number of users with disabilities at each facility type; and, when adjusting the demand curve to account for the impact on demand of improved access brought about by the Final Rules.

The EOA is used to account for the fact that, before implementation of the Final Rules, access to some facilities may have been more limited for persons with disabilities than for the general population and that persons with disabilities would, therefore, have visited the relevant facility at a lower rate. The EOA adjustment reflects the estimate of the ratio of the average number of visits per person with disabilities to the average number of visits per person for all adults, adjusted for income. The EOA is applied by multiplying it to an interim estimate of uses by persons with disabilities calculated from total visits by all adults, the portion of adults with disability, adjusted for income. After the Final Rules are implemented, it is assumed that the new EOA is 100.

The ratio between the new EOA and the current EOA is also used to adjust the initial slope of the demand curve to incorporate sensitivity to the change in access resulting from the implementation of the Final Rules. The elasticity for the facility is multiplied by the ratio of the EOAs. Thus, sensitivity to changes in access is higher in those facilities where accessibility had been more constrained prior to the Final Rules. The point (Price,  $Q_0$ ) plus the adjusted slope are the basis of the demand curve used in the calculation of the consumer surplus.

Facility	Ease of Access before implementing standards
Inns	90%
Hotels	90%
Motels	90%
Restaurants	90%
Motion Picture House	90%
Theatre / Concert Hall	90%
Stadiums	90%
Auditoriums	90%
Convention Centers	90%
Single Level Stores	90%
Shopping Malls	90%
Indoor Service Establishments	90%
Offices of Health Care Providers	90%
Hospitals	90%
Nursing Homes	90%
Terminal (private airports)	90%
Depots	90%
Museums, Historical Sites & Libraries	90%
Parks or zoos	80%
Amusement Parks	90%
Nursery schools - Daycare	90%
Elementary Private Schools	90%

<b>Facility</b>	<b>Ease of Access before implementing standards</b>
Secondary Private Schools	90%
Undergraduate and Postgraduate Private Schools	90%
Ski Facilities	90%
Homeless Shelter	90%
Food Banks	90%
Social Service Establishments	90%
Exercise Facilities	60%
Aquatic Centers /Swimming Pools	60%
Bowling Alleys	70%
Golf Courses (private with public access)	80%
Golf Courses (private only)	80%
Miniature golf courses	60%
Recreational Boating Facilities	60%
Fishing Piers and Platforms	60%
Shooting Facilities	60%
Office Buildings	90%
Elementary Public Schools	90%
Secondary Public Schools	90%
Undergraduate, postgraduate public schools	90%
Public Housing	90%
State and Local Judicial Facilities (courthouses)	90%
State and Local Detention Facilities (jails)	90%
State and Local Correctional Facilities (prisons)	90%
Parking Garages	90%
Self Service Storage Facilities	90%
Theatre / Concert Halls (public)	90%
Stadiums (public)	90%
Auditoriums (public)	90%
Convention Centers (public)	90%
Offices of Health Care Providers (public)	90%
Hospitals (public)	90%
Nursing Homes (public)	90%
Museums, Historical Sites & Libraries (public)	90%
Parks or zoos (public)	80%
Homeless Shelter (public)	90%
Exercise Facilities (public)	60%
Social Service Establishments (public)	90%
Aquatic Centers /Swimming Pools (public)	60%
Miniature golf courses (public)	60%
Recreational Boating Facilities (public)	60%
Fishing Piers and Platforms (public)	60%
Office Buildings (public)	90%
Parking Garages (public)	90%
Golf Courses (public)	80%
Restaurants (public)	90%
Amusement Parks (public)	60%

## Q. Requirements with Use Time Estimates

Several requirements also have a use value included in the estimation of benefits when at certain facilities. When a requirement is instrumental to the use and enjoyment of a facility for its primary purpose (such as watching a movie at a movie theater, or sleeping in a bed and having a shower when at a hotel) the impact of that improved use while at the facility is included in the calculations. The table below lists those requirements with use value and the facilities at which those use values are calculated.

#	Requirement	Facilities at Which Use Value Calculated for Requirement
27	Ambulatory Accessible Toilet Compartments	Undergraduate and Postgraduate Private Schools; Undergraduate, postgraduate public schools
28	Water closet clearance in single-user toilet rooms - out swinging door	Undergraduate and Postgraduate Private Schools, Homeless Shelters, Undergraduate and Postgraduate Public Schools, Public Housing
29	Shower Spray Controls	Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools, Public Housing, Homeless Shelters, State and Local Detention Facilities (jails), State and Local Correctional Facilities (prisons)
30	Urinals	Inns, Motels, Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools, Public Housing
32	Water closet clearance in single-user toilet rooms - in swinging door	Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools
45	Bathrooms with vanities and water closet clearance out-swinging doors	Inns, Hotels, Motels
49	Galley Kitchen Clearances	Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools, public housing
50	Shower Compartments with Mobility Features	Hotels, Motels, Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools, Public Housing, Homeless Shelters, State and Local Detention Facilities (jails), State and Local Correctional Facilities (prisons)
52	Wheelchair Space Overlap in Assembly Areas	Motion Picture House, Theatre/Concert Hall, Stadiums, Auditoriums, museums, historical sites & libraries, amusement parks, Undergraduate and Postgraduate Private Schools, Secondary Private Schools, Secondary Public Schools, Undergraduate, postgraduate public schools, Theatre/Concert Hall (public), Stadiums (public), Auditoriums (public), museums, historical sites & libraries (public), amusement parks (public)
55	Wheelchair Spaces in Assembly Areas	Motion Picture House, Theatre / Concert Hall, Stadiums, Undergraduate, postgraduate public schools, Undergraduate, postgraduate private schools, Theatre / Concert Hall (public), Stadiums (public)



#	Requirement	Facilities at Which Use Value Calculated for Requirement
62	Assistive Listening Systems (technical)	Motion Picture House, Theatre / Concert Hall, Stadiums, Auditoriums, Convention Centers, Museums, Historical Sites & Libraries, Amusement Parks, Secondary Private Schools, Undergraduate and Postgraduate Private Schools, Secondary Public Schools, Undergraduate, postgraduate public schools, Theatre / Concert Halls (public), Stadiums (public), Auditoriums (public), Convention Centers (public), Museums, Historical Sites & Libraries (public), Amusement Parks (public)
71	Accessible Exercise Machines and Equipment	Exercise Facilities, Exercise Facilities (public)
88	Accessible Fishing Piers and Platforms	Parks or Zoos, Fishing Piers and Platforms, Parks or Zoos (public), Fishing Piers and Platforms (public)
94	Accessible Mini Golf Holes	Miniature golf courses, Miniature golf courses (public)
100	Accessible Play Components (BR)	Parks or zoos, Amusement Parks, Parks or zoos (public), Amusement Parks (public)
102	Accessible Play Components (ALT)	Parks or zoos, Amusement Parks, Parks or zoos (public), Amusement Parks (public)
104	Accessible Play Components (NC)	Parks or zoos, Amusement Parks, Parks or zoos (public), Amusement Parks (public)
113	Housing at Places of Education – Kitchen Turning Space	Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools
114	Housing at Places of Education – Kitchen Work Surfaces	Undergraduate and Postgraduate Private Schools, Undergraduate and Postgraduate Public Schools

## R. Examples of Consumer Surplus Calculations

Following are several examples for the calculation of benefits as described in Section 3.2.3.

### **Example for Water Closet Clearance in Single-User Toilet Rooms – In-Swinging Doors in Restaurant Facilities**

This section details the benefits resulting from water closet clearance in single-user toilet rooms with in-swinging doors (requirement 32) at restaurants.

First, the estimation of benefits begins with the total number of visits at the facility group ( $Q_0$ ). This estimate is taken from market research estimating that there are 48 billion visits to restaurants annually, which is the equivalent of about 200 visits per average U.S. adult each year, or 4 times a week. The income adjustment (IA) for restaurants (60%) and the Ease of Access (EOA) for restaurants (80%) are applied to this figure.

$$Q_0 \text{ visits to Restaurants} = 48 \text{ billion} * 60\% \text{ (IA)} * 90\% \text{ (EOA)} = 26.1 \text{ billion visits}$$

Then, to reflect that this requirement is intended to benefit persons using a wheelchair,  $Q_0$  is multiplied by that portion of the population, approximately 1.4% of the population.

$Q_0$  visits by those who might benefit from Requirement 32 in Restaurants = 26.1 billion \* 1.4% of population using a wheelchair = **365.4 million visits**

Similar calculations for all other requirements in restaurants yield 6.7 billion total visits by visitors with disabilities of all types to restaurants.

The time savings ( $A_t$ ) brought about by this requirement, on an average visit, is determined next. Data on the total time saved per use is derived from Benefits RAP panel input (in this case, **0.186 hours**). The data collected from the Benefit RAP panelists assumes that the element affected by the requirement for water closet clearance is used 0.048 times per hour of a visit. The frequency of element uses per visit, for this case, is measured in uses per hour of access time spent at the facility. This is multiplied by the panelists' input on the access time per facility (0.287 hours in restaurants) which equals **0.014 uses per visit**. The likelihood of using the element during a facility visit and realizing the full benefits is assumed to be 25%. The likelihood of this element being present in the facility, which is data provided by the Cost RAP panelists, is assumed to be 50%.

$A_t$  per requirement = Total time saved per element use \* frequency of element uses per visit \* likelihood of using element \* likelihood of element in a facility

$A_t$  per requirement = 0.19 hours \* 0.014 \* 25% \* 50% = **0.00033 hours (about 1.2 seconds)**

Based on similar calculations performed for all requirements at restaurants, a total time saved due to all requirements by wheelchair users at a restaurant is computed. This amount, **0.012 hours (42.3 seconds)**, is due to a total of 8 requirements that affect persons using wheelchairs. This net time savings for persons using wheelchairs at restaurants includes the less stringent requirement for sales and service counters.

The slope ( $m$ ) of the demand curve for restaurants per disability is computed, using elasticity for the facility ( $\epsilon$ ), Ease of Access before (EOA) and after implementation of Standards (EOAn), and the market price (C). The resulting figure represents the change in the number of visits due to a one unit change in price.

$m$  for persons using wheelchairs =  $\epsilon * (EOAn/EOA) * (Q_0 \text{ for Requirement 32} / C)$   
 =  $0.188 * (100\% / 90\%) * (365.5 \text{ million} / \$8)$   
 = 9.544 million visits per dollar of change in generalized use and access cost

With the slope of the demand curve for restaurants for persons using wheelchairs found, it is possible to determine the new quantity of visits made by current users due to the lower generalized use and access cost ( $Q_1$ ).

$Q_1$  for persons using wheelchairs =  $Q_0 + [m * VOT * A_t]$   
 = 365.5 million +  $[9.544 \text{ million} * \$17 * 0.012 \text{ hours}]$   
 = 367.4 million visits

It is estimated that there are more visits made by persons using wheelchairs because of the net time savings per visit (43.2 seconds).

The value of the time change at restaurants is calculated from the VOT for all visitors to restaurants who could benefit from this requirement (367.44 million visits by people using wheelchairs). Restaurant visitors are assumed to have a value of time of **\$10/hour**, or half of the hourly earnings rate.<sup>87</sup> A VOT premium for the enhanced quality of access time – in this case equal to 100% of the base VOT is added; the resulting total VOT is **\$20 per hour**.

The annual consumer surplus (CS) is computed below per disability and then apportioned to the requirement based on its time savings. Specifically, the net time change per disability is computed from the time change per visit:

$$\begin{aligned}\text{Annual CS per disability category}^{88} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (365.5 \text{ million} * \$20 * 0.012 \text{ hours}) + \frac{1}{2} (\$20 * 0.012 \text{ hours})^2 * 9.544 \text{ million} \\ &= \$87.99 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Annual CS assigned per requirement} &= (\text{Annual CS per disability category}) * A_t / (\text{Net time change per disability category}) \\ &= (\$87.99 \text{ million} * 0.00033 \text{ hours}) / (0.012 \text{ hours}) \\ &= \$2.44 \text{ million}\end{aligned}$$

This facility and requirement are not included in either the use value or the new user benefit estimation.

The present value of benefits is computed over a 40 year planning horizon. Population growth of persons with disabilities is assumed to grow at 0.8%, the same rate as the general population. The present value of benefits equals \$6.7 million for requirement 32 in restaurants.

In order to incorporate the uncertainty surrounding the assumptions, estimates, and expectations in the model, high and low estimates are used to bracket the expected, or “most likely” value for many parameters. The ranges of values are used to approximate the full range of possible outcomes. All figures used above are calculated using the “most likely” value for variables in which there are high, most likely, and low estimates. The following variables in the above example have low and high estimates:

	Low	High	Most Likely
Access time per facility (restaurants) hours	0.19	0.40	<b>0.29</b>
Access time change per element (Req 32) hours	0.03	0.48	<b>0.15</b>
Frequency of use per access hour per element (Req 32)	0.01	0.07	<b>0.05</b>
Likelihood of element in a facility (Req 32)	30%	70%	<b>50%</b>

<sup>87</sup> See the Section 4.2.5 and Appendix 4J for details.

<sup>88</sup> The consumer surplus is further adjusted to account for the years that will pass before the full benefits are spilled to users in the form of consumer surplus. The numbers shown in these examples include such adjustments.

	Low	High	Most Likely
Likelihood of using element (Req 32)	15%	35%	<b>25%</b>

### **Example for Primary Accessible Means of Entry to Pools at Aquatic Centers /Swimming Pools**

Another example involves computing benefits from primary accessible means of entry to pools (requirement 79) at privately-owned swimming pool facilities (pools).

It is assumed from data from the Census Bureau's Economic Census that pools collect \$4.02 B in sales receipts. It is assumed that the market price per facility visit (C) is \$10. This results in 401 million visits to Aquatic Centers/Swimming Pools each year (Sales/Market Price), which is approximately 1 visit per year per average U.S. adult. The number of visits ( $Q_0$ ) to pools is adjusted by the income adjustment of 60% and Ease of Access adjustment of 60%, and then by the percent of persons with ambulatory disabilities, which is approximately 11.9% of the total population.

$Q_0$  visits to Pools = 401 million \* 60% (IA) \* 60% (EOA) = 144.4 million

$Q_0$  visits by those who might benefit from Requirement 79 in Pools = 144.4 million \* 11.9% of population with ambulatory disabilities = **17.18 million (2.02 million wheelchair users (1.4%) and 15.16 million non-wheelchair users (10.5%))**.

Similar calculations for all other requirements at pools yield 37 million visits by persons with disabilities.

The time savings ( $A_t$ ) brought about by this requirement, on an average visit, is computed using the following: The frequency of element uses is assumed to be uses per visit; the data collected from the Benefit RAP panelists assumes that the element affected by this requirement (the pool) is used on average 2.167 times per visit. The key difference between this calculation and the previous example is that it is assumed that this element is used per visit rather than per hour of access time. Data on total time saved per element is collected from the Benefits panelists (0.27 hours). The likelihood of using the element during a facility visit and realizing the full benefits is assumed to be 50%. The likelihood of this element being present in the facility is assumed to be 80%.

$A_t$  per requirement = Total time saved per element use \* frequency of element uses per visit \* likelihood of using element \* likelihood of element in a facility

$A_t$  per requirement = 0.27 hours \* 2.16 \* 50% \* 80% = 0.235 hours (about **14.1 minutes**)

Based on similar calculations performed for all requirements at pools, the total time saved for persons with ambulatory disabilities is computed. This amount, 0.71 hours (43 minutes), is due to a total of 18 requirements intending to benefit persons with ambulatory disabilities. In this particular case, the time savings for wheelchair and non-wheelchair users are about the same.

The slope (**m**)<sup>89</sup> of the demand curve for pools per disability is computed, using elasticity for the facility ( $\epsilon$ ), Ease of Access before (EOA) and after implementation of Standards (EOAn), and the market price (C). The resulting figure represents the change in the number of visits due to a one unit change in price.

$$\begin{aligned}\mathbf{m} \text{ for persons in wheelchairs} &= \epsilon * (\text{EOAn/EOA}) * (Q_0 \text{ for Requirement 79/ C}) \\ &= 0.813 * (100\% / 60\%) * (2.02 \text{ million visits/ } \$10) \\ &= 0.274 \text{ million visits per dollar of change in generalized} \\ &\quad \text{use and access cost}\end{aligned}$$

$$\begin{aligned}\mathbf{m} \text{ for persons with other ambulatory disabilities} &= \epsilon * (\text{EOAn/EOA}) * (Q_0 \text{ for Requirement 79/ C}) \\ &= 0.813 * (100\% / 60\%) * (15.16 \text{ million visits/ } \$10) \\ &= 2.05 \text{ million visits per dollar of change in} \\ &\quad \text{generalized use and access cost}\end{aligned}$$

With the slope of the demand curve for pools for persons with ambulatory disabilities found, it is possible to determine the new quantity of visits made due to the lower generalized use and access cost (**Q<sub>1</sub>**).

$$\begin{aligned}\mathbf{Q_1} \text{ for persons in wheelchairs} &= Q_0 + [\mathbf{m} * \text{VOT} * A_d] \\ &= 2.02 \text{ million} + [0.274 \text{ million} * \$10 \text{ per hour} * \\ &\quad 0.71 \text{ hours}] \\ &= 3.97 \text{ million visits}\end{aligned}$$

$$\begin{aligned}\mathbf{Q_1} \text{ for persons with ambulatory disabilities} &= Q_0 + [\mathbf{m} * \text{VOT} * A_d] \\ &= 15.16 \text{ million} + [2.05 \text{ million} * \$10 \text{ per hour} * \\ &\quad 0.71 \text{ hours}] \\ &= 29.72 \text{ million visits}\end{aligned}$$

The value of the time change at pools is calculated from the VOT for all visitors to pools who could benefit from this requirement (11.45 million persons with ambulatory disabilities). Pool visitors are assumed to have a value of time of **\$5/hour** (recreational visitors are assumed to have a lower value of time than visitors to other facilities).<sup>90</sup> A requirement-specific access premium of 100% is applied, resulting in a VOT of **\$10/hour**.

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<sup>89</sup> Effectively, the consumer surplus for people with ambulatory disabilities is estimated as the sum of the consumer surplus for people in wheelchairs plus the consumer surplus for people with other ambulatory disabilities. This average slope is just a weighted average of the slopes actually use in the estimation.

<sup>90</sup> See the Section 4.2.5 and Appendix 4J for details.

Annual consumer surplus (CS)<sup>91</sup> is computed below per disability and then apportioned to the requirement based on its time savings.

$$\begin{aligned}\text{Annual CS per disability} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (2.02 \text{ million} * \$10 * 0.71 \text{ hours}) + \frac{1}{2} (\$10 * 0.71 \text{ hours})^2 * 0.274 \\ &\quad \text{million} \\ &= \$21.25 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Annual CS per disability} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (15.16 \text{ million} * \$10 * 0.71 \text{ hours}) + \frac{1}{2} (\$10 * 0.71 \text{ hours})^2 * 2.05 \\ &\quad \text{million} \\ &= \$159.31 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Annual CS assigned per requirement} &= (\text{Annual CS per disability}) * A_t / (\text{Net time change for} \\ &\quad \text{persons with ambulatory disabilities}) \\ &= (\$21.25 \text{ million} + \$159.31 \text{ million}) * (0.235 \text{ hours} / (0.71 \\ &\quad \text{hours})) \\ &= \$59.76 \text{ million}\end{aligned}$$

The calculation of benefits for Primary Accessible Means of Entry to Pools (NC/Alt) at Aquatic Centers/Swimming Pools does not include any use value, so in this sense the calculation is the same as the Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors in Restaurant Facilities. However, the calculation of benefits for Accessible Means of Entry to Pools at Aquatic Centers/Swimming Pools has one additional step; because these are new, or supplemental, requirements (as are all play and recreation requirements), they are assumed to have a greater impact on new users. The number and benefits derived from these new users is estimated as follows<sup>92</sup>:

$$\begin{aligned}Q'_1 \text{ for persons in wheelchairs} &= Q_1 + 0.5 * m * [\text{VOT} * A_t + \text{VOT help} * \text{UseTime} \\ &\quad * \text{VOT adjustment}] \\ &= 3.97 \text{ million} + 0.5 * 0.274 \text{ millions per dollar} * \\ &\quad [\$10 \text{ per hour} * 0.71 \text{ hours} + \$9.34 * 2.324 \text{ hours} * \\ &\quad 90\%] \\ &= 7.62 \text{ million visits}\end{aligned}$$

$$\begin{aligned}Q'_1 \text{ for persons with other ambulatory disabilities} &= Q_1 + 0.5 * m * [\text{VOT} * A_t + \text{VOT help} * \\ &\quad \text{UseTime} * \text{VOT adjustment}]\end{aligned}$$

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<sup>91</sup> As mentioned above, the numbers presented here are adjusted to reflect the market consumer surplus at a time when all construction will have been finished.

<sup>92</sup> An adjustment is made on the number of users and the consumer surplus so that the rate of use per disabled users does not exceed the rate of use per non-disabled users. A cap is set to the number of disabled visits per facility in order to attain this purpose. The numbers shown here incorporate this adjustment.

$$\begin{aligned}
&= 29.72 \text{ million} + 0.5 * 2.05 \text{ million per dollar} * \\
&[\$10 \text{ per hour} * 0.71 \text{ hours} + \$9.34 * 2.324 \text{ hours} * \\
&90\%] \\
&= 57.02 \text{ million visits}
\end{aligned}$$

The total number of disabled users after the implementation of the Final Rules is then 64.64 million.

Finally, the Annual CS is then adjusted to incorporate the new users as well as the use value, if any.

$$\begin{aligned}
\text{Annual CS wheelchair} &= \frac{1}{2} * m * (\text{VOT} * A_t + \text{VOT help} * \text{UseTime} * \text{VOT Adjustment})^2 \\
&= \frac{1}{2} * 274 \text{ millions per dollar} * (\$10 * 0.71 \text{ hours} + \$9.34 * 2.324 \\
&\text{hours} * 90\%)^2 \\
&= \$97.19 \text{ million}
\end{aligned}$$

$$\begin{aligned}
\text{Annual CS non-wheelchair} &= (\frac{1}{2} * m * (\text{VOT} * A_t + \text{VOT help} * \text{UseTime} * \text{VOT Adjustment})^2 \\
&= \frac{1}{2} * 2.05 \text{ millions per dollar} * (\$10 * 0.71 \text{ hours} + \$9.34 * 2.324 \\
&\text{hours} * 90\%)^2 \\
&= \$727.19 \text{ million}
\end{aligned}$$

The consumer surplus assigned to the requirement is then:

$$\begin{aligned}
\text{Annual CS assigned per requirement} &= (\text{Annual CS per disability}) * A_t / (\text{Net time change for} \\
&\text{persons with ambulatory disabilities}) \\
&= (\$97.19 \text{ million} + \$727.19 \text{ million}) * (0.235 \text{ hours} / (0.71 \\
&\text{hours})) \\
&= \$273.06 \text{ million}
\end{aligned}$$

#### **Annual Consumer Surplus including**

$$\begin{aligned}
\text{New users and Use value} &= \text{Annual CS for requirement 79} + \text{New Users} + \text{Use Value} \\
&= \$59.76 \text{ million} + \$273.06 \text{ million} + \$0 \text{ million} \\
&= \$332.8 \text{ million}
\end{aligned}$$

The present value of benefits is computed by discounting the annual benefits over the regulation's lifecycle. Population of persons with disabilities grows with general population. The present value of benefits for requirement 79 at pools equals \$497.97 million.<sup>93</sup>

All of the estimations above are based on the most likely values for the variables in which there are high, most likely and low estimates. The following variables in the above example have low and high estimates:

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<sup>93</sup> The cost of barrier removal for this requirement is zero and so are the benefits. Then, benefits are obtained only from alterations and new construction. This is why the present value may seem low when compared to the annual consumer surplus.

	Low	High	<b>Most Likely</b>
Access time per facility (pools) hours	2.20	2.48	<b>2.32</b>
Access time change per element (Req 79) hours	0.09	0.52	<b>0.25</b>
Frequency of use per visit per element (Req 79)	1	4	<b>2</b>
Likelihood of element in a facility (Req 79 at pools)	70%	100%	<b>90%</b>
Likelihood of using element (Req 79)	0%	15%	<b>5%</b>

### **Example for Accessible Means of Entry to Pools at Hotels**

Another example involves computing benefits from accessible means of entry to pools (requirement 79) at hotel facilities.

It is estimated from data collected by The American Travel and Lodging Association that there are 639 million visits to hotels made by all Americans annually, or about 2.5 visits per person per year. It is assumed that the market price per facility visit (C) is \$150. The number of visits ( $Q_0$ ) to hotels is adjusted by the income adjustment of 60% and Ease of Access adjustment of 90%, and then by the percent of persons with ambulatory disabilities, which is approximately 11.9% of the total population.

$Q_0$  visits to hotels = 639 million \* 60% (IA) \* 90% (EOA) = 345 million

$Q_0$  visits by those who might benefit from Requirement 79 (pools) in hotels = 345 million \* 11.9% of population with ambulatory disabilities = **41.1** million (4.8 million wheelchair users (1.4%) and 36.2 million non-wheelchair users (10.5%))

Similar calculations for all other requirements at hotels yield 88.2 million visits by persons with disabilities.

The time savings ( $A_t$ ) brought about by this requirement, on an average visit, is computed using the following: As in the previous example, the frequency of element uses is assumed to be uses per visit; the data collected from the Benefit RAP panelists assumes that the element affected by this requirement (the pool) is used on average 2.16 times per visit, and the time saved per use is 0.27 hours. However, for this facility-requirement time savings, it is assumed that there is a 6% likelihood of using the element and realizing the full benefits and a 72% likelihood of the pool being present in the hotel.

$A_t$  per requirement = Total time saved per element use \* frequency of element uses per visit \* likelihood of using element \* likelihood of element in a facility

$A_t$  per requirement = 0.27 hours \* 2.16 \* 6% \* 72% = 0.0246 hours (about 1.4 **minutes**)

Based on similar calculations performed for all requirements at hotels, the total time saved for persons with ambulatory disabilities is computed. This amount is estimated for wheelchair and non-wheelchair users, as 0.23 hours (almost 14 minutes for both type of users), and it is due to a total of 14 requirements intending to benefit persons with ambulatory disabilities.

The slope (**m**) of the demand curve for hotels per disability is computed, using elasticity for the facility ( $\epsilon$ ), Ease of Access before (EOA) and after implementation of Standards (EOAn), and the



market price (C). This figure represents the change in the number of visits due to a one unit change in price.

$$\begin{aligned} \mathbf{m} \text{ for wheelchair users} &= \varepsilon * (\text{EOAn/EOA}) * (Q_0 \text{ for Requirement 79/ C}) \\ &= 0.7 * (100\% / 90\%) * (4.8 \text{ million visits/ \$150}) \\ &= 24 \text{ thousand visits per dollar of change in generalized use} \\ &\quad \text{and access cost} \end{aligned}$$

$$\begin{aligned} \mathbf{m} \text{ for persons non-wheelchair users} &= \varepsilon * (\text{EOAn/EOA}) * (Q_0 \text{ for Requirement 79/ C}) \\ &= 0.7 * (100\% / 90\%) * (36.2 \text{ million visits/ \$150}) \\ &= 188 \text{ thousand visits per dollar of change in generalized} \\ &\quad \text{use and access cost} \end{aligned}$$

With the slope of the demand curve for hotels for persons with ambulatory disabilities found, it is possible to determine the new quantity of visits made due to the lower generalized use and access cost ( $Q_1$ ).

$$\begin{aligned} \mathbf{Q_1} \text{ for wheelchair users} &= Q_0 + [m * \text{VOT} * A_t] \\ &= 4.8 \text{ million} + [24 \text{ thousand} * \$20.00 * 0.23 \text{ hours}] \\ &= 4.89 \text{ million visits} \end{aligned}$$

$$\begin{aligned} \mathbf{Q_1} \text{ for non-wheelchair users} &= Q_0 + [m * \text{VOT} * A_t] \\ &= 36.2 \text{ million} + [188 \text{ thousand} * \$20.00 * 0.23 \text{ hours}] \\ &= 37.06 \text{ million visits} \end{aligned}$$

The value of the time change at pools is calculated from the VOT for all visitors to hotels who could benefit from this requirement (37.9 million persons with ambulatory disabilities). Hotel visitors are assumed to have a value of time of **\$10/hour**.<sup>94</sup> A requirement-specific access premium of 100% is applied, resulting in a VOT of **\$20/hour**.

Annual consumer surplus (CS) is computed below per disability group and then apportioned to the requirement based on its time savings.

$$\begin{aligned} \mathbf{Annual \text{ CS for wheelchair users}} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (4.8 \text{ million} * \$20 * 0.23 \text{ hours}) + \frac{1}{2} (\$20 * 0.23 \text{ hours})^2 \\ &\quad * 24 \text{ thousand} \\ &= \$22.33 \text{ million} \end{aligned}$$

$$\begin{aligned} \mathbf{Annual \text{ CS for wheelchair users}} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (36.2 \text{ million} * \$20 * 0.23 \text{ hours}) + \frac{1}{2} (\$20 * 0.23 \text{ hours})^2 \\ &\quad * 188 \text{ thousand} \\ &= \$168.51 \text{ million} \end{aligned}$$

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<sup>94</sup> See Section 4.2.5 and Appendix 4J for details.

$$\begin{aligned}
\text{Total CS for requirement} &= (\text{Sum of Annual CS per disability}) * A_t / (\text{Net time change for persons with ambulatory disabilities}) \\
&= (\$22.33 \text{ million} + 168.51 \text{ million}) * (0.0246 \text{ hours}) / (0.23 \text{ hours}) \\
&= \$20.41 \text{ million}
\end{aligned}$$

This facility and requirement are not included in either the use value or the new user benefit estimation. The present value of benefits is computed by discounting the annual benefits over the regulation's lifecycle. Population of persons with disabilities grows with general population. The present value of benefits for requirement 79 at hotels equals \$159.12 million.

All of the estimations above are based on the most likely values for the variables in which there are high, most likely and low estimates. The following variables in the above example have low and high estimates:

	Low	High	Most Likely
Access time per facility (hotels) hours	4.45	4.90	<b>4.58</b>
Access time change per element (Req 79) hours	0.09	0.52	<b>0.25</b>
Frequency of use per visit per element (Req 79)	1	4	<b>2</b>
Likelihood of element in a facility (Req 79 at hotels)	57.6%	86.4%	<b>72%</b>
Likelihood of using element (Req 79)	0%	15%	<b>5%</b>

### Estimation of New Visits

The following is a discussion of the estimated change in the number of total annual visits made to facilities after the 2004 ADAAG is implemented. The estimates below do not distinguish between additional (or fewer) visits by a consumer who has patronized the business at least once before (new visits by existing users) and one who is visiting the facility for the first time (new users). In order to estimate new facility visits brought about by the estimated time savings in accessing facilities, general assumptions are made instead of the more specific assumptions used in the modeling of benefits per requirement and facility.

First, the total annual number of visitors made by persons with disabilities before 2004 ADAAG is implemented ( $Q_0$ ) is estimated. The total annual visits made by the total population by facility type is either from market research or from assuming that the number of total visits is equal to the total sales revenue per industry sector, available from the 2002 Economic Census, divided by an assumed price per visit. The Income Adjustment reflects that as a group, persons with disabilities have a lower average income than the rest of the population. The Ease of Access Adjustment adjusts for the relative difficulty of accessing a particular type of facility. The percentage of the population with disabilities, reported by the U.S. Census is 18 percent.

$Q_0 = \text{Total Annual Visits made by Total Population} * \text{Income Adjustment} * \text{Ease of Access Adjustment} * \text{Percentage of Population with Disabilities}$

To arrive at  $Q_1$ , the new number of total annual visits made by persons with disabilities after the Final Rule, the following assumptions are made:

$Q_1 = Q_0 + (\text{Slope of demand curve} * \text{Value of Time} * \text{Net Time Change per facility visit})$

Where the Slope of the demand curve = Price elasticity of demand per facility visit \* (New Ease of Access Adjustment / Current Ease of Access Adjustment) \*  $Q_0$ /Cost of Facility visit

The slope of the demand curve is developed using literature-derived price elasticities for the purchase of goods or services sold at the facilities.

The following table shows the estimated change in the number of visits made by persons with disabilities for each facility type. The column  $Q_0$  lists the estimated number of total number of annual visits to each facility type made by persons with disabilities today, before the Standards. The next column,  $Q_1$ , lists the estimated change in the total number of annual visits made by persons with disabilities after the Standards. It is important to note that the change in number of visits may come from more frequent visits from current users of the facilities or from new users of the facility.

Facility Index	Facilities	$Q_0$ (millions)	$Q_1$ (millions)	$Q_1 - Q_0$ (millions)	% change
A	Inns	42.2	42.8	0.6	1%
B	Hotels	62.2	63.1	0.9	1%
C	Motels	92.9	97.3	4.4	5%
D	Restaurants	4,739.1	4,743.5	4.4	0%
E	Motion Picture House	107.2	107.0	-0.2	0%
F	Theatre / Concert Hall	34.6	34.6	0.0	0%
G	Stadiums	16.8	16.8	0.1	1%
H	Auditoriums	26.0	26.0	0.0	0%
I	Convention Centers	4.5	4.6	0.0	1%
J	Single Level Stores	1,974.1	1,974.0	-0.1	-0.005%
K	Shopping Malls	252.8	253.9	1.0	0%
L	Indoor Service Establishments	2,480.6	2,480.8	0.2	0%
M	Offices of Health Care Providers	194.7	194.7	0.0	0%
N	Hospitals	16.7	16.7	0.0	0%
O	Nursing Homes	122.3	122.2	-0.1	-0.1%
P	Terminal (private airports)	0.1	0.1	0.0	1%
Q	Depots	2.4	2.3	-0.01	0%
R	Museums, Historical Sites & Libraries	223.7	224.0	0.3	0%
S	Parks or zoos	7.7	8.4	0.7	9%
T	Amusement Parks	26.0	27.3	1.3	5%
U	Nursery schools – Daycare	327.5	328.1	0.7	0%
V	Elementary Private Schools	86.6	87.0	0.4	0%
W	Secondary Private Schools	16.3	16.3	0.0	0%
X	Undergraduate and Postgraduate Private Schools	87.4	89.0	1.7	2%
Y	Ski Facilities	4.4	4.4	0.0	0%
Z	Homeless Shelter	23.5	24.2	0.7	3%
AA	Food Banks	47.7	47.8	0.2	0%
AB	Social Service Establishments	164.0	164.0	0.0	0%
AC	Exercise Facilities	96.4	107.0	10.6	11%
AD	Swimming pools / Aquatic Centers	26.0	40.4	14.3	55%
AE	Bowling Alleys	17.9	18.2	0.2	1%

Facility Index	Facilities	Q <sub>0</sub> (millions)	Q <sub>1</sub> (millions)	Q <sub>1</sub> - Q <sub>0</sub> (millions)	% change
AF	Golf Courses (private with public access)	23.7	24.4	0.7	3%
AG	Golf Courses (private only)	5.6	5.7	0.1	2%
AH	Miniature golf courses	33.2	38.8	5.6	17%
AI	Recreational Boating Facilities	2.7	2.7	0.0	1%
AJ	Fishing Piers and Platforms	0.4	0.4	0.0	2%
AK	Shooting Facilities	1.9	2.0	0.0	2%
AM	Office Buildings	12.7	12.8	0.1	1%
AN	Elementary Public Schools	564.0	565.5	1.5	0%
AO	Secondary Public Schools	742.1	743.0	0.8	0%
AP	Undergraduate, postgraduate public schools	2.0	2.1	0.1	4%
AQ	Public Housing	18.0	21.4	3.4	19%
AR	State and Local Judicial Facilities (courthouses)	0.5	0.5	0.0	0%
AS	State and Local Detention Facilities (jails)	2.0	2.0	0.0	0%
AT	State and Local Correctional Facilities (prisons)	150.5	150.5	0.0	0%
AU	Parking Garages	170.6	179.0	8.4	5%
AV	Self Service Storage Facilities	6.2	6.2	0.1	1%
AW	Theatre / Concert Halls (public)	0.0	0.0	0.0	0%
AX	Stadiums (public)	50.3	50.5	0.2	0%
AY	Auditoriums (public)	0.8	0.8	0.0	0%
AZ	Convention Centers (public)	6.8	6.9	0.1	1%
BB	Hospitals (public)	2.9	2.9	0.0	0%
BC	Nursing Homes (public)	11.3	11.3	-0.01	0%
BD	Museums, Historical Sites & Libraries (public)	332.6	333.0	0.4	0%
BE	Parks or zoos (public)	118.9	127.1	8.2	7%
BF	Homeless Shelter (public)	3.4	3.5	0.1	3%
BG	Exercise Facilities (public)	3.1	3.4	0.2	8%
BH	Social Service Establishments (public)	58.7	58.7	0.0	0%
BI	Swimming pools / Aquatic Centers (public)	3.3	4.7	1.4	42%
BJ	Miniature golf courses (public)	1.6	1.9	0.3	17%
BK	Recreational Boating Facilities (public)	3.7	3.7	0.0	1%
BL	Fishing Piers and Platforms (public)	0.4	0.4	0.0	2%
BM	Office Buildings (public)	31.9	32.3	0.4	1%
BN	Parking Garages (public)	1.4	1.4	0.1	5%
BO	Golf Courses (public)	4.0	4.1	0.1	2%
BP	Restaurants (public)	0.2	0.2	0.0	0%
BQ	Amusement Parks (public)	0.4	0.4	0.0	7%
<b>Total</b>		<b>13,695.9</b>	<b>13,770.6</b>	<b>74.6</b>	<b>0.5%</b>

Those facilities where fewer visitors are expected after the Rule is enacted than currently include motion Picture Houses, single level stores, and depots. In these facilities, the net access time change is negative. The requirements that make up the access time increases for each of these facilities are listed in the table below.

<b>Motion Picture Houses</b>	
<b>Req ID</b>	<b>Requirement</b>
12	Handrails
38	Sales and Service Counters (NC)
39	Sales and Service Counters (Alt)
54	Handrails on Aisle Ramps in Assembly Areas
55	Wheelchair Spaces in Assembly Areas
64	Detectable Warnings (scoping)
66	Assistive Listening Systems (scoping)
<b>Single Level Stores</b>	
<b>Req ID</b>	<b>Requirement</b>
30	Urinals
38	Sales and Service Counters (NC)
39	Sales and Service Counters (Alt)
<b>Depots</b>	
<b>Req ID</b>	<b>Requirement</b>
12	Handrails
30	Urinals
38	Sales and Service Counters (NC)
39	Sales and Service Counters (Alt)
<b>Nursing Homes (public and private)</b>	
<b>Req ID</b>	<b>Requirement</b>
12	Handrails
13	Accessible Routes from Site Arrival Points and Within Sites
26	Passenger Loading Zones (Medical / Long-Term Care)
30	Urinals
50	Shower Compartments with Mobility Features
64	Detectable Warnings (scoping)

## APPENDIX 5: SMALL BUSINESS DATA

This appendix presents the data used to estimate the number of facilities owned or operated by small entities (*i.e.*, small businesses, small nonprofit organizations, and small governmental jurisdictions) and total sales receipts included in the cost estimation and cost impact analysis.

A few notes with respect to the methodology and sources used to collect data concerning small businesses and small governmental jurisdictions. First, the total number of small entities that would be impacted by the Final Rules is determined using the U.S. Small Business Administration's (SBA) definition of a small entity. This definition, in turn, is generally based on either a threshold amount of total receipts or number of employees. The SBA's small business definition for each facility group is shown in the table below.

Second, for several facility types, SBA data on establishments and receipts was not at the same level of detail (*i.e.*, NAICS level) as data found in the 2002 U.S. Economic Census. For these facilities, data from the Economic Census was allocated between small and "typical" (*i.e.*, non-small) businesses based upon the ratio of small to typical establishments in the most similar category. The affected facility types are: shopping malls (88% of establishments assumed to be small entity facilities based on the proportion of small entities in NAICS 531120 – "Lessors of Nonresidential Buildings (except mini-warehouses)"); amusement parks (80% of establishments assumed to be small entity facilities based on the proportion of small entities in NAICS 71311 – "Amusement and Theme Parks"); and, recreational boating facilities and shooting facilities (96% of each establishment assumed to be small entity facility based on the proportion of small entities in NAICS 713990 – "All Other Amusement and Recreational Industries").

Third, sales for small businesses are derived from SBA's estimated receipts of small businesses. SBA states that its publicly-available receipts data includes total sales plus cost of goods sold, which is assumed to be twice the total sales as reported by the U.S. Economic Census.

Facility Type	2-digit NAICS	NAICS Code	NAICS Description	SBA Definition of small firms	Definition in Use
Inn / Hotel / Motel	72	721	Accommodation	\$6.5	\$6.5
Restaurant / Bar	72	722	Food Services and Drinking Places	\$6.5 / \$19.0	\$6.5
Motion Picture House	51	51213	Motion Picture Theater	\$6.5	\$6.5
Theatre / Concert Hall	71	7111	Performing Arts Companies	\$6.5	\$6.5
Stadium	71	7112	Spectator Sports	\$6.5	\$6.5
Auditorium	71	71131	Promoters of Performing Arts, Sports, and Similar Events with Facilities	\$6.5	\$6.5
Convention Center	56	56192	Convention and trade show organizers	\$6.5	\$6.5
Bakery / Grocery Store	44-45 <sup>1</sup>	445	Food and Beverage Stores	\$6.50 / \$25.0	\$6.5
Clothing Store	44-45	448	Clothing and Clothing Accessories Stores	\$6.50 / \$8.0	\$6.5
Hardware Store	44-45	444	Building Material and Garden Equipment and Supplies Dealers	\$6.5	\$6.5
Other Sales or rental establishments	44-45	441	Motor vehicle & parts dealers	\$6.5 / \$9.0 / \$21.0 / \$26.5	\$6.5
	44-45	442	Furniture & home furnishings stores	\$6.5	\$6.5
	44-45	443	Electronics & appliance stores	\$6.50 / \$8.0	\$8.0

Facility Type	2-digit NAICS	NAICS Code	NAICS Description	SBA Definition. of small firms	Definition in Use
	44-45	451	Sporting goods, hobby and music stores	\$6.5	\$6.5
	44-45	452	General merchandise stores	\$10.5 / \$25.0	\$25.0
	44-45	453	Miscellaneous store retailers	\$6.5 / \$12.0	\$6.5
Shopping Center	53	5311203	Lessors of shopping centers & retail stores	\$6.5	\$6.5
Laundromat, Funeral Parlor, Beauty/Barber Shop, Etc	81	812	Personal and Laundry Services	\$4.5 / \$6.5 / \$13.0	\$6.5
Pharmacy	44	446	Health and Personal Care Stores	\$6.5	\$6.5
Banks / Insurance	52	522,523, 524,525	Finance and Insurance	\$6.5	\$6.5
Professional, Scientific, and Technical Services	54	54	Professional, Scientific, and Technical Services	\$6.5	\$6.5
Self Storage	53	53113	Lessors of miniwarehouses & self-storage units	\$23.5	\$23.5
Travel Services	56	5615	Travel Arrangement and Reservation Services	\$6.5	\$6.5
Gas Stations	44-45	447	Gasoline Stations	\$8.0 / \$25	\$16.5
Terminal, depot, or other station used for public transportation	48-49	4851	Urban transit systems	\$6.5	\$6.5
	48-49	4852	Interurban & rural bus transportation	\$6.5	\$6.5
	48-49	481	Air transportation	\$6.5 / \$25.5	\$25.5
Professional Offices of healthcare providers	62	621	Ambulatory health care services	\$6.5 / \$9.0 / \$12.5 / \$31.5 <sup>2</sup>	\$6.5
Hospitals	62	622	Hospitals	31.5 <sup>2</sup>	\$31.5
Nursing and Residential Facilities	62	623	Nursing and Residential Care Facilities	\$6.5 / \$9.0 / \$12.5	\$6.5
Museums, historical sites, & similar institutions	71	71211, 71212	Museums	\$6.5	\$6.5
Park / Zoo	71	71213	Zoos and Botanical Gardens	\$6.5	\$6.5
	71	71219	Nature parks & similar institutions	\$6.5	\$6.5
Amusement Park	71	7131	Amusement Parks	\$6.5	\$6.5
Food Bank	62	62421	Community Food Services	\$6.5	\$6.5
Adoption Agency	62	6241	Individual and family services	\$6.5	\$6.5
Other social service establishments	62	62423	Emergency and other relief services	\$6.5	\$6.5
	62	6243	Vocational rehabilitation services	\$6.5	\$6.5
Homeless Shelter	62	62422	Community Housing Services	\$6.5	\$6.5
Fitness & Recreational Sports Ctrs	71	71394	Fitness and Recreational Sports Centers	\$6.5	\$6.5
Aquatic Centers / Swimming Pools	61	61162	Sports and recreational instruction	\$6.5	\$6.5
Bowling Alley	71	71395	Bowling Centers	\$6.5	\$6.5
Golf Course	71	71391	Golf Courses and Country Clubs	\$6.5	\$6.5
Recreational Boating Facility	71	71393	Marinas	\$6.5	\$6.5
Fishing Pier or Platform	71	7139908	All Other Amusement and Recreation Industries	\$6.5	\$6.5
Miniature Golf Course	71	7139904	All Other Amusement and Recreation Industries	\$6.5	\$6.5
Shooting Facility	71	7139908	All Other Amusement and Recreation Industries	\$6.5	\$6.5
Nursery Schools/Day Care	62	6244	Child Day Care Services	\$6.5	\$6.5

Facility Type	2-digit NAICS	NAICS Code	NAICS Description	SBA Definition. of small firms	Definition in Use
Private Schools	NA	NA	NA	50000 <sup>3</sup>	50000 <sup>3</sup>
Under and post graduate private schools	NA	NA	NA	50,000	50,000

The following table shows the breakdown, in order of NAICS codes, of the small business receipts and establishment data, provided by the SBA. The last column shows the total receipts and establishments used in the cost impact analysis.



NAICS Title	NAICS	Type of Data (Receipts in thousands)	Total	Size of Receipts					Total for small business
				0-99,999	100,000- 499,999	500,000- 999,999	1,000,000- 4,999,999	5,000,000- 9,999,999	
Motor vehicle & parts dealers	441	Establishments	126,644	7,766	26,193	16,166	27,161	7,363	79,495
	441	Est. Receipts	813,208,907	407,673	7,259,315	11,458,193	54,264,797	42,839,532	86,241,838
Furniture & home furnishings stores	442	Establishments	66,360	6,492	18,777	10,014	14,369	2,474	50,394
	442	Est. Receipts	97,073,126	335,480	5,069,979	7,013,695	24,527,599	8,458,417	39,484,278
Electronics & appliance stores	443	Establishments	49,600	6,373	14,643	5,689	7,678	1,286	34,769
	443	Est. Receipts	92,280,756	322,761	3,730,748	3,880,510	12,313,503	4,688,825	21,654,170
Building material & garden equipment & supplies dealers	444	Establishments	94,109	6,742	22,194	13,113	21,798	5,102	65,378
	444	Est. Receipts	288,435,295	353,101	6,085,235	9,273,310	42,417,169	22,759,014	64,956,519
Food & beverage stores	445	Establishments	155,677	15,526	49,031	24,932	26,257	3,938	116,927
	445	Est. Receipts	464,412,506	805,473	13,305,852	17,471,788	48,368,465	19,728,358	85,870,085
Health & personal care stores	446	Establishments	82,574	5,164	14,066	6,675	16,634	2,764	43,368
	446	Est. Receipts	186,448,806	263,134	3,690,676	4,513,837	32,950,470	11,099,483	44,747,962
Gasoline stations	447	Establishments	117,100	3,853	15,391	12,491	28,894	5,001	62,129
	447	Est. Receipts	238,083,074	213,599	4,393,751	9,038,572	58,256,322	16,430,038	185,510,435
Clothing & clothing accessories stores	448	Establishments	151,895	13,232	34,079	11,899	11,761	2,362	71,680
	448	Est. Receipts	170,396,483	681,564	8,693,993	7,917,681	16,313,373	5,116,931	35,141,690

NAICS Title	NAICS	Type of Data (Receipts in thousands)	Total	Size of Receipts					Total for small business
				0-99,999	100,000- 499,999	500,000- 999,999	1,000,000- 4,999,999	5,000,000- 9,999,999	
Sporting goods, hobby, book, & music stores	451	Establishments	65,933	8,477	21,040	7,590	7,928	1,481	45,479
	451	Est. Receipts	76,687,429	446,193	5,372,053	5,091,156	11,295,064	3,679,732	23,308,386
General merchandise stores	452	Establishments	41,069	1,899	4,432	1,624	1,638	319	9,689
	452	Est. Receipts	444,604,851	101,330	1,140,476	1,101,247	2,516,475	942,062	5,142,147
Miscellaneous store retailers	453	Establishments	129,997	24,891	52,412	14,473	15,367	3,043	108,056
	453	Est. Receipts	97,907,211	1,288,868	12,705,316	9,458,743	21,226,399	6,713,593	46,693,404
Motion picture & video exhibition	51213	Establishments	5,198	389	921	372	544	138	2,267
	51213	Est. Receipts	11,007,327	21,127	226,583	241,182	707,108	321,590	1,292,477
Credit intermediation & related activities	522	Establishments	196,160	10,497	20,199	8,054	17,939	9,473	59,531
	522	Est. Receipts	1,030,210,082	505,785	5,043,240	5,407,463	27,232,630	23,082,259	45,113,796
Securities intermediation & related activities	523	Establishments	81,690	14,067	18,945	5,435	6,725	1,564	45,641
	523	Est. Receipts	367,487,329	624,107	4,498,824	3,716,491	12,640,934	7,781,713	23,814,870
Insurance carriers & related activities	524	Establishments	168,976	29,976	71,273	14,501	13,553	2,678	130,106
	524	Est. Receipts	1,312,063,818	1,582,793	17,200,781	9,460,056	21,613,065	9,696,104	52,765,526

NAICS Title	NAICS	Type of Data (Receipts in thousands)	Total	Size of Receipts					Total for small business
				0-99,999	100,000- 499,999	500,000- 999,999	1,000,000- 4,999,999	5,000,000- 9,999,999	
Funds, trusts, & other financial vehicles (part)	525	Establishments	3,538	759	835	279	343	81	2,240
	525	Est. Receipts	23,281,761	30,557	204,072	193,122	693,655	484,592	1,266,784
Lessors of miniwarehouses & self storage units	53113	Establishments	9,739	1,440	3,745	962	636	204	7,048
	53113	Est. Receipts	4,101,315	79,068	950,980	632,977	683,268	184,646	5,211,612
Professional, scientific, & technical services	54	Establishments	772,365	196,610	319,140	88,813	91,630	15,226	700,761
	54	Est. Receipts	944,065,638	9,668,104	76,171,380	61,412,207	167,270,690	70,479,149	335,666,126
Travel arrangement & reservation services	5615	Establishments	27,587	7,693	8,567	1,852	2,324	681	20,640
	5615	Est. Receipts	24,628,213	362,628	1,948,839	1,153,294	3,042,782	1,614,595	6,991,922
Elementary & secondary schools	61111	Establishments	20,894	2,731	4,305	2,858	6,844	1,707	17,250
	61111	Est. Receipts	41,859,655	115,716	1,153,553	2,072,266	14,154,329	8,441,660	20,028,362
Sports & recreation instruction	61162	Establishments	8,940	3,546	4,057	705	459	61	8,785
	61162	Est. Receipts	2,451,169	168,756	929,788	465,070	560,875	156,402	2,171,410
Ambulatory health care services	621	Establishments	487,747	56,688	194,584	96,423	78,465	13,012	430,064
	621	Est. Receipts	505,690,644	2,850,904	54,362,647	66,075,911	126,820,368	42,723,078	262,926,753

NAICS Title	NAICS	Type of Data (Receipts in thousands)	Total	Size of Receipts					Total for small business
				0-99,999	100,000-499,999	500,000-999,999	1,000,000-4,999,999	5,000,000-9,999,999	
Hospitals	622	Establishments	7,569	184	194	126	501	548	1,169
	622	Est. Receipts	499,145,896	(D)	(D)	89,891	1,404,495	3,728,055	2,612,803
Nursing & residential care facilities	623	Establishments	67,900	5,497	9,760	3,730	12,978	7,439	34,197
	623	Est. Receipts	126,267,746	(D)	(D)	2,467,333	19,343,333	17,773,345	27,142,670
Nursing care facilities	6231	Establishments	16,779	689	926	477	3,588	1,842	6,233
	6231	Est. Receipts	74,576,571	28,759	234,544	335,271	9,320,907	10,809,639	13,162,373
Individual & family services	6241	Establishments	50,695	10,250	12,305	4,139	9,411	4,622	37,492
	6241	Est. Receipts	44,933,294	490,202	2,938,310	2,748,163	10,757,141	6,616,605	18,918,798
Community food services	62421	Establishments	3,455	793	766	290	916	267	2,845
	62421	Est. Receipts	3,078,384	39,952	174,214	173,778	628,110	345,217	1,119,619
Community housing services	62422	Establishments	6,085	649	1,736	915	1,584	475	5,027
	62422	Est. Receipts	5,214,353	34,050	481,037	621,547	1,980,653	736,661	3,338,285
Emergency & other relief services	62423	Establishments	1,905	377	706	242	295	92	1,648
	62423	Est. Receipts	2,586,908	19,750	168,343	164,894	367,850	198,990	780,534
Vocational rehabilitation services	6243	Establishments	8,451	732	1,404	756	2,055	1,018	5,252
	6243	Est. Receipts	11,808,900	34,425	362,271	495,128	2,690,848	1,702,585	4,093,448
Child day care services	6244	Establishments	69,733	24,212	23,455	5,371	5,551	2,293	59,277
	6244	Est. Receipts	22,557,876	1,095,397	5,494,046	3,281,011	4,201,666	1,540,782	14,534,355

NAICS Title	NAICS	Type of Data (Receipts in thousands)	Total	Size of Receipts					Total for small business
				0-99,999	100,000-499,999	500,000-999,999	1,000,000-4,999,999	5,000,000-9,999,999	
Performing arts companies	7111	Establishments	9,366	2,585	3,824	1,127	1,349	229	8,954
	7111	Est. Receipts	10,830,898	120,767	932,101	780,188	2,695,697	1,418,528	4,954,311
Promoters of performing arts, sports, & similar events w/facility	71131	Establishments	1,451	292	518	192	235	43	1,250
	71131	Est. Receipts	3,967,111	13,741	130,564	135,231	483,183	251,925	838,297
Museums	71211	Establishments	4,464	1,393	1,509	519	663	165	4,134
	71211	Est. Receipts	5,920,808	64,514	360,622	346,613	1,237,041	751,039	2,234,102
Zoos & botanical gardens	71213	Establishments	525	105	170	67	92	33	444
	71213	Est. Receipts	1,663,809	5,100	41,088	49,893	220,875	192,808	374,798
Nature parks & other similar institutions	71219	Establishments	642	155	193	56	97	8	503
	71219	Est. Receipts	609,302	7,971	46,366	38,272	132,515	51,067	240,444
Amusement Parks & arcades	7131	Establishments	2,992	605	949	312	370	74	2,258
	7131	Est. Receipts	9,304,040	28,420	232,334	212,079	627,105	250,415	1,175,063
Golf Courses & country clubs	71391	Establishments	11,842	1,172	3,802	2,041	3,333	588	10,524
	71391	Est. Receipts	16,857,370	59,780	1,013,515	1,463,985	7,490,676	3,251,420	11,003,382
Skiing facilities	71392	Establishments	379	65	92	42	91	24	297
	71392	Est. Receipts	1,675,962	3,183	22,279	30,117	189,527	151,183	290,461
Fitness & recreational sports centers	71394	Establishments	25,477	8,141	9,580	2,632	2,583	446	23,070

NAICS Title	NAICS	Type of Data (Receipts in thousands)	Total	Size of Receipts					Total for small business
				0-99,999	100,000- 499,999	500,000- 999,999	1,000,000- 4,999,999	5,000,000- 9,999,999	
	71394	Est. Receipts	15,036,862	378,961	2,260,772	1,790,104	3,893,269	1,196,127	8,681,944
Bowling centers	71395	Establishments	4,898	642	1,997	933	746	29	4,327
	71395	Est. Receipts	3,057,184	33,240	534,902	646,066	1,067,477	81,516	2,306,140
All other amusement & recreation industries	713990	Establishments	13,718	4,445	5,715	1,577	1,435	137	13,213
	713990	Est. Receipts	6,865,068	204,427	1,381,035	1,061,755	2,252,081	522,332	5,055,998
Accommodation	721	Establishments	61,795	9,916	22,344	8,710	9,273	1,581	50,717
	721	Est. Receipts	122,505,607	512,677	5,576,909	6,022,174	15,491,407	5,853,822	29,359,314
Foodservices & drinking places	722	Establishments	503,354	89,149	182,424	58,372	58,713	13,102	392,589
	722	Est. Receipts	324,210,635	4,406,632	45,255,183	39,508,709	78,411,546	19,536,493	173,443,018
Personal & laundry services	812	Establishments	206,884	71,104	76,277	14,840	14,765	3,216	177,951
	812	Est. Receipts	75,128,325	3,607,112	16,636,642	9,039,879	14,856,973	4,200,791	45,400,843
Parking lots & garages	81293	Establishments	11,775	564	973	396	659	516	2,747
	81293	Est. Receipts	6,687,864	28,291	238,297	231,102	636,560	347,408	1,238,472

The 2002 U.S. Census of Governments provides data on the expenditures of counties by population size. The percentage of the U.S. that lives in small governmental jurisdictions with a population of less than 50,000, which is found to be 16.3%, is applied to the total number of public entities to determine the number of facilities in these small jurisdictions. The total expenditures on these facilities are broken down by the size of the counties and are summed together for populations with less than 50,000 in the table below.

Number of facilities	All	Small Jurisdictions
Library	9,207	2,481
Public Schools	91,680	26,224
Hospitals	1,130	305
Parks and recreation	112,128	30,216
Office Buildings	74,637	20,113
State and local government housing	25,642	7,262
State and Local Judicial Facilities	35,500	10,010
State and Local Detention Facilities	35,500	10,010
State and Local Correctional Facilities	1,668	467

Total Expenditures (2007)	Small Entities	Total Entities
Library	\$1,405,082,095	\$6,148,633,444
Public Schools	\$11,710,537,676	\$83,081,322,479
Elementary <sup>95</sup>	\$5,855,268,838	\$41,540,661,240
Secondary <sup>96</sup>	\$5,855,268,838	\$41,540,661,240
Office Buildings	\$2,184,300,562	\$8,492,876,460
Hospitals	\$7,660,665,599	\$37,106,446,320
Parks and recreation	\$6,106,679,451	\$23,701,023,133
State and local government housing	\$2,769,088,021	\$14,362,680,986
State and Local Judicial Facilities	\$2,317,573,048	\$18,824,851,781
State and Local Detention Facilities	\$935,081,220	\$3,890,971,130
State and Local Correctional Facilities	\$1,928,267,073	\$20,732,488,279

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<sup>95</sup> In the absence of breakdown in expenditure data for education, capital outlay funds are allocated equally to elementary and secondary facilities (since elementary schools in an area are likely to be greater in number but smaller in size than secondary schools).

<sup>96</sup> Ibid.

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## APPENDIX 6: RAP PRIMER

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Risk Analysis Process (RAP) involves four steps:

### Step 1: Define the Structure and Logic of the Problem

A “structure and logic diagram” depicts the variables and cause and effect relationships that underpin the forecasting problem at-hand. Although the structure and logic model will eventually be written down mathematically to facilitate analysis, the graphical depictions presented above greatly facilitate stakeholder scrutiny and modification in Step 3 of the process.

### Step 2: Assign Central Estimates and Conduct Probability Analysis

Each variable will be assigned a central estimate and a range (a probability distribution) to represent the degree of uncertainty. In every possible instance, historical data will be utilized to develop these estimates. Special data sheets are used to record the estimates. The first column gives an initial median while the second and third columns define an uncertainty range representing an 80 percent confidence interval. This is the range within which there exists an 80 probability of finding the actual outcome. The greater the uncertainty associated with a forecast variable the wider the range.

Variable	Median	10% Lower Limit	10% Higher Limit
Percentage of Assistive Listening Systems in Courtrooms that will undergo Alterations	75%	50%	95%

Probability ranges will be established on the basis of both statistical analysis and subjective probability. Probability ranges need not be normal or symmetrical - that is, there is no need to assume the normal bell-shaped probability curve. The bell curve assumes an equal likelihood of being too low and being too high in forecasting a particular value. It might well be, for example, that if a projected growth rate deviates from expectations, circumstances are such that it is more likely to be higher than the median expected outcome than lower.

The risk analysis process outlined in this framework will transform the ranges as depicted above into formal probability distributions (or “probability density functions”). This liberates the non-statistician from the need to appreciate the abstract statistical depiction of probability and thus will enable stakeholders to understand and participate in the process whether or not they possess statistical training.

The central estimates and probability ranges for each assumption in the forecasting structure and logic framework come from two sources. The first is an historical analysis of statistical uncertainty in all variables and an error analysis of the forecasting “coefficients.” “Coefficients” are numbers that represent the measured impact of one variable (say, income) on another (such as retail sales). While these coefficients can only be known with uncertainty, statistical methods help uncover the magnitude of such errors (using diagnostic statistics such as “standard



deviation,” “standard error,” “confidence intervals”, and so on). The uncertainty analysis outlined above is known in textbooks as “frequentist” probability.

The second line of uncertainty analysis employed in the risk analysis process is called “subjective probability” (also called “Bayesian” statistics). Whereas a frequentist probability represents the measured frequency with which different outcomes occur (i.e., the number of heads and tails after thousands of tosses) the Bayesian probability of an event occurring is the degree of belief held by an informed person or group that it will occur. Obtaining subjective probabilities is the subject of Step 3.

### **Step 3: Conduct Expert Evaluation<sup>97</sup>**

Step 3 involves the formation of an expert panel and the use of facilitation techniques to elicit from the panel risk and probability beliefs about:

1. The structure of the forecasting framework; and
2. Uncertainty attached to each variable and forecasting coefficient within the framework.<sup>98</sup>

In (1), experts will be invited to add variables and hypothesized causal relationships that may be material, yet missing from the model. In (2), panelists will be engaged in a discursive protocol during which the frequentist-based central estimates and ranges, provided to panelists in advance of the session, will be modified according to subjective expert beliefs. This process will be aided with an interactive “groupware” computer tool that permits the visualization of probability ranges under alternative belief systems.

### **Step 4: Issue Risk Analysis**

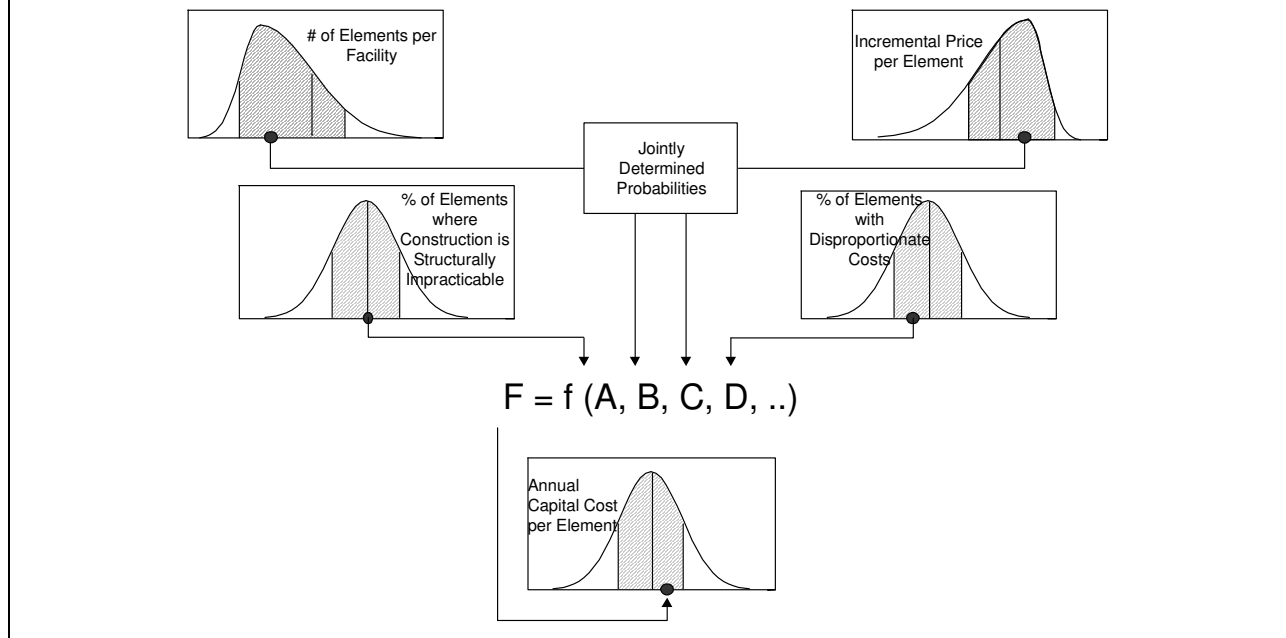
The final probability distributions will be formulated to represent a combination of “frequentist” and subjective probability information drawn from Step 3. These will be combined using a simulation technique (Monte Carlo analysis) that allows each variable and forecasting coefficient to vary simultaneously according to its associated probability distribution (see Figure 26).

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<sup>97</sup> This type of evaluation will occur on a formal level with architectural experts specializing in ADA compliance (both affiliated with the Department and not), as well as the Department’s lawyers specializing in ADA compliance. The questions asked of each group will differ in many cases. However, less formal consultations with the Department are also ongoing.

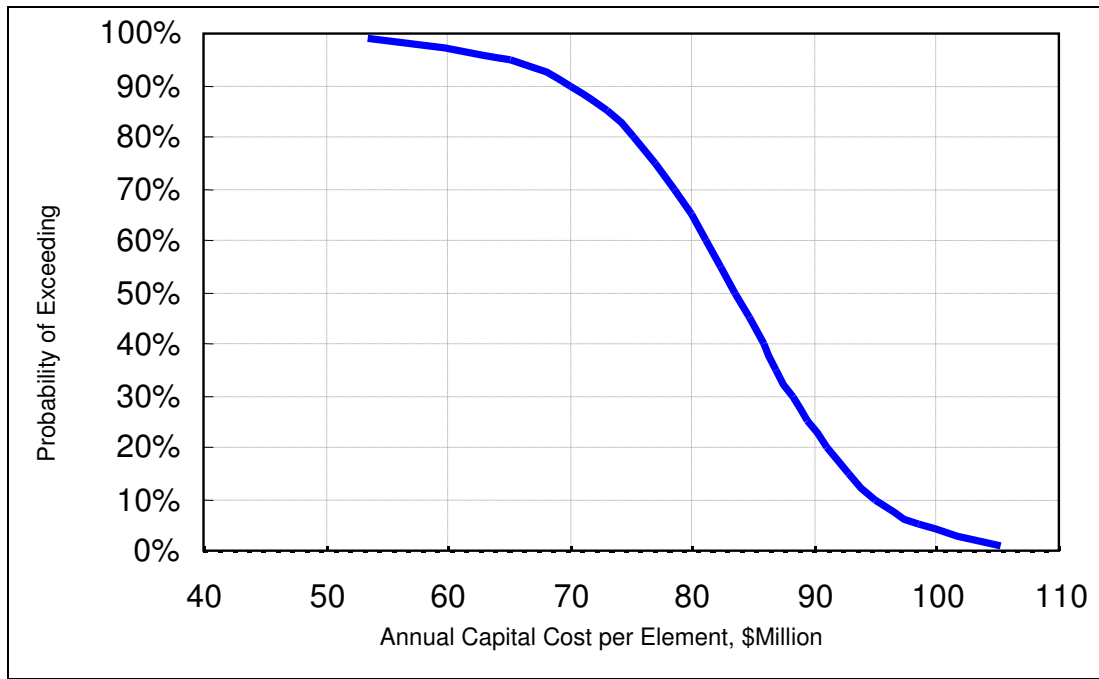
<sup>98</sup> Variables that might be reviewed include unit cost of an element, number of elements per facility, and percentage of accessible elements required per facility.

**Figure 26: Combining Probability Distributions**



The end result will be a central forecast, together with estimates of the probability of achieving alternative outcomes given uncertainties in underlying variables and coefficients.

Annual Elemental Capital Costs (In Millions of Dollars)	Probability of Exceeding Value Shown at Left
105.3	0.01
98.4	0.05
<b>94.9</b>	<b>0.10</b>
91.0	0.20
88.2	0.30
85.8	0.40
<b>83.5</b>	<b>0.50</b>
81.2	0.60
78.5	0.70
75.2	0.80
<b>71.3</b>	<b>0.90</b>
65.0	0.95
53.5	0.99
<b>82.9</b>	<b>Mean Expected Outcome</b>



**Figure 27: Risk Analysis of Annual Capital Cost per Element, Illustration Only**

## Consensus Process

The application of Bayes' Formula extends beyond laboratory application. In the real world, consensus building represents some combination of empirical observation, professional beliefs and personal values. Tversky and Kahneman (the latter the 2002 Nobel laureate in Economics) are among the pioneers in the quantification of subjective probabilities through a process called "elicitation." Defined broadly, elicitation is a process that helps experts and lay persons construct a set of carefully reasoned and considered judgments. Specifically, elicitation is conducted with a range of available or circumstance-specific "protocols" employed with a view to obtaining peoples' subjective but accurately specified quantitative expressions of future probability in relation to matters such as:

*Economic variables* – such as fuel prices and interest rates/discount rates;

*Behavioral variables* – such as price elasticities and cross-elasticities, quality of service elasticities and cross-elasticities, and income elasticities;

*Technology impact variables* – such as the impact of adding new process at border inspection or the rate at which a technology might become obsolete;

*Risk variables* – such as technological obsolescence, management-labor relations, human factors and politics;

*Value parameters* – such as the economic value of delay to a commuter at borders;

*Domain parameters* – such as the delay impact at the borders on the regional economy and competitiveness of the country as a whole;

*Model structures* – such as the way in which scientific knowledge is employed in making cause-and-effect judgments;

*Project and policy design variables* – such as solution complexity and involvement of multiple agencies; and

*Decision criteria* – such as the classification of issues as liberties versus public goods, and welfare criteria such as net present value and rate of return.

The term “accurate” as used here does not contemplate the discovery by analysts of pre-existing subjective probabilities as they exist in the minds of experts and stakeholders. Such constructs rarely exist. Rather, consensus building is intended to enable stakeholders themselves to formulate and articulate their own beliefs about probabilities in light of the issues at-hand and in light of pre-existing and relevant knowledge, new evidence, and values - both their own values and those of others. “Accurate” assumes the realization of probability statements that are purged of factual error, freed of scientific myth and misinterpretation, and liberated from reasoning biases.

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## APPENDIX 7: RAP PANELISTS / AGENDA

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### A. Benefits RAP Panel

#### Panelists:

Jeff Rosen, General Counsel and Director of Policy, National Council on Disability  
Liz Savage, Director of Housing and Health Care Policy, Disability Policy Collaboration  
Timothy Adams, CEO, Systems Applications and Technologies  
Paul Tobin, Executive Director, United Spinal Association  
Maureen McCloskey, National Advocacy Director, Paralyzed Veterans of America  
Angela Van Etten, President (former), Little People of America  
Teri Fox, Senior Vice President, Microtel Inns & Suites, Inc.  
James Panebianco, Graphic Designer, Panebianco, Inc.  
John Lancaster, Executive Director, National Council on Independent Living

#### Benefits RAP Organizers and Facilitators:

David Lewis, Vice President, HDR  
Chris Behr, Senior Economist, HDR  
Lane Conway, Economist, HDR  
Chris Fotopulos, DOJ  
Tracy Justesen, DOJ  
Anne Marie Pecht, DOJ

#### Risk Analysis Process Workshop: Benefits Estimation Agenda

February 13, 2007

Madison Hotel, 15<sup>th</sup> St. NW, Washington, D.C.

<b>I. INTRODUCTION</b> .....	8:30 – 9:15 am
A. Description of Project/Framework .....	
B. Description of Data Sheets .....	
 <b>II. BENEFITS ASSESSMENT</b>	
Facility Access Time Estimation .....	9:15 – 9:45 am
 Break .....	9:45 – 10:00 am
 Impacts of Requirements on Access Time - part 1 .....	10:00 – 12:00 pm
a. Entrances, Doors .....	
b. Lifts Elevators .....	
c. Parking Lots .....	
d. Bathrooms .....	
e. Common Elements .....	
f. Accessible Rooms .....	
 Lunch Break.....	12:00 – 1:00 pm

Impacts of Requirements on Access Time - part 2 .....	1:00 – 3:00 pm
g. Assembly Areas	
h. Effective Communication	
i. Judicial Facilities	
j. Exercise Facilities	
k. Swimming pools	
l. Boating	
m. Fishing	
n. Golf	
o. Miniature golf	
p. Amusement Parks	
q. Play Areas	
Break .....	3:00 – 3:15 pm
Impacts of Requirements on Changes in Use .....	3:15 – 4:00 pm
<b>III. CLOSING REMARKS .....</b>	<b>4:00 – 4:15 pm</b>

## **B. Cost RAP Panel**

### **Review of Initial Cost Assumptions**

Prior to the Cost RAP panel, on February 15, 2007, the Department's architects assembled to discuss, explain and refine the initial assumptions concerning the cost data.

### **Review of Initial Cost Assumptions Panel:**

Luis Pitarque, Senior Architect, HDR

Jim Bostrom, DOJ

Mary Adams, DOJ

Michele Antonio Mallozzi, DOJ

Rex Pace, DOJ

Thomas Fodor, DOJ

Diane Perry, DOJ

### **Review of Initial Cost Assumptions Organizers and Facilitators:**

Chris Behr, Senior Economist, HDR

Chris Fotopulos, DOJ

### **Cost RAP Panelists:**

Paulette R. Rutlen, CPE, Chief Estimator of The Austin Company, American Society of Professional Estimators

Larry Perry, Code consultant

Mark J. Mazz, AIA, Senior Advisor to the Deputy Assistant Secretary for Enforcement and Programs, U.S. Department of Housing and Urban Development

Ed Roether, AIA, Vice President, Sports Facilities Group, HOK

Joe Pettipas, Vice President, Practice Leader - Retail/Hospitality, HOK

### **Cost RAP Organizers and Facilitators:**

Chris Behr, Senior Economist, HDR

Lane Conway, Economist, HDR

Daphne Federing, Economist, HDR

Chris Fotopulos, DOJ

Jim Bostrom, DOJ

### **Risk Analysis Process Workshop: Cost Estimation**

June 5, 2007

1425 New York Ave NW, Washington DC

**OPENING REMARKS** ..... 8:00 – 8:15 am

**I. INTRODUCTION** ..... 8:15 – 8:30 am  
Description of Project/ Benefits overview/ Cost Estimation Framework

**II. FACILITIES ASSUMPTIONS**  
Typical Facility Assumptions ..... 8:45 – 9:30 am

Break ..... 9:30 – 9:45 am

Unit Descriptions per Requirement Assumptions..... 9:45 – 11:45 am

Lunch Break..... 11:45 – 12:45 pm

### **III. ELEMENTS PER FACILITY**

Number of Elements per Facility & Adjustments by Facility ..... 12:45 – 4:45 pm

1. Inns
2. Hotels
3. Motels
4. Restaurants
5. Motion Picture Houses
6. Stadiums
7. Single-level stores
8. Shopping Malls

Break ..... 3:00 – 3:15 pm

9. Office Buildings

**IV. CLOSING REMARKS** ..... 4:45 – 5:00 pm



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## APPENDIX 8: MATRIX OF CHANGES REPRESENTED BY NEW AND REVISED REQUIREMENTS

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This chart identifies the *incremental* changes represented by each new and revised requirement relative to the current requirement, including the construction scenarios to which the change relates. (In practice, the requirement may be broader and apply in more construction scenarios; the focus of this chart is on the ways in which (and facilities to which) the requirements in the Final Rules will apply differently than the current requirements. A more complete summary of the incremental changes represented by each new and revised requirement is provided in Appendix 1.) Revised and new requirements are grouped separately and identified by the change they will effect: more stringent requirements are highlighted in blue; less stringent requirements are highlighted in green; and new (supplemental) requirements are highlighted in orange. The costs listed are medium construction costs for NC, ALT or BR; for low and high cost estimates see Appendix 2D. Operations and Maintenance and productive space costs are not included in this table (See Appendices 2E and 2I).

**Key:** #: Number of requirement as listed in Appendix 1

§: Section number of Access Board's 2004 Final Regulatory Assessment for Revised ADAAG

ADAAG §: Name of new or revised requirement and relevant sections in 2004 ADAAG

**Incremental change:** Brief summary of incremental change

**Unit cost assumptions:** Assumptions made to estimate unit costs, including relevant considerations and alternate baselines \*

**NC:** Requirement will change the standard that applies to elements in facilities that will be newly constructed; median estimated construction cost

**ALT:** Requirement will change the standard that applies to elements in existing facilities that will be altered; median estimated construction cost

**BR:** Requirement will change the standard that applies to elements in existing facilities for purposes of barrier removal; median estimated construction cost

\* Some new requirements will be costed against two baselines: (1) zero; and (2) compliance with the 1991 Standards as interpreted by the Department. The 1991 Standards require each facility to be accessible, including an accessible entrance and exit and an accessible route to accessible spaces. With respect to elements and spaces that are not subject to a specific scoping or technical requirement (including elements in "facilities such as bowling alleys, golf courses, exercise equipment, pool lifts, amusement park rides, and cruise ships"), the Department requires entities to apply any "appropriate technical standards" to "a reasonable number, but at least one" of such elements. TA Manual III-5.3000.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
1	6.4	<b>PUBLIC ENTRANCES</b>  <b>206.4.1; 404</b>	At least 60% of public entrances in newly constructed facilities would be required to be accessible. The current requirement requires 50% of public entrances to be accessible, plus additional entrances so the total number of accessible public entrances is equal to the number of required exits (based on building or fire codes; typically two), but not exceeding the total number of planned public entrances. The revision will have no effect on altered or existing facilities.	Cost for one accessible entrance (minus cost of inaccessible entrance). Assumed one 3' door leaf and signage.	-\$200	na	na
2	7.8	<b>MANEUVERING CLEARANCE OR STANDBY POWER FOR AUTOMATIC DOORS</b> <sup>99, 100</sup>  <b>404.3.2</b>	When an automatic door serves as part of an accessible means of egress, it will be required to have sufficient maneuvering clearance unless stand-by power is provided or the door/gate remains open when the power is off.	Stand-by power likely to be preferred mechanism. Additional wiring required to connect automatic doors to emergency power system. Assumes emergency power system is in place & only wiring is necessary.	\$500	\$500	\$500
3	6.23	<b>AUTOMATIC DOOR BREAK-OUT OPENINGS</b>  <b>404.1; 404.3; 404.3.1; 404.3.6, Ex.</b>	Automatic doors that are part of a means of egress that do not have standby power will be required to provide 32 inch minimum break out openings ("swing out" option) when operated in emergency mode (unless there are manual swinging doors serving the same means of egress).	Assumed 2'8" clear width. Based range of costs on cost of door frame and hardware design; zero cost in NC as can use two door leafs are included.	\$0	\$300	\$2,000
4	6.21	<b>THRESHOLDS AT DOORWAYS</b>  <b>404.1; 404.2.5, Ex.</b>	Exterior sliding doors that are part of an accessible route <sup>101</sup> will have to provide lower (1/2 inch) thresholds (currently 3/4 inch). The revision maintains the current exception for existing thresholds that do not exceed 3/4 inch and are beveled on each side, and so will effect no change for altered or existing facilities. No change for interior sliding doors, which are currently required to provide 1/2 inch thresholds.	Assumed 3' wide sliding door.	\$150	na	na
5	6.22	<b>DOOR AND GATE SURFACES</b>  <b>404.1; 404.2.10, Ex. 2, 4.</b>	Swinging doors and gates except tempered glass doors without stiles will be required to have smooth surfaces on their lowermost 10 inches so that individuals who use wheelchairs and scooters can open these doors/gates without creating a trap or pinch point. Currently, there is no requirement with respect to the surface features of doors. Existing doors and gates are specifically exempted.	Provide 10" smooth surface @ bottom of door. Assumed 3' wide door; low cost solution is a kickplate; high cost is gate.	\$275	na	na

<sup>99</sup> As applied to existing facilities that were newly constructed under the current Standards and will be altered under the Final Rules. Benefits and costs have only been assessed with respect to the proportion of existing facilities that were designed and constructed for first occupancy between January 26, 1993 and January 26, 2009.

<sup>100</sup> As applied to existing facilities that were newly constructed under the current Standards and will be required to comply with the Final Rules pursuant to the readily achievable barrier removal requirement. Benefits and costs have only been assessed with respect to the proportion of existing facilities that were designed and constructed for first occupancy between January 26, 1993 and January 26, 2009.

<sup>101</sup> An accessible route must comply with specifications for walking surfaces, running slope, doorways, ramps, curb ramps, elevators, platform lifts, etc. Specifications include width of unobstructed surface, cross slope, and amount of turning space.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
6	6.3	<b>LOCATION OF ACCESSIBLE ROUTES</b>  <b>206.3</b>	An accessible route will have to coincide with or be located in the same area as the circulation path <sup>102</sup> used by the general public. Currently, accessible routes must coincide with general circulation paths to the maximum extent feasible. Because, by statute, altered facilities need only comply with accessibility requirements to the maximum extent feasible, this revision effects no change for altered or existing facilities.	Cost is not for route but for redesign (where route will be located), as route would have to be provided either way. range - 25', 50' & 100' travel distance	\$1,000	na	na
7	6.2	<b>COMMON USE CIRCULATION PATHS IN EMPLOYEE WORK AREAS</b>  <b>203.9; 206.2.8; 403.5, Ex.; 405.5, Ex.; 405.8, Ex.</b>	Common use circulation paths within employee work areas will have to comply with the technical requirements for accessible routes, with specific exceptions provided where compliance may be difficult due to the size, arrangement, location or function of the work area. Currently, employee work areas are only required to permit individuals with disabilities to approach, enter, and exit.	Because the life safety requirements for circulation meet the accessibility standard this will have no cost impact.	\$0	\$0	na
8	6.7	<b>ACCESSIBLE MEANS OF EGRESS</b>  <b>207.1, Ex. 1; 216.4.</b>	The revised requirement will incorporate by reference the IBC requirements for accessible means of egress.	Assumed 0-50-100' travel distance, 3' wide; no change re: equipment or hardware design. The change relates to both scoping (the number of accessible means of egress that are required) and technical requirements (e.g., the current requirement requires the accessible means of egress to get you out the door, while the revised requirement will require it to get you away from the building). Includes signage costs associated with compliance.	\$400	na	na
9	6.10	<b>STAIRS (NC)</b>  <b>210.1; 504.2</b>	All stairs in newly constructed facilities that are part of a means of egress will have to comply with the requirements for accessible stairs, which cover treads, risers, and handrails. Currently, stairs serving levels that are connected by an accessible route (e.g., an elevator) are exempt.	No additional costs required for redesign of handrails or treads and risers.	\$0	na	na
10	6.10	<b>STAIRS (ALT/BR)</b>  <b>210.1, Ex. 2</b>	In existing facilities where levels are connected by an accessible route (e.g., an elevator), all stairs that are part of a means of egress will have to provide handrails. Currently, stairs serving levels that are connected by an accessible route (e.g., an elevator) are exempt.	Unit is one run. Costs add extensions to handrails for low end estimate, add handrails for middle, and remove and replace at high end.	na	\$7,500	\$7,500

<sup>102</sup> A circulation path is an exterior or interior way of passage provided for pedestrian travel, including but not limited to, walks, hallways, courtyards, elevators, platform lifts, ramps, stairways, and landings.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
11	6.20	<b>HANDRAILS ALONG WALKWAYS</b>  403.6	Handrails on non-ramp walkways will be subject to technical requirements for handrails (including height, gripping surface, and clearance requirements). Compliant handrails are required on only one side of the walkway.	Assumed 50' travel distance and cost railing design and features. For NC/Alt, difference in cost between compliant and noncompliant handrails. For BR, cost of removing (low) or replacing (high) noncompliant handrails.	\$0	\$250	\$250
12	5.22	<b>HANDRAILS</b>  505.5 thru 505.10	The technical requirements for handrails will be more flexible (permitting the distance between handrail gripping surfaces and other surfaces to be 1.5" or more, rather than exactly 1.5"; permitting a wider range of approved handrail gripping surface diameters; and no longer requiring a horizontal section of handrail at the bottom of stairs.)	Assumed one run (floor to floor). NC is savings realized from shorter extensions. No need to replace in ALT so no cost.	-\$50	\$0	na
13	5.3	<b>ACCESSIBLE ROUTES FROM SITE ARRIVAL POINTS AND WITHIN SITES</b>  206.2.1, Ex. 2; 206.2.2, Ex.	With respect to areas within sites or between an entrance and site arrival point that can only be accessed by vehicle (such as the roads and parking areas of many suburban "big-box" retail shopping malls), facilities will be exempt from providing a pedestrian accessible route. Currently buildings and facilities on a site are required to be connected by an accessible route even if sidewalks are not provided.	Unit is one accessible route. Assumed 50-100-600' range. Horizontal surface construction materials and accessible path of travel. No need to change in ALT.	-\$2,000	\$0	na
14	7.2	<b>STANDBY POWER FOR PLATFORM LIFTS</b> <sup>103, 104</sup>  207.2	Where a platform lift is permitted to be used as part of an accessible means of egress (as required by the IBC), it will be required to have a back-up power source. Currently, such lifts are not required to have back-up power.	Lowest cost assumes lift with existing battery; medium assumes wiring to existing power source; high assumes new battery & rewiring required.	\$400	\$500	\$600
15	7.9	<b>POWER- OPERATED DOORS FOR PLATFORM LIFTS</b>  410.6	Platform lifts will be required to have power-operated doors with the exception of lifts that serve no more than two landings which are permitted to have self-closing manual doors on opposite ends. Current standards permit either maneuvering space or power-operated doors.	Unit is one lift with 42" wide power-operated side door. This type of lift would generally not be incorporated into NC designs. The cost for ALT/BR is for the new doors & wiring involved.	\$0	\$2,500	\$2,500

<sup>103</sup> As applied to existing facilities that were newly constructed under the current Standards and will be altered under the Final Rules. Benefits and costs have only been assessed with respect to the proportion of existing facilities that were designed and constructed for first occupancy between January 26, 1993 and January 26, 2009.

<sup>104</sup> As applied to existing facilities that were newly constructed under the current Standards and will be required to comply with the Final Rules pursuant to the readily achievable barrier removal requirement. Benefits and costs have only been assessed with respect to the proportion of existing facilities that were designed and constructed for first occupancy between January 26, 1993 and January 26, 2009.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
16	6.6	<b>ALTERATIONS TO EXISTING ELEVATORS</b>  206.6.1	When an element in an existing elevator is altered, the same element will have to be altered in any other elevators that are programmed to respond to the same call button. Currently, only elements being altered have to be made accessible.	For a bank of elevators (minus the one elevator). Low cost would be replacing the hoistway marker; median cost would be emergency communications equipment; high cost would be replacing the entire control panel (no need to make alterations to the cab itself).	na	\$1,500	na
17	5.8	<b>PLATFORM LIFTS IN HOTEL GUEST ROOMS AND DWELLING UNITS</b>  206.7; 206.7.6	A multi-story hotel guest room or residential dwelling unit that is required to be accessible will be allowed to use a platform lift in lieu of an elevator as part of the accessible route. Under the current standard, only elevators are permitted.	Cost difference between elevator and lift (2 stops).	-\$20,000	-\$20,000	na
18	5.7	<b>“LULA” AND PRIVATE RESIDENCE ELEVATORS</b>  206.2.3, Ex. 1-2; 206.6, Ex. 1-2; 206.7	Facilities that are not required to install an elevator but that plan one anyway will be permitted to install a LULA instead. This provision will also permit private residence elevators to be used in a multi-story residential dwelling unit.	Cost difference between a 2 stop elevator & a LULA or residential elevator.	-\$20,000	-\$20,000	na
19	7.3	<b>VAN ACCESSIBLE PARKING SPACES</b>  208.2.4	One in six (rather than one in eight) accessible spaces will be required to be van accessible. There is no change in the total number of accessible parking spaces required; however, van accessible parking spaces are 3 feet wider than accessible parking spaces. For each van accessible space, facilities have the option of either providing an 11' parking space with a 5' aisle, or an 8' space with an 8' aisle. If the facility has 600 or fewer spaces, it need only provide two van accessible spaces, which can be placed together and share a common access aisle.	Unit is one space, plus the sign. Low cost is for striping & sign only where two spaces can share an aisle; High cost is for additional paving, striping & signage. Space is 16'-0" wide x 20'-0" long.	\$200	\$200	\$200
20	6.9	<b>VALET PARKING GARAGES</b>  208.2	Facilities with valet-only parking services, which currently must provide an accessible passenger loading zone but are not required to provide accessible parking spaces, will now have to provide accessible parking spaces as well.	One space (striping plus sign) and accessible route. Low cost is for striping & sign only; High cost is for additional paving, striping & signage. BR includes cost of removing curbs, etc. Space is 5'-0" wide x 20'-0" long.	\$250	\$250	\$1,500
21	6.9	<b>MECHANICAL ACCESS PARKING GARAGES</b>  209.5	Mechanical access parking garages (garages that use lifts, elevators, or other mechanical devices to move vehicles from the street level to a parking tier) will no longer be exempt from providing an accessible passenger loading zone, which would be required at vehicle drop-off and pick-up areas.	One space/zone. Low cost is for striping & sign only; High cost is for additional paving, striping & signage. BR includes cost of removing curbs, etc. Space is 5'-0" wide x 20'-0" long	\$250	\$250	\$1,500

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
22	6.5	<b>DIRECT ACCESS ENTRANCES FROM PARKING STRUCTURES</b>  206.4.2	All (rather than one) direct pedestrian connections from a parking structure to a facility will be required to be accessible.	The cost of incorporating accessible access to entrances would be part of the design solution & therefore have no cost impact to NC. If there is an access issue in an existing facility the cost to correct the problem would be prohibitive & therefore, would not be done as part of an Alt or BR.	\$0	\$0 <sup>105</sup>	\$0 <sup>106</sup>
23	6.8	<b>PASSENGER LOADING ZONES</b>  209.2.1; 503.2-4	Facilities that provide one long continuous passenger loading zone will have to provide one accessible passenger loading zone for every 100 feet of loading space. Access aisles will have to be on the same level as the vehicle pull-up space (currently can be on a sidewalk with a curb ramp).	Unit is one loading zone, 5'-0" wide x 20'-0" long, accessible route; sign; floor & ground surface for vehicle space and aisle; 114" minimum vertical clearance at space, aisle and route.	\$650	\$900	\$900
24	5.9	<b>PARKING SPACES</b>  208.1, Ex.	Parking lots containing spaces designated for the exclusive use of buses, delivery vehicles, law enforcement vehicles and the like will have to provide an accessible loading zone.	Unit is one loading zone, 5'-0" wide x 20'-0" long, accessible route; sign; floor & ground surface for vehicle space and aisle; 114" minimum vertical clearance at space, aisle and route.	\$650	\$900	\$900
25	5.9	<b>PARKING SPACES (SIGNS)</b>  216.5, Ex. 1-2	Facilities with four or fewer parking spaces and residential facilities with assigned parking spaces will no longer be required to identify accessible parking spaces (including the van accessible space) with signs displaying the International Symbol of Accessibility.	Cost of one sign.	-\$100	-\$100	na
26	5.10	<b>PASSENGER LOADING ZONES AT MEDICAL CARE AND LONG- TERM CARE FACILITIES</b>  209.3	Medical or long-term care facilities that are required to provide at least one passenger loading zone at an accessible entrance will no longer have to provide a canopy or roof overhang.	Savings is deleting the cost of a canopy at loading zones (assumed Canopies of 20'x20' & 30'x35').	-\$50,000	-\$30,000	na

<sup>105</sup> Under the assumption that if there is an access issue in an existing facility, the cost to correct the problem would be prohibitive and therefore would not be done as part of an Alt or BR, zero is used for cost.

<sup>106</sup> Under the assumption that if there is an access issue in an existing facility, the cost to correct the problem would be prohibitive and therefore would not be done as part of an Alt or BR, zero is used for cost.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
27	7.4	<b>AMBULATORY ACCESSIBLE TOILET COMPARTMENTS</b>  <b>213.3.1; 604.8.2</b>	In multi-user men's toilet rooms where the total of toilet compartments and urinals is six or more (as opposed to just the toilet compartments), at least one toilet compartment will have to be ambulatory accessible.	Cost of making one toilet compartment ambulatory accessible. Ambulatory accessible toilet compartments must be between 35 inches and 37 inches wide and at least 60 inches deep, and have grab bars at least 42 inches long on each side of the compartment. The only additional cost is for the two grab bars on the side walls of the ambulatory accessible toilet compartment and possible relocation of partition.	\$450	\$450	\$600
28	7.10	<b>WATER CLOSET CLEARANCE IN SINGLE-USER TOILET ROOMS WITH OUT- SWINGING DOORS</b>  <b>604.3</b>	In single-user toilet rooms, the water closet will have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory will no longer be permitted to overlap the water closet clearance, except in special dwelling unit cases. See #32 for in-swinging doors.	Added space requirement in toilet room from water closet clearance requirement. NC cost includes cost of added plumbing wall, less the 1.25 sf of finishes, ALT/BR. Cost of reworked or demolition of walls & relocation of fixtures. Assumes increase of 10 sf in ALT/BR but space savings of up to 1.25 sf for NC. <sup>107</sup>	\$125	\$3,000	\$3,500
29	7.11	<b>SHOWER SPRAY CONTROLS</b>  <b>607.6; 608.6</b>	In accessible bathtubs and shower compartments, the revision will require shower spray controls to have a "non-positive" on/off control.	Cost for shower spray unit with on/off control.	\$200	\$200	\$225
30	5.13	<b>URINALS</b>  <b>213.3</b>	In men's toilet rooms with only one urinal, an accessible urinal will no longer be required.	1 fixture - adjust mounting height. Because this is a less stringent requirement & there is virtually no difference in the cost of fixtures, there is no cost impact	\$0	\$0	\$0
31	5.12	<b>MULTIPLE SINGLE-USER TOILET ROOMS</b>  <b>213.2, Ex. 4</b>	Where multiple single-user toilet rooms are clustered in a single location, 50% (rather than 100%) will be required to be accessible. Accessible single-user toilet rooms will have to be identified by the international symbol of accessibility.	Savings from not incurring the cost of making one toilet room accessible; reduction in space required to be dedicated to the HC toilet room & grab bars.	-\$2,000	-\$800	na

<sup>107</sup> The Department is publishing figures which illustrate and compare two different layouts for single-user toilet rooms with out-swinging doors. The first presents a layout typically used in new construction; this layout does not comply with 2004 ADAAG water closet clearance requirements. The second is the Department's presentation of a layout that complies with the 2004 ADAAG requirement for increased water closet clearance, but also uses less overall floor space. The Department expects that the publication of these illustrations together with technical assistance materials will result in many new facilities using the second layout and its reduced space costs. Thus, this requirement is costed with savings in productive space for NC but costs in productive space in ALT and BR on the understanding that a change to such a layout (requiring moving walls) is not be financially feasible in ALT or BR. (See Appendix 2I)

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
32	5.23	<b>WATER CLOSET CLEARANCE IN SINGLE-USER TOILET ROOMS WITH IN-SWINGING DOORS</b>  604.3, 603.1, 603.2.3, Ex. 2; 604.3	In single-user toilet rooms, the water closet will have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory will no longer be permitted to overlap the water closet clearance, except in special dwelling unit cases. The in-swinging doors of single user toilet or bathing rooms will be permitted to swing into the clearance around any fixture, as long as clear floor space is provided within the toilet room beyond the door's arc.	Added space requirement (3' x 3') in toilet room for water closet clearance, but door can now overlap part of clearance. Minimum impact on NC. ALT assumes some rework of the room may be required; BR assumes plumbing rework has to be done. Cost of reworked or demolition of walls & relocation of fixtures.	\$200	\$3,100	\$3,600
33	5.24	<b>WATER CLOSET LOCATION AND REAR GRAB BAR</b>  604.2; 604.5.2, Ex. 1	The revised provision will allow greater flexibility in the placement of the centerline of water closets (permitting it to be between 16-18 inches from the wall rather than exactly 18 inches), and will also permit a shorter grab bar where there is not enough space due to special circumstances (e.g., because a lavatory is located next to the water closet and the wall behind the lavatory is recessed so that the lavatory does not overlap the clear floor space at the water closet).	A design issue; no cost impact.	\$0	\$0	\$0
34	5.19	<b>PATIENT TOILET ROOMS</b>  223.1, Ex.	Toilet rooms that are part of critical or intensive care patient sleeping rooms will no longer be required to provide mobility features.	One accessible toilet room; smaller room and no grab bars.	-\$2,150	-\$950	na
35	6.11	<b>DRINKING FOUNTAINS</b>  211.1-3; 602.2, Ex.; 602.4; 602.7	Drinking fountains will be required to provide a forward approach (rather than either a forward or a parallel approach) unless they are used exclusively by children.	No cost for NC. For existing facilities, the fountain would have to be replaced (Cost of fixture is additional + cost of space required. BR assumes demolition added.).	\$0	\$650	\$2,500
36	6.12	<b>SINKS IN HOTELS</b>  212.1.3; 606.2, Ex.	Under the revised provision, at least 5% of sinks in each accessible space will be required to be accessible. Sinks in transient lodging facilities that include a cook top or conventional range will have to be positioned for a forward approach.	No scoping change unless more than 20 sinks in a space. No cost impact to NC, cabinet credit offsets counter & pipe insulation. Alt/BR is to remove cabinet & lower counter & sink, & provide pipe insulation.	\$0	\$700	\$950
37	6.19	<b>SIDE REACH</b>  205.1; 228.1-2; 309.3, 308.3, 308.3.1, Ex. 2, 308.3.2	The side reach requirement will have a lower maximum (48" instead of 54") and higher minimum (15" instead of 9"). Side reach requirement applies (unless forward reach is provided) to operable parts on accessible elements, to elements located on accessible routes, and to elements in accessible rooms and spaces.	Design issue for NC/Alt. For BR, No cost impact is anticipated in NC. ALT/BR high end costs include moving of electrical items, & restoring the wall to its previous condition.	\$0	\$150	\$150



#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
38 & 39	5.26	<b>SALES AND SERVICE COUNTERS</b>  904.4.1, Ex.; 904.4.2	For counters providing a forward approach, newly constructed facilities will be permitted to install counters that are shorter in length than currently required (30" instead of the current 36"). Existing facilities will be permitted to install even shorter counters (24" instead of the current 36" or 30") if installing 30" counters would require reducing the number of existing counters.	Unit is a counter (6-12 inch savings). NC costs for shorter counters -- 30" instead of 36"; ALT costs for 24" counters instead of 36"	-\$200	-\$200	na
40	5.21	<b>WASHING MACHINES</b>  214.2-3; 611.3; 309.3; 309.3.2, Ex. 1	The maximum height for the tops of these machines can be 2 inches higher (36" maximum above the finish floor) than the general requirement (34") for high reach maximums over an obstruction. The revised requirement will specify the number of machines of each type required to be accessible (1 or 2 depending on number of machines).	Unit is one washing machine.	\$500	\$500	\$500
41	5.21	<b>CLOTHES DRYERS</b>  214.2-3; 611.3; 309.3; 309.3.2, Ex. 1	The maximum height for the tops of these machines can be 2 inches higher (36" maximum above the finish floor) than the general requirement (34") for high reach maximums over an obstruction. The revised requirement will specify the number of machines of each type required to be accessible (1 or 2 depending on number of machines).	Unit is one clothes dryer	\$300	\$300	\$300
42	5.20	<b>SELF-SERVICE STORAGE FACILITY SPACES</b>  225.3	In self-service storage facilities, the revised requirement will require 5% of the first 200 self-service storage spaces and 2% of spaces over 200 to be accessible. Currently, only one storage unit in each class is required to be accessible.	One storage space. Costs may require moving door for clearances, or installing an overhead door opener	\$0	\$500	\$500
43	5.1	<b>LIMITED ACCESS SPACES AND MACHINERY SPACES</b>  203.4-5	The revised requirement will exempt spaces that either have limited means of access (catwalks, crawl spaces, etc.) or are visited only by service personnel, even if such spaces are nonetheless "occupiable." The current provision only exempts such spaces if both conditions apply and the space is "non-occupiable."	Cost of a 3' wide accessible door (all that would be required now). The change increases the number of exempted spaces; therefore, door, hardware, & design changes have no cost impact.	\$0	\$0	\$0
44	5.2	<b>OPERABLE PARTS</b>  205.1, Ex.	Several kinds of operable parts will no longer have to be accessible, including those used solely by service or maintenance personnel, redundant controls (except for light switches), extra outlets along an uninterrupted kitchen counter, floor electrical receptacles, outlets for dedicated use, and HVAC diffusers.	Cost for one operable part. There is no cost impact for these elements in NC; they would not have to be changed in either Alt or BR, so there is no cost impact there either.	\$0	\$0	\$0
45	7.13	<b>BATHROOMS WITH VANITIES AND WATER CLOSET CLEARANCE OUT- SWINGING DOORS</b> 806.2.4.1	Vanity counter top space that is comparable in terms of size and proximity to the lavatory will be required in mobility-accessible rooms. Currently, accessible counters are only required to comply with height and knee space specifications.	Assumed 3-4-5' range and room area; maneuvering clearances for reach, depth and height. No add'l space required in NC.	\$0	\$1,435	\$1,875

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
46	7.6	<b>OPERABLE WINDOWS</b>  229.1	At least one window will have to meet the technical requirements for operable parts. The technical requirements for operable parts require the parts to be no higher than 48 inches from the floor; and to be operable with one hand and not require tight grasping, pinching, or twisting of the wrist. The maximum force to activate an operable part is 5 pounds.	1 window - 2'-0" width & clear space. There is no cost impact in NC; ALT/BR will encounter cost of hardware as a minimum.	\$0	\$500	\$700
47	7.14	<b>DWELLING UNITS WITH COMMUNICATION FEATURES [1991]<sup>108</sup></b>  809.5; 708.4	At least 2% of dwelling units will be required to provide communication features if certain elements are provided for inaccessible units.	Baseline is transient lodging provisions under the 1991 Standards Equipment and hardware design and operation (High cost - communication at each unit; Low cost - communication at main) visible signal assumed to be required at units.	\$550	\$500	na
48	7.14	<b>DWELLING UNITS WITH COMMUNICATION FEATURES [UFAS]</b>  809.5; 708.4	At least 2% of dwelling units will be required to provide communication features if certain elements are provided for inaccessible units.	Baseline is UFAS (same scoping but less stringent technical specs). Equipment and hardware design and operation (High cost - communication at each unit; Low cost - communication at main) visible signal assumed to be required at units.	\$550	\$500	na
49	7.12	<b>GALLEY KITCHEN CLEARANCES</b>  804.2	The revision clarifies that "galley" style kitchens (those with only one entrance and a dead-end on the other side) with a cooktop or conventional range have to meet the greater clearance requirements (60 inches).	Cost of maneuvering clearance for reach (depth, width and height); space; 4' counter and room area. Estimate adding 13 SF of room area  <b>Alternate baseline: UFAS</b>	\$1,000	\$1,000	\$1,200
50	5.25	<b>SHOWER COMPARTMENTS WITH MOBILITY FEATURES</b>  608.1; 608.2.1; 608.2.3; 608.4; 608.5.3; 608.7, Ex.	The revised requirement will provide more flexible specifications for transfer-type and roll-in showers.	A design issue. Cost range includes cost of reworking plumbing & possibly replacing a molded shower enclosure. BR costs include removal of curbs.	\$0	-\$500	-\$500

<sup>108</sup> Dwelling units, whether they are located in public housing facilities constructed by or on behalf of state and local government entities (under Title II) or in public or private group homes, halfway houses, homeless shelters or school dormitories (under Title II or III) are covered under the ADA. However, the current ADA Standards do not have specific provisions for dwelling units – only transient lodging. Therefore, all private entities, and those public entities that have elected to comply with ADAAG, are currently subject to the requirements for transient lodging, which are more stringent than the new requirements for dwelling units. Therefore, for these entities, the new requirements will be less stringent.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
51	7.1	<b>LOCATION OF ACCESSIBLE ROUTE TO STAGES</b>  206.2.6	For stages where the circulation path (for the general audience) directly connects the stage to the seating area, the accessible route will also have to be direct. Currently, an accessible route connecting accessible seating locations to performing areas may go outside the assembly area and use an indirect interior accessible route.	Low cost includes the cost of a platform lift, high cost is for a ramp. NC has no cost impact since it is only the location of the access that has changed.	\$0	\$15,000	\$20,000
52	6.26	<b>WHEELCHAIR SPACE OVERLAP IN ASSEMBLY AREAS</b>  802.1.4, 802.1.5	Wheelchair spaces will not be permitted to overlap accessible routes or circulation paths. Not a change with respect to accessible routes (which are and have been required to have a 36 inch minimum clear width – without obstructions), and while new with respect to circulation paths, only applies to the path width as required by applicable building codes and fire and life safety codes. Since the codes prohibit obstructions in the required width of assembly aisles anyway, this doesn't really effect a change.	There is no cost impact for compliance in NC. The costs in Alt/BR are for additional space required (5' x 5' minimum); may lose an entire aisle.	\$0	\$650	\$1,200
53	6.15	<b>LAWN SEATING IN ASSEMBLY AREAS</b>  221.5	Lawn seating and exterior overflow seating areas without fixed seats would have to connect to an accessible route. The accessible route does not, however, have to extend through the lawn seating area.	There are no cost impacts for providing direct access to lawn seating since the accessible route does not have run through the seating area. (Assumed 3' wide and 0-50-100' range.)	\$0	\$0	\$0
54	5.11	<b>HANDRAILS ON AISLE RAMPS IN ASSEMBLY AREAS</b>  210.1, Ex. 3; 405.1, Ex.; 505.2, Ex.; 505.3, Ex.; 505.10, Ex.	Handrails on aisle ramps adjacent to seating in assembly areas that are part of an accessible route to accessible seating or other accessible elements, which are required to be on only one side of the ramp (the side that is not adjacent to the seats), will be permitted to be discontinuous and need not have extensions beyond the ramp where the handrails must be discontinuous to allow access to seating and aisle crossing.	Reduced handrail requirements will affect NC/Alt. May be saved cost of bottom extension. Assumed 50' long.	-\$1,750	-\$1,750	na
55	5.18	<b>WHEELCHAIR SPACES IN ASSEMBLY AREAS</b>  221.2; 221.2.1-3	Revised formula will reduce the number of wheelchair spaces required in larger assembly areas with fixed seating.	Unit is one 5' x 5' space. Cost of wheelchair seating in stadium seating (low cost) & luxury box seating (high cost).	-\$1,250	-\$650	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
56	5.4	<b>ACCESSIBLE ROUTE TO TIERED DINING AREAS IN SPORTS FACILITIES (NC)  206.2.5, Ex. 3</b>	In newly constructed facilities, an accessible route will have to be provided to 25% (rather than 100%) of tiered dining areas. Each tier will have to provide the same services and the accessible route will have to serve accessible seating.	The cost savings included in the NC are for raising a tier & ramping to that tier, or a wall mounted lift that makes as many as four stops.	-\$10,000	na	na
57	5.5	<b>ACCESSIBLE ROUTE TO PRESS BOXES  206.2.7, Ex.</b>	Where the aggregate area of all press boxes does not exceed 500 square feet, small press boxes that are located on bleachers with entrances on only one level and freestanding small press boxes elevated more than 12 feet will be exempted from accessible route requirements (e.g., a lift).	Cost of lift.	-\$17,000	-\$17,000	na
58	7.5	<b>PUBLIC TTYs  217.4</b>	Currently, only one TTY phone is required per facility (public or private), in public facilities if at least one public pay phone is provided, and in private facilities when 4+ public pay phones are on a site and at least one is in an interior location. The requirement will increase the scoping. In private facilities, one TTY will be required on every floor with 4+ phones and in all banks of 4+ phones. In public facilities, one TTY will be required on every floor with 1 phone and in all banks of 4+ phones. For exterior pay phones in both types of facilities, one TTY will be required where there are 4+ phones. One TTY will also be required at entrances to bus and rail stations, and at public rest stops, where a public pay telephone is provided.	Cost of one public TTY phone.	\$2,320	\$2,320	\$2,500
59	6.13	<b>PUBLIC TELEPHONE VOLUME CONTROLS  217.3; 704.3</b>	All public pay phones (interior and exterior) (rather than only 25%) will be required to have volume controls; identifying signs will no longer be required. The revision will also expand the volume increase range (currently, a minimum gain of 12 dB and a maximum gain of 18 dB; as revised, will require a gain up to 20 dB minimum and an automatic reset).	Cost difference (rental or purchase) between phone with and without volume controls, including cost savings for sign.	\$0	\$350	\$350
60	7.7	<b>TWO-WAY COMMUNICATION SYSTEMS AT ENTRANCES  230.1; 708.1-3</b>	Where two-way communication systems are provided at entrances (in facilities other than residential facilities) and used to gain access to a facility or a restricted area of a facility, they will now be required to have visible as well as audible signals. Handsets, if provided, will be subject to minimum handset cord length requirements.	Cost to add visual signal to secured entrances equipped with audible signals.	\$1,400	\$1,400	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
61	6.25	ATMS AND FARE MACHINES  707.1-8	The current standards use a performance test, requiring that machines be accessible to people with vision impairments. The requirement adds specific technical requirements for privacy, speech output, tactilely discernable input controls, display screens, and Braille instructions. (Fare machines don't have to meet the requirements for privacy.)	Cost of one conversion kit for ATM machines and installation	\$3,000	\$3,000	\$3,000
62	5.17; 6.24	ASSISTIVE LISTENING SYSTEMS (TECHNICAL)  706.1-6, 219.3, Ex. 2	Technical specifications for assistive listening systems will require standard mono jacks; certain specifications for sound level pressure, signal-to-noise ratio, and peak clipping level; and neck loops that interface with the telecoils in hearing aids for hearing-aid compatible receivers (a new provision would require 25% (minimum 2) receivers to be hearing-aid compatible unless the assembly area uses an induction loop assistive listening system.)	Unit is one system with required number of hearing-aid compatible receivers. Assembly areas served by an induction loop assistive listening system do not have to provide hearing-aid compatible receivers.	\$72	\$72	na
63	5.14	VISIBLE ALARMS IN ALTERATIONS TO EXISTING FACILITIES  202.3; 215.1, Ex.	New exception will require visible alarms to be added to existing fire alarm systems only when systems are upgraded or replaced, or when a new system is installed.	This work would only be done when the entire Fire Alarm System was being upgraded & therefore the cost of this work has not been included here.  There are no noncompliant alarms available on the market.	na	\$0	na
64	5.27	DETECTABLE WARNINGS (SCOPING)  218.2-3; 810.5; 810.5.2; 705.1; 705.1.1-3; 705.2	Curb ramps, hazardous vehicular areas, and reflecting pools will no longer be subject to the requirement for detectable warnings.	Credit for materials no longer required. Assumed 3' long x 6' wide.	-\$250	-\$250	na
65	5.27	DETECTABLE WARNINGS (TECHNICAL)  218.2-3; 810.5; 810.5.2; 705.1; 705.1.1-3; 705.2	Platform boarding edges in rail transit facilities will continue to be subject to the requirements for detectable warnings, but the technical specifications will be more flexible.	Detectable horizontal surface construction material specification changes should have no cost impact. Assumed 3' long x 6' wide.	\$0	\$0	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
66	5.17	<b>ASSISTIVE LISTENING SYSTEMS (SCOPING)</b>  219.2, Ex.; 219.3, Ex. 1-2	Currently, assistive listening systems are required in any assembly area that provides an audio amplification system OR has an occupant load of at least 50 people, and the number of required receivers is 4% (minimum 2) of seats no matter how many seats there are. Under the Final Rules, only (a) assembly areas with audio amplification systems and (b) courtrooms will be subject to the requirement, and fewer receivers will be required in larger assembly areas (3% of seats between 501-1000, 2% of seats between 1001-2000, and 1% of seats over 2000).	Unit is one system.	-\$1,250	-\$1,250	na
67		<b>ACCESSIBLE COURTROOM STATIONS</b>  231.2; 808; 304; 305; 902	Forward approach (with clear floor space, accessible work surface heights, toe and knee clearance) will be required for all courtroom stations (judges' benches, clerks' stations, bailiffs' stations, deputy clerks' stations, court reporters' stations and litigants' and counsel stations).	Area in front of built-in elements. This should have no cost impact to NC/Alt, & minimal cost impact to BR	\$0	\$0	\$1,000
68		<b>ACCESSIBLE ATTORNEY AREAS AND WITNESS STANDS</b>  206.2.4	Raised attorney areas and witness stands will have to provide vertical access by ramp, elevator, or platform lift.	Cost of vertical access (ramp or lift) with power backup. Low cost is for a small ramp, high cost is for a power lift with emergency power connections or battery.	\$15,000	\$15,000	\$18,000
69		<b>RAISED COURTROOM STATIONS NOT FOR MEMBERS OF THE PUBLIC</b>  206.2.4, Ex. 1	Raised courtroom stations used by judges, clerks, bailiffs and court reporters will have to be constructed or altered in a way that they can later be easily adapted to provide vertical access by ramp, elevator or platform lift.	Enough clear floor space to install a lift later. Costs are for the additional space required & the conduit for the future wiring required for a lift. This is for NC or Alt. only	\$7,500	\$1,900	na
70		<b>ACCESSIBLE ROUTE TO EXERCISE MACHINES AND EQUIPMENT</b>  206.2.13	An accessible route will be required to serve fixed exercise machines and equipment that are required to meet clear floor space specifications.	Because of the existing life/safety requirements for exiting this should be a no cost design issue in NC/Alt. For BR cost of labor to relocate machines; accessible route and floor space; travel distance varies by configuration of equipment. In very small spaces may require eliminating or providing fewer machines. Machines could be clustered together.	\$0	\$0	\$500

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
71		<b>ACCESSIBLE EXERCISE MACHINES AND EQUIPMENT</b>  236; 1004	One of each type of fixed exercise machine will be required to meet clear floor space specifications. Types of machines are generally defined according to the muscular groups exercised or the kind of cardiovascular exercise provided.	A design issue when laying out the location of the machines in both NC/Alt on the low cost end. The high cost end will add SF to the building because of the number of differing types of equipment. Cost in BR for reorganization of equipment location.	\$1,500	\$600	\$700
72 & 111		<b>ACCESSIBLE SAUNAS AND STEAM ROOMS</b>  241; 612	At least 5% but no fewer than one of each type of sauna or steam room (per cluster or facility) will be required to meet accessibility requirements, including accessible turning space and an accessible bench.	Assumes no cost to NC/Alt because the sauna would be designed to accessibility standards, & the cost of an accessible bench is no more than a regular bench. BR pricing assumes fairly significant changes would be required to walls & finishes.	\$0	\$0	\$10,000
73		<b>ACCESSIBLE LOCKERS</b>  225.2.1; 811	At least 5% but no fewer than one of each type of locker (per cluster or facility) will be required to meet accessibility requirements.	Costs include all finishes in the accessibility space required. The NC/Alt should have no real impact because it will be a design around issue.	\$0	\$400	\$500
74		<b>ACCESSIBLE DRESSING ROOMS, FITTING ROOMS, OR LOCKER ROOMS</b>  222; 803	At least 5% but no fewer than one dressing room, fitting room, and locker room (per cluster or facility) will be required to meet accessibility requirements.	3'-0" wide door. BR costs include reworking an existing space to accommodate the accessibility space requirements. The NC/Alt should have no real impact because it will be a design around issue.	\$0	\$0	\$1,500
75		<b>WHEELCHAIR SPACES IN TEAM OR PLAYER SEATING AREAS</b>  221.2.1.4 and Ex.; 802.1	At least one wheelchair space will be required in team or player seating areas with fixed seats. With respect to team or player seating areas serving bowling lanes, the requirement applies only to those lanes required to be accessible.	This is a no cost item in NC/Alt. The cost in BR is for moving benches, etc. to accommodate the required accessibility & path of travel. Assumed 5'-0" x 5'-0" space and accessible route.	\$0	\$0	\$250
76		<b>ACCESSIBLE ROUTE IN COURT SPORT FACILITIES</b>  206.2.12	At least one accessible route will be required to directly connect both sides of the court.	Assumed 3' wide and 100' long (high). NC/Alt & BR cost of new pavement to provide an accessible path of travel	\$1,500	\$1,500	\$1,800
77		<b>ACCESSIBLE ROUTE TO BOWLING LANES</b>  206.2.11	At least 5% but no fewer than one of each type of bowling lane will be required to be on an accessible route.	Assumed 3' wide and 50' long (high). No cost impact on NC/Alt. BR cost to rework the furniture layout to provide accessibility	\$0	\$0	\$1,000

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
78		<b>SHOOTING FACILITIES WITH FIRING POSITIONS</b>  243; 1010	At least 5% but no fewer than one of each type of firing position at shooting facilities will be required to provide an accessible turning space.	Cost to provide additional space	\$300	\$300	\$500
79 & 112		<b>PRIMARY ACCESSIBLE MEANS OF ENTRY TO POOLS</b>  242.2; 1009.2-6	Swimming pools will be required to provide at least one accessible means of entry.	Costs range from a low cost lift to a high end lift	\$10,000	\$15,000	\$15,000
80		<b>ACCESSIBLE MEANS OF ENTRY TO WADING POOLS</b>  242.3; 1009.3	At least one sloped means of entry will be required into the deepest part of each wading pool.	Cost of ramp complete with handrails & surfacing for wading pool of 33x10, 58x30, and 69x40. Given the amount of space required for proper slope, not possible for smaller sizes.	\$142,500	\$145,500	\$145,500
81		<b>ACCESSIBLE MEANS OF ENTRY TO SPAS</b>  242.4; 1009.2, .4, .5	At least 5% but no fewer than one spa (per cluster or facility) will be required to meet accessibility requirements, including an accessible means of entry (either a pool lift, transfer wall or a transfer system).	Cost of either steps with rail or a lift.	\$4,500	\$6,000	\$6,000
82		<b>ACCESSIBLE ROUTE TO BOATING FACILITIES</b>  206.2.10; 1003.2	An accessible route will be required to serve all accessible boating facilities, including boat slips and boarding piers at boat launch ramps.	Assumed 200' travel distance. Additional horizontal surface construction materials for the accessible path of travel. (Assuming that BR will be exempted.)	\$1,500	\$1,500	\$0
83		<b>ACCESSIBLE BOARDING PIERS (NC)</b>  235.3; 1003.2-3	At least 5% but no fewer than one boarding pier at boat launch ramps will be required to be accessible.	Cost to provide 5' wide and 100' long of accessible slip (difference between accessible & non-accessible). It is assumed that this would not be feasible in Alt/BR.	\$750	na	na
84		<b>ACCESSIBLE BOARDING PIERS (ALT/BR)</b>  235.3; 1003.2-3	At least 5% but no fewer than one boarding pier at boat launch ramps will be required to be accessible.	Cost to provide 5' wide and 100' long of accessible slip (difference between accessible & non-accessible). It is assumed that this would not be feasible in Alt/BR.	na	\$0	\$0
85		<b>ACCESSIBLE BOAT SLIPS (NC)</b>  235.2; 1003.3.1	A specified number of boat slips in each recreational boating facility will be required to meet specified accessibility standards and to be dispersed throughout the boat slip area and among the various types of slips provided.	Cost to provide 2 40' accessible slips (difference between accessible & non-accessible) and be dispersed.	\$300	na	na



#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
86		<b>ACCESSIBLE BOAT SLIPS (ALT/BR)</b>  <b>235.2; 1003.3.1</b>	A specified number of boat slips in each recreational boating facility will be required to meet specified accessibility standards and to be dispersed throughout the boat slip area and among the various types of slips provided.	Cost to provide two 40' accessible slips (difference between accessible & non-accessible) and be dispersed.	na	\$300	\$1,500
87		<b>ACCESSIBLE ROUTE TO FISHING PIERS</b>  <b>206.2.14; 1005.1</b>	An accessible route will be required to serve each accessible fishing pier and platform.	Cost to provide 100' of accessible route (difference between accessible & non-accessible).	\$300	\$300	\$500
88		<b>ACCESSIBLE FISHING PIERS AND PLATFORMS</b>  <b>237; 1005</b>	At least 25% of railings will have to meet a specified maximum height (so that a person seated in a wheelchair can reach over the railing) and be dispersed among the piers and platforms. If railings, guards, or handrails are provided, accessible edge protection, clear floor or ground space, and turning space will be required.	Cost to provide lower railing & 30" x 12" edge extension in 25% of 100' of pier.	\$1,500	\$1,500	\$7,000
89		<b>ACCESSIBLE ROUTE TO GOLF COURSES</b>  <b>206.2.15; 1006.2-3</b>	An accessible route will have to serve all accessible elements within the boundary of the golf course; all golf car rental areas, bag drop areas, teeing grounds, putting greens, and weather shelters; and all accessible practice putting greens, practice teeing grounds, and teeing stations at driving ranges.	Assumed 5' wide and 100' long (high). Cost of accessible path, low cost assumes that NC/Alt/BR paths will be compliant & only mid & high will have costs. Med cost is for asphalt, high cost is for concrete path.	\$1,000	\$1,000	\$2,000
90		<b>ACCESSIBLE TEEING GROUNDS, PUTTING GREENS, AND WEATHER SHELTERS AT GOLF COURSES (ALT/BR)</b>  <b>238.2; 1006.4</b>	Golf cars will have to be able to enter and exit each putting green, each weather shelter, and, for each hole, at least one teeing ground (two if more than two teeing grounds are provided), including the forward ground. In existing golf courses, the forward teeing ground shall not be required to be one of the teeing grounds on a hole designed and constructed so that a golf car can enter and exit the teeing ground where compliance is not feasible due to terrain.	Assumed 200' travel distance per hole. Cost for re-grading & landscaping to ramp up to teeing ground, not expected to be a cost in NC.		\$1,000	\$1,500
91		<b>ACCESSIBLE TEEING GROUNDS, PUTTING GREENS, AND WEATHER SHELTERS AT GOLF COURSES (NC)</b>  <b>238.2; 1006.4</b>	Golf cars will have to be able to enter and exit each putting green, each weather shelter, and, for each hole, at least one teeing ground (two if more than two teeing grounds are provided), including the forward ground.	Assumed 200' travel distance per hole. Cost for re-grading & landscaping to ramp up to teeing ground, not expected to be a cost in NC. Assumed 200' travel distance per hole. Cost for re-grading & landscaping to ramp up to teeing ground, not expected to be a cost in NC.	\$0	na	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
92		ACCESSIBLE PRACTICE PUTTING GREENS, PRACTICE TEEING GROUNDS, AND TEEING STATIONS AT DRIVING RANGES  238.3	Golf cars will have to be able to enter and exit at least 5% but no fewer than one of each of practice putting greens, practice teeing grounds, and teeing stations at driving ranges.	Assumed 200' travel distance per hole. Cost for re-grading & landscaping up to area.	\$0	\$1,000	\$1,500
93		ACCESSIBLE ROUTE TO HOLES (MINI GOLF)  206.2.16; 239.3; 1007.2	An accessible route will be required to serve accessible miniature golf holes (which will generally have to be consecutive) and to connect the last accessible hole and the course entrance or exit. Specified exceptions will be available for accessible routes located on the playing surfaces of holes.	Assumed 200' travel distance. NC/Alt & BR cost of new pavement to provide an accessible path of travel	\$1,000	\$1,000	\$3,500
94		ACCESSIBLE HOLES (MINI GOLF)  239.2; 1007.3	At least 50% of holes on miniature golf courses will be required to be accessible (includes specified clear space at the start of play and a specified golf club reach range area).	Assumed 9 holes need to be made compliant (i.e., 50% of an 18-hole course). NC/Alt & BR cost of new surfacing to provide an accessible path of travel. BR includes costs to re-grade & remove obstacles.	\$9,000	\$9,000	\$25,000
95		ACCESSIBLE ROUTE TO AMUSEMENT RIDES  206.2.9; 1002.2	An accessible route will be required to serve each ride at amusement parks, including the load/unload area.	Assumed 50' travel distance. Low cost assumes little to no cost, med a ramp, & high an elevator or lift.	\$5,000	\$5,000	\$7,500
96		WHEELCHAIR SPACE, TRANSFER SEAT OR TRANSFER DEVICE FOR AMUSEMENT RIDE  234.2; 1002.4-6	Each newly constructed <sup>109</sup> amusement ride (except for mobile/temporary rides and a few additional excepted rides), will be required to provide at least one type of wheelchair access (namely, one wheelchair space, one transfer seat, or one transfer device).	Construction of location for loading, unloading, & transfer area. NC only. Alt/BR are exempt. Low cost for area & bench, high cost for transfer seat.	\$1,000	na	na

<sup>109</sup> This requirement will only effect a change for newly constructed amusement rides. No changes will be required to existing rides unless the structural or operational characteristics of the ride are altered to the extent that the amusement ride's performance differs from that specified by the manufacturer.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
97		<b>MANEUVERING SPACE IN LOAD AND UNLOAD AREA OF AMUSEMENT RIDE</b>  234.2; 1002.3	Each amusement ride (except for mobile/temporary rides) will be required to provide specified maneuvering space in the load/unload area.	Assumed 5' x 5' area (turning space). No cost item at the low end of NC/Alt & minimal at the high end.	\$350	\$350	\$750
98		<b>SIGNS AT AMUSEMENT RIDES</b>  216.12	Signs identifying the type and location of wheelchair access for each amusement ride will be required at entries to queues and waiting lines.	Cost of sign for one ride.	\$250	\$250	\$250
99		<b>ACCESSIBLE ROUTE TO PLAY COMPONENTS (BR)</b>  206.2.17; 240.2.1-2; 1008.2-3	At least one accessible route will be required within each play area and will have to connect to a certain number of ground level play components, elevated play components, and entry points to soft contained play structures.	For medium play area, sq ft to be covered under Barrier removal 190 (low, medium and high). For large play area, sq ft to be covered under Barrier removal 240 (low, medium and high).	na	na	\$1,365 (sm) \$2,485 (med) \$4,550 (lg)
100		<b>ACCESSIBLE PLAY COMPONENTS (BR)</b>  240.2; 1008.4	Play components (include ground level, elevated, and soft contained play structures) will themselves have to comply with accessibility requirements. For ALT/BR, additional accessible ground components can be substituted for the required accessible elevated play components.	For medium playgrounds, Under Barrier Removal: Low cost -- cost to add one ground component, Medium cost -- cost to add two ground components, High cost -- cost to add four ground components. For large playgrounds, Under Barrier Removal: Low cost -- cost to add two ground component, Medium cost -- cost to add four ground components, High cost -- cost to add eight ground components. (Small are exempt)	na	na	\$550 (sm) \$1,100 (med) \$2,950(lg)
101		<b>ACCESSIBLE ROUTE TO PLAY COMPONENTS (ALT)</b>  206.2.17; 240.2.1-2; 1008.2-3	At least one accessible route will be required within each play area and will have to connect to a certain number of ground level play components, elevated play components, and entry points to soft contained play structures.	For small play area, sq ft to be covered, Alterations -- low, 0; medium 70; high, 308. For medium play area, sq ft to be covered Alterations -- low, 0; medium 140; high, 710; For large play area, sq ft to be covered alterations -- low, 0; medium, 280;	na	\$1,356 (sm) \$2,457 (med) \$4,550 (lg)	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
102		<b>ACCESSIBLE PLAY COMPONENTS (ALT)</b>  240.2; 1008.4	Play components (include ground level, elevated, and soft contained play structures) will themselves have to comply with accessibility requirements. For ALT/BR, additional accessible ground components can be substituted for the required accessible elevated play components.	small playground Under Alterations: Low cost -- no cost, Medium cost – cost to add one ground component, High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 24” deck. For medium playgrounds, Under Alterations:, Low cost -- no cost, Medium cost – cost to add two ground components, High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 36” deck plus the cost of adding one additional ground component. Under Alterations:, Low cost -- no cost, Medium cost – cost to add four ground components, High cost – incremental cost for substituting stairs/ladder on a composite play structure with a ramp to a 12 or 16” platform from grade	na	\$500 (sm) \$1,000 (med) \$2,000 (lg)	na
103		<b>ACCESSIBLE ROUTE TO PLAY COMPONENTS (NC)</b>  206.2.17; 240.2.1-2; 1008.2-3	At least one accessible route will be required within each play area and will have to connect to a certain number of ground level play components, elevated play components, and entry points to soft contained play structures.	For small play area, sq ft to be covered: New construction –308 (low, medium and high. For medium play area, sq ft to be covered New construction –710 (low, medium and high); For large play area, sq ft to be covered 1,095 (low, medium and high).	\$4,805 (sm) \$10,153 (med) \$21,975 (lg)	na	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
104		<b>ACCESSIBLE PLAY COMPONENTS (NC)</b>  240.2; 1008.4	Play components (include ground level, elevated, and soft contained play structures) will themselves have to comply with accessibility requirements. For ALT/BR, additional accessible ground components can be substituted for the required accessible elevated play components.	Small playground, Under New Construction; Low cost -- no cost, Medium cost – cost to add one ground component, High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 24” deck. For medium sized playground, Under New Construction: Low cost -- no cost, Medium cost – cost to add two ground components, High cost – incremental cost for substituting stairs/ladder on a composite play structure with a transfer system to a 36” deck plus the cost of adding one additional ground component. Large sized playground; Under New Construction: Low cost -- no cost, Medium cost – cost to add four ground components, High cost – incremental cost for substituting stairs/ladder on a composite play structure with a ramp to a 12 or 16” platform from grade	\$500 (sm) \$1,000 (med) \$2,000 (lg)	na	na
106		<b>POST SECONDARY SCHOOL MULTI-STORY DORM FACILITY – ELEVATOR</b>  (REGULATORY REQUIREMENT)  224; 806	Public post secondary schools that had previously opted to comply with the Uniform Federal Accessibility Standards (UFAS) will now be subject to the requirements for transient lodging. With respect to dormitory facilities, the biggest differences are accessible vertical access (i.e., elevators, platform lifts, etc.) between all levels, distribution of rooms with communications features for people who are deaf or hard of hearing, and distribution of rooms with mobility features. The Final Rules require broader access for people with disabilities than UFAS.	NC cost assumes adding an elevator to the building. Low cost is for a 2 story compliant hydraulic elevator, complete with pit, shaft walls, & machine room. The cost to add an elevator to an existing building would be excessive & is being considered as exempt.	\$75,000	\$0	\$0
107		<b>MOBILITY ACCESSIBLE PRISON CELL</b>  (REGULATORY REQUIREMENT)  232.2; 807.2	Fewer cells with mobility features will be required in newly constructed and altered detention facilities (from 5% to 3%).	NC costs are for the incremental added square footage, & the ADA accessible toilet. Alt costs include the burden of retro-fitting masonry or concrete walls.	-\$20,000	-\$30,000	\$0

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
108		<b>COMMUNICATION ACCESSIBLE PRISON CELL</b>  232.2; 807.3	For cells equipped with audible emergency alarm systems or permanently installed telephones, 2% of these cells must have accessible communication features.	NC/Alt include the cost to install a security type communication system	\$6,000	\$7,000	\$7,000
109		<b>SOCIAL SERVICE ESTABLISHMENTS – ELEVATOR ACCESS</b>  233.1; 206.2.3	Multi-story social service establishments will no longer be required to provide accessible vertical access (i.e., elevator or platform lift) to each story or level so long as all common and public use areas are otherwise located on an accessible route.	NC eliminates the need for an elevator (See item 106 for description of elevator). Assumes no impact to Alt/BR	-\$150,000	\$0	\$0
110		<b>SOCIAL SERVICE ESTABLISHMENTS – CLEAR FLOOR SPACE AROUND BEDS</b>  (REGULATORY REQUIREMENT)  806.2.3	Group homes, halfway houses, shelters, or similar social service establishments that provide temporary sleeping accommodations, and which are operated by public entities that previously complied with UFAS, will now be subject to the new requirements for residential dwelling units in the ADA Standards. The main impact of the change for these facilities is that in sleeping rooms with more than 25 beds, 5% of the beds will now be required to provide clear floor space to enable a person using a wheelchair to transfer into the bed	NC/Alt includes the cost of the incremental additional space requirements.	\$3,500	\$1,500	\$0
113		<b>HOUSING AT PLACE OF EDUCATION – KITCHEN TURNING SPACE</b>  (REGULATORY REQUIREMENT)  809.2.2	Specified kitchens in ADA-covered housing at places of education (i.e., college dormitories, student apartments, etc.) will be required to provide larger turning spaces.		\$43	\$43	\$674
114		<b>HOUSING AT PLACE OF EDUCATION – KITCHEN WORK SURFACE</b>  (REGULATORY REQUIREMENT)  804.3	Specified kitchens in ADA-covered housing at places of education (i.e., college dormitories, student apartments, etc.) will be required to provide an accessible work surface, including a segment of counter with a lower height.		\$0	\$0	\$279

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
115 & 116		<b>SECONDARY MEANS OF ENTRY TO POOLS</b>  <b>242.2; 1009.2-.6</b>	Larger swimming pools with over 300 linear feet of pool wall will be required to provide – in addition to an accessible primary entry via pool lift or sloped entry (see Requirement ## 79 & 112) – a second accessible means of entry. This secondary accessible entry may be a transfer wall, transfer system, pool stairs, pool lift, or sloped entry.		\$2,631	\$3,491	\$3,491
117		<b>SOCIAL SERVICE ESTABLISHMENTS – ROLL-IN SHOWER</b>  <b>(REGULATORY REQUIREMENT)</b>  <b>608.2.2; 608.2.3</b>	Group homes, halfway houses, shelters, or similar social service establishments with more than 50 beds and that have common use bathing facilities will be required to provide at least one roll-in shower. When separate common use shower facilities are provided for men and women, one roll-in shower must be provided for each gender.		\$167	\$167	\$1,385

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## APPENDIX 9: MATRIX OF APPLICABLE BASELINES FOR IBC SCENARIOS

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The Final RIA calculates the net present value of the Final Rules using the 1991 Standards as the primary baseline, and also presents summary results for three alternate baselines based upon recent IBC editions – IBC 2000, IBC 2003, and IBC 2006. Given the many variations among State laws with respect to whether they have adopted the accessibility provisions of the IBC, it would be infeasible to conduct an accurate state-by-state assessment (which would require an assessment of local jurisdictions in many cases) on a national basis for each requirement and facility group. Thus, for each alternate IBC baseline, it is assumed that all relevant provisions of ANSI A117.1, as well as Chapter 11 and Appendix E of the IBC, have been adopted by all states and local jurisdictions. Additionally, with respect to ANSI A117.1, it is assumed that ANSI A117.1-1998 ANSI applies to both IBC 2000 and IBC 2003, while ANSI A117.1-2003 applies to ABC 2006. (Such assumptions represent more conservative modeling and are consistent similar assumptions made by the Access Board in its regulatory assessment of the 2004 ADAAG).

This chart is intended to assist in identifying the applicable baseline standard for each requirement under each alternate IBC baseline. Each alternate baseline is applied on a per-requirement basis. IBC provisions are only used as the baseline when they are more stringent than the corresponding current 1991 Standards. Thus, under any particular IBC baseline scenario, there are occasions in which the current requirement 1991 Standard trumps the IBC provision and continues to serve as the relevant baseline with respect to that requirement.

The columns in this chart: identify each new or revised requirement in the Final Rules sequentially by RIA requirement number; list the corresponding 2004 ADAAG provision(s); summarize the incremental change effected by the requirement as compared to the 1991 Standards; and identify the source of the applicable baseline standard (*i.e.*, 1991 Standards or IBC) for that requirement under each of the three respective IBC scenarios. New and revised requirements are color-coded by the change they will effect -- more stringent revised requirements are highlighted in blue, less stringent revised requirements are highlighted in green, and new (supplemental) requirements are highlighted in orange. Where the IBC provision serves as the applicable baseline for a particular requirement (*i.e.*, because the IBC provision is more stringent than the 1991 Standard), the box in the relevant right-hand column is marked “IBC” and text is highlighted in yellow. On the other hand, where the 1991 Standards serves as the applicable baseline for a particular requirement (*i.e.*, because the IBC provision is either less stringent than the 1991 Standard and/or not equivalent to the final standard), the box in the relevant right-hand column is marked “ADA.”



Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
1	Public Entrances 206.4.1; 404	At least 60% of public entrances in newly constructed facilities would be required to be accessible. The current requirement requires 50% of public entrances to be accessible, plus additional entrances so the total number of accessible public entrances is equal to the number of required exits (based on building or fire codes; typically two), but not exceeding the total number of planned public entrances. The revision will have no effect on altered or existing facilities.	ADA	ADA	ADA
2	Maneuvering Clearance or Standby Power for Automatic Doors 404.3.2	When an automatic door serves as part of an accessible means of egress, it will be required to have sufficient maneuvering clearance unless stand-by power is provided or the door/gate remains open when the power is off.	ADA	ADA	ADA
3	Automatic Door Break-Out Openings 404.1; 404.3; 404.3.1; 404.3.6, Ex.	Automatic doors that are part of a means of egress that do not have standby power will be required to provide 32 inch minimum break out openings ("swing out" option) when operated in emergency mode (unless there are manual swinging doors serving the same means of egress).	IBC 1003.3.1.1 and 1003.3.1.3.2	IBC 1008.1.1 and 1008.1.3.2	IBC 1008.1.1 and 1008.1.3.2
4	Thresholds at Doorways 404.1; 404.2.5, Ex.	Exterior sliding doors that are part of an accessible route <sup>110</sup> will have to provide lower (1/2 inch) thresholds (currently 3/4 inch). The revision maintains the current exception for existing thresholds that do not exceed 3/4 inch and are beveled on each side, and so will effect no change for altered or existing facilities. No change for interior sliding doors, which are currently required to provide 1/2 inch thresholds.	ADA	ADA	ADA
5	Door and Gate Surfaces 404.1; 404.2.10, Ex. 2, 4.	Swinging doors and gates except tempered glass doors without stiles will be required to have smooth surfaces on their lowermost 10 inches so that individuals who use wheelchairs and scooters can open these doors/gates without creating a trap or pinch point. Currently, there is no requirement with respect to the surface features of doors. Existing doors and gates are specifically exempted.	IBC ICC/ANSI A117.1-1998: 404.2.10	IBC ICC/ANSI A117.1-1998: 404.2.10	IBC ICC/ANSI A117.1-2003: 404.2.9

<sup>110</sup> An accessible route must comply with specifications for walking surfaces, running slope, doorways, ramps, curb ramps, elevators, platform lifts, etc. Specifications include width of unobstructed surface, cross slope, and amount of turning space.

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
6	Location of Accessible Routes 206.3	An accessible route will have to coincide with or be located in the same area as the circulation path <sup>111</sup> used by the general public. Currently, accessible routes must coincide with general circulation paths to the maximum extent feasible. Because, by statute, altered facilities need only comply with accessibility requirements to the maximum extent feasible, this revision effects no change for altered or existing facilities.	IBC 1104.5	IBC 1104.5	IBC 1104.5
7	Common Use Circulation Paths in Employee Work Areas 203.9; 206.2.8; 403.5, Ex.; 405.5, Ex.; 405.8, Ex.	Common use circulation paths within employee work areas will have to comply with the technical requirements for accessible routes, with specific exceptions provided where compliance may be difficult due to the size, arrangement, location or function of the work area. Currently, employee work areas are only required to permit individuals with disabilities to approach, enter, and exit.	ADA	IBC 1104.3.1	IBC 1104.3.1
8	Accessible Means of Egress 207.1, Ex. 1; 216.4.	The revised requirement will incorporate by reference the IBC requirements for accessible means of egress.	IBC 1003.2.13	IBC 1007	IBC 1007
9	Stairs (NC) 210.1; 504.2	All stairs in newly constructed facilities that are part of a means of egress will have to comply with the requirements for accessible stairs, which cover treads, risers, and handrails. Currently, stairs serving levels that are connected by an accessible route (e.g., an elevator) are exempt. The revised requirement specifies a riser height of 4" minimum and 7" maximum.	IBC 1003.3.3.3 and 1003.3.3.3.1; ICC/ANSI A117.1-1998; 504.2	IBC 1009.3 and 1009.3.1; ICC/ANSI A117.1-1998; 504.2	IBC 1009.3 and 1009.3.1; ICC/ANSI A117.1-2003; 504.2
10	Stairs (ALT/BR) 210.1, Ex. 2; 505	In existing facilities where levels are connected by an accessible route (e.g., an elevator), all stairs that are part of a means of egress will have to provide handrails. Currently, stairs serving levels that are connected by an accessible route (e.g., an elevator) are exempt.	IBC 1003.3.3.3 and 1003.3.3.3.1; ICC/ANSI A117.1-1998; 504.2	IBC 1009.3 and 1009.3.1; ICC/ANSI A117.1-1998; 504.2	IBC 1009.10; ICC/ANSI A117.1-2003; 504.6

<sup>111</sup> A circulation path is an exterior or interior way of passage provided for pedestrian travel, including but not limited to, walks, hallways, courtyards, elevators, platform lifts, ramps, stairways, and landings.

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
11	Handrails Along Walkways 403.6	Handrails on non-ramp walkways will be subject to technical requirements for handrails (including height, gripping surface, and clearance requirements). Compliant handrails are required on only one side of the walkway.	ADA	ADA	ADA
12	Handrails 505.5 thru 505.10	The technical requirements for handrails will be more flexible (permitting the distance between handrail gripping surfaces and other surfaces to be 1.5" or more, rather than exactly 1.5"; permitting a wider range of approved handrail gripping surface diameters; and no longer requiring a horizontal section of handrail at the bottom of stairs.)	ADA	ADA	ADA
13	Accessible Routes from Site Arrival Points and Within Sites 206.2.1, Ex. 2; 206.2.2, Ex.	With respect to areas within sites or between an entrance and site arrival point that can only be accessed by vehicle (such as the roads and parking areas of many suburban "big-box" retail shopping malls), facilities will be exempt from providing a pedestrian accessible route. Currently buildings and facilities on a site are required to be connected by an accessible route even if sidewalks are not provided.	ADA	ADA	ADA
14	Standby Power for Platform Lifts 207.2	Where a platform lift is used as part of an accessible means of egress, it will be required to have a back-up power source. Currently, such lifts are not required to have back-up power.	ADA	IBC 1007.5	IBC 1007.5
15	Power-Operated Doors for Platform Lifts 410.6	Platform lifts will be required to have power-operated doors with the exception of lifts that serve no more than two landings which are permitted to have self-closing manual doors on opposite ends. Current standards permit either maneuvering space or power-operated doors.	ADA	ADA	IBC ICC/ANSI A117.1-2003: 410.2.1
16	Alterations to Existing Elevators 206.6.1	When an element in an existing elevator is altered, the same element will have to be altered in any other elevators that are programmed to respond to the same call button. Currently, only elements being altered have to be made accessible.	IBC 3408.7.1	IBC 3409.7.2	IBC 3409.8.2
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units 206.7; 206.7.6	A multi-story hotel guest room or residential dwelling unit that is required to be accessible will be allowed to use a platform lift in lieu of an elevator as part of the accessible route. Under the current standard, only elevators are permitted.	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
18	“LULA” and Private Residence Elevators 206.2.3, Ex. 1-2; 206.6, Ex. 1-2; 206.7	Facilities that are not required to install an elevator but that plan one anyway will be permitted to install a LULA instead. This provision will also permit private residence elevators to be used in a multi-story residential dwelling unit.	ADA	ADA	ADA
19	Van Accessible Parking Spaces 208.2.4	One in six (rather than one in eight) accessible spaces will be required to be van accessible.	ADA	IBC 1106.5; ICC/ANSI A117.1-1998; 502.2	IBC 1106.5; ICC/ANSI A117.1-2003; 502.2
20	Valet Parking Garages 208.2	Facilities with valet-only parking services, which currently must provide an accessible passenger loading zone but are not required to provide accessible parking spaces, will now have to provide accessible parking spaces as well.	IBC 1106.1 and 1106.6.2	IBC 1106.1 and 1106.7.3	IBC 1106.1 and 1106.7.3
21	Mechanical Access Parking Garages 209.5	Mechanical access parking garages (garages that use lifts, elevators, or other mechanical devices to move vehicles from the street level to a parking tier) will no longer be exempt from providing an accessible passenger loading zone, which would be required at vehicle drop-off and pick-up areas.	ADA	ADA	ADA
22	Direct Access Entrances from Parking Structures 206.4.2	All (rather than one) direct pedestrian connections from a parking structure to a facility will be required to be accessible.	ADA	IBC 1105.1.1	IBC 1105.1.1
23	Passenger Loading Zones 209.2.1; 503.2-4	Facilities that provide one long continuous passenger loading zone will have to provide one accessible passenger loading zone for every 100 feet of loading space. Access aisles will have to be on the same level as the vehicle pull-up space (currently can be on a sidewalk with a curb ramp).	ADA	IBC 1106.7.1 and 1106.7.2; ICC/ANSI A117.1-1998; 503.3 and 503.4	IBC 1106.7.1 and 1106.7.1; ICC/ANSI A117.1-2003; 503.3 and 503.4

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
24	Parking Spaces 208.1, Ex.	Parking lots containing spaces designated for the exclusive use of buses, delivery vehicles, law enforcement vehicles and the like will have to provide an accessible loading zone.	IBC 1106.1	ADA	ADA
25	Parking Spaces (Signs) 216.5, Ex. 1-2	Facilities with four or fewer parking spaces and residential facilities with assigned parking spaces will no longer be required to identify accessible parking spaces (including the van accessible space) with signs displaying the International Symbol of Accessibility.	ADA	ADA	ADA
26	Passenger Loading Zones at Medical Care and Long-Term Care Facilities 209.3	Medical or long-term care facilities that are required to provide at least one passenger loading zone at an accessible entrance will no longer have to provide a canopy or roof overhang.	ADA	ADA	ADA
27	Ambulatory Accessible Toilet Compartments 213.3.1; 604.8.2	In multi-user men's toilet rooms where the total of toilet compartments and urinals is six or more (as opposed to just the toilet compartments), at least one toilet compartment will have to be ambulatory accessible.	IBC 1108.2.2	IBC 1109.2.2	IBC 1109.2.2
28	Water Closet Clearance in Single-User Toilet Rooms – Out-Swinging Doors 604.3	In single-user toilet rooms, the water closet will have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory will no longer be permitted to overlap the water closet clearance, except in special dwelling unit cases.	ADA	ADA	For non-dwelling units: IBC ICC/ANSI A117.1-2003: 603.2 & 604.3 ADA for dwelling units
29	Shower Spray Controls 607.6; 608.6	In accessible bathtubs and shower compartments, the revision will require shower spray controls to have a “non-positive” on/off control.	ADA	ADA	IBC ICC/ANSI A117.1-2003: 607.6 & 608.6

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
30	Urinals 213.3	In men's toilet rooms with only one urinal, an accessible urinal will no longer be required.	ADA	ADA	ADA
31	Multiple Single-User Toilet Rooms  213.2, Ex. 4	Where multiple single-user toilet rooms are clustered in a single location, 50% (rather than 100%) will be required to be accessible. Accessible single-user toilet rooms will have to be identified by the international symbol of accessibility.	ADA	ADA	ADA
32	Water Closet Clearance in Single-User Toilet Rooms – In-Swinging Doors  603.1, 603.2.3, Ex. 2; 604.3	The in-swinging doors of single user toilet or bathing rooms will be permitted to swing into the clearance around any fixture, as long as clear floor space is provided within the toilet room beyond the door's arc.	IBC ICC/ANSI A117.1-1998; 603.2.3 Ex. 2; 604.3	IBC ICC/ANSI A117.1-1998; 603.2.3 Ex. 2; 604.3	IBC ICC/ANSI A117.1-2003; 603.2.3 Ex. 2; 604.3
33	Water Closet Location and Rear Grab Bar  604.2; 604.5.2, Ex. 1	The revised provision will allow greater flexibility in the placement of the centerline of water closets (permitting it to be between 16-18 inches from the wall rather than exactly 18 inches), and will also permit a shorter grab bar where there is not enough space due to special circumstances (e.g., because a lavatory is located next to the water closet and the wall behind the lavatory is recessed so that the lavatory does not overlap the clear floor space at the water closet).	ADA	ADA	ADA
34	Patient Toilet Rooms  223.1, Ex.	Toilet rooms that are part of critical or intensive care patient sleeping rooms will no longer be required to provide mobility features.	ADA	ADA	ADA
35	Drinking Fountains  211.1-3; 602.2, Ex.; 602.4; 602.7	Drinking fountains will be required to provide a forward approach (rather than either a forward or a parallel approach) unless they are used exclusively by children.	ADA	ADA	IBC 1109.5 ICC/ANSI A117.1-2003; 602.2

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
36	Sinks 212.1.3; 606.2, Ex.	Under the revised provision, at least 5% of sinks in each accessible space will be required to be accessible. Sinks in spaces that include a cook top or conventional range will have to be positioned for a forward approach.	IBC 1108.3; ICC/ANSI A117.1-1998: 606.2	IBC 1109.3; ICC/ANSI A117.1-1998: 606.2	IBC 1109.3 ICC/ANSI A117.1-2003: 606.2
37	Side Reach 205.1; 228.1-2; 309.3, 308.3, 308.3.1, Ex. 2, 308.3.2	The side reach requirement will have a lower maximum (48" instead of 54") and higher minimum (15" instead of 9" unobstructed, or 10" instead of 9" over an obstruction not higher than 34"). Side reach requirement applies (unless forward reach is provided) to operable parts on accessible elements, to elements located on accessible routes, and to elements in accessible rooms and spaces. Side or forward reach will be newly required for at least one of each type of depositories, vending machines, change machines, and gas pumps; and at least 5 percent of mailboxes provided in an interior location.	IBC ICC/ANSI A117.1-1998: 308.3.1 and 308.3.2	IBC ICC/ANSI A117.1-1998: 308.3.1 and 308.3.2	IBC ICC/ANSI A117.1-2003: 308.2 & 308.3
38	Sales and Service Counters (NC) 904.4.1, Ex.; 904.4.2	For counters providing a forward approach, newly constructed facilities will be permitted to install counters that are shorter in length than currently required (30" instead of the current 36").	ADA	ADA	ADA
39	Sales and Service Counters (Alt) 904.4, Ex.	For counters providing a forward approach, existing facilities will be permitted to install even shorter counters (24" instead of the current 36" or 30") if installing 30" counters would require reducing the number of existing counters.	ADA	ADA	ADA
40	Washing Machines and Clothes Dryers (technical) 214.2-3; 611.3; 309.3; 309.3.2, Ex. 1	The maximum height for the tops of these machines can be 2 inches higher than the general requirement for high reach maximums over an obstruction	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
41	Washing Machines and Clothes Dryers (Scoping) 214.2-3; 611.3; 309.3; 309.3.2, Ex. 1	The revised requirement will specify the number of machines of each type required to be accessible (1 or 2 depending on number of machines).	ADA	IBC E105.3	IBC E105.2
42	Self-Service Storage Facility Spaces 225.3	In self-service storage facilities, the revised requirement will require 5% of the first 200 self-service storage spaces and 2% of spaces over 200 to be accessible. Currently, only one storage unit in each class is required to be accessible.	IBC 1107.6	IBC 1108.3	IBC 1108.3
43	Limited Access Spaces and Machinery Spaces 203.4-5	The revised requirement will exempt spaces that either have limited means of access (catwalks, crawl spaces, etc.) or are visited only by service personnel, even if such spaces are nonetheless “occupiable.” The current provision only exempts such spaces if both conditions apply and the space is “non-occupiable.”	ADA	ADA	ADA
44	Operable Parts 205.1, Ex.	Several kinds of operable parts will no longer have to be accessible, including those used solely by service or maintenance personnel, redundant controls (except for light switches), extra outlets along an uninterrupted kitchen counter, floor electrical receptacles, outlets for dedicated use, and HVAC diffusers.	ADA	ADA	ADA
45	Bathrooms with vanities and water closet clearance out-swinging doors 806.2.4.1	Vanity counter top space that is comparable in terms of size and proximity to the lavatory will be required in mobility-accessible rooms. Currently, accessible counters are only required to comply with height and knee space specifications.	ADA	ADA	IBC ICC/ANSI A117.1-2003; 1002.11.1
46	Operable Windows 229.1	At least one window will have to meet the technical requirements for operable windows.	IBC 1108.13.1	IBC 1109.13.1	IBC 1109.13.1



Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
47	Dwelling Units with Communication Features [1991] <sup>112</sup> 809.5; 708.4	At least 2% of dwelling units will be required to provide communication features if certain elements are provided for inaccessible units.	ADA	ADA	ADA
48	Dwelling Units with Communication Features [UFAS] <sup>113</sup> 809.5; 708.4	At least 2% of dwelling units will be required to provide communication features if certain elements are provided for inaccessible units.	ADA	ADA	ADA
49	Galley Kitchen Clearances 804.2	The revision clarifies that “galley” style kitchens (those with only one entrance and a dead-end on the other side) with a cooktop or conventional range have to meet the greater clearance requirements (60 inches) applicable to “u-shaped” kitchens.	ADA	ADA	ADA
50	Shower Compartments with Mobility Features 608.1; 608.2.1; 608.2.3; 608.4; 608.5.3; 608.7, Ex.	The revised requirement will provide more flexible specifications for transfer-type and roll-in showers.	ADA	ADA	ADA
51	Location of Accessible Route to Stages 206.2.6	For stages where the circulation path (for the general audience) directly connects the stage to the seating area, the accessible route will also have to be direct. Currently, an accessible route connecting accessible seating locations to performing areas may go outside the assembly area and use an indirect interior accessible route.	ADA	IBC 1108.2.8	IBC 1108.2.7

<sup>112</sup> As applied to public or private facilities that comply with ADAAG’s transient lodging provisions, which are more stringent than the new (less stringent) requirements for dwelling units.

<sup>113</sup> As applied to public dwelling units that comply with UFAS, which is less stringent than the new (more stringent) requirements for dwelling units.

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
52	Wheelchair Space Overlap in Assembly Areas 802.1.4, 802.1.5	Wheelchair spaces will not be permitted to overlap accessible routes or circulation paths.	IBC 1008.7.6	IBC 1024.9.6	IBC 1025.9.6
53	Lawn Seating in Assembly Areas 221.5	Lawn seating and exterior overflow seating areas without fixed seats would have to connect to an accessible route. The accessible route does not, however, have to extend through the lawn seating area.	ADA	ADA	IBC 1108.2.5
54	Handrails on Aisle Ramps in Assembly Areas 210.1, Ex. 3; 405.1, Ex.; 505.2, Ex.; 505.3, Ex.; 505.10, Ex.	Handrails on aisle ramps adjacent to seating in assembly areas that are part of an accessible route to accessible seating or other accessible elements, which are required to be on only one side of the ramp (the side that is not adjacent to the seats), will be permitted to be discontinuous and need not have extensions beyond the ramp where the handrails must be discontinuous to allow access to seating and aisle crossing.	ADA	ADA	ADA
55	Wheelchair Spaces in Assembly Areas 221.2; 221.2.1-3	Revised formula will reduce the number of wheelchair spaces required in larger assembly areas with fixed seating.	ADA	ADA	ADA
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC) 206.2.5, Ex. 3	In newly constructed facilities, an accessible route will have to be provided to 25% (rather than 100%) of tiered dining areas. Each tier will have to provide the same services and the accessible route will have to serve accessible seating.	ADA	ADA	ADA
57	Accessible Route to Press Boxes 206.2.7, Ex.	Where the aggregate area of all press boxes does not exceed 500 square feet, small press boxes that are located on bleachers with entrances on only one level and freestanding small press boxes elevated more than 12 feet will be exempted from accessible route requirements (e.g., a lift).	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
58	Public TTYS 217.4	Currently, only one TTY phone is required per facility (public or private), in public facilities if at least one public pay phone is provided, and in private facilities when 4+ public pay phones are on a site and at least one is in an interior location. The requirement will increase the scoping. In private facilities, one TTY will be required on every floor with 4+ phones and in all banks of 4+ phones. In public facilities, one TTY will be required on every floor with 1 phone and in all banks of 4+ phones. For exterior pay phones in both types of facilities, one TTY will be required where there are 4+ phones (and at all public rest stops that have at least one phone).	For private facilities: IBC E1106.4  ADA for public facilities	IBC E106.4	IBC E106.4
59	Public Telephone Volume Controls 217.3; 704.3	All public pay phones (interior and exterior) (rather than only 25%) will be required to have volume controls; identifying signs will no longer be required. The revision will also expand the volume increase range.	ADA	IBC E106.3; ICC/ANSI A117.1-1998: 704.3	IBC E106.3; ICC/ANSI A117.1-2003: 704.3
60	Two-Way Communication Systems at entrances 230.1; 708.1-3	Where two-way communication systems are provided at entrances (in facilities other than residential facilities), they will now be required to have visible as well as audible signals. Handsets, if provided, will be subject to minimum handset cord length requirements.	ADA	ADA	IBC E105.6; ICC/ANSI A117.1-2003: 708
61	ATMs and Fare Machines 707.1-8	The current standards use a performance test, requiring that machines be accessible to people with vision impairments. The requirement adds specific technical requirements for privacy, speech output, tactilely discernable input controls, display screens, and Braille instructions.	ADA	IBC E105.6; ICC/ANSI A117.1-1998: 707	IBC E105.5; ICC/ANSI A117.1-2003: 707
62	Assistive Listening Systems (technical) 706.1-6, 219.3, Ex. 2	Technical specifications for assistive listening systems will require standard mono jacks; certain specifications for sound level pressure, signal-to-noise ratio, and peak clipping level; and neck loops that interface with the telecoils in hearing aids for hearing-aid compatible receivers (a new provision would require 25% (minimum 2) receivers to be hearing-aid compatible unless the assembly area uses an induction loop assistive listening system.)	ADA	ADA	IBC 1108.2.6 ICC/ANSI A117.1-2003: 706

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
63	Visible Alarms in Alterations to Existing Facilities 202.3; 215.1, Ex.	New exception will require visible alarms to be added to existing fire alarm systems only when systems are upgraded or replaced, or when a new system is installed.	ADA	ADA	ADA
64	Detectable Warnings (scoping) 218.2-3; 810.5; 810.5.2; 705.1; 705.1.1-3; 705.2	Curb ramps, hazardous vehicular areas, and reflecting pools will no longer be subject to the requirement for detectable warnings.	ADA	ADA	ADA
65	Detectable Warnings (technical) 218.2-3; 810.5; 810.5.2; 705.1; 705.1.1-3; 705.2	Transit platform edges will still be subject to the requirement, but the specifications for the diameter and spacing of the truncated domes will now permit a range of dimensions, no longer require the material used to provide contrast to be an integral part of the truncated domes, and no longer require the truncated domes to contrast in resiliency or sound-on-cane contact from adjoining walking surfaces at interior locations.	ADA	ADA	ADA
66	Assistive Listening Systems (scoping) 219.2, Ex.; 219.3, Ex. 1-2	Currently, assistive listening systems are required in any assembly area that provides an audio amplification system OR has an occupant load of at least 50 people, and the number of required receivers is 4% (minimum 2) of seats no matter how many seats there are. Under the Final Rules, only (a) assembly areas with audio amplification systems and (b) courtrooms will be subject to the requirement, and fewer receivers will be required in larger assembly areas (3% of seats between 501-1000, 2% of seats between 1001-2000, and 1% of seats over 2000).	ADA	ADA	ADA
67	Accessible Courtroom Stations 231.2; 808; 304; 305; 902	Forward approach (with clear floor space, accessible work surface heights, toe and knee clearance) will be required for all courtroom stations (judges' benches, clerks' stations, bailiffs' stations, deputy clerks' stations, court reporters' stations and litigants' and counsel stations).	ADA	IBC 1108.4.1	IBC 1108.4.1 ICC/ANSI A117.1-2003: 807

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
68	Accessible Attorney Areas and Witness Stands 206.2.4	Raised attorney areas and witness stands will have to provide vertical access by ramp, elevator, or platform lift.	ADA	IBC 1109.7.6	IBC 1109.7.6 ICC/ANSI A117.1-2003: 807
69	Raised Courtroom Stations Not for Members of the Public 206.2.4, Ex. 1	Raised courtroom stations used by judges, clerks, bailiffs and court reporters will have to be constructed or altered in a way that they can later be easily adapted to provide vertical access by ramp, elevator or platform lift.	ADA	IBC 1109.7.6	IBC 1109.7.6 ICC/ANSI A117.1-2003: 807
70	Accessible Route to Exercise Machines and Equipment 206.2.13	An accessible route will be required to serve fixed exercise machines and equipment that are required to meet clear floor space specifications.	ADA	ADA	ADA
71	Accessible Exercise Machines and Equipment 236; 1004	One of each type of fixed exercise machine will be required to meet clear floor space specifications. Types of machines are generally defined according to the muscular groups exercised or the kind of cardiovascular exercise provided.	ADA	ADA	ADA
72 & 111	Accessible Saunas and Steam Rooms 241; 612	At least 5% but no fewer than one of each type of sauna or steam room (per cluster or facility) will be required to meet accessibility requirements, including accessible turning space and an accessible bench.	ADA	ADA	ADA
73	Accessible Lockers 225.2.1; 811	At least 5% but no fewer than one of each type of locker (per cluster or facility) will be required to meet accessibility requirements, including an accessible bench.	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms 222; 803	At least 5% but no fewer than one dressing room, fitting room, and locker room (per cluster or facility) will be required to meet accessibility requirements.	ADA	ADA	ADA
75	Wheelchair Spaces in Team or Player Seating Areas 221.2.1.4 and Ex.; 802.1	At least one wheelchair space will be required in team or player seating areas with fixed seats. With respect to team or player seating areas serving bowling lanes, the requirement applies only to those lanes required to be accessible.	ADA	ADA	ADA
76	Accessible Route in Court Sport Facilities 206.2.12	At least one accessible route will be required to directly connect both sides of the court.	ADA	ADA	ADA
77	Accessible Route to Bowling Lanes 206.2.11	At least 5% but no fewer than one of each type of bowling lane will be required to be on an accessible route.	ADA	ADA	ADA
78	Shooting Facilities with Firing Positions 243; 1010	At least 5% but no fewer than one of each type of firing position at shooting facilities will be required to provide an accessible turning space.	ADA	ADA	ADA
79 & 112	Primary Accessible Means of Entry to Pools 242.2; 1009.2-6	At least one accessible means of entry will be required for swimming pools – primary accessible entry may be either a sloped entry or a pool lift while the other can be a transfer wall or a transfer system).	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
80	Accessible Means of Entry to Wading Pools 242.3; 1009.3	At least one sloped means of entry will be required into the deepest part of each wading pool.	ADA	ADA	ADA
81	Accessible Means of Entry to Spas 242.4; 1009.2, .4, .5	At least 5% but no fewer than one spa (per cluster or facility) will be required to meet accessibility requirements, including an accessible means of entry (either a pool lift, transfer wall or a transfer system).	ADA	ADA	ADA
82	Accessible Route to Boating Facilities 206.2.10; 1003.2	An accessible route will be required to serve all accessible boating facilities, including boat slips and boarding piers at boat launch ramps.	ADA	ADA	ADA
83	Accessible Boarding Piers (NC) 235.3; 1003.2-3	At least 5% but no fewer than one boarding pier at boat launch ramps will be required to be accessible.	ADA	ADA	ADA
84	Accessible Boarding Piers (ALT/BR) 235.3; 1003.2-3	At least 5% but no fewer than one boarding pier at boat launch ramps will be required to be accessible.	ADA	ADA	ADA
85	Accessible Boat Slips (NC) 235.2; 1003.3.1	A specified number of boat slips in each recreational boating facility will be required to meet specified accessibility standards and to be dispersed throughout the boat slip area and among the various types of slips provided.	ADA	ADA	ADA
86	Accessible Boat Slips (Alt/BR) 235.2; 1003.3.1	A specified number of boat slips in each recreational boating facility will be required to meet specified accessibility standards and to be dispersed throughout the boat slip area and among the various types of slips provided.	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
87	Accessible Route to Fishing Piers 206.2.14; 1005.1	An accessible route will be required to serve each accessible fishing pier and platform.	ADA	ADA	ADA
88	Accessible Fishing Piers and Platforms 237; 1005	At least 25% of railings will have to meet a specified maximum height (so that a person seated in a wheelchair can reach over the railing) and be dispersed among the piers and platforms. If railings, guards, or handrails are provided, accessible edge protection, clear floor or ground space, and turning space will be required.	IBC 1003.2.12.1; 1003.2.12.2	IBC 1012.2; 1012.3	ADA
89	Accessible Route to Golf Courses 206.2.15; 1006.2-3	An accessible route will have to serve all accessible elements within the boundary of the golf course; all golf car rental areas, bag drop areas, teeing grounds, putting greens, and weather shelters; and all accessible practice putting greens, practice teeing grounds, and teeing stations at driving ranges.	ADA	ADA	ADA
90	Accessible Teeing Grounds, Putting Greens, and Weather Shelters (ALT/BR) 238.2; 1006.4	Golf cars will have to be able to enter and exit each putting green, each weather shelter, and, for each hole, at least one teeing ground (two if more than two teeing grounds are provided), including the forward ground. In existing golf courses, the forward teeing ground shall not be required to be one of the teeing grounds on a hole designed and constructed so that a golf car can enter and exit the teeing ground where compliance is not feasible due to terrain.	ADA	ADA	ADA
91	Accessible Teeing Grounds, Putting Greens, and Weather Shelters (NC) 238.2; 1006.4	Golf cars will have to be able to enter and exit each putting green, each weather shelter, and, for each hole, at least one teeing ground (two if more than two teeing grounds are provided), including the forward ground.	ADA	ADA	ADA



Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
92	Accessible Practice Putting Greens, Practice Teeing Grounds, and Teeing Stations at Driving Ranges 238.3	Golf cars will have to be able to enter and exit at least 5% but no fewer than one of each of practice putting greens, practice teeing grounds, and teeing stations at driving ranges.	ADA	ADA	ADA
93	Accessible Route to Mini Golf Holes 206.2.16; 239.3; 1007.2	An accessible route will be required to serve accessible miniature golf holes (which will generally have to be consecutive) and to connect the last accessible hole and the course entrance or exit. Specified exceptions will be available for accessible routes located on the playing surfaces of holes.	ADA	ADA	ADA
94	Accessible Mini Golf Holes 239.2; 1007.3	At least 50% of holes on miniature golf courses will be required to be accessible (includes specified clear space at the start of play and a specified golf club reach range area).	ADA	ADA	ADA
95	Accessible Route to Amusement Rides 206.2.9; 1002.2	An accessible route will be required to serve each ride, including the load/unload area.	ADA	ADA	ADA
96	Wheelchair Space, Transfer Seat or Transfer Device for Amusement Ride 234.2; 1002.4-6	Each newly constructed <sup>114</sup> amusement ride (except for mobile/temporary rides and a few additional excepted rides), will be required to provide at least one type of wheelchair access (namely, one wheelchair space, one transfer seat, or one transfer device).	ADA	ADA	ADA

<sup>114</sup> This requirement will only effect a change for newly constructed amusement rides. No changes will be required to existing rides unless the structural or operational characteristics of the ride are altered to the extent that the amusement ride's performance differs from that specified by the manufacturer.

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
97	Maneuvering Space in Load and Unload Area of Amusement Ride 234.2; 1002.3	Each amusement ride (except for mobile/temporary rides) will be required to provide specified maneuvering space in the load/unload area.	ADA	ADA	ADA
98	Signs at Amusement Rides 216.12	Signs identifying the type and location of wheelchair access for each amusement ride will be required at entries to queues and waiting lines.	ADA	ADA	ADA
99	Accessible Route to Play Components (BR) 206.2.17; 240.2.1-2; 1008.2-3	At least one accessible route will be required within each play area and will have to connect to a certain number of ground level play components, elevated play components, and entry points to soft contained play structures.	ADA	ADA	ADA
100	Accessible Play Components (BR) 240.2; 1008.4	Play components (include ground level, elevated, and soft contained play structures) will themselves have to comply with accessibility requirements.	ADA	ADA	ADA
101 & 103	Accessible Route to Play Components (ALT/NC) 206.2.17; 240.2.1-2; 1008.2-3	At least one accessible route will be required within each play area and will have to connect to a certain number of ground level play components, elevated play components, and entry points to soft contained play structures.	ADA	ADA	ADA

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
102 & 104	Accessible Play Components (ALT/NC) 240.2; 1008.4	Play components (include ground level, elevated, and soft contained play structures) will themselves have to comply with accessibility requirements.	ADA	ADA	ADA
106	Post Secondary School Multi-Story Dorm Facility	Public Dormitory facilities at post secondary schools formerly complying with UFAS will be required to provide accessible vertical access (i.e., elevators, platform lifts, etc.) between all levels and more widely disperse rooms with mobility features and communication features for people who are deaf or hard of hearing.	ADA	ADA	ADA
107	Mobility Accessible Prison Cell	Detention and correctional facilities previously provided 5% mobility accessible cells (under UFAS), will now be required to provide fewer mobility-accessible cells (3% ).	ADA	ADA	ADA
108	Communications Accessible Prison Cell	At least 2% equipped with audible emergency alarm systems or permanently installed telephones must provide accessible communication equipment.	ADA	ADA	ADA
109	Social Service Establishments – Elevator Access	Multi-story social service establishments will no longer be required to provide accessible vertical access (i.e., elevator or platform lift) to each story or level so long as all common and public use areas are otherwise located on an accessible route.	ADA	ADA	ADA
110	Social Service Establishments – Clear Floor Space Around Beds	Homeless Shelters and other social service establishments with over 25 beds will be required to ensure 2% of these beds have the clear floor space that enables a person using a wheelchair to transfer into the bed.	ADA	ADA	ADA
113	Housing at Place of Education - Kitchen Turning Space	Specified kitchens in housing at places of education will be required to provide larger turning spaces.	IBC ICC/ANSI A117.1-1998 -- 1002.3.2; 1002.2.12.1.2	IBC ICC/ANSI A1171.1-2003:804.2 & 804.3	IBC ICC/ANSI A1171.1-2003:804.2 & 804.3

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
114	Housing at Place of Education – Kitchen Work Surface	Specified kitchens in housing at places of education will be required to provide accessible work surfaces, including a lower height for a specified section (i.e., at least 30 inches wide minimum) of the counter.	IBC 1107.5.4; ICC/ANSI A117.1-1998; 1002.12.3	IBC 1107.6.2.2; ICC/ANSI A117.1-2003: 804.3, 902.2 & 902.3	IBC 1107.6.2.2 & Table 1107.6.1.1; ICC/ANSI A117.1-2003: 1002.12
115 & 116	Secondary Accessible Means of Entrance to Pools	Larger swimming pools with over 300 linear feet of pool wall will be required to provide a second accessible means of entry (in addition to providing a primary accessible entry via pool lift or sloped entry). The secondary accessible entry may be a transfer wall, transfer system, pool stairs, pool lift, or sloped entry.	ADA	ADA	ADA
117	Social Service Establishments – Roll-In Shower	Homeless Shelters and other social service establishments with more than 50 beds and common use bathing facilities will be required to provide at least one roll-in shower. (When separate common use shower facilities are provided for men and women, a roll-in shower must be provided for each gender.) Currently, such facilities have the option of choosing among several different types and configurations of accessible bathing facilities, including roll-in showers.	ADA	ADA	ADA

## APPENDIX 10: MATRIX OF SELECT REQUIREMENTS AND IBC/ANSI MODEL CODES – ADOPTION BY JURISDICTION

The Final RIA (Section 6.2.2) includes an alternative state- and requirement-specific IBC/ANSI baseline analysis for 20 requirements which have readily-identifiable IBC/ANSI counterparts and which, with one exception, have negative NPVs under the primary baseline in order to illustrate the estimated impact (in terms of total NPV) of using more refined alternate IBC/ANSI baselines. These alternate IBC/ANSI baselines were constructed for each of the 20 requirements by researching current building codes nationwide (*i.e.*, all 50 States, the District of Columbia, and, as applicable, local jurisdictions within States) to determine which State or local jurisdictions had adopted their respective equivalent IBC/ANSI counterpart(s) as part of the building or accessibility code in that jurisdiction.

This table details the adoption by individual states of IBC/ANSII as relevant to these requirements, and uses the following codes:

- 1 T2 & T3: All buildings
- 2 T3 only - 0 for public buildings
- 3 T2 and hotels, motels, inns, movie theaters
- 4 Honolulu
- 5 T2 only
- 6 T2 and elementary and day care centers
- n/a Local

	Automatic Door Break-Out Openings	Door and Gate Surfaces	Stairs (Alt/BR)	Standby Power for Platform Lifts	Power-Operated Doors for Platform Lifts	Alterations to Existing Elevators	Water closet clearance in single-user toilet rooms - out swinging door	Water closet clearance in single-user toilet rooms - in swinging door	Drinking Fountains	Side Reach	Washing Machines and Clothes Dryers (Scoping)	Location of Accessible Route to Stages	Wheelchair Space Overlap in Assembly Areas	Public TTYS	Public Telephone Volume Controls	Two-Way Communication Systems at Entrances	ATMs and Fare Machines	Assistive Listening Systems (technical)	Accessible Attorney Areas and Witness Stands
Req. #	3	5	10	14	15	16	28	32	35	37	41	51	52	58	59	60	61	62	68
AL	3	3	1	3	3	1	1	1	3	1	3	0	3	3	3	3	3	0	0
AK	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1

	Automatic Door Break-Out Openings	Door and Gate Surfaces	Stairs (Alt/BR)	Standby Power for Platform Lifts	Power-Operated Doors for Platform Lifts	Alterations to Existing Elevators	Water closet clearance in single-user toilet rooms - out swinging door	Water closet clearance in single-user toilet rooms - in swinging door	Drinking Fountains	Side Reach	Washing Machines and Clothes Dryers (Scoping)	Location of Accessible Route to Stages	Wheelchair Space Overlap in Assembly Areas	Public TTYS	Public Telephone Volume Controls	Two-Way Communication Systems at Entrances	ATMs and Fare Machines	Assistive Listening Systems (technical)	Accessible Attorney Areas and Witness Stands
AZ	n/a	n/a	1	n/a	n/a	1	0	1	n/a	1	n/a	0	n/a	n/a	n/a	n/a	n/a	0	0
AR	1	2	1	1	2	1	2	1	2	1	2	0	1	2	2	2	2	0	0
CA	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CO	5	5	n/a	5	5	n/a	1	5	5	5	0	n/a	5	0	0	0	0	n/a	n/a
CT	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	1
DE	n/a	1	n/a	n/a	1	n/a	5	n/a	1	n/a	0	0	0	0	0	0	0	0	0
DC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FL	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
GA	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0
HI	4	4	1	4	4	1	4	1	4	1	4	0	4	4	4	4	4	0	0
ID	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IL	n/a	1	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IN	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0
IA	1	1	1	1	1	1	n/a	1	1	1	0	1	1	0	0	0	0	1	1
KS	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
KY	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0
LA	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0
ME	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0
MD	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
MA	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0

	Automatic Door Break-Out Openings	Door and Gate Surfaces	Stairs (Alt/BR)	Standby Power for Platform Lifts	Power-Operated Doors for Platform Lifts	Alterations to Existing Elevators	Water closet clearance in single-user toilet rooms - out swinging door	Water closet clearance in single-user toilet rooms - in swinging door	Drinking Fountains	Side Reach	Washing Machines and Clothes Dryers (Scoping)	Location of Accessible Route to Stages	Wheelchair Space Overlap in Assembly Areas	Public TTYS	Public Telephone Volume Controls	Two-Way Communication Systems at Entrances	ATMs and Fare Machines	Assistive Listening Systems (technical)	Accessible Attorney Areas and Witness Stands
MI	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	1
MN	1	0	1	1	0	1	1	1	1	1	0	1	1	0	0	0	0	1	1
MS	n/a	n/a	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	0	n/a	n/a	n/a	n/a	n/a	0	0
MO	n/a	n/a	1	n/a	n/a	1	0	1	n/a	1	n/a	0	n/a	n/a	n/a	n/a	n/a	0	0
MT	1	0	1	1	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0
NE	n/a	n/a	1	n/a	n/a	1	0	1	n/a	1	n/a	0	n/a	n/a	n/a	n/a	n/a	0	0
NV	NV	NV	NV	NV	NV	NV	n/a	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
NH	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1
NJ	1	1	1	1	1	0	1	1	1	1	0	0	1	0	0	0	0	0	1
NM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NY	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1
NC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ND	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0
OH	1	n/a	1	1	n/a	1	0	1	n/a	1	0	0	1	0	0	0	0	0	0
OK	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OR	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
PA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SC	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	1
SD	6	6	1	6	5	1	0	1	5	1	n/a	0	6	n/a	n/a	n/a	n/a	0	0

	Automatic Door Break-Out Openings	Door and Gate Surfaces	Stairs (Alt/BR)	Standby Power for Platform Lifts	Power-Operated Doors for Platform Lifts	Alterations to Existing Elevators	Water closet clearance in single-user toilet rooms - out swinging door	Water closet clearance in single-user toilet rooms - in swinging door	Drinking Fountains	Side Reach	Washing Machines and Clothes Dryers (Scoping)	Location of Accessible Route to Stages	Wheelchair Space Overlap in Assembly Areas	Public TTYS	Public Telephone Volume Controls	Two-Way Communication Systems at Entrances	ATMs and Fare Machines	Assistive Listening Systems (technical)	Accessible Attorney Areas and Witness Stands
TN	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0
TX	n/a	n/a	1	n/a	n/a	1	0	1	n/a	1	n/a	0	n/a	n/a	n/a	n/a	n/a	0	0
UT	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1
VT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VA	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1
WA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WV	1	1	n/a	1	1	n/a	1	1	1	1	0	n/a	1	0	0	0	0	n/a	1
WI	n/a	n/a	n/a	n/a	n/a	n/a	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WY	1	0	1	1	0	1	7	1	0	1	0	0	1	0	0	0	0	0	0