

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

**INITIAL REGULATORY IMPACT ANALYSIS OF THE
PROPOSED 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

1991 ADAAG – ADA Accessibility Guidelines
2004 ADAAG – ADA/ABA Accessibility Guidelines
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
BLS – Bureau of Labor Statistics
BR – barrier removal
CPI – Consumer Price Index
Department of 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

EXECUTIVE SUMMARY

With the anticipated adoption of the revised regulations implementing Titles II and III of the Americans with Disabilities Act (ADA), including revised ADA Standards for Accessible Design (proposed standards), the Department of Justice (the Department) has commissioned this initial Regulatory Impact Analysis (RIA or regulatory analysis). The proposed standards are based upon the ADA/ABA 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 benefits and compares them with an update of the Access Board's work on costs.

This initial RIA is attached to the Notice of Proposed Rulemaking (NPRM). The NPRM includes additional regulatory proposals with benefit-cost implications. A final regulatory analysis will be published with a final rule adopting revised ADA Standards. 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, 2004.¹

Dimensions of the Regulatory Analysis

Incremental Effects

The economic costs and benefits of the revised regulations are estimated for existing and new facilities. Costs and benefits are measured on an *incremental* basis. That is, the economic impact of the proposed standard are represented by the change in benefits as compared to previously enacted access regulations. The primary baseline of the analysis is the 1991 ADA Standards. However, some States and smaller jurisdictions have enacted more current standards (such as International Building Code (IBC) 2000, IBC 2003, and IBC 2006) and these represent alternative baselines.

Type of Construction

The 2004 ADAAG imposes costs for different types of construction: new construction, alterations and architectural 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 proposed standards. 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 proposed standards.

Facilities Subject to Proposed Requirements

The proposed standards will apply to new construction and alterations for both Title II and Title III entities. Types of facilities include single purpose facilities, such as hotels and classes of facilities, such as retail stores (e.g. clothing, etc.) or service establishments (e.g., banks, dry cleaners, etc.). 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,

¹ Federal Register, Vol. 69, No. 189: 58768-58786.

especially the responsiveness of average customers to changes in prices for goods and services at facilities. For example, gas stations and restaurants are in different groups because consumers would have less price responsiveness in buying gasoline than going to a restaurant due to the general necessity for many people to drive a car, while most people can cook at home. Finally, it must be noted that some facilities, such as exercise equipment and pools, 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 currently considering providing Safe Harbor (SH) for existing private (Title III) facilities already compliant with 1991 Standards. Under Safe Harbor, these facilities would not need to undergo barrier removal for revised requirements. 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. This analysis assumes that Title II entities will not need to make changes to existing facilities except in the limited context of public playgrounds, swimming pools, and saunas.

Description of Requirements

Over one hundred substantive changes to the 1991 Standards and 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 proposing to adopt 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).² 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.³ 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 or are specifically exempted in 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

² 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

³ The 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.

have long been subject to specific accessibility requirements.⁴ 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.

In addition to supplemental and revised requirements, the Department is making several regulatory proposals. The regulatory proposals can be grouped into five different categories: 1) those modifying 2004 ADAAG requirements for barrier removal in an effort to decrease the burden on businesses, 2) additional requirements similar to the 2004 ADAAG for certain equipment or facilities, 3) new proposals regarding effective communications, 4) codifications of existing law, and 5) proposals expected to have no significant cost impact. Regulatory proposals in the first three categories have been incorporated into the benefit-cost model. Codifications of existing law and the proposals that are expected to have no cost impact have not been analyzed.

Analytical Scenarios

To assess the implications of the Safe Harbor proposal for existing facilities that are compliant with the 1991 Standards, this analysis provides two sets of results, one with and one without SH Under SH, barrier removal is not required and changes to facilities proceed on the alterations schedule. Under the safe harbor, the Department would deem 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 would be eligible for the SH.

To determine the proportion of existing elements that would undergo barrier removal or 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 date of implementation of the new standards. 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

⁴ Such standards include UFAS, another Federal accessibility standard (for example, under the Fair Housing Act or Section 504 of the Rehabilitation Act) or the IBC.

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 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 proposed standards. 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 proposed standards are justified in economic terms. The benefit consumers derive from changes in facility accessibility can be equated to 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.

Benefits – the economic value people derive from accessibility – can be divided into three categories:

- Use value: the value that people with disabilities derive from the use of accessible facilities;
- Option value: the value that people both with and without disabilities derive from the opportunity to obtain the benefit of accessible facilities; and,
- Existence value: the value that people both with and without disabilities derive from the guarantees of equal protection and nondiscrimination that are accorded through the provision of accessible facilities.

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 proposed requirements 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 is 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, are 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. For example, enhancing the quality of facility access means changing the experience of moving through doorways, getting a drink of water, or getting into a pool. With the proposed requirements, these common everyday activities will be easier for enable persons with disabilities, and in may enable them to feel more like common people, not victims of discrimination. In particular, the supplemental, or “new” requirements, are designed to ensure independent access where independent access had not existed before (play areas, recreational facilities, specified courtroom elements, and detention facilities). Some revised requirements may have significant impact, as well. For example, the seemingly slight change in side reach requirements might well mean the difference between inaccessibility and independence for someone who could for the first time independently operate the lights in their rooms at night. 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.

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 operations and maintenance (O&M) and the cost of lost 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.

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 passes, approximately 2024, 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 under the proposed standards. 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 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 cost and benefit. 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 benefit (“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 total value. 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 who use elements that are affected by the proposed requirements.⁵ 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.⁶ In addition, it is assumed that existing facility users 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 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

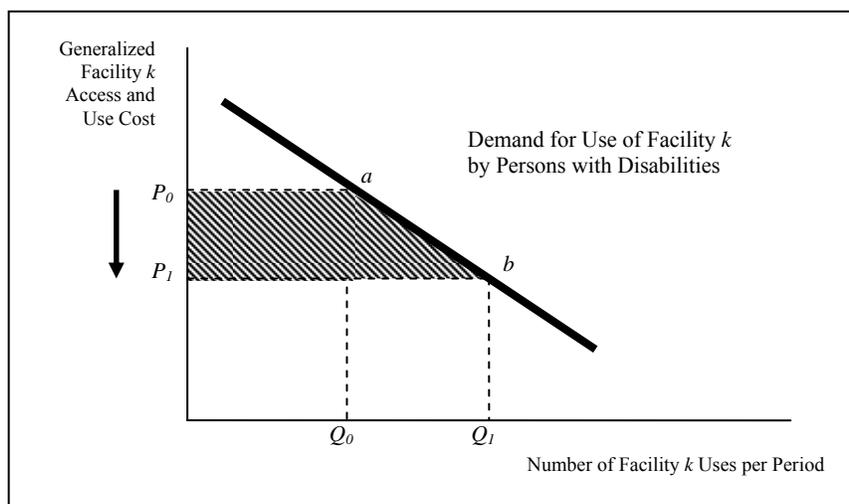
⁵ Employees with disabilities are also beneficiaries of requirements that increase access at facilities. However, since limited employment data is available by facility type, most of the assessment of benefits for employees is discussed in the section on unquantified benefits. See Section 5.4.

⁶ Initial assumptions on the impact on use of recreational facilities due to new requirements are that they would permit new *independent* access where it is currently not possible under the current standard. Evidence from the expert panel suggests that some people with disabilities use such facilities. Their comments however also indicate that the new 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.

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 $[P_0 a b P_1]$.

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 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 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 difference between the cost of complying under the 1991 standard and compliance with the 2004 ADAAG. 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 proposed standard represents 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.

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 would be able to 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 strictly to meet compliance 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 proposed standards 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 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. 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 a baseline scenario: Safe Harbor (SH), barrier removal is readily achievable for 50% of elements (RA50) and the baseline is the 1991 Standards (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 1,000 Monte Carlo simulations.

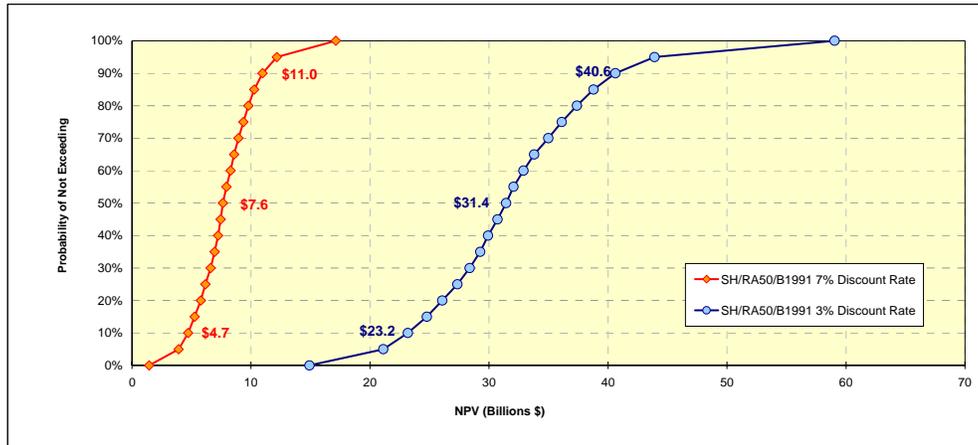
Under the assumptions used to construct this analysis, these results indicate that the proposed regulations have a net positive public benefit – the benefits exceed the costs. For the uncertainties modeled, the risk analysis indicates zero probability that costs would exceed benefits. The latter is seen from the numbers on the chart represent the 10th, 50th and 90th percentiles of the distribution. The range between the 10th and 90th 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 (50th) percentile (in the middle of this range).

The 7% discount rate indicates that the 80% confidence interval ranges from \$4.7 B to \$11.0 B, with a median of \$7.6 B. At 3%, this range (\$23.2 to \$40.6 B) is much wider and more skewed towards 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. Differences between the Total expected NPV in Table ES-1 (\$7.5 B at a 7% discount rate) and the median NPV in Figure ES-2 (\$7.6 B) are caused by the skewness of the distribution of NPVs.

Table ES-1: Total Net Present Value in 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%	\$31.1	\$53.9	-\$22.8
7%	\$7.5	\$19.5	-\$11.9

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



The following Figures (ES-3, 4, and 5) show the NPV results for other scenarios. Figure ES-3 compares SH and NSH policies. The difference in NPV is significant. Without SH, benefits are most likely to exceed costs by about \$3.3 B whereas with SH, benefits exceed costs by over \$7.6 B. Part of the explanation for this discrepancy is that because of NSH, barrier removal costs are applied to a number of more stringent requirements and the level of benefits for many elements' 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 barrier removal before the next rule-making occurs. It is also worth noting that the wider range in NPV for NSH compared to SH reflects a proportionally larger nominal range of costs for barrier removal compared to alterations construction scenarios.

Figure ES-3: NPV Comparison – Safe Harbor Policy: SH/RA50/ B1991, NSH/RA50/ B1991

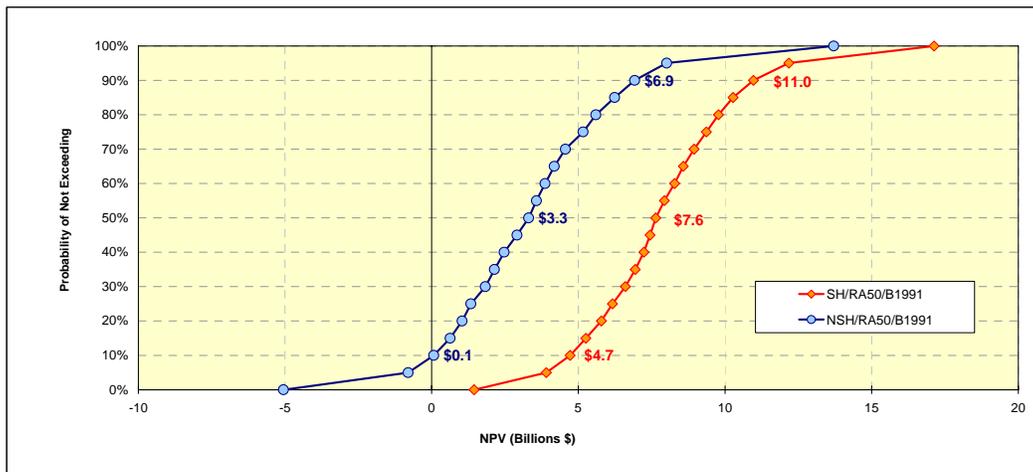


Figure ES-4 provides an assessment of how NPV changes with different RA assumptions. The chart shows RA at the 0, 50, and 100% levels. There is little variation among the three RA scenarios: One of the reasons that the results of the RA scenarios do not vary significantly under safe harbor is that there are three 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 reduces costs because a higher RA% implies fewer alterations on elements subject to new requirements.

Finally, the third effect increases the benefits as the RA% increases, because the rate of completion of elements related to new requirements is higher, and so are the benefits derived from them (benefits can be shown to increase at a decreasing rate). The combination of these three effects keeps the RA curves close to one another.

Figure ES-4: NPV Comparison – Alternate Readily Achievable %: SH/ RA0, RA50, RA100/ B1991

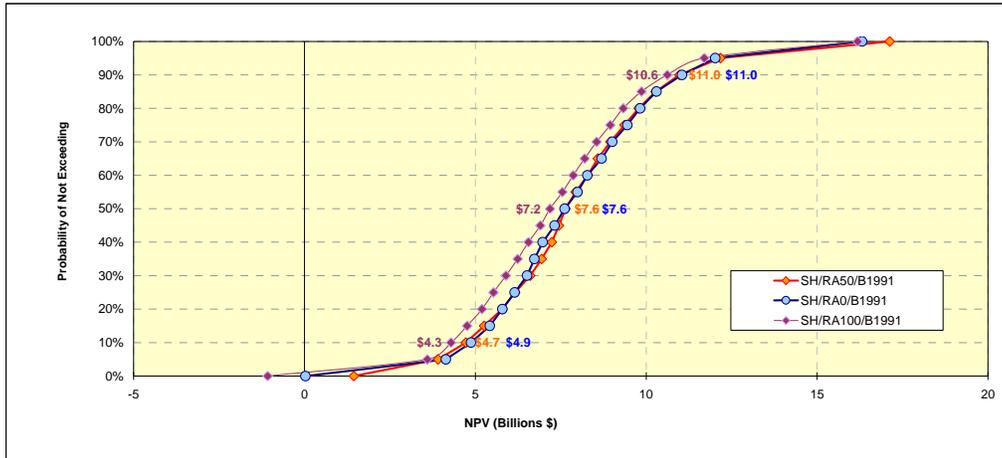
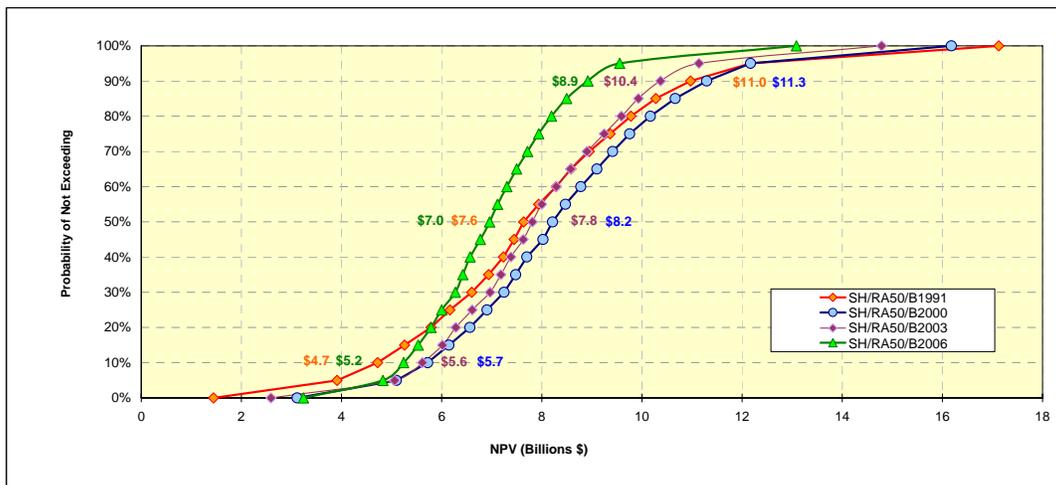


Figure ES-5 represents differences in NPV for different baselines, including the various IBC editions. These probability curves indicate that the effect of changing the set of requirements that apply. The results indicate that B2000 (IBC 2000) has the highest NPV and B2006 (IBC 2006) has the lowest and 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-5: NPV Comparison – Alternate Baselines: SH/RA100/ B1991, B2000, B2003, B2006



1. INTRODUCTION

With the anticipated adoption of the proposed ADA Standards for Accessible Design (proposed standards), which are based upon revised 2004 Americans with Disabilities Act Accessibility Guidelines (2004 ADAAG) published by the Architectural and Transportation Barriers Compliance Board (Access Board) on July 23, 2004, the Department of Justice (the Department) is preparing this initial Regulatory Impact Analysis (regulatory analysis or RIA) encompassing buildings undergoing new construction, alterations and architectural barrier removal.

This analysis is attached to a Notice of Proposed Rulemaking (NPRM). The NPRM proposes to adopt revised ADA standards and seeks public comment. The final regulatory analysis will be published with a final rule adopting revised ADA standards. 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, 2004.⁷ This initial proposed framework for the regulatory analysis has been reproduced in Appendix 1.

The regulatory analysis estimates the economic impact, in terms of all costs and benefits, on facilities and the general public associated with how the proposed standards affect existing and new facilities. 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 ADA rule (1991 Standards). Incremental impacts are also measured against 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 regulation 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 analytical results of the regulation, individual requirements and facilities. Several scenarios are evaluated to assess how costs and benefits change under different assumptions. This chapter also explores the qualitative value of non-quantified benefits. Chapter six discusses the approach to assessing and impact of the proposed regulation on small businesses.

Appendices present additional information about the analysis and especially the data and assumptions. Appendix 1 reproduces the Appendix A to the Advance Notice of Proposed Rulemaking (ANPRM). Appendix 2 summarizes the proposed requirements. 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 discusses the regulatory proposals.

The scope of this analysis is very broad yet involves very detailed changes that can occur in a wide variety of situations. Many estimates and assumptions were necessary in the absence of specific data and to make the estimate exercise manageable. The Department solicits any comments to improve the analysis to the greatest extent possible. Comments may be submitted to

⁷ Federal Register, Vol. 69, No. 189: 58768-58786.

the regulatory docket using any of the methods listed under ADDRESSES in the preamble to this Proposed Rule. All input received during the public comment period will be considered.

2. ADAAG BACKGROUND

The scope of the regulatory analysis, applied to the proposed standards, 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 (this part of 2004 ADAAG is sometimes referred to in this paper as the “general provisions of revised ADAAG”);
- 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;⁸
- 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);⁹ 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).¹⁰

These different parts are now incorporated into 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 either new construction of buildings. Alterations involve major renovations at existing sites which 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 2004 ADAAG would, if adopted as proposed standards, 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 2004.¹¹ The Department also consulted the Board’s earlier regulatory

⁸ 63 FR 2000, Jan. 13, 1998.

⁹ 65 FR 62497, Oct. 18, 2000.

¹⁰ 67 FR 56352, Sept. 3, 2002.

¹¹ 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>.

assessments for its supplemental guidelines for play areas (2000) and recreation facilities (2002).¹² Because the costs of these supplemental guidelines had already been adopted into 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 2004 ADAAG to those in the 1991 ADAAG (as amended through 2002). The Department however must compare the provisions in the 2004 ADAAG (as proposed 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 proposed standards would 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 proposed standards represents not a substantive change but merely a codification of current law.¹³

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.¹⁴ 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

¹² The Board's final assessments for its supplemental guidelines for play areas and recreation facilities are available 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.

¹³ 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).

¹⁴ 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.”

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 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 proposed standards would 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 proposed standards would affect over one hundred 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 ADAAG since they were adopted, the Department is now proposing to adopt 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.¹⁵

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

¹⁵ 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, detention and correctional facilities.

to the types of elements and spaces that are typically found in a wide range of commonly used facility types, such as restaurants, retail stores, schools, hospitals, and office buildings. Also the revised requirement 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 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 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.¹⁶

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

¹⁶ The reason for this is that Title II entities that elected to comply with ADAAG rather than UFAS (an option they will no longer have under the proposed standards), 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 preparing several regulatory proposals. The regulatory proposals can be grouped into five different categories: 1) those modifying 2004 ADAAG requirements for barrier removal in an effort to decrease the burden on businesses, 2) additional requirements similar to the 2004 ADAAG for certain equipment or facilities, 3) new proposals regarding effective communications, 4) codifications of existing law, and 5) proposals expected to have no cost impact. Regulatory proposals in the first three categories have been incorporated into the benefit-cost model and calculations for the revised 2004 ADAAG. The codifications of existing law and the proposals expected to have no cost impact have not been analyzed.

Table 1 lists requirements relevant to this analysis. A summary of the requirements is provided in Appendix 2, which references this list, numbered 1-112. 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

ID	Requirement	ID	Requirement
1	Public Entrances	57	Accessible Route to Press Boxes
2	Maneuvering Clearance or Standby Power for Automatic Doors	58	Public TTYS
3	Automatic Door Break-Out Openings	59	Public Telephone Volume Controls
4	Thresholds at Doorways	60	Two-Way Communication Systems at entrances
5	Door and Gate Surfaces	61	ATMs and Fare Machines
6	Location of Accessible Routes	62	Assistive Listening Systems (technical)
7	Common Use Circulation Paths in Employee Work Areas	63	Visible Alarms in Alterations to Existing Facilities
8	Accessible Means of Egress	64	Detectable Warnings (scoping)
9	Stairs (NC)	65	Detectable Warnings (technical)
10	Stairs (ALT/BR)	66	Assistive Listening Systems (scoping)
11	Handrails Along Walkways	67	Accessible Courtroom Stations
12	Handrails	68	Accessible Attorney Areas and Witness Stands
13	Accessible Routes from Site Arrival Points and Within Sites	69	Raised Courtroom Stations Not for Members of the Public
14	Standby Power for Platform Lifts	70	Accessible Route to Exercise Machines and Equipment
15	Power-Operated Doors for Platform Lifts	71	Accessible Machines and Equipment
16	Alterations to Existing Elevators	72	Accessible Saunas and Steam Rooms (NC)
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units	73	Accessible Lockers
18	“LULA” and Private Residence Elevators	74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms

ID	Requirement
19	Van Accessible Parking Spaces
20	Valet Parking Garages
21	Mechanical Access Parking Garages
22	Direct Access Entrances from Parking Structures
23	Passenger Loading Zones
24	Parking Spaces
25	Parking Spaces (Signs)
26	Passenger Loading Zones at Medical Care and Long-Term Care Facilities
27	Ambulatory Accessible Toilet Compartments
28	Water Closet Clearance in Single-User Toilet Rooms with Out-Swinging Doors
29	Shower Spray Controls
30	Urinals
31	Multiple Single-User Toilet Rooms
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors
33	Water Closet Location and Rear Grab Bar
34	Patient Toilet Rooms
35	Drinking Fountains
36	Sinks
37	Side Reach
38	Sales and Service Counters (NC)
39	Sales and Service Counters (ALT)
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
44	Operable Parts
45	Transient lodging Guest Room Vanities
46	Operable Windows
47	Dwelling Units with Communication Features (1991)
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

ID	Requirement
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	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)
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 Holes (mini golf)
94	Accessible Holes (mini golf)
95	Accessible Route to amusement rides
96	Wheelchair Space or Transfer Seat or Transfer Device
97	Maneuvering Space in Load and Unload Area
98	Signs at amusement park 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)
105	Open Captioning in Sports Stadium
106	Post Secondary School Multi-Story Dorm Facility
107	Mobility Accessible Prison Cell
108	Communication Accessible Prison Cell
109	Social Service Establishment (UFAS)

ID	Requirement
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)

ID	Requirement
110	Social Service Establishment (ADAAG)
111	Accessible Saunas and Steam Rooms (ALT/BR)
112	Accessible Means of Entry to Pools (BR)

2.3 Facilities

The 2004 ADAAG and the proposed standards apply to new construction and alterations for both Title II and Title III entities. Types of facilities include single purpose facilities such as hotels and classes of facilities such as retail stores (e.g. bakeries, etc.) or service establishments (e.g. banks, dry cleaners, etc.). 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 of the general necessity for many people in driving 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 or 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 Shelter

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, 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 or zoos (public)
BF	Homeless Shelter (public)
BG	Exercise facilities (public)
BH	Social service establishments (public)
BI	Aquatic centers / swimming pools (public)
BJ	Miniature golf courses (public)

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

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

One of the methods the Department is considering to minimize the financial burden upon existing private (Title III) facilities, while still maintaining high levels of accessibility for persons with disabilities, is to establish a safe harbor (SH) policy. Under SH, the Department would deem compliance with scoping and technical requirements in the 1991 Standards to constitute compliance with the ADA for purposes of meeting BR obligations on a requirement-by-requirement basis. In other words, only elements in a covered facility which are in compliance with the applicable scoping and technical requirements of the 1991 Standards would be eligible for SH.

Safe harbor would 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 -- since such requirements necessarily have no counterpart in the 1991 Standards. Second, existing public (Title II) 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 for which the Department is proposing a separate safe harbor provision.)¹⁷

As the Department pointed out in the Advance Notice of Proposed Rulemaking (ANPRM), published on September 30, 2004.¹⁸

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

¹⁷ 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 proposed 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.

¹⁸ Federal Register, Vol. 69, No. 189: 58768-58786.

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 prevent critical access for persons with disabilities. Although the reduced improvements compared to new facilities may be minor, some people may lose significant benefits by establishing SH. Given this tradeoff, the Department has tasked this analysis to assess the difference in costs and benefits of the proposed standards both with and without SH.¹⁹

2.4.2 Classification of Requirements

The framework for determining the impact of the proposed standards 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 would be readily achievable, and whether or not SH is adopted. This framework also defines the differences in how revised and new 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 be fully compliant with the 1991 standards. That is, if it was readily achievable, the element is assumed to be compliant with the 1991 Standards; and, if it was not readily achievable, the element is assumed to be non-compliant. Compliance with the 1991 Standards is assumed for existing elements: built after 1993; altered after 1992; or having readily achievable barrier removal after 1992. Non-compliant elements are assumed not to have been readily achievable. Classification of elements is as follows:

- The first division classifies elements as being designed and constructed for first occupancy before or after 1993.²⁰ These buildings would be “new” compared to the 1991 Standards. 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).²¹
- Elements constructed before 1993 are then sub-divided into whether they have or have not been altered between 1992 and 2009.²² The proportion of facilities altered is represented by the proportion (b).

¹⁹ The Department has also requested public comments in the ANPRM (Federal Register, Vol. 69, No. 189: 58768-58786. By comparing the costs and benefits of each implementation scenario, as well as the comments from members of the public directly affected by the standards, the Department can make an informed decision regarding whether SH should be established.

²⁰ The actual date is January 26, 1993, but data is only available on an annual basis.

²¹ Building construction date data is used to estimate c.

²² January 26, 2009 is the earliest likely date for the proposed standards to become effective.

- The third classification divides unaltered facilities into whether barrier removal was or was not readily achievable. It is assumed that if barrier removal is readily achievable, then it has been undertaken. This sub-classification applies to unaltered elements because if they had been altered, they are assumed to have been compliant with the 1991 Standards. If barrier removal is not readily achievable, it is not compliant. Proportions of elements assumed to be readily achievable to comply with the proposed new standards is (a).

With respect to the revised, more stringent requirements in the proposed standards, existing elements comply by undertaking either barrier removal or through an alteration. In all cases, if barrier removal is not readily achievable, alterations are undertaken. Only compliant elements subject to more stringent requirements are considered for barrier removal and of these, only elements that are readily achievable. If barrier removal is not readily achievable relative to the proposed standards, it is not undertaken. Barrier removal of currently noncompliant elements due to more stringent requirements cannot logically be readily achievable because they are currently noncompliant and more stringent requirements only increase the level of (and cost of) compliance. Finally, elements subject to less stringent requirements (whether currently compliant or not) do not undertake barrier removal simply because barrier removal only applies to increased standards.²³

Elements subject to less stringent proposed requirements are assumed to be compliant and to have no legal obligations under the proposed standards. Although, when the elements subject to less stringent requirements are altered, which is assumed to eventually occur in the 40 year lifecycle of a building, it will undertake the alteration cost of compliance.

SH policy, as applied to this classification, determines which elements benefit from avoided barrier removal. In particular, with SH, currently compliant elements do not need to undertake barrier removal and would only incur costs during an alteration. Without SH, all currently compliant elements subject to more stringent requirements undertake barrier removal ahead of the alteration schedule if it is 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.

Evaluating supplemental requirements is straightforward. New requirements affect elements not subject to 1991 Standards. All new requirements which are readily achievable must undertake barrier removal. If barrier removal is not readily achievable, then it is not undertaken. Supplemental requirements appear in Figure 1 as subject to requirements after 2010, when the proposed rule is expected to be adopted. With or without a SH policy, elements subject to supplemental requirements are noncompliant, and must comply if it is 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

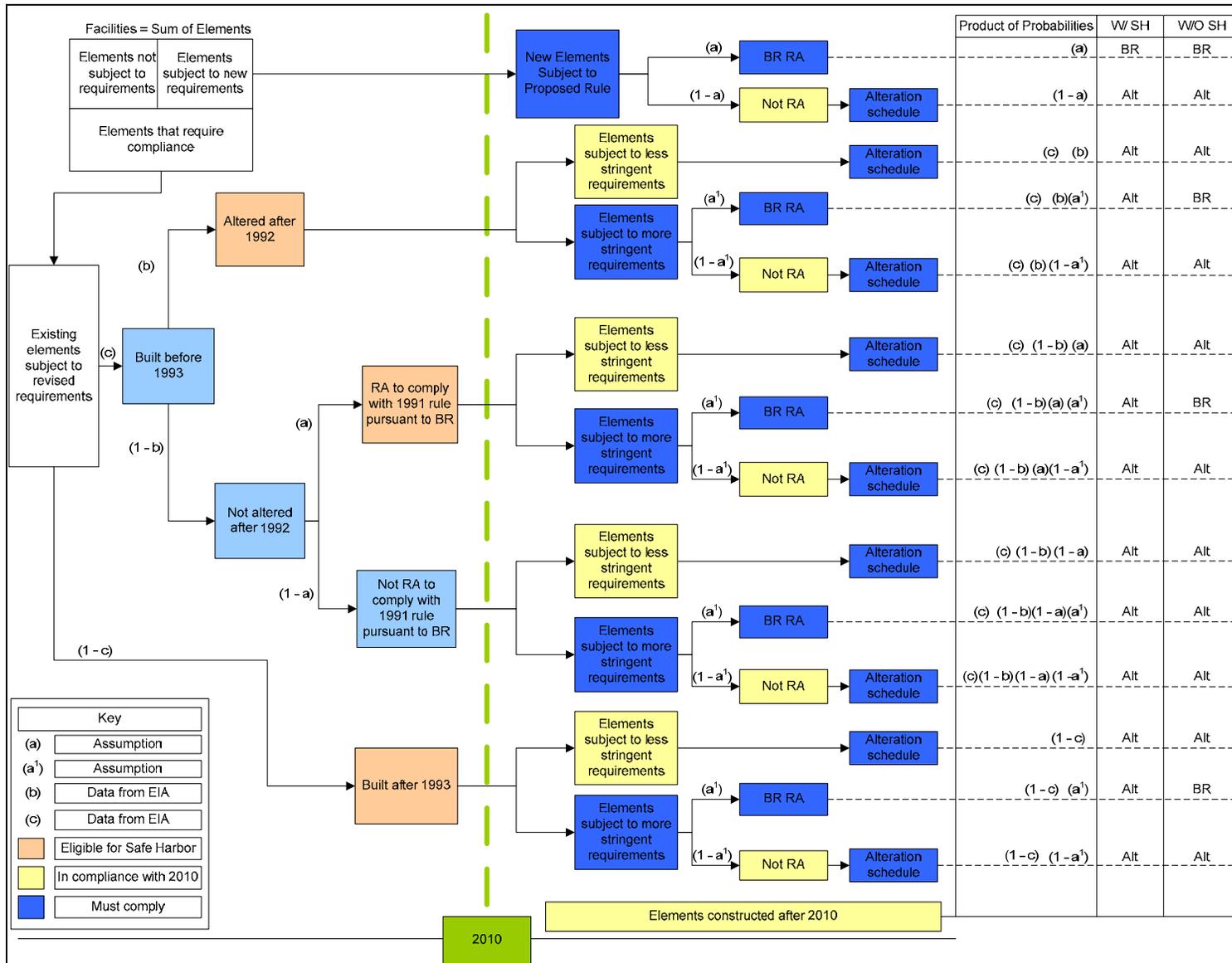
²³ Elements that are compliant with the current requirement are not required to be retrofitted to meet a less stringent requirement. Although the proposed Title III regulation will permit entities that had complied with the current requirement to voluntarily retrofit (or infill) to the proposed requirement should they wish to do so, whether or not to do so is entirely within the discretion of the entity.

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 product of these probabilities represents the distinct likelihood that such 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.

The percentage of elements that are readily achievable (a^1) for the revised standards may be equal or proportional to a facilities original readily achievable status (a). This proportion is not known for facilities nor 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.

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.²⁴ While many State and local governments have enacted building codes that include standards relating to accessibility, many of which are based on model codes such as the IBC, there is wide variation with respect to which standards have been adopted. Because the model codes are voluntary, public entities often modify or carve out particular standards when adopting them into their laws, and even when the standards are the same, local officials often interpret them differently. 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 the regulatory assessment, the analysis 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 proposed standards. A version of the IBC – IBC 2000, IBC 2003 or IBC 2006 – has been adopted at the state or local level (by some or all jurisdictions) in all 50 states and the District of Columbia.²⁵ The IBC standards apply to requirements that are similar to and often equivalent to the proposed standards.²⁶ After the effective date of the proposed standards, facilities that are currently subject to an IBC standard would experience less impact from the Department’s adoption of the proposed standards 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.²⁷ It is also not clear how

²⁴ 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).

²⁵ According to statistics compiled by the International Code Council (which publishes the IBC), a version of the IBC – either IBC 2000, IBC 2003, or IBC 2006 – has been adopted on a statewide basis in 46 states and the District of Columbia. See International Codes – Adoptions by States, <http://www.iccsafe.org/government/stateadoptions.pdf> (April 1, 2008). In the four remaining states (Colorado, Delaware, Illinois and Mississippi), adoption of IBC has been left to the discretion of local jurisdictions. IBC adoption by these local jurisdictions has been widespread. For example, all local jurisdictions in Delaware have adopted the IBC and, in Mississippi, all but one county have adopted the IBC.

²⁶ One of the Access Board’s goals in revising ADAAG was to harmonize the ADA guidelines with the model codes, such as the IBC, precisely because they form the basis of many State and local building codes.

²⁷ ANSI A117.1 (or a regulatory equivalent) has been adopted by 15 states on a statewide basis (Alabama, Alaska, Connecticut, Michigan, Minnesota, Montana, New Jersey, New Mexico, New York, Oklahoma, South Carolina,

many of the jurisdictions that have adopted a version of the IBC have 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 does not necessarily mean that facilities within that jurisdiction are legally subject to its accessibility provisions.

The Department had considered following a state-by-state approach in which the relevant baseline for newly constructed and altered facilities would vary from state to state, depending on which version of the IBC the State had adopted, using the 1991 Standards as the default baseline for any State that had not yet adopted any version of the IBC. However, given the many variations among State laws with respect to whether they have adopted the accessibility provisions of the IBC, the Department has determined that it would be infeasible to conduct an accurate state-by-state assessment on a national basis. Therefore, the Department has presented the benefits and costs for newly constructed facilities, altered facilities and existing facilities nationwide as measured against four 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 the 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 proposed standards will vary 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 Department has conducted more limited analyses of four illustrative requirements using a requirement-specific alternative IBC/ANSI baseline in order to demonstrate the likely actual incremental impact of the proposed standards 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 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 assess the impact of a requirement-specific alternative IBC/ANSI baseline, it was necessary to construct a proxy with respect to the number and location of facilities in each facility group. For purposes of these analyses, it is assumed that the number of facilities respectively compliant with each of the four illustrative proposed requirements is equal to the percentage of the current United States population (based on statistics from the U.S. Census Bureau) residing in those states or local jurisdictions that have adopted IBC (or ANSI A117.1 through incorporation by reference in IBC Chapter 11). The results of these analyses using requirement-specific alternative IBC/ANSI baselines are presented in section 5.2.3.

Utah, Virginia, Washington, West Virginia, and Wisconsin), as well as by the District of Columbia. In five other states (Colorado, Delaware, Idaho, Mississippi, and South Dakota), adoption of ANSI A117.1 (or a functionally equivalent regulatory standard) has either been left to the discretion of local jurisdictions or only applies to certain occupancies or types of facilities (*i.e.*, buildings constructed with state or local governmental funds or educational facilities). No publicly available data was found concerning adoption of ANSI A117.1 at the local level.

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 reason for this 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 three 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 proposed rule applies to actual facilities are captured as independent scenarios.²⁸ These dimensions include: SH vs. No SH; readily achievable levels [0%, 50%, 100%]; and baselines [1991 ADA, IBC 2000, IBC 2003, IBC 2006]. These varying dimensions are shown in the results chapter.

²⁸ Scenarios were considered but not implemented for uncertainty related to issues concerning technical infeasibility and “path of travel”.

3. BENEFIT-COST ANALYSIS APPROACH

The Department's adoption of the 1991 Standards ADAAG 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 proposed standards 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 proposed standards 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 and 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 proposed regulatory action. Considering the diversity of facilities, requirements, construction types, and of course, persons with disabilities, measuring the incremental economic impact of the proposed standards becomes a complex assessment. In all cases however, changes in costs and benefits are measured against a baseline. The 1991 Standard is the primary baseline for measuring these regulations' impact on 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 proposed standards.

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 only differs in parameter values. The cost framework can be simply defined as:

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

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.²⁹ 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 proposed requirements 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.³⁰

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.³¹ 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 element is counted for the average size. A similar approach is used to determine the number of

²⁹ 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).

³⁰ Data sources and assumptions are discussed in more detail below.

³¹ 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.

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.³² 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 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).

³² This factor could also be interpreted as adjusting the number of facilities that actually have the element.

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 standard and the compliance with 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 proposed standard represents 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 is 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 proposed standards. Similarly, if the proposed standards frees up productive space, this lesser requirement results in a decreased cost (or benefit) to facility owners.³³ These decreased costs will also be 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, these costs are applied each year of the planning horizon.

³³ Benefits to facilities are counterbalanced by decreased benefits to facility users.

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 proposed standards are justified on economic terms. The benefit consumers derive from changes in facility accessibility can be equated to 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.

Benefits – the economic value people derive from accessibility – can be divided into three categories:

- Use value: the value that people with disabilities derive from the use of accessible facilities;
- Option value: the value that people both with and without disabilities derive from the opportunity to obtain the benefit of accessible facilities; and,
- Existence value: the value that people both with and without disabilities derive from the guarantees of equal protection and nondiscrimination that are accorded through the provision of accessible facilities.

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.

This distinction is important because changes in accessibility due to the proposed requirements 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 is 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, are 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 which 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 use of facilities has 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 benefit (“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 than 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 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 that 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.

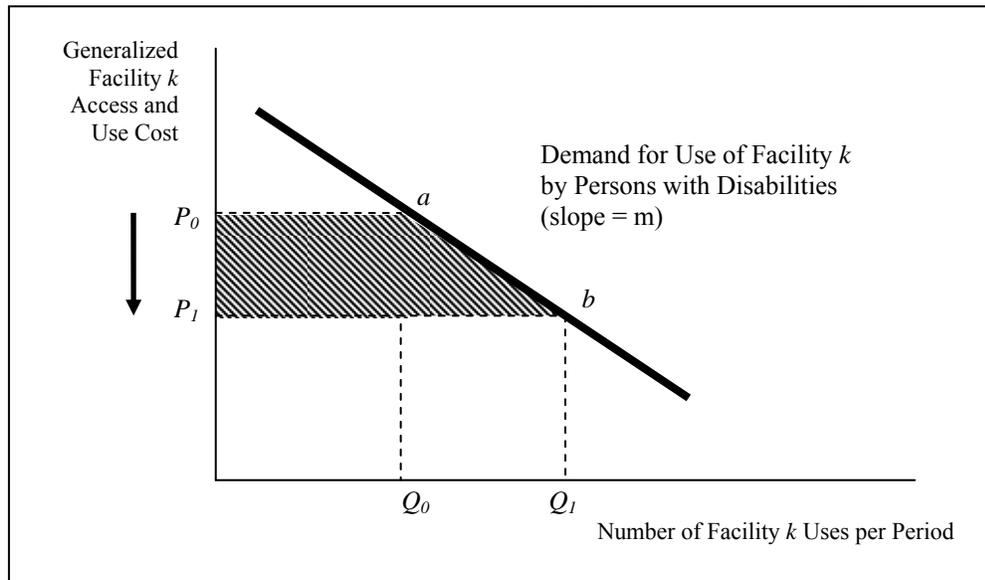
3.2.3 Economic Models for a Change in Access Time

The partial equilibrium model of consumer surplus for existing users who benefit from a change in access time is shown in Figure 2. 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 $[P_0 \text{ a } b \text{ } P_1]$.

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 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. Existing small recreational elements and facilities are protected by the limited safe harbor provision allowing them to limit

annual barrier removal costs to no more than 1% of annual receipts (see Appendix 10 for more detail). 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 5.2). It is also assumed that demand from persons with disabilities does not cause a shift in demand and price.

Figure 2: 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 US 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 proposed Standards. 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 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 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 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 proposed Standards on each facility and type of disability. Time savings are valued at the value of time (VOT) 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 US. For persons with disabilities, the base VOT is assumed to be equal to 50% of average hourly earnings.³⁴ 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 proposed Standards 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.

- 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 (ϵ) 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
 - 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

³⁴ See Section 4.2.5 and Appendix 4J for details.

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 Ease of Access 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 new standards. The estimation follows the guidelines below:

- Before the implementation of the new standards, 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 new standards, 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 new standards, 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 new standards, 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 new standards. 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 proposed standards assumes that six months following passage of the final rule, all facilities will be subject to a “triggering event” that compels compliance with the new

regulation.³⁵ The specific triggers vary for new construction and alterations construction and/or the Title the construction falls under.³⁶ New construction under Title III uses “first occupancy” as its triggering event. Hence, after the effective date of the proposed standards, all entities must be designed and constructed for “first occupancy” in accordance with those standards.³⁷ 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.

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 this proposed regulation the benefits and costs that will result from compliance efforts that will be 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 proposed standards will be subject to this regulation. This covers the period from the end of 2010 through 2024.

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.³⁸ Most commercial buildings require substantial renovations every 30-40 years, while others are designed to last 50 years or more.³⁹ 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.⁴⁰

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

³⁵ This is the only scenario considered. Twelve and eighteen months are not considered at this time.

³⁶ Title II or Title III.

³⁷ 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).

³⁸ Many buildings are built to last a long time, but can require several major alterations before it is beyond usefulness.

³⁹ Expert opinion was provided by HDR. Some technically advanced facilities such as labs required substantial alterations on a far more frequent basis.

⁴⁰ With suitable data, alternative assumptions on alternations schedules and planning horizons could be developed for different types of facilities.

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 new standards. Such benefits patterns are commonly observed in the response of users to transportation system investments (such as new roads).

The compliance costs must be incurred to maintain access. Over a 40-year period, elements require annual operation and maintenance (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 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 benefits of the proposed standards 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.

4. DATA AND ASSUMPTIONS

A large number of data and assumptions are required to estimate costs and benefits of the proposed standards. 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 is drawn from several sources (Appendix 3A). The 2002 Economic Census is a primary source for the number of employer-based commercial establishments.⁴¹ In these cases, facilities and facility groups are classified using appropriate North American Industry Classification System (NAICS) codes. The number of facilities in 2007 is estimated by applying sector-specific construction growth rates to 2002 data.⁴² Data on public facilities, which are not included in the Economic Census, has 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 nearly 7 million, with nearly half of those facilities (3.3 million) falling into the broad *Indoor Service Establishment* facility group. *Single-level stores* are also estimated to have a large number of facilities (0.9 million), followed by *Restaurants* and *Offices of Health Care Providers* (nearly 0.5 million each). Together, these four facilities account for slightly more than 75 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 0.2% to 1.2% depending on the facility.⁴³ 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.

⁴¹ Employer-based establishments are more likely to require compliance than non-employer establishments (who may be self-employed firms).

⁴² 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.

⁴³ McGraw-Hill Dodge Construction Potentials Bulletin (May 2007).

Table 3: Number of Establishments in 2007 by Facility Group

A	Inns	16,865
B	Hotels	14,941
C	Motels	21,047
D	Restaurants	508,800
E	Motion Picture House	5,233
F	Theatre / Concert Hall	9,778
G	Stadiums	431
H	Auditoriums	1,786
I	Convention centers	168
J	Single level stores	863,964
K	Shopping malls	9,368
L	Indoor Service Establishments	3,330,412
M	Offices of health care providers	499,088
N	Hospitals	4,432
O	Nursing homes	15,080
P	Terminal (private airports)	13,900
Q	Depots	298
R	Museums, historical sites & libraries	4,812
S	Parks or zoos	1,189
T	Amusement parks	467
U	Nursery schools - Daycare	72,653
V	Elementary private schools	18,257
W	Secondary Private Schools	2,826
X	Undergraduate and postgraduate private schools	2,560
Y	Ski facilities	407
Z	Homeless Shelter	7,867
AA	Food banks	4,075
AB	Social service establishments	61,110
AC	Exercise facilities	26,580
AD	Aquatic centers / Swimming Pools	9,559
AE	Bowling alleys	5,175
AF	Golf courses (private with public access)	9,391
AG	Golf courses (private only)	4,599
AH	Miniature golf courses	8,750
AI	Recreational boating facilities	5,095
AJ	Fishing piers and platforms	1,583
AK	Shooting facilities	3,096
AM	Office buildings	769,451
AN	Elementary public schools	68,416
AO	Secondary public schools	23,264
AP	Undergraduate, postgraduate public schools	1,803
AQ	Public housing	27,492
AR	State and local judicial facilities (courthouses)	36,810
AS	State and local detention facilities (jails)	36,810
AT	State and local correctional facilities (prisons)	1,761
AU	Parking garages	12,640
AV	Self service storage facilities	9,846
AW	Theatre / Concert Halls (public)	8
AX	Stadiums (public)	1,294
AY	Auditoriums (public)	129
BA	Convention centers (public)	253
BB	Hospitals (public)	1,130
BC	Nursing homes (public)	1,224
BD	Museums, historical sites & libraries (public)	9,789
BE	Parks or zoos (public)	112,128
BF	Homeless Shelter (public)	1,176
BG	Exercise facilities (public)	1,125
BH	Social service establishments (public)	26,148
BI	Aquatic centers / Swimming Pools (public)	1,721
BJ	Miniature golf courses (public)	920
BK	Recreational boating facilities (public)	7,567
BL	Fishing piers and platforms (public)	1,583
BM	Office buildings (public)	78,057
BN	Parking garages (public)	113
BO	Golf courses (public)	2,614
BP	Restaurants (public)	18
BQ	Amusement parks (public)	10

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 per facility is applied to new construction, alterations barrier removal types of construction.

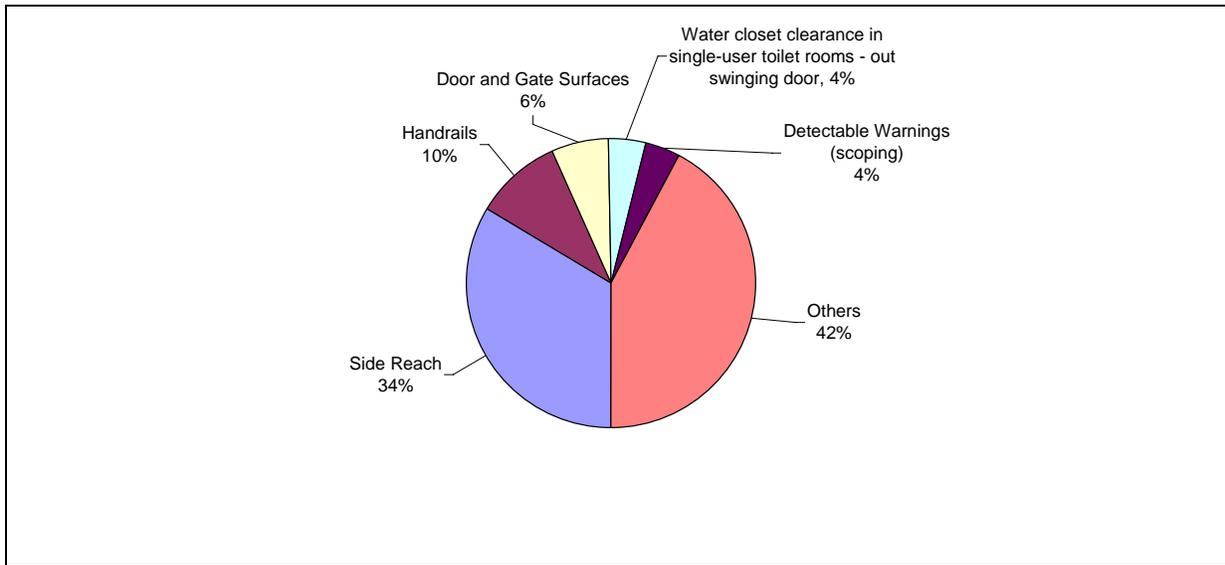
The numbers of elements per facility are defined as uncertain with parameter values defining the most likely low and high values (following the basic risk-analysis framework). A standard low and high range is defined as +/- 20% of the most likely value is applied to all facilities.

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 (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 has 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 seven elements with the largest numbers in all facilities are shown in Figure 3. Side Reach requirements comprise the single largest category with 20% of all elements. Together these five elements represent over 60% of all elements subject to the proposed standards. 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 3: 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 proposed standards 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 (ALT/BR)	No appreciable costs
107	Mobility Accessible Prison Cell	Not applied in any typical facility
108	Communication Accessible Prison Cell	Not applied in any typical facility

4.1.3 Construction Costs

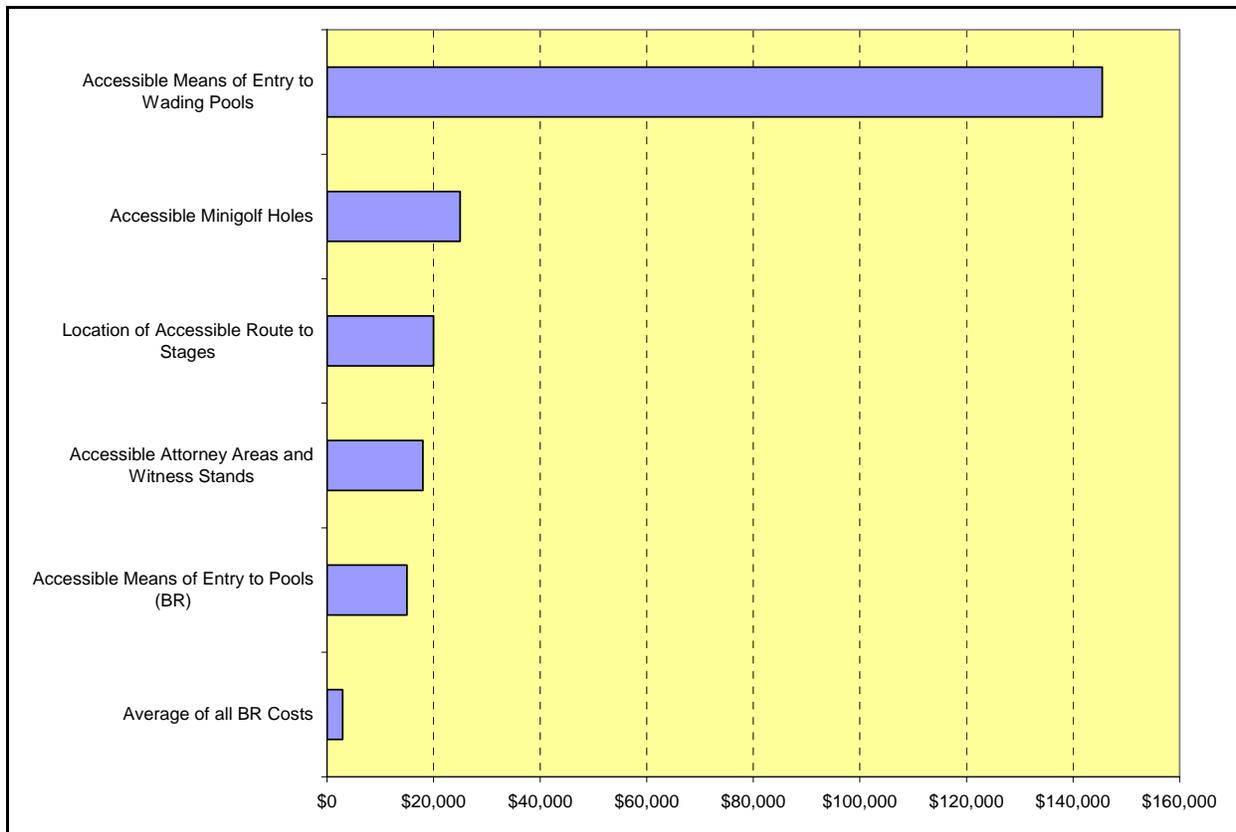
An independent certified professional cost estimator was hired to provide detailed cost estimates for each of the 112 requirements.⁴⁴ See Appendix 7-B (identifying members of Cost RAP Panel). Unit cost estimates were derived using standard industry practices and published sources for construction costs 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 cost 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 only reflect 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.)

⁴⁴ Paulette R. Rutlen, CPE, Chief Estimator, The Austin Company worked with the Department to develop unit cost estimates.

At the expected level, the most expensive BR costs include those listed in Figure 4. 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 readily achievable 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 Accessible Means of Entry to Pools (see Figure 4).

Figure 4: 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 be 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, significantly 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) has been developed by the Department's architects and an independent certified professional cost estimator using standard industry practices.⁴⁵ Changes in productive space for each element are included only if meeting the requirement would result in a loss (or addition) of space which 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 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 was 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 (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 40 year time frame for the nearly 20 elements considered here that would expect replacement. Examples include platform lifts and golf cars. Costs which 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.)

⁴⁵ 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 5.

Figure 5: Example of Cost RAP Question

<p>13. Accessible Routes from Site Arrival</p> <p>Key Element Features:</p> <ul style="list-style-type: none">• routes accessible by vehicle only• Horizontal surface construction materials and accessible path of travel, range - 100', 200', & 500'+ travel distance <p>Comments:</p> <hr/> <hr/> <hr/> <p>Range(s) to use in estimating range of unit costs to account for variations in facility sizes and configurations (if applicable):</p> <hr/> <hr/> <hr/> <p>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:</p> <p><input type="checkbox"/> 50% Other: _____</p>

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 is 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 has been collected for many types of facilities (see Appendix 4A).⁴⁶ Some of the figures on total or average visits included both adults and children. In those cases, the data was scaled down by the percentage of the US population 18 years of age and older. All the data is estimated for 2007 using population growth rates. (See Appendix 4B for population data from US Census Bureau.)

⁴⁶ 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.

When such data for a facility type could not 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 US 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 2002 is scaled to 2007 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 each 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 is not available for some facilities that are counted by the Economic Census nor for the public facilities. For these facilities, the numbers of facility visits are directly assumed as such:

- 25% of the US 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 is 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.⁴⁷
- Visit to judicial facilities vary. It is assumed that 1% of the total adult population of the United States (18 years and older) need to visit a judicial facility annually.
- Visits to detention facilities are derived from data on monthly estimates of felony cases.⁴⁸ An annual number of detainees are 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) were assumed to have the same proportion of visits per facility as their private counterpart.

The baseline Q_0 divided by the US population 18 years and older illustrates the number of visits per facility made by the typical US consumer, shown below in Table 5. For example, this estimate shows that the typical US consumer visits a restaurant about 200 times annually.

⁴⁷ Data is collected by the US Department of Housing and Urban Development (HUD).

⁴⁸ Data is collected from Bureau of Justice Statistics.

(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 1.4 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	418,223,173
Hotels	616,221,287
Motels	552,358,334
Restaurants	48,338,773,679
Motion Picture House	1,083,378,141
Theatre / Concert Hall	304,481,793
Stadiums	138,976,020
Auditoriums	148,973,954
Convention centers	38,395,037
Single level stores	18,359,459,605
Shopping malls	2,438,483,140
Indoor Service Establishments	23,924,676,737
Offices of health care providers	826,821,636
Hospitals	71,069,771
Nursing homes	495,779,500
Terminal (private airports)	900,000
Depots	22,541,144
Museums, historical sites & libraries	1,655,806,872
Parks or zoos	87,168,846
Amusement parks	250,698,490
Nursery schools - Daycare	3,096,379,871
Elementary private schools	510,239,184
Secondary Private Schools	160,027,990
Undergraduate and postgraduate private schools	865,841,138
Ski facilities	43,937,431
Homeless Shelter	99,962,161
Food banks	193,181,373
Social service establishments	832,264,600
Exercise facilities	1,120,181,794
Aquatic centers / Swimming Pools	279,067,602
Bowling alleys	229,809,871
Golf courses (private with public access)	164,932,889
Golf courses (private only)	64,624,920
Miniature golf courses	229,151,749
Recreational boating facilities	37,576,314
Fishing piers and platforms	5,897,917
Shooting facilities	23,165,590
Office buildings	60,962,079
Elementary public schools	3,420,000,000
Secondary public schools	4,500,000,000
Undergraduate, postgraduate public schools	12,000,000
Public housing	85,884,500
State and local judicial facilities (courthouses)	3,000,000
State and local detention facilities (jails)	12,000,000
State and local correctional facilities (prisons)	912,500,000
Parking garages	1,549,010,460
Self service storage facilities	41,202,214
Theatre / Concert Halls (public)	254,135
Stadiums (public)	416,928,060
Auditoriums (public)	10,723,175
Convention centers (public)	57,592,555
Hospitals (public)	17,767,443
Nursing homes (public)	48,873,500
Museums, historical sites & libraries (public)	3,368,600,046
Parks or zoos (public)	1,351,326,245
Homeless Shelter (public)	14,936,875
Exercise facilities (public)	47,418,856
Social service establishments (public)	356,114,319
Aquatic centers / Swimming Pools (public)	50,232,168
Miniature golf courses (public)	24,084,079
Recreational boating facilities (public)	56,364,471
Fishing piers and platforms (public)	5,897,917
Office buildings (public)	193,304,290
Parking garages (public)	13,875,732
Golf courses (public)	45,907,796
Restaurants (public)	1,715,722
Amusement parks (public)	5,480,304

By far, the largest number of visits are made to Restaurants (48 billion visits), Indoor Service Establishments (24 billion visits), and Single-level Stores (18 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: 198 average visits a year to Restaurants, 98 average visits a year to Indoor Service Establishments, and 75 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 US Census Bureau: ambulatory, wheelchair only, seeing, hearing, and upper body limitation (see Appendix 4E).⁴⁹ 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,

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

the benefits also start to decrease at the same rate, until they reached zero when all construction has aged.

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, US 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, US Department of Labor, estimates of the average wage for the average production worker in 2006, approximately \$17 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, \$8.50 per hour. Due to a high proportion of persons with disabilities being low income, the \$8.50 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 \$4.25 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 \$8.50 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 \$0.85 (\$17 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 provides 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 6. Data from the panel data is 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 (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, Open Captioning in Sports Stadium) 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 6: Example of Benefits RAP Question

<p>13. Accessible routes from site arrival points within sites: Vehicle-only routes would not have to provide an accessible pedestrian route.</p> <ul style="list-style-type: none"> - <u>Time increase</u> 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 			
<p>Time increase (minutes):</p> <p><input type="checkbox"/> Range: 10 – 60 <input type="checkbox"/> Other: _____</p> <p><input type="checkbox"/> Most Likely: 20 <input type="checkbox"/> Other: _____</p>		<p>Expected number of uses per 100 visits:</p> <p><input type="checkbox"/> Range: 20 – 60 <input type="checkbox"/> Other: _____</p> <p><input type="checkbox"/> Most Likely: 30 <input type="checkbox"/> Other: _____</p>	
<p>Lost Access:</p> <p>% of target population whose independent access is now not possible: _____</p>			
<p>Comments:</p>			

4.2.7 Price Elasticity of Demand for a Facility Visit

Elasticities for some facility groups are derived directly from literature sources (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.

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 passage of the proposed standards. These factors range from 60 percent to 100 percent. At 100 percent, facilities are generally accessible (except for the proposed requirements), 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 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.

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.

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 proposed standards, assessed zero benefits and zero costs. Where the IBC provision is not equivalent to the provision in the proposed standards, even if it is more similar to the provision in the proposed standards than it is to the provision in the 1991 Standards, the full incremental benefits and costs of the proposed standards 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.

5. RESULTS AND DISCUSSION

The goal of this analysis is to assess the incremental benefits and costs due to the adoption of the Department's proposed regulations. 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 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 proposed standards 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 discusses how the total NPV changes under key alternate scenarios. These alternate scenarios are: safe harbor *versus* no safe harbor; barrier removal that is assumed to be readily achievable at varying percentages [0%, 50%, and 100%]; and alternate IBC baselines [IBC 2000, IBC 2003, and IBC 2006]. 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, NSH; 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 presents stress analyses that assess the relative impact of varying several key selected assumptions individually. Stress analyses are presented for three different parameters: premium on access time; premium on use time; and, price elasticity of demand for facility use. In addition, to further explore the relative impact of parameter variability on results, this section also includes an assessment of the key drivers behind the risk ranges for the three requirements with the largest negative NPVs [Side Reach (Req. # 37), Water Closet Clearance in Single User Toilet Rooms – In Swinging Doors (Req. #32), and Passenger Loading Zones (Medical/Long-Term Care) (Req. # 26)], as well as the three requirements with the largest positive NPVs

[Passenger Loading Zones (Req. # 19), Accessible Route to Exercise Machines and Equipment (Req. # 70), and Transient Lodging Guest Room Vanities (Req. # 45)].

Lastly, to supplement the quantitative results presented in preceding sections, the fourth section discusses the unquantified benefits of the proposed regulations and their implication for model results. Many of the significant benefits conferred on persons with disabilities, businesses, and society generally by these proposed 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 the proposed 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 proposed regulation 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 unquantified benefits 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.

5.1 Results Under Primary Baseline Scenario

5.1.1 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 when SH is not granted, BR becomes the dominant form of compliance with its relatively large cost burden on facilities.

Table 6 and Figure 7 present total NPV for a 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 1,000 Monte Carlo simulations.

Under the assumptions used to construct this analysis, these results suggest that the proposed regulations have a net positive public benefit. The numbers on the chart represent the 10th, 50th and 90th percentiles of the distribution. The range between the 10th and 90th 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 (50th) percentile (in the middle of this range).

Figure 7 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 \$4.7 B to \$11.0 B, with a median of \$7.6 B. At 3%, this range (\$23.2 to \$40.6 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. Differences between the Total expected NPV in Table 6 (\$7.5 B at the 7% discount rate) and the median NPV in Figure 7 (\$7.6 B) are caused by the skewness of the distribution of NPVs.

Figure 7: Total NPV - Baseline Scenario: SH/RA50/B1991; 3% and 7% Discount Rates



Table 6: Total Net Present Value in 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%	\$31.1	\$53.9	-\$22.8
7%	\$7.5	\$19.5	-\$11.9

5.1.2 Distribution of Costs and Benefits

Figure 8 and Figure 9 show the distributions of benefits and costs for the baseline case (SH and 7% discount rate). Time savings for users comprises over 90% of total benefits. Cost savings for facilities associated with less stringent requirements for NC and ALT projects is comparatively small, at about 9%. 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, O&M is larger

than lost productive space and replacement costs. Costs to users in terms of lost time are also a significant component of cost.

Figure 8: Distribution of Benefits between Users and Facilities (Cost Savings)

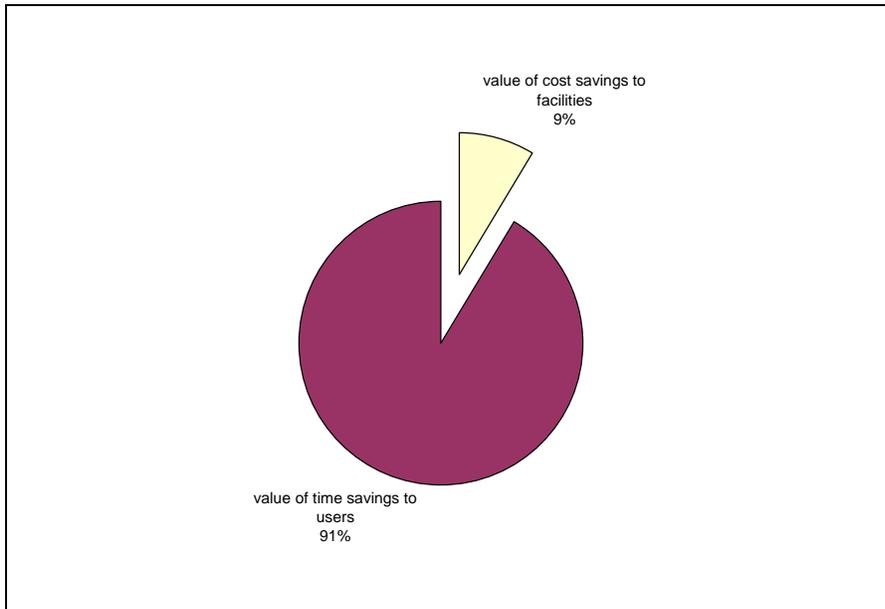
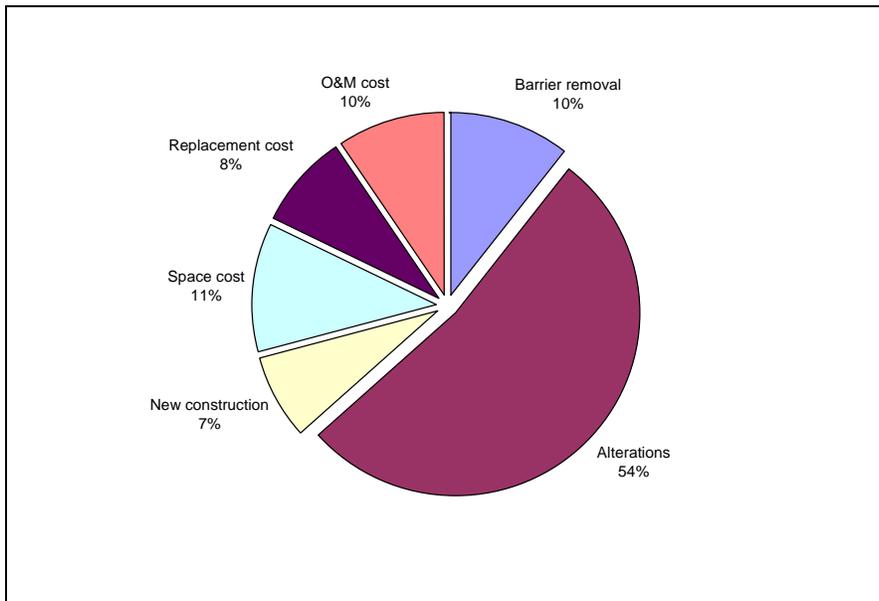


Figure 9: Distribution of Costs between Type of Cost, Type of Construction, Users⁵⁰

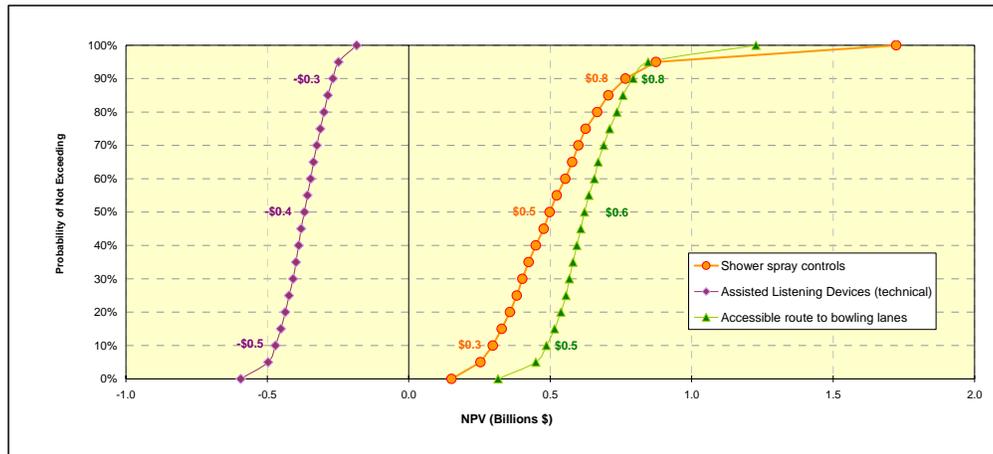


5.1.3 Net Present Value by Requirements

Figure 10 shows the NPV for selected requirements including shower spray controls (a revised, more stringent requirement), assisted listening devices (technical) (a revised, more stringent requirement with use value benefits) and accessible routes to bowling lanes (a supplemental requirement with new user benefits).

⁵⁰ The costs to users are the increases in time that would result from less stringent requirements.

Figure 10: NPV for Selected Requirements



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 those an overall cost 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 three Drivers of Costs list those facilities in which the greatest costs for the requirement are generated.

Table 7 (which follows at the end of Section 5.1.4) 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 in which the requirement costs 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):

- *23. Passenger loading zones:* The high positive NPV (\$1.84 B) is due to high users benefits (\$1.89 B) and low costs to facilities (\$50 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.

- *70. Accessible routes to exercise machines* and *71. Accessible exercise machines*: New access to exercise facilities also drives high NPVs (\$1.10 B and \$842 M, 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 accessible routes to exercise machines are fairly low (\$15 M), but costs to facilities for the accessible machines are higher (\$340 M), this difference accounts for most of the difference in NPV for the requirements, since benefits are very similar (\$1.12 B for accessible routes to exercise machines, and \$1.18 B for accessible machines).
- *45. Transient lodging room guest vanities*. Similar to the NPV for passenger loading zones, the high positive NPV (\$1.07 B) for transient lodging room guest vanities is due to high users benefits (\$1.09 B) and low costs to facilities (\$22 M). Benefits from these requirements 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 – hotels, inns and motels. Being able to use the vanity comfortably enhances the experience relating to the primary purpose of staying at the hotel (defined as shelter, a bed and use of a bathroom).
- *37. Side reach*: The large negative NPV (-\$971 M) is the largest NPV in magnitude among all requirements. The large negative impact is driven by the ubiquitous nature of these elements and a relatively small benefit per use compared with capital cost. Total benefits to users are \$184 M while the cost to facilities is \$1.15 B. The facility category 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).
- *32. Water Closet Clearance in Single-user Toilet Rooms with In-swinging doors*. The large negative NPV (\$-928 M) for this requirement is due to relatively small benefits to users (\$46 M) but large costs to facilities (\$974 M). Over 90% of the total cost for *in-swinging doors* 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 (ALT/BR)*.⁵¹ Stairs under new construction (#9) has a small positive NPV of \$54 M, but it is minimal when paired with the large negative NPV (\$-764 M) for stairs under alterations (#10). The benefits for this requirement under alterations are moderate in size (\$18 M) when compared to other requirements but the costs to facilities are high (\$782 M) due to high unit costs (\$7,500 per flight at the median level).
- *100, 102, 104. Accessible play components*⁵²: The NPV for all accessible play components, new construction, alterations, and barrier removal, totals \$769 M. This is due to large users benefits (\$823 M) and moderate costs to facilities. In contrast, the

⁵¹ New construction was modeled separately from alterations and barrier removal due to differences in other underlying assumptions.

⁵² New construction, alterations, and barrier removal were all modeled separately in order to adequately take into account the impact of program access for public facilities and the exemptions provided to small playgrounds.

requirement for accessible routes to play components has a fairly large cost to facilities of \$392 M (plus a slightly lower benefit to users of \$549 M), and thus a much lower NPV of \$156 M. The benefits and costs for public schools are moderate due to existing program access requirements which already have made a large portion of existing school playgrounds accessible.

5.1.4 Net Present Value by Facilities

Figure 11 shows the NPV for selected facilities, including inns, hotels, and motels.

Figure 11: NPV for Selected Facilities

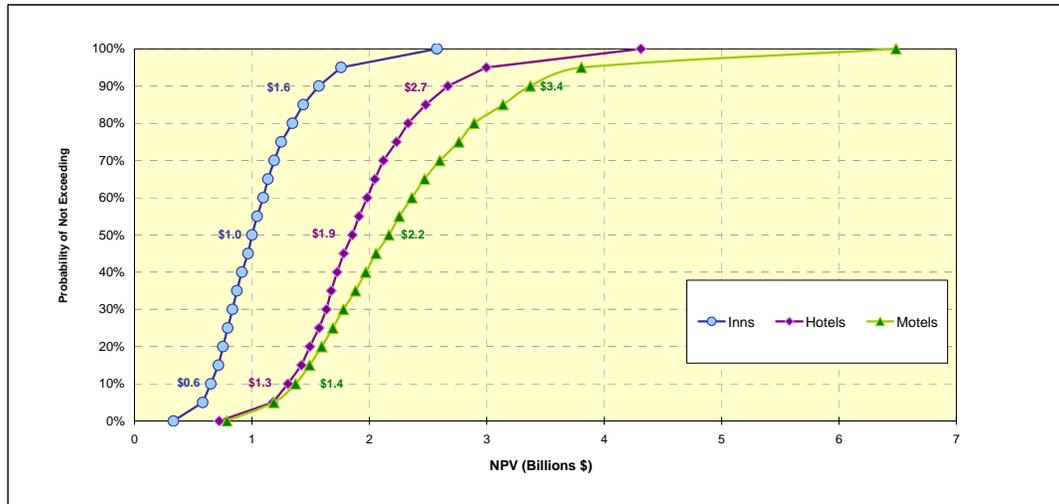


Table 8 summarizes the results for all facilities at the baseline scenario. Facilities with the largest positive and negative NPVs are discussed below (Details regarding benefits and costs for each requirement in each facility type can be found in the Supplemental Results volume):

- *Restaurants*: Although costs to restaurants are relatively high (\$442 M) benefits to users are much higher (\$2.74 B) resulting in a large NPV of \$2.30 B. The requirement driving much of the benefits is passenger loading zones, which have very low capital costs but fairly high user benefits (see discussion above). Further amplifying the benefits is the relatively high number of visits for this facility group (48 B), larger than any other facility group.
- *Exercise Facilities*: The \$1.79 B NPV follows directly from the high NPV of exercise facilities' two most important requirements: *Accessible route to exercise machines* and *Accessible machines* (as discussed above).
- *Undergraduate and post-graduate private schools*: The large NPV of \$1.48 B is due to substantial benefits of \$1.62 B and while costs total \$141 M. These large benefits are due to moderately high benefits (from \$147 M to \$245 M) for several requirements, including water closet clearance in single-user toilet rooms without-swinging doors, accessible routes to exercise machines, accessible exercise machines and accessible dressing and locker rooms.

- *Office buildings*: Office buildings posted a large negative NPV of \$-1.04 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' alterations followed by side reach alterations.
- *Indoor Service Establishments*: The large negative NPV (-\$1.11 B) for this facility is driven by two requirements 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 for over three-fourths of the facilities' costs, coupled with substantial costs due to lost usable space. Yet the vast majority of user benefits are also due to this same requirement.
- *(State and local judicial facilities) Courthouses*: This facility has a fairly large negative NPV (-\$517 M) primarily due to the large capital costs for Accessible Attorney Areas and Witness Stands (-\$302 M). Since visits to these facilities are fairly low in comparison to other facility groups, benefits do have as much opportunity to accumulate.

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 those an overall cost 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 three Drivers of Costs list those facilities in which the greatest costs for the requirement are generated.

Table 7: Costs and Benefits per Requirement in Baseline Scenario

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	(22.08)	(22.31)	Shopping malls Stadiums (public) Stadiums	0.23	Shopping malls Stadiums (public) Stadiums
2	Maneuvering Clearance or Standby Power for Automatic Doors	(0.38)	0.01	Nursing homes Nursing homes (public) Convention centers (public)	(0.40)	Nursing homes Nursing homes (public) Convention centers (public)
3	Automatic Door Break-Out Openings	(3.25)	0.00	Motels Hotels Hospitals	(3.25)	Hotels Motels Hospitals
4	Thresholds at Doorways	2.18	4.35	Motels Hotels Inns	(2.16)	Public housing Motels Hotels
5	Door and Gate Surfaces	(83.70)	2.73	Motels Museums, historical sites & libraries (public) Parks or zoos (public)	(86.42)	Office buildings Parks or zoos (public) Office buildings (public)
9	Stairs (NC)	53.62	53.62	Motels Museums, historical sites & libraries (public) Undergraduate and postgraduate private schools	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
10	Stairs (ALT/BR)	(764.21)	18.26	Motels Museums, historical sites & libraries (public) Undergraduate and postgraduate private schools	(782.47)	Office buildings Offices of health care providers Undergraduate, postgraduate public schools
11	Handrails Along Walkways	0.00	0.00		0.00	
12	Handrails	14.99	(24.83)	Exercise facilities Museums, historical sites & libraries (public) Parking garages	39.82	Office buildings Office buildings (public) Undergraduate, postgraduate public schools
13	Accessible Routes from Site Arrival Points and Within Sites	9.89	(35.35)	Parks or zoos (public) Motels Golf courses (private with public access)	45.23	Parks or zoos (public) Motels Terminal (private airports)
14	Standby Power for Platform Lifts	(33.23)	0.00	Stadiums (public) Stadiums State and local judicial facilities (courthouses)	(33.23)	State and local judicial facilities (courthouses) Stadiums (public) Stadiums
15	Power-Operated Doors for Platform Lifts	(24.74)	2.37	Stadiums (public) Stadiums State and local judicial facilities (courthouses)	(27.11)	State and local judicial facilities (courthouses) Stadiums (public) Stadiums
16	Alterations to Existing Elevators	(339.87)	2.53	Nursing homes Undergraduate and postgraduate private schools Hotels	(342.41)	Office buildings Office buildings (public) State and local judicial facilities (courthouses)

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
19	Van Accessible Parking Spaces	52.60	59.87	Parks or zoos (public) Amusement parks Stadiums (public)	(7.27)	Parks or zoos (public) Terminal (private airports) Undergraduate, postgraduate public schools
20	Valet Parking Garages	(46.28)	175.22	Restaurants Hotels Theatre / Concert Hall	(221.50)	Restaurants Theatre / Concert Hall Hotels
21	Mechanical Access Parking Garages	186.96	187.34	Parking garages Parking garages (public)	(0.38)	Parking garages Parking garages (public)
22	Direct Access Entrances from Parking Structures	44.71	44.71	Shopping malls Convention centers (public) Convention centers	0.00	
23	Passenger Loading Zones	1,835.26	1,885.30	Restaurants Shopping malls Parks or zoos (public)	(50.03)	Office buildings Parks or zoos (public) Restaurants
24	Parking Spaces	961.28	992.42	Restaurants Museums, historical sites & libraries (public) Parks or zoos (public)	(31.15)	Office buildings Restaurants Parks or zoos (public)
25	Parking Spaces (Signs)	(2.89)	(3.27)	Public housing	0.38	Public housing
26	Passenger Loading Zones (Medical / Long-Term Care)	(489.01)	(653.23)	Nursing homes Hospitals Nursing homes (public)	164.22	Nursing homes Hospitals Nursing homes (public)
27	Ambulatory Accessible Toilet Compartments	442.06	497.81	Parks or zoos (public) Undergraduate and postgraduate private schools Exercise facilities	(55.76)	Theatre / Concert Hall Parks or zoos (public) Shopping malls

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
28	Water closet clearance in single-user toilet rooms - out swinging door	189.66	2,364.31	Indoor Service Establishments Undergraduate and postgraduate private schools Parks or zoos (public)	(2,174.64)	Indoor Service Establishments Offices of health care providers Nursing homes
29	Shower Spray Controls	144.30	207.18	Undergraduate and postgraduate private schools Motels Hotels	(62.88)	Nursing homes Undergraduate, postgraduate public schools Parks or zoos (public)
30	Urinals	(13.08)	(13.08)	Undergraduate and postgraduate private schools Motels Museums, historical sites & libraries (public)	0.00	
31	Multiple Single-User Toilet Rooms	135.34	(5.96)	Offices of health care providers Hospitals Theatre / Concert Hall	141.30	Offices of health care providers Theatre / Concert Hall Hospitals
32	Water closet clearance in single-user toilet rooms - in swinging door	(928.09)	46.28	Restaurants Undergraduate and postgraduate private schools Single level stores	(974.37)	Single level stores Restaurants Elementary public schools
34	Patient Toilet Rooms	(3.44)	(5.40)	Hospitals Hospitals (public)	1.96	Hospitals Hospitals (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
35	Drinking Fountains	(66.13)	0.37	Undergraduate and postgraduate private schools Swimming pools / Aquatic centers Swimming pools / Aquatic centers (public)	(66.50)	Office buildings Office buildings (public) Swimming pools / Aquatic centers
37	Side Reach	(970.60)	184.18	Indoor Service Establishments Restaurants Single level stores	(1,154.78)	Indoor Service Establishments Office buildings Offices of health care providers
38	Sales and Service Counters (NC)	31.42	(10.99)	Restaurants Museums, historical sites & libraries (public) Indoor Service Establishments	42.41	Indoor Service Establishments Single level stores Parks or zoos (public)
39	Sales and Service Counters (Alt)	(64.00)	(239.60)	Restaurants Indoor Service Establishments Single level stores	175.60	Indoor Service Establishments Single level stores Restaurants
40	Washing Machines and Clothes Dryers (technical)	(6.43)	0.14	Undergraduate and postgraduate private schools Public housing Undergraduate, postgraduate public schools	(6.57)	Public housing Undergraduate, postgraduate public schools Undergraduate and postgraduate private schools
41	Washing Machines and Clothes Dryers (Scoping)	(1.93)	0.07	Undergraduate and postgraduate private schools Public housing Undergraduate, postgraduate public schools	(2.00)	Public housing Undergraduate, postgraduate public schools Undergraduate and postgraduate private schools
42	Self-Service Storage Access	17.08	19.78	Self service storage facilities	(2.70)	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
45	Transient lodging Guest Room Vanities	1,071.48	1,093.72	Motels Hotels Inns	(22.24)	Motels Hotels Inns
46	Operable Windows	169.56	204.66	Motels Undergraduate and postgraduate private schools Hotels	(35.11)	Public housing Undergraduate, postgraduate public schools Motels
47	Dwelling Units with Communication Features [1991]	(13.00)	0.02	Public housing	(13.03)	Public housing
48	Dwelling Units with Communication Features [UFAS]	(3.47)	0.01	Public housing	(3.47)	Public housing
49	Galley Kitchen Clearances	27.21	47.74	Undergraduate and postgraduate private schools Public housing Undergraduate, postgraduate public schools	(20.53)	Undergraduate, postgraduate public schools Public housing Undergraduate and postgraduate private schools
50	Shower Compartments with Mobility Features	61.20	(12.38)	Undergraduate and postgraduate private schools Motels Hotels	73.58	Nursing homes Undergraduate, postgraduate public schools Parks or zoos (public)
51	Location of Accessible Route to Stages	(147.16)	0.16	Undergraduate and postgraduate private schools Amusement parks Secondary public schools	(147.32)	Undergraduate, postgraduate public schools Secondary 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
52	Wheelchair Space Overlap in Assembly Areas	(64.79)	498.06	Museums, historical sites & libraries (public) Secondary public schools Museums, historical sites & libraries	(562.85)	Stadiums (public) Motion Picture House Theatre / Concert Hall
54	Handrails on Aisle Ramps in Assembly Areas	(351.89)	(400.95)	Museums, historical sites & libraries (public) Undergraduate and postgraduate private schools Museums, historical sites & libraries	49.06	Parks or zoos (public) Motion Picture House Secondary public schools
55	Wheelchair Spaces in Assembly Areas	96.11	(5.82)	Undergraduate and postgraduate private schools Motion Picture House Stadiums (public)	101.93	Stadiums (public) Stadiums Undergraduate, postgraduate public schools
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	5.60	(0.53)	Stadiums (public) Stadiums	6.13	Stadiums (public) Stadiums
57	Accessible Route to Press Boxes	69.25	(1.48)	Undergraduate and postgraduate private schools Secondary public schools Undergraduate, postgraduate public schools	70.74	Secondary public schools Undergraduate and postgraduate private schools Undergraduate, postgraduate public schools
58	Public TTYS	(3.16)	0.02	Shopping malls Convention centers (public) Stadiums (public)	(3.17)	State and local judicial facilities (courthouses) Shopping malls Terminal (private airports)
				Nursing homes		State and local judicial facilities (courthouses)

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
59	Public Telephone Volume Controls	(7.78)	0.01	Undergraduate and postgraduate private schools Hotels	(7.80)	Hotels Shopping malls
60	Two-Way Communication Systems at Entrances	(5.45)	7.89	Motels Public housing	(13.34)	Public housing Motels
61	ATMs and Fare Machines	(14.42)	37.53	Indoor Service Establishments Stadiums (public) Stadiums	(51.95)	Indoor Service Establishments Stadiums (public) Stadiums
62	Assistive Listening Systems (technical)	(185.48)	1.24	Museums, historical sites & libraries (public) Secondary public schools Museums, historical sites & libraries	(186.72)	Secondary public schools Undergraduate, postgraduate public schools Stadiums (public)
64	Detectable Warnings (scoping)	309.78	(71.87)	Restaurants Nursing homes Museums, historical sites & libraries (public)	381.65	Indoor Service Establishments Office buildings Offices of health care providers
66	Assistive Listening Systems (scoping)	267.90	(7.03)	Museums, historical sites & libraries (public) Undergraduate and postgraduate private schools Museums, historical sites & libraries	274.94	Stadiums (public) Undergraduate, postgraduate public schools Stadiums
68	Accessible Attorney Areas and Witness Stands	(301.75)	0.01	State and local judicial facilities (courthouses)	(301.76)	State and local judicial facilities (courthouses)
70	Accessible Route to Exercise Machines and Equipment	1,100.40	1,115.75	Exercise facilities Undergraduate and postgraduate private schools Hotels	(15.35)	Exercise facilities Undergraduate and postgraduate private schools Hotels

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
71	Accessible Machines and Equipment	841.53	1,181.17	Exercise facilities Undergraduate and postgraduate private schools Hotels	(339.64)	Exercise facilities Undergraduate and postgraduate private schools Undergraduate, postgraduate public schools
73	Accessible Lockers	137.10	175.07	Exercise facilities Undergraduate and postgraduate private schools Swimming pools / Aquatic centers	(37.96)	Exercise facilities Swimming pools / Aquatic centers Undergraduate and postgraduate private schools
74	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	244.76	246.96	Undergraduate and postgraduate private schools Secondary Private Schools	(2.20)	Undergraduate and postgraduate private schools Secondary Private Schools
75	Wheelchair Spaces in Team or Player Seating Areas	(0.82)	0.01	Undergraduate and postgraduate private schools Secondary Private Schools	(0.83)	Undergraduate and postgraduate private schools Secondary Private Schools
77	Accessible Route to Bowling Lanes	232.37	233.56	Bowling alleys	(1.19)	Bowling alleys
78	Shooting Facilities with Firing Positions	223.22	223.71	Shooting facilities	(0.49)	Shooting facilities
79	Accessible Means of Entry to Pools (NC/ALT)	104.51	393.53	Swimming pools / Aquatic centers Undergraduate and postgraduate private schools Motels	(289.03)	Swimming pools / Aquatic centers Motels

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
80	Accessible Means of Entry to Wading Pools	179.04	867.78	Swimming pools / Aquatic centers Swimming pools / Aquatic centers (public)	(688.74)	Swimming pools / Aquatic centers Swimming pools / Aquatic centers (public)
81	Accessible Means of Entry to Spas	598.52	779.37	Swimming pools / Aquatic centers Undergraduate and postgraduate private schools Nursing homes	(180.84)	Nursing homes Swimming pools / Aquatic centers Hospitals
82	Accessible Route for Boating Facilities	2.48	10.28	Recreational boating facilities (public) Recreational boating facilities	(7.79)	Recreational boating facilities (public) Recreational boating facilities
83	Accessible Boarding Piers (NC)	0.54	2.50	Recreational boating facilities (public) Recreational boating facilities	(1.96)	Recreational boating facilities (public) Recreational boating facilities
85	Accessible Boat Slips (NC)	(2.25)	9.42	Recreational boating facilities Recreational boating facilities (public)	(11.68)	Recreational boating facilities Recreational boating facilities (public)
87	Accessible Route to Fishing Piers	31.98	32.30	Fishing piers and platforms Fishing piers and platforms (public)	(0.32)	Fishing piers and platforms Fishing piers and platforms (public)
88	Accessible Fishing Piers and Platforms	57.51	66.43	Parks or zoos (public) Fishing piers and platforms Fishing piers and platforms (public)	(8.91)	Parks or zoos (public) Fishing piers and platforms Parks or zoos

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
89	Accessible Route to Golf Courses	207.74	220.73	Golf courses (private with public access) Golf courses (private only) Golf courses (public)	(12.99)	Golf courses (private with public access) Golf courses (private only) Golf courses (public)
90	Accessible Practice Grounds at Golf Courses (Alt/BR)	(219.03)	162.36	Golf courses (private with public access) Golf courses (private only) Golf courses (public)	(381.39)	Golf courses (private with public access) Golf courses (private only) Golf courses (public)
92	Accessible Practice Grounds at Driving Ranges	292.63	299.29	Golf courses (private with public access) Golf courses (private only) Golf courses (public)	(6.65)	Golf courses (private with public access) Golf courses (private only) Golf courses (public)
93	Accessible Route to Minigolf Holes	241.42	257.93	Miniature golf courses Miniature golf courses (public)	(16.52)	Miniature golf courses Miniature golf courses (public)
94	Accessible Minigolf Holes	179.90	243.92	Miniature golf courses Miniature golf courses (public)	(64.02)	Miniature golf courses Miniature golf courses (public)
95	Accessible Route to Rides	441.25	503.57	Amusement parks Amusement parks (public)	(62.31)	Amusement parks Amusement parks (public)
96	Wheelchair Space or Transfer Seat or Transfer Device	3.39	4.62	Amusement parks Amusement parks (public)	(1.24)	Amusement parks Amusement parks (public)
97	Maneuvering Space in Load and Unload Area	12.25	15.33	Amusement parks Amusement parks (public)	(3.08)	Amusement parks Amusement parks (public)
98	Signs at Amusement Park rides	3.66	5.13	Amusement parks Amusement parks (public)	(1.47)	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)	(13.54)	194.03	Elementary public schools Parks or zoos (public) Amusement parks	(207.58)	Elementary public schools Parks or zoos (public) Elementary private schools
100	Accessible Play Components (BR)	259.11	294.94	Elementary public schools Parks or zoos (public) Amusement parks	(35.83)	Elementary public schools Parks or zoos (public) Elementary private schools
101	Accessible Route to Play Components (ALT)	255.24	270.57	Restaurants Shopping malls Motels	(15.33)	Restaurants Parks or zoos (public) Elementary public schools
102	Accessible Play Components (ALT)	398.56	402.00	Restaurants Shopping malls Motels	(3.43)	Restaurants Parks or zoos (public) Nursery schools - Daycare
103	Accessible Route to Play Components (NC)	(85.20)	84.07	Elementary public schools Restaurants Nursery schools - Daycare	(169.27)	Elementary public schools Nursery schools - Daycare Elementary private schools
104	Accessible Play Components (NC)	111.29	126.17	Elementary public schools Restaurants Nursery schools - Daycare	(14.89)	Elementary public schools Nursery schools - Daycare Elementary private schools
105	Open Captioning in Sports Stadium	(0.53)	0.00	Stadiums	(0.53)	Stadiums (public) Stadiums
106	Post Secondary School Multi-Story Dorm Facility	(94.40)	0.48	Undergraduate, postgraduate public schools	(94.87)	Undergraduate, postgraduate 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
109	Social Service Establishment (UFAS)	81.28	(24.34)	Homeless Shelter Homeless Shelter (public)	105.62	Homeless Shelter Homeless Shelter (public)
110	Social Service Establishment (ADAAG)	51.18	54.56	Homeless Shelter Homeless Shelter (public)	(3.38)	Homeless Shelter Homeless Shelter (public)
111	Accessible Saunas and Steam Rooms (ALT/BR)	344.39	553.05	Exercise facilities Undergraduate and postgraduate private schools Swimming pools / Aquatic centers	(208.66)	Exercise facilities Undergraduate and postgraduate private schools Swimming pools / Aquatic centers
112	Accessible Means of Entry to Pools (BR)	82.51	132.57	Undergraduate and postgraduate private schools Swimming pools / Aquatic centers Hotels	(50.07)	Swimming pools / Aquatic centers Hotels Undergraduate and postgraduate private schools

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 those an overall cost 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 requirement 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 three drivers of Impacts to Facilities lists the requirements with the largest impact on facility costs.

Table 8: Total Costs and Benefits per Facility Group in Baseline Scenario

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	353.58	361.37	Transient lodging Guest Room Vanities Water closet clearance in single-user toilet rooms - out swinging door Operable Windows	(7.80)	Water closet clearance in single-user toilet rooms - out swinging door Side Reach Transient lodging Guest Room Vanities
Hotels	594.05	764.62	Transient lodging Guest Room Vanities Water closet clearance in single-user toilet rooms - out swinging door Accessible Route to Exercise Machines and Equipment	(170.57)	Accessible Means of Entry to Pools (NC/ALT) Water closet clearance in single-user toilet rooms - out swinging door Stairs (ALT/BR)
Motels	718.23	854.43	Transient lodging Guest Room Vanities Water closet clearance in single-user toilet rooms - out swinging door Operable Windows	(136.20)	Accessible Means of Entry to Pools (NC/ALT) Water closet clearance in single-user toilet rooms - out swinging door Transient lodging Guest Room Vanities
Restaurants	2,296.62	2,738.47	Passenger Loading Zones Parking Spaces Accessible Play Components (ALT)	(441.85)	Water closet clearance in single-user toilet rooms - in swinging door Valet Parking Garages Side Reach

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	(114.02)	26.73	Wheelchair Space Overlap in Assembly Areas Passenger Loading Zones Parking Spaces	(140.75)	Wheelchair Space Overlap in Assembly Areas Assistive Listening Systems (technical) Ambulatory Accessible Toilet Compartments
Theatre / Concert Hall	(170.21)	26.53	Wheelchair Space Overlap in Assembly Areas Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(196.74)	Wheelchair Space Overlap in Assembly Areas Valet Parking Garages Assistive Listening Systems (technical)
Stadiums	4.96	19.28	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Accessible Saunas and Steam Rooms (ALT/BR)	(14.32)	Wheelchair Space Overlap in Assembly Areas Assistive Listening Systems (technical) Water closet clearance in single-user toilet rooms - out swinging door
Auditoriums	(3.61)	9.82	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(13.43)	Wheelchair Space Overlap in Assembly Areas Location of Accessible Route to Stages Ambulatory Accessible Toilet Compartments
Convention centers	14.49	14.56	Passenger Loading Zones Ambulatory Accessible Toilet Compartments ATMs and Fare Machines	(0.07)	Assistive Listening Systems (technical) Location of Accessible Route to Stages Water closet clearance in single-user toilet rooms - in swinging door
Single level stores	(391.45)	(2.90)	Sales and Service Counters (Alt) Sales and Service Counters (NC) Urinals	(388.55)	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	307.28	341.00	Passenger Loading Zones Ambulatory Accessible Toilet Compartments Direct Access Entrances from Parking Structures	(33.72)	Stairs (ALT/BR) Ambulatory Accessible Toilet Compartments Water closet clearance in single-user toilet rooms - in swinging door
Indoor Service Establishments	(1,109.49)	524.84	Water closet clearance in single- user toilet rooms - out swinging door Side Reach ATMs and Fare Machines	(1,634.33)	Water closet clearance in single-user toilet rooms - out swinging door Side Reach ATMs and Fare Machines
Offices of health care providers	(222.72)	116.86	Water closet clearance in single- user toilet rooms - out swinging door Side Reach Stairs (NC)	(339.58)	Water closet clearance in single-user toilet rooms - out swinging door Stairs (ALT/BR) Side Reach
Hospitals	(29.56)	(10.27)	Passenger Loading Zones (Medical / Long-Term Care) Patient Toilet Rooms Multiple Single-User Toilet Rooms	(19.29)	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	(303.38)	(188.68)	Passenger Loading Zones (Medical / Long-Term Care) Detectable Warnings (scoping) Accessible Routes from Site Arrival Points and Within Sites	(114.70)	Water closet clearance in single-user toilet rooms - out swinging door Accessible Means of Entry to Spas Side Reach
Terminal (private airports)	1.58	0.06	Direct Access Entrances from Parking Structures Passenger Loading Zones Water closet clearance in single- user toilet rooms - out swinging door	1.53	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	0.06	0.05	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	44.88	51.85	Wheelchair Space Overlap in Assembly Areas Passenger Loading Zones Parking Spaces	(6.97)	Water closet clearance in single-user toilet rooms - in swinging door Wheelchair Space Overlap in Assembly Areas Assistive Listening Systems (technical)
Parks or zoos	45.50	48.27	Water closet clearance in single-user toilet rooms - out swinging door Passenger Loading Zones Accessible Play Components (BR)	(2.77)	Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - in swinging door Accessible Fishing Piers and Platforms
Amusement parks	773.40	844.76	Accessible Route to Rides Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(71.36)	Accessible Route to Rides Maneuvering Space in Load and Unload Area Location of Accessible Route to Stages
Nursery schools - Daycare	(23.15)	84.15	Water closet clearance in single-user toilet rooms - out swinging door Accessible Play Components (NC) Accessible Route to Play Components (NC)	(107.30)	Accessible Route to Play Components (NC) Water closet clearance in single-user toilet rooms - out swinging door Side Reach
Elementary private schools	(33.10)	80.61	Accessible Play Components (BR) Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - out swinging door	(113.71)	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	(10.68)	9.72	Wheelchair Space Overlap in Assembly Areas Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(20.40)	Location of Accessible Route to Stages Accessible Lockers Assistive Listening Systems (technical)
Undergraduate and postgraduate private schools	1,482.99	1,624.15	Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms Accessible Machines and Equipment Accessible Route to Exercise Machines and Equipment	(141.16)	Accessible Means of Entry to Pools (NC/ALT) Location of Accessible Route to Stages Accessible Machines and Equipment
Ski facilities	53.21	53.30	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	152.47	66.96	Social Service Establishment (ADAAG) Water closet clearance in single-user toilet rooms - out swinging door Shower Spray Controls	85.51	Social Service Establishment (UFAS) Shower Compartments with Mobility Features Detectable Warnings (scoping)
Food banks	13.25	14.36	Water closet clearance in single-user toilet rooms - out swinging door Parking Spaces Side Reach	(1.11)	Water closet clearance in single-user toilet rooms - out swinging door Side Reach Parking Spaces
Social service establishments	(31.04)	0.14	Side Reach Water closet clearance in single-user toilet rooms - in swinging door Door and Gate Surfaces	(31.18)	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	1,790.96	2,315.14	Accessible Machines and Equipment Accessible Route to Exercise Machines and Equipment Accessible Saunas and Steam Rooms (ALT/BR)	(524.18)	Accessible Machines and Equipment Accessible Saunas and Steam Rooms (ALT/BR) Accessible Lockers
Swimming pools / Aquatic centers	766.02	1,586.53	Accessible Means of Entry to Wading Pools Accessible Means of Entry to Spas Accessible Means of Entry to Pools (NC/ALT)	(820.51)	Accessible Means of Entry to Wading Pools Accessible Means of Entry to Pools (NC/ALT) Accessible Means of Entry to Spas
Bowling alleys	234.83	236.40	Accessible Route to Bowling Lanes Side Reach Door and Gate Surfaces	(1.57)	Accessible Route to Bowling Lanes Side Reach Door and Gate Surfaces
Golf courses (private with public access)	296.68	567.80	Accessible Practice Grounds at Driving Ranges Accessible Route to Golf Courses Accessible Practice Grounds at Golf Courses (Alt/BR)	(271.12)	Accessible Practice Grounds at Golf Courses (Alt/BR) Accessible Route to Golf Courses Water closet clearance in single-user toilet rooms - in swinging door
Golf courses (private only)	87.83	222.87	Accessible Practice Grounds at Driving Ranges Accessible Route to Golf Courses Accessible Practice Grounds at Golf Courses (Alt/BR)	(135.04)	Accessible Practice Grounds at Golf Courses (Alt/BR) Water closet clearance in single-user toilet rooms - in swinging door Accessible Route to Golf Courses
Miniature golf courses	401.84	485.14	Accessible Route to Minigolf Holes Accessible Minigolf Holes Side Reach	(83.30)	Accessible Minigolf Holes Accessible Route to Minigolf 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	(3.93)	11.38	Accessible Boat Slips (NC) Accessible Route for Boating Facilities Accessible Boarding Piers (NC)	(15.31)	Accessible Boat Slips (NC) Accessible Route for Boating Facilities Water closet clearance in single-user toilet rooms - in swinging door
Fishing piers and platforms	45.23	48.44	Accessible Route to Fishing Piers Accessible Fishing Piers and Platforms	(3.21)	Accessible Fishing Piers and Platforms Accessible Route to Fishing Piers
Shooting facilities	221.29	220.99	Shooting Facilities with Firing Positions Door and Gate Surfaces	0.30	Accessible Routes from Site Arrival Points and Within Sites Detectable Warnings (scoping)
Office buildings	(1,036.79)	3.80	Passenger Loading Zones Parking Spaces Stairs (NC)	(1,040.59)	Stairs (ALT/BR) Alterations to Existing Elevators Side Reach
Elementary public schools	53.97	332.79	Accessible Play Components (BR) Water closet clearance in single-user toilet rooms - out swinging door Accessible Route to Play Components (BR)	(278.82)	Accessible Route to Play Components (BR) Water closet clearance in single-user toilet rooms - in swinging door Accessible Route to Play Components (NC)
Secondary public schools	161.26	296.93	Wheelchair Space Overlap in Assembly Areas Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(135.67)	Assistive Listening Systems (technical) Location of Accessible Route to Stages 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
Undergraduate, postgraduate public schools	(228.83)	17.33	Water closet clearance in single-user toilet rooms - out swinging door Accessible Machines and Equipment Ambulatory Accessible Toilet Compartments	(246.16)	Post Secondary School Multi-Story Dorm Facility Location of Accessible Route to Stages Stairs (ALT/BR)
Public housing	(0.47)	168.54	Water closet clearance in single-user toilet rooms - out swinging door Accessible Play Components (BR) Accessible Route to Play Components (BR)	(169.01)	Stairs (ALT/BR) Accessible Route to Play Components (BR) Operable Windows
State and local judicial facilities (courthouses)	(516.95)	0.85	Water closet clearance in single-user toilet rooms - out swinging door Passenger Loading Zones Parking Spaces	(517.80)	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)	(3.11)	0.02	Shower Spray Controls Passenger Loading Zones Parking Spaces	(3.14)	Shower Spray Controls Side Reach Door and Gate Surfaces
State and local correctional facilities (prisons)	(0.83)	3.60	Accessible Machines and Equipment Shower Spray Controls Passenger Loading Zones	(4.42)	Stairs (ALT/BR) Accessible Machines and Equipment Shower Spray Controls
Parking garages	182.97	187.80	Mechanical Access Parking Garages Stairs (NC) Stairs (ALT/BR)	(4.83)	Stairs (ALT/BR) Mechanical Access Parking Garages

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
Self service storage facilities	15.11	19.50	Self-Service Storage Access Stairs (NC) Side Reach	(4.39)	Self-Service Storage Access Stairs (ALT/BR) Alterations to Existing Elevators
Theatre / Concert Halls (public)	(0.13)	0.03	Water closet clearance in single-user toilet rooms - out swinging door Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(0.16)	Wheelchair Space Overlap in Assembly Areas Valet Parking Garages Assistive Listening Systems (technical)
Stadiums (public)	12.42	50.37	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas ATMs and Fare Machines	(37.95)	Wheelchair Space Overlap in Assembly Areas Assistive Listening Systems (technical) Water closet clearance in single-user toilet rooms - out swinging door
Auditoriums (public)	0.05	1.01	Passenger Loading Zones Wheelchair Space Overlap in Assembly Areas Ambulatory Accessible Toilet Compartments	(0.97)	Wheelchair Space Overlap in Assembly Areas Location of Accessible Route to Stages Ambulatory Accessible Toilet Compartments
Convention centers (public)	21.73	21.84	Passenger Loading Zones Ambulatory Accessible Toilet Compartments ATMs and Fare Machines	(0.11)	Assistive Listening Systems (technical) Location of Accessible Route to Stages Water closet clearance in single-user toilet rooms - in swinging door
Hospitals (public)	(4.68)	(4.02)	Passenger Loading Zones (Medical / Long-Term Care) Patient Toilet Rooms Multiple Single-User Toilet Rooms	(0.66)	Water closet clearance in single-user toilet rooms - out swinging door Water closet clearance in single-user toilet rooms - in swinging door Accessible Means of Entry to Spas

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
Nursing homes (public)	(31.63)	(26.93)	Passenger Loading Zones (Medical / Long-Term Care) Detectable Warnings (scoping) Accessible Routes from Site Arrival Points and Within Sites	(4.70)	Water closet clearance in single-user toilet rooms - out swinging door Side Reach Accessible Means of Entry to Spas
Museums, historical sites & libraries (public)	91.31	105.48	Wheelchair Space Overlap in Assembly Areas Passenger Loading Zones Parking Spaces	(14.17)	Water closet clearance in single-user toilet rooms - in swinging door Wheelchair Space Overlap in Assembly Areas Assistive Listening Systems (technical)
Parks or zoos (public)	465.75	617.36	Water closet clearance in single-user toilet rooms - out swinging door Passenger Loading Zones Ambulatory Accessible Toilet Compartments	(151.61)	Water closet clearance in single-user toilet rooms - in swinging door Accessible Route to Play Components (BR) Side Reach
Homeless Shelter (public)	22.78	10.01	Social Service Establishment (ADAAG) Water closet clearance in single-user toilet rooms - out swinging door Shower Spray Controls	12.78	Social Service Establishment (UFAS) Shower Compartments with Mobility Features Detectable Warnings (scoping)
Exercise facilities (public)	13.92	20.41	Accessible Machines and Equipment Ambulatory Accessible Toilet Compartments Accessible Lockers	(6.49)	Accessible Machines and Equipment Wheelchair Space Overlap in Assembly Areas Side Reach

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
Social service establishments (public)	(13.28)	0.06	Side Reach Water closet clearance in single-user toilet rooms - in swinging door Door and Gate Surfaces	(13.34)	Water closet clearance in single-user toilet rooms - in swinging door Side Reach Door and Gate Surfaces
Swimming pools / Aquatic centers (public)	62.44	115.30	Accessible Means of Entry to Wading Pools Accessible Means of Entry to Spas Accessible Means of Entry to Pools (NC/ALT)	(52.87)	Accessible Means of Entry to Wading Pools Accessible Means of Entry to Pools (NC/ALT) Accessible Means of Entry to Spas
Miniature golf courses (public)	15.03	16.88	Accessible Route to Minigolf Holes Accessible Minigolf Holes Side Reach	(1.84)	Accessible Minigolf Holes Water closet clearance in single-user toilet rooms - in swinging door Accessible Route to Minigolf Holes
Recreational boating facilities (public)	0.94	10.62	Accessible Route for Boating Facilities Accessible Boat Slips (NC) Accessible Boarding Piers (NC)	(9.68)	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)	15.60	16.02	Accessible Route to Fishing Piers Accessible Fishing Piers and Platforms	(0.42)	Accessible Fishing Piers and Platforms Accessible Route to Fishing Piers
Office buildings (public)	(93.02)	12.54	Passenger Loading Zones Parking Spaces Stairs (NC)	(105.56)	Stairs (ALT/BR) Alterations to Existing Elevators Side Reach
Parking garages (public)	1.64	1.68	Mechanical Access Parking Garages Stairs (NC) Stairs (ALT/BR)	(0.04)	Stairs (ALT/BR) Mechanical Access Parking Garages

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
Golf courses (public)	45.94	60.86	Water closet clearance in single-user toilet rooms - out swinging door Accessible Route to Golf Courses Accessible Practice Grounds at Driving Ranges	(14.92)	Accessible Practice Grounds at Golf Courses (Alt/BR) Water closet clearance in single-user toilet rooms - in swinging door Side Reach
Restaurants (public)	0.07	0.09	Passenger Loading Zones Parking Spaces Accessible Play Components (ALT)	(0.02)	Water closet clearance in single-user toilet rooms - in swinging door Valet Parking Garages Side Reach
Amusement parks (public)	33.65	34.20	Accessible Route to Rides Water closet clearance in single-user toilet rooms - out swinging door Ambulatory Accessible Toilet Compartments	(0.54)	Accessible Route to Rides Location of Accessible Route to Stages Wheelchair Space or Transfer Seat or Transfer Device

5.1.5 Net Present Value for Public versus Private Facilities

Figure 12 shows the NPV for public and privately owned elementary and postgraduate schools. The results show a large discrepancy between public and private undergraduate and postgraduate schools. 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 12: NPV for Selected Facilities with Public and Private

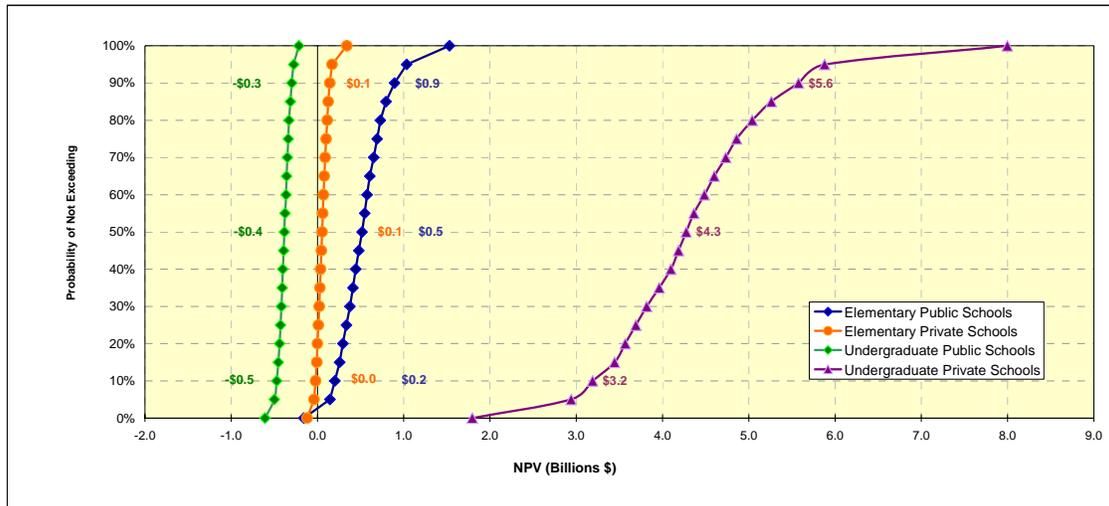


Table 9 presents the NPV for all private and all public facilities analyzed. While the total NPV is positive for both sets of groups, the NPV for private facilities (\$7.4 B) is significantly higher than that for public facilities (\$126 M). This is primarily due to the fact that there are significantly more private than public establishments.

The private facilities with the largest (positive or negative) NPV are Restaurants (\$2.3 B), Exercise Facilities (\$1.8 B), Undergraduate and Postgraduate Private Schools (\$1.5 B) and Indoor Service Establishments (-\$1.1 B). The public facility with the greatest benefits is Parks and zoos, with a positive NPV of \$0.5 B. The public facility with the largest negative NPV is State and local Judicial Facilities (-\$0.5 B).

Table 9: Net Present Value for Public and Private Facilities

	Facility Group	NPV (\$ mil)	Impact to Facilities
A	Inns	353.58	(7.80)
B	Hotels	594.05	(170.57)
C	Motels	718.23	(136.20)
D	Restaurants	2,296.62	(441.85)

	Facility Group	NPV (\$ mil)	Impact to Facilities
No public counterpart			
No public counterpart			
No public counterpart			
BP	Restaurants (public)	0.07	(0.02)

	Facility Group	NPV (\$ mil)	Impact to Facilities
E	Motion Picture House	(114.02)	(140.75)
F	Theatre / Concert Hall	(170.21)	(196.74)
G	Stadiums	4.96	(14.32)
H	Auditoriums	(3.61)	(13.43)
I	Convention centers	14.49	(0.07)
J	Single level stores	(391.45)	(388.55)
K	Shopping malls	307.28	(33.72)
L	Indoor Service Establishments	(1,109.49)	(1,634.33)
M	Offices of health care providers	(222.72)	(339.58)
N	Hospitals	(29.56)	(19.29)
O	Nursing homes	(303.38)	(114.70)
P	Terminal (private airports)	1.58	1.53
Q	Depots	0.06	0.01
R	Museums, historical sites & libraries	44.88	(6.97)
S	Parks or zoos	45.50	(2.77)
T	Amusement parks	773.40	(71.36)
U	Nursery schools - Daycare	(23.15)	(107.30)
V	Elementary private schools	(33.10)	(113.71)
W	Secondary Private Schools	(10.68)	(20.40)
X	Undergraduate and postgraduate private schools	1,482.99	(141.16)
Y	Ski facilities	53.21	(0.09)

	Facility Group	NPV (\$ mil)	Impact to Facilities
No public counterpart			
AW	Theatre / Concert Halls (public)	(0.13)	(0.16)
AX	Stadiums (public)	12.42	(37.95)
AY	Auditoriums (public)	0.05	(0.97)
AZ	Convention centers (public)	21.73	(0.11)
No public counterpart			
BB	Hospitals (public)	(4.68)	(0.66)
BC	Nursing homes (public)	(31.63)	(4.70)
No public counterpart			
No public counterpart			
BD	Museums, historical sites & libraries (public)	91.31	(14.17)
BE	Parks or zoos (public)	465.75	(151.61)
BQ	Amusement parks (public)	33.65	(0.54)
No public counterpart			
AN	Elementary public schools	53.97	(278.82)
AO	Secondary public schools	161.26	(135.67)
AP	Undergraduate, postgraduate public schools	(228.83)	(246.16)
No public counterpart			

	Facility Group	NPV (\$ mil)	Impact to Facilities
Z	Homeless Shelter	152.47	85.51
AA	Food banks	13.25	(1.11)
AB	Social service establishments	(31.04)	(31.18)
AC	Exercise facilities	1,790.96	(524.18)
AD	Aquatic centers / swimming pools	766.02	(820.51)
AE	Bowling alleys	234.83	(1.57)
AF	Golf courses (private with public access)	296.68	(271.12)
AG	Golf courses (private only)	87.83	(135.04)
AH	Miniature golf courses	401.84	(83.30)
AI	Recreational boating facilities	(3.93)	(15.31)
AJ	Fishing piers and platforms	45.23	(3.21)
AK	Shooting facilities	221.29	0.30
AM	Office buildings	(1,036.79)	(1,040.59)
No private counterpart			
AU	Parking garages	182.97	(4.83)

	Facility Group	NPV (\$ mil)	Impact to Facilities
BF	Homeless Shelter (public)	22.78	12.78
No public counterpart			
BH	Social service establishments (public)	(13.28)	(13.34)
BG	Exercise facilities (public)	13.92	(6.49)
BI	Aquatic centers / swimming pools (public)	62.44	(52.87)
No public counterpart			
No public counterpart			
BO	Golf courses (public)	45.94	(14.92)
BJ	Miniature golf courses (public)	15.03	(1.84)
BK	Recreational boating facilities (public)	0.94	(9.68)
BL	Fishing piers and platforms (public)	15.60	(0.42)
No public counterpart			
BM	Office buildings (public)	(93.02)	(105.56)
AQ	Public housing	(0.47)	(169.01)
AR	State and local judicial facilities (courthouses)	(516.95)	(517.80)
AS	State and local detention facilities (jails)	(3.11)	(3.14)
AT	State and local correctional facilities (prisons)	(0.83)	(4.42)
BN	Parking garages (public)	1.64	(0.04)

	Facility Group	NPV (\$ mil)	Impact to Facilities
AV	Self service storage facilities	15.11	(4.39)

	Facility Group	NPV (\$ mil)	Impact to Facilities
No public counterpart			

5.2 Results Under Additional Scenarios

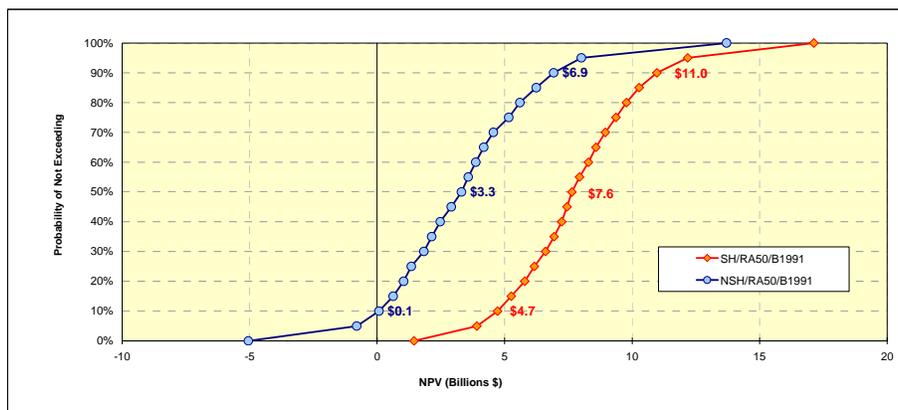
This section discusses a few of the scenarios that are analyzed in this report. The scenarios are discussed in comparison with one or more other scenarios given a common basis. For review, the scenarios modeled in this analysis include: safe harbor (SH) and no safe harbor (NSH) for existing facilities compliant under the 1991 Standards; barrier removal that would be readily achievable in either 0%, 50%, or 100% of situations (RA0, RA50, and RA100); and alternate baselines using either the 1991 Standards or recent IBC editions (B1991, and B2000, B2003, and B2006).⁵³

Results under safe harbor (SH) versus no safe harbor (NSH) are discussed assuming that 50% of barrier removal is readily achievable (RA50) and with the 1991 Standards as the baseline (B1991). In addition, results for RA0, and RA100 also assume SH and B1991. Alternative baselines for B1991, and the various IBC editions (B2000, B2003, and B2006) all assume SH and RA100.

5.2.1 Safe Harbor and No Safe Harbor Scenarios

The following graphs (Figure 13, Figure 14, and Figure 15) show the NPV results for other scenarios. Figure 13 compares SH and NSH policies (both assuming RA50 and 1991 Standards). The difference in NPV is significant. Without SH, benefits are most likely to exceed costs by about \$3.3 B whereas with SH, benefits exceed costs by over \$7.6 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 13: NPV Comparison – Safe Harbor Policy: SH/RA50/ B1991 , NSH/RA50/ B1991



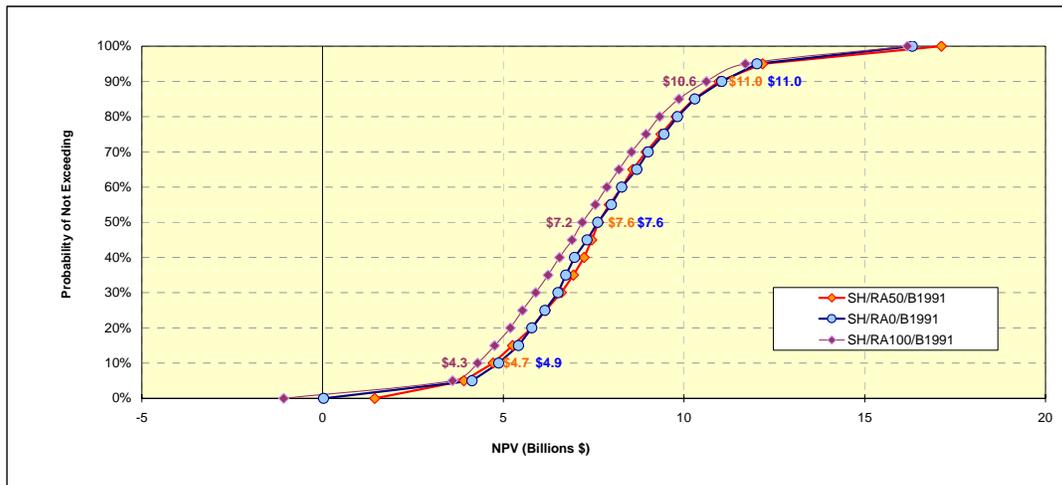
5.2.2 Readily Achievable Scenarios

Figure 14 provides an assessment of how NPV changes with different readily achievable assumptions. There is little variation among the three RA scenarios (RA0, RA50, and RA100):

⁵³ See section 4.2.1 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.

One of the reasons that the results of the RA scenarios do not vary significantly under safe harbor is that there are three offsetting effects working simultaneously. The first effect that pushes costs up is a higher barrier removal cost due to a higher number of elements subject to new requirements undergoing barrier removal. The second effect reduces costs because a higher RA% implies fewer alterations on elements subject to new requirements. Finally, the third effect increases the benefits as the RA% increases, because the rate of completion of elements related to new requirements is higher, and so are the benefits derived from them (benefits can be shown to increase at a decreasing rate). The combination of these three effects keeps the RA curves close to one another.

Figure 14: NPV Comparison – Alternate Readily Achievable %: SH/ RA0, RA50, RA100/ B1991



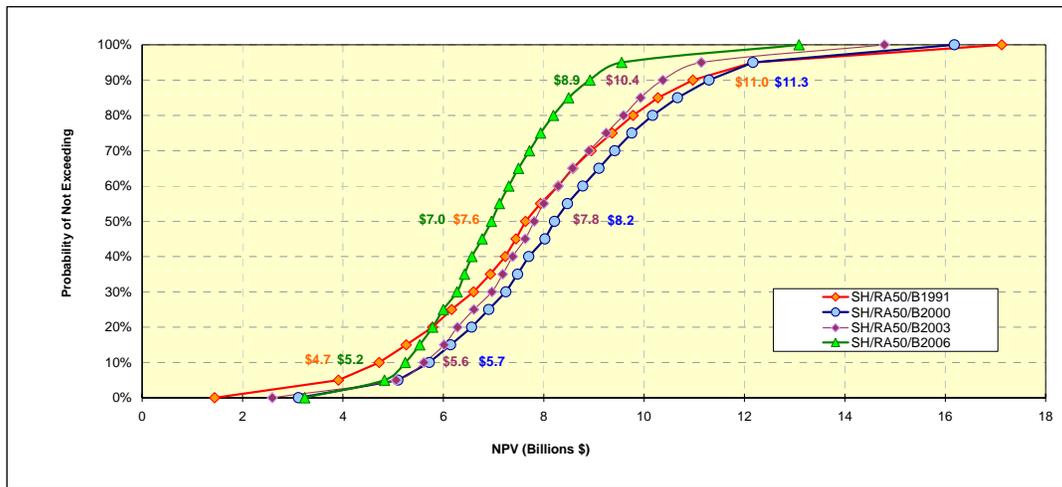
5.2.3 International Building Code (IBC) Scenarios

Figure 15 represents differences in NPV for different baselines, including the various IBC editions (B2000, B2003, and B2006). These probability curves indicate that the effect of changing the set of requirements that apply. 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.

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 Accessible Attorney Areas and Witness Stands) and Location of Accessible Routes to are also no longer included. The total NPV using the 2006 IBC is lowest of

all the scenarios (though not by much), as Transient Lodging Guest Room Vanities and Water Closet Clearances with Out-Swinging Doors are no longer included under this scenario.

Figure 15: NPV Comparison – Alternate Baselines: SH/RA100/ B1991, B2000, B2003, B2006



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 adoption by state and local jurisdictions. Nonetheless, to further assist stakeholders in assessing the impact of the proposed regulations, several more limited assessments were conducted that compared four illustrative proposed requirements against requirement-specific alternate IBC/ANSI baselines based on current IBC adoption by states and local jurisdictions nationwide. The results of these analyses demonstrate that consideration of requirement-specific alternate IBC/ANSI baselines on a requirement-by-requirement basis would likely lead to markedly lower incremental costs (and benefits) for many requirements.

Table 10 presents total comparative costs, benefits, and NPV for two illustrative proposed requirements when using either the primary baseline (1991 Standards) or a requirement-specific alternate IBC baseline. The two illustrative requirements – barrier removal and alteration requirements for existing stairs (RIA Req. #10) and alterations requirements for existing elevators (RIA Req. # 16) – were selected because they both appear in the “main” chapters of the IBC for which adoption is near universal. It is estimated that 95.63% of facilities nationwide are currently covered by IBC provisions that mirror these two proposed requirements for existing stairs and elevators. Thus, for purposes of these alternate IBC baselines, the expected values for costs and benefits were scaled by this same percentage. Using this methodology, the likely costs for these two requirements falls from \$1.1 billion using the 1991 Standards as a baseline to \$49 million using requirement-specific alternate IBC baselines.

Table 10: Costs, Benefits and NPV Comparison using Primary (1991 Standards) Baseline and Requirement-Specific Alternate IBC Baseline – Req. # 10 and 16

Costs, Benefits and NPV for Stairs (ALT/BR) (RIA – Req. # 10) and Alterations to Existing Elevators (RIA – Req. # 16) Requirements Using Primary (1991 Standards) Baseline and Requirement-Specific Alternate IBC Baseline				
1991 Standards Baseline				
(\$ millions)				
Requirement #	Requirement	Impact to Users (Benefits)	Impact to Facilities (Costs) *	NPV
10	Stairs (ALT/BR)	18.3	(782.5)	(764.2)
16	Alterations to Existing Elevators	2.5	(342.4)	(339.9)
	Sum	20.8	(1,124.9)	(1,104.1)
Alternate IBC Baseline				
(\$ millions)				
Requirement #	Requirement	Impact to Users (Benefits)	Impact to Facilities (Costs) *	NPV
10	Stairs (ALT/BR)	0.8	(34.1)	(33.3)
16	Alterations to Existing Elevators	0.1	(14.9)	(14.8)
	Sum	0.9	(49.0)	(48.1)

* Negative numbers in these columns are a cost to facilities.

Table 11 presents total costs, benefits, and NPV for two other illustrative proposed requirements using the same comparative baselines. This second set of illustrative proposed requirements – water closet clearance requirements in single-user toilet rooms with in-swinging doors (RIA Req. # 32) and side reach requirements (RIA Req. # 37) – were selected because they both appear in Chapter 11 of the IBC (through incorporation by reference of ANSI A117.1) which has been less widely adopted than some other IBC chapters. Nonetheless, it is still estimated that 31.03% of facilities nationwide are currently covered by IBC/ANSI A117.1 provisions that mirror these two proposed requirements for water closet clearances and side reach. Likely costs and benefits were thus scaled in a manner similar to that described above. Using this methodology, the likely costs for this second set of illustrative proposed requirements falls from \$2.1 billion using the 1991 Standards as a baseline to \$1.5 billion using requirement-specific alternate IBC/ANSI baselines.

Table 11: Costs, Benefits and NPV Comparison Using Primary (1991 Standards) Baseline and Requirement-Specific Alternate IBC/ANSI Baselines – Req # 32 and 37

Costs, Benefits and NPV for Water Closet Clearance in Single-User Toilet Rooms (In-Swinging Door) (RIA Req # 32) and Side Reach (RIA Req # 37) Requirements Using Primary (1991 Standards) Baseline and Requirement-Specific Alternate IBC/ANSI Baseline				
Water closet clearance in single-user toilet rooms with in swinging door and Side Reach				
1991 Standards Baseline				
(\$ millions)				
Requirement #	Requirement	Impact to Users (Benefits)	Impact to Facilities (Costs) *	NPV
32	Water closet clearance in single-user toilet rooms - in swinging door	46.3	(974.4)	(928.1)
37	Side Reach	184.2	(1,154.8)	(970.6)
	Sum	230.5	(2,129.2)	(1,898.7)
Alternate IBC/ANSI A117.1 Baseline				
(\$ millions)				
Requirement #	Requirement	Impact to Users (Benefits)	Impact to Facilities (Costs) *	NPV
32	Water closet clearance in single-user toilet rooms - in swinging door	31.9	(672.0)	(640.1)
37	Side Reach	127.0	(796.4)	(669.4)
	Sum	158.9	(1,468.4)	(1,309.5)

* Negative numbers in these columns are a cost to facilities.

5.3 Relative Impact of Selected Assumptions

As noted in sections 3.4 and 4.3, this regulatory impact analysis incorporates risk analysis to understand the potential impact on results of the uncertainty surrounding assumptions and some data estimates. The results presented in preceding sections illustrate how parameters of uncertainties translate into variability of NPVs.

An additional assessment of impact of parameter values explores the change in benefits from alternate assumptions. The change in benefits is assessed at expected value. This approach of assessing impact is not a sensitivity analysis in which viable values are assessed, justified in economic literature. Instead, this approach is a stress analysis to assess the impact in results from a hypothetical change in one parameter. The approach is conducted for three variables: the premium on access time, the premium on use time, and the price elasticity of demand for facility visits.

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.

The results below are for the complete list of requirements. Some requirements have no data since, in the 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 .5 instead of 1) reduces the benefits to

users by that factor. Lowering the premium by one half reduces total net benefits to users from \$16.3 billion to \$10.7 billion, or 34%.⁵⁴

Table 12: Impact on Results of Reduced to Access Time Premium

	Baseline Scenario	Impact of Reduced Premium On Net Benefits to Users
	Premium = 1	Premium = .5
Requirement (millions of dollars)	Impact to Users (Benefits and Costs)	Impact to Users (Benefits and Costs)
Public Entrances	(22.3)	(11.1)
Maneuvering Clearance or Standby Power for Automatic Doors	0.0	0.0
Automatic Door Break-Out Openings	0.0	0.0
Thresholds at Doorways	4.3	2.1
Door and Gate Surfaces	2.7	1.6
Location of Accessible Routes	-	-
Common Use Circulation Paths in Employee Work Areas	-	-
Accessible Means of Egress	-	-
Stairs (NC)	53.6	26.6
Stairs (ALT/BR)	18.3	9.1
Handrails Along Walkways	-	-
Handrails	(24.8)	(14.2)
Accessible Routes from Site Arrival Points and Within Sites	(35.3)	(24.5)
Standby Power for Platform Lifts	0.0	0.0
Power-Operated Doors for Platform Lifts	2.4	1.2
Alterations to Existing Elevators	2.5	1.3
Platform Lifts in Hotel Guest Rooms and Dwelling Units	-	-
“LULA” and Private Residence Elevators	-	-
Van Accessible Parking Spaces	59.9	35.9
Valet Parking Garages	175.2	87.4
Mechanical Access Parking Garages	187.3	91.8
Direct Access Entrances from Parking Structures	44.7	22.3
Passenger Loading Zones	1,885.3	968.7
Parking Spaces	992.4	500.4
Parking Spaces (Signs)	(3.3)	(1.6)
Passenger Loading Zones (Medical / Long-Term Care)	(653.2)	(326.8)
Ambulatory Accessible Toilet Compartments	497.9	322.8
Water closet clearance in single-user toilet rooms - out swinging door	2,364.4	1,398.0
Shower Spray Controls	207.2	152.1
Urinals	(13.1)	(9.3)

⁵⁴ This \$16.3 billion is not the same as the estimate for Total Expected Benefits in Table 5, because the latter includes any benefits to facilities from any less stringent requirements and does not net out the costs to users from less stringent requirements.

	Baseline Scenario	Impact of Reduced Premium On Net Benefits to Users
	Premium = 1	Premium = .5
Requirement (millions of dollars)	Impact to Users (Benefits and Costs)	Impact to Users (Benefits and Costs)
Multiple Single-User Toilet Rooms	(6.0)	(3.0)
Water closet clearance in single-user toilet rooms - in swinging door	46.3	28.5
Water Closet Location and Rear Grab Bar	-	-
Patient Toilet Rooms	(5.4)	(2.7)
Drinking Fountains	0.4	0.2
Sinks	-	-
Side Reach	184.2	99.8
Sales and Service Counters (NC)	(11.0)	(5.6)
Sales and Service Counters (Alt)	(239.6)	(120.1)
Washing Machines and Clothes Dryers (technical)	0.1	0.1
Washing Machines and Clothes Dryers (Scoping)	0.1	0.0
Self-Service Storage Access	19.8	9.9
Limited Access Spaces and Machinery Spaces	-	-
Operable Parts	-	-
Transient lodging Guest Room Vanities	1,093.7	623.3
Operable Windows	204.7	102.2
Dwelling Units with Communication Features [1991]	0.0	0.0
Dwelling Units with Communication Features [UFAS]	0.0	0.0
Galley Kitchen Clearances	47.7	38.0
Shower Compartments with Mobility Features	(12.4)	(11.0)
Location of Accessible Route to Stages	0.2	0.1
Wheelchair Space Overlap in Assembly Areas	498.1	474.3
Lawn Seating in Assembly Areas	-	-
Handrails on Aisle Ramps in Assembly Areas	(400.9)	(200.8)
Wheelchair Spaces in Assembly Areas	(5.8)	(2.9)
Accessible Route to Tiered Dining Areas in Sports Facilities (NC)	(0.5)	(0.3)
Accessible Route to Press Boxes	(1.5)	(0.7)
Public TTYS	0.0	0.0
Public Telephone Volume Controls	0.0	0.0
Two-Way Communication Systems at Entrances	7.9	3.9
ATMs and Fare Machines	37.5	18.8
Assistive Listening Systems (technical)	1.2	1.2
Visible Alarms in Alterations to Existing Facilities	-	-
Detectable Warnings (scoping)	(71.9)	(35.9)
Detectable Warnings (technical)	-	-
Assistive Listening Systems (scoping)	(7.0)	(3.5)
Accessible Courtroom Stations	-	-
Accessible Attorney Areas and Witness Stands	0.0	0.0
Raised Courtroom Stations Not for Members of the Public	-	-

	Baseline Scenario	Impact of Reduced Premium On Net Benefits to Users
	Premium = 1	Premium = .5
Requirement (millions of dollars)	Impact to Users (Benefits and Costs)	Impact to Users (Benefits and Costs)
Accessible Route to Exercise Machines and Equipment	1,115.9	809.6
Accessible Machines and Equipment	1,181.3	866.1
Accessible Saunas and Steam Rooms (NC)	-	-
Accessible Lockers	175.1	127.0
Accessible Dressing Rooms, Fitting Rooms, or Locker Rooms	247.1	122.8
Wheelchair Spaces in Team or Player Seating Areas	0.0	0.0
Accessible Route in Court Sport Facilities	-	-
Accessible Route to Bowling Lanes	233.6	221.9
Shooting Facilities with Firing Positions	223.7	218.1
Accessible Means of Entry to Pools (NC/ALT)	393.6	241.3
Accessible Means of Entry to Wading Pools	867.8	584.3
Accessible Means of Entry to Spas	779.5	470.2
Accessible Route for Boating Facilities	10.3	8.4
Accessible Boarding Piers (NC)	2.5	2.0
Accessible Boarding Piers (ALT/BR)	-	-
Accessible Boat Slips (NC)	9.4	7.7
Accessible Boat Slips (Alt/BR)	-	-
Accessible Route to Fishing Piers	32.3	31.4
Accessible Fishing Piers and Platforms	66.4	55.5
Accessible Route to Golf Courses	220.7	198.8
Accessible Practice Grounds at Golf Courses (Alt/BR)	162.4	146.2
Accessible Practice Grounds at Golf Courses (NC)	-	-
Accessible Practice Grounds at Driving Ranges	299.3	269.5
Accessible Route to Minigolf Holes	257.9	211.6
Accessible Minigolf Holes	243.9	200.6
Accessible Route to Rides	503.6	417.6
Wheelchair Space or Transfer Seat or Transfer Device	4.6	3.5
Maneuvering Space in Load and Unload Area	15.3	11.5
Signs at Amusement Park rides	5.1	3.9
Accessible Route to Play Components (BR)	194.0	116.0
Accessible Play Components (BR)	294.9	179.2
Accessible Route to Play Components (ALT)	270.6	136.2
Accessible Play Components (ALT)	402.0	202.6
Accessible Route to Play Components (NC)	84.1	46.1
Accessible Play Components (NC)	126.2	69.8
Open Captioning in Sports Stadium	0.0	0.0
Post Secondary School Multi-Story Dorm Facility	0.5	0.2
Mobility Accessible Prison Cell	-	-
Communication Accessible Prison Cell	-	-
Social Service Establishment (UFAS)	(24.3)	(12.1)

	Baseline Scenario	Impact of Reduced Premium On Net Benefits to Users
	Premium = 1	Premium = .5
Requirement (millions of dollars)	Impact to Users (Benefits and Costs)	Impact to Users (Benefits and Costs)
Social Service Establishment (ADAAG)	54.6	27.2
Accessible Saunas and Steam Rooms (ALT/BR)	553.1	404.8
Accessible Means of Entry to Pools (BR)	132.6	73.5
Total for Entire Rule	16,264.7	10,720.2

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. The results are shown below for the requirements with use value only. Reducing the premium used for use time by a half (i.e. using a use time premium of .175 instead of .35) lowers total net benefits to users⁵⁵ from \$16.3 billion to \$16.0 billion, or 2%.

Table 13: Impact on Results of Reduced to Use Time Premium

Requirement (millions of dollars)	Baseline Use Value = .35	Alternate Use Value = .175
	Impact to Users	Impact to Users
Ambulatory Accessible Toilet Compartments	497.86	489.93
Water closet clearance in single-user toilet rooms - out swinging door	2,364.39	2,308.18
Shower Spray Controls	207.18	160.14
Urinals	-13.09	-10.48
Multiple Single-User Toilet Rooms	-5.96	-5.96
Water closet clearance in single-user toilet rooms - in swinging door	46.28	42.70
Transient lodging Guest Room Vanities	1,093.72	1,013.12
Shower Compartments with Mobility Features	-12.38	-8.13
Wheelchair Space Overlap in Assembly Areas	498.06	396.24
Assistive Listening Systems (technical)	1.24	0.94
Accessible Machines and Equipment	1,181.32	1,167.83
Accessible Fishing Piers and Platforms	66.43	64.19
Accessible Minigolf Holes	243.92	243.06
Accessible Play Components (BR)	294.94	292.83
Accessible Play Components (ALT)	402.00	401.85
Accessible Play Components (NC)	126.17	125.75
Total for Entire Rule	16,264.7	15,940.5

The last stress analysis assesses the impact of reducing the price elasticity of demand for each facility. This analysis shows the overall minor impact the slope of the demand curve (which is derived, in part, from the elasticity) has on the change in consumer surplus. Reducing the

⁵⁵ *Ibid.*

elasticities by a half (meaning that each reducing in price leads to a smaller change in demand) reduces net benefits to users from \$16.3 billion to \$13.2 billion. 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.

Table 14: Impact on Results of Reduced Demand Elasticity At All Facilities

Facility Group	Facility Index	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In Benefits	
		Impact to Users	NPV	Impact to Users	NPV	\$	%
Inns	A	361.37	353.58	359.58	351.78	(1.8)	-0.5%
Hotels	B	764.62	594.05	761.52	590.95	(3.1)	-0.4%
Motels	C	854.43	718.23	845.26	709.06	(9.2)	-1.1%
Restaurants	D	2,738.47	2,296.62	2,732.40	2,290.55	(6.1)	-0.2%
Motion Picture House	E	26.73	(114.02)	26.66	(114.09)	(0.1)	-0.3%
Theatre / Concert Hall	F	26.53	(170.21)	26.51	(170.23)	(0.0)	-0.1%
Stadiums	G	19.28	4.96	19.26	4.94	(0.0)	-0.1%
Auditoriums	H	9.82	(3.61)	9.81	(3.62)	(0.0)	-0.1%
Convention centers	I	14.56	14.49	14.53	14.45	(0.0)	-0.2%
Single level stores	J	(2.90)	(391.45)	(2.90)	(391.45)	0.0	0.0%
Shopping malls	K	341.00	307.28	340.47	306.75	(0.5)	-0.2%
Indoor Service Establishments	L	524.84	(1,109.49)	524.80	(1,109.52)	(0.0)	0.0%
Offices of health care providers	M	116.86	(222.72)	116.86	(222.72)	0.0	0.0%
Hospitals	N	(10.27)	(29.56)	(10.27)	(29.56)	0.0	0.0%
Nursing homes	O	(188.68)	(303.38)	(188.79)	(303.49)	(0.1)	0.1%
Terminal (private airports)	P	0.06	1.58	0.06	1.58	0.0	0.0%
Depots	Q	0.05	0.06	0.05	0.06	0.0	0.0%
Museums, historical sites & libraries	R	51.85	44.88	51.59	44.63	(0.3)	-0.5%

Facility Group	Facility Index	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In Benefits	
		Impact to Users	NPV	Impact to Users	NPV	\$	%
Parks or zoos	S	48.27	45.50	36.57	33.80	(11.7)	-32.0%
Amusement parks	T	844.76	773.40	537.02	770.43	(307.7)	-57.3%
Nursery schools - Daycare	U	84.15	(23.15)	84.08	(23.22)	(0.1)	-0.1%
Elementary private schools	V	80.61	(33.10)	80.46	(33.25)	(0.2)	-0.2%
Secondary Private Schools	W	9.72	(10.68)	9.72	(10.69)	0.0	0.0%
Undergraduate and postgraduate private schools	X	1,624.15	1,482.99	1,615.61	1,474.45	(8.5)	-0.5%
Ski facilities	Y	53.30	53.21	28.21	53.21	(25.1)	-88.9%
Homeless Shelter	Z	66.96	152.47	66.83	152.34	(0.1)	-0.2%
Food banks	AA	14.36	13.25	14.34	13.23	(0.0)	-0.1%
Social service establishments	AB	0.14	(31.04)	0.14	(31.04)	0.0	0.0%
Exercise facilities	AC	2,315.14	1,790.96	1,368.39	844.22	(946.8)	-69.2%
Aquatic centers / swimming pools	AD	1,586.53	766.02	967.77	695.29	(618.8)	-63.9%
Bowling alleys	AE	236.40	234.83	124.53	122.96	(111.9)	-89.8%
Golf courses (private with public access)	AF	567.80	296.68	319.40	294.77	(248.4)	-77.8%
Golf courses (private only)	AG	222.87	87.83	125.60	48.42	(97.3)	-77.4%
Miniature golf courses	AH	485.14	401.84	276.71	310.89	(208.4)	-75.3%
Recreational boating facilities	AI	11.38	(3.93)	7.41	(7.90)	(4.0)	-53.6%
Fishing piers and platforms	AJ	48.44	45.23	25.17	34.01	(23.3)	-92.5%
Shooting facilities	AK	220.99	221.29	112.69	215.12	(108.3)	-96.1%
Office buildings	AM	3.80	(1,036.79)	3.79	(1,036.80)	(0.0)	-0.3%

Facility Group	Facility Index	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In Benefits	
		Impact to Users	NPV	Impact to Users	NPV	\$	%
Elementary public schools	AN	332.79	53.97	332.44	53.62	(0.4)	-0.1%
Secondary public schools	AO	296.93	161.26	296.83	161.16	(0.1)	0.0%
Undergraduate, postgraduate public schools	AP	17.33	(228.83)	17.19	(228.97)	(0.1)	-0.8%
Public housing	AQ	168.54	(0.47)	162.05	(6.95)	(6.5)	-4.0%
State and local judicial facilities (courthouses)	AR	0.85	(516.95)	0.85	(516.95)	0.0	0.0%
State and local detention facilities (jails)	AS	0.02	(3.11)	0.02	(3.11)	0.0	0.0%
State and local correctional facilities (prisons)	AT	3.60	(0.83)	3.60	(0.83)	0.0	0.0%
Parking garages	AU	187.80	182.97	184.02	179.19	(3.8)	-2.1%
Self service storage facilities	AV	19.50	15.11	19.42	15.03	(0.1)	-0.4%
Theatre / Concert Halls (public)	AW	0.03	(0.13)	0.03	(0.13)	0.0	0.0%
Stadiums (public)	AX	50.37	12.42	50.33	12.38	(0.0)	-0.1%
Auditoriums (public)	AY	1.01	0.05	1.01	0.05	0.0	0.0%
Convention centers (public)	AZ	21.84	21.73	21.79	21.68	(0.1)	-0.2%
Hospitals (public)	BB	(4.02)	(4.68)	(4.02)	(4.68)	0.0	0.0%
Nursing homes (public)	BC	(26.93)	(31.63)	(26.95)	(31.65)	(0.0)	0.1%
Museums, historical sites & libraries (public)	BD	105.48	91.31	104.96	90.79	(0.5)	-0.5%
Parks or zoos (public)	BE	617.36	465.75	453.67	302.06	(163.7)	-36.1%
Homeless Shelter (public)	BF	10.01	22.78	9.99	22.76	(0.0)	-0.2%

Facility Group	Facility Index	Results Using Literature Elasticities		Results Using Elasticity Estimates Reduced by Half		Difference In Benefits	
		Impact to Users	NPV	Impact to Users	NPV	\$	%
Exercise facilities (public)	BG	20.41	13.92	11.98	5.49	(8.4)	-70.4%
Social service establishments (public)	BH	0.06	(13.28)	0.06	(13.28)	0.0	0.0%
Aquatic centers / swimming pools (public)	BI	115.30	62.44	69.16	58.69	(46.1)	-66.7%
Miniature golf courses (public)	BJ	16.88	15.03	9.62	11.87	(7.3)	-75.5%
Recreational boating facilities (public)	BK	10.62	0.94	6.92	(2.76)	(3.7)	-53.5%
Fishing piers and platforms (public)	BL	16.02	15.60	8.33	11.89	(7.7)	-92.3%
Office buildings (public)	BM	12.54	(93.02)	12.49	(93.08)	(0.0)	-0.4%
Parking garages (public)	BN	1.68	1.64	1.65	1.61	(0.0)	-1.8%
Golf courses (public)	BO	60.86	45.94	34.20	45.74	(26.7)	-78.0%
Restaurants (public)	BP	0.09	0.07	0.09	0.07	0.0	0.0%
Amusement parks (public)	BQ	34.20	33.65	17.97	17.61	(16.2)	-90.3%
Total		16,264.7	7,541.8	13,231.5	5,999.6	(3,033.2)	-22.9%

The three requirements with the largest positive NPVs and the three requirements with the largest negative NPVs can be characterized as key drivers of the overall costs and benefits to the Rule. The following figures present the driving factors behind the risk range for the NPV estimates for each of these requirements. Each graph indicates the level of risk attributable to each variable. Those factors that explain the largest portion of the risk are the ones that will have the largest impact on the overall NPV.

Top Negative Requirements (NPV \$ millions)

The Side Reach requirement has one of the largest negative NPVs (-\$970.6 million at the median) among the nearly one hundred requirements in the proposed Rule. Figure 16 illustrates the relative impact of various assumptions on the side reach NPV. The unit cost estimates for alterations are a significant driver for this requirement, and substantially greater than the impact

from other assumptions. Unit costs for side reach under alterations can vary greatly, from \$0 to \$1,500 and with a median estimate of \$150.

Figure 16: Distribution of Sensitivities for Requirement 37: Side Reach. NPV = -\$970.6

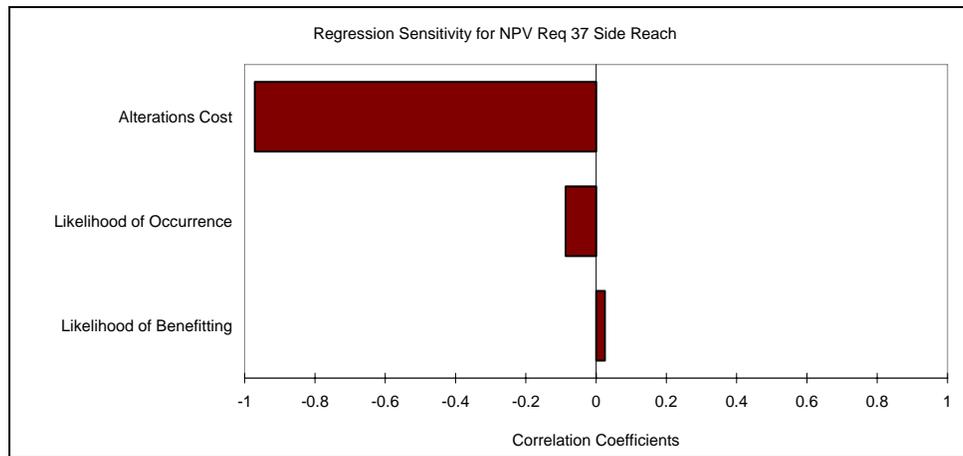


Figure 17 illustrates the relative impact of various assumptions on the Water closet clearance in single user toilet rooms – in swinging doors NPV. The range of estimates (incorporated to account for uncertainty regarding the actual figure) on the likelihood of occurrence are the most significant drivers for the range of results for the requirement’s NPV. The range of alterations costs has the next most significant impact on the NPV range. The frequency of occurrence at single-level stores is the third most important driver of the NPV range, since there are a large number of single-level stores.

Figure 17: Distribution of Sensitivities for Requirement 32: Water closet clearance in single user toilet rooms – in swinging doors. NPV = -928.1

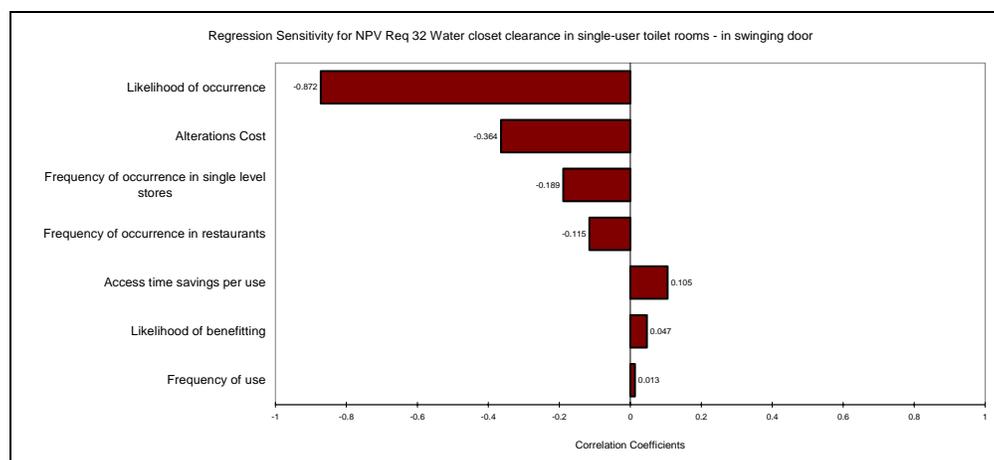
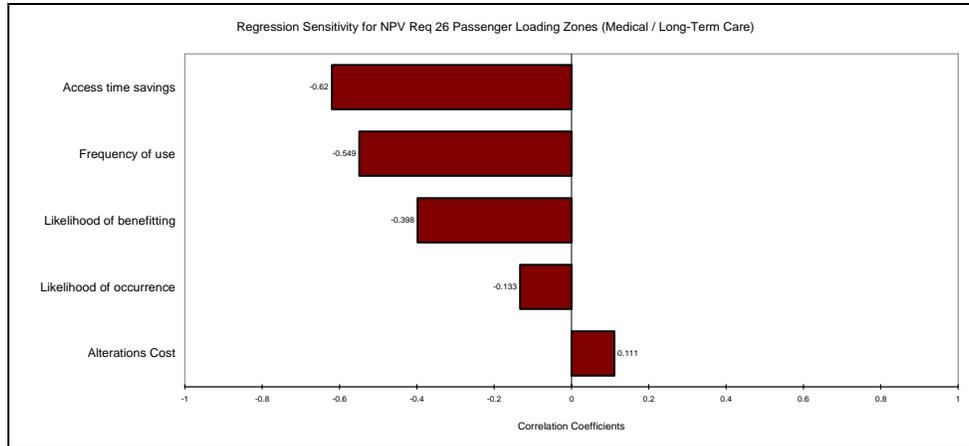


Figure 18 illustrates the relative impact of various assumptions on the Passenger Loading Zones (Medical / Long-Term Care) NPV. The range of estimates (incorporated to account for uncertainty regarding the actual figure) on access time saved is the most significant drivers for

the range of results for the requirement's NPV, followed closely by the frequency of use of the element.

Figure 18: Distribution of Sensitivities for Requirement 26: Passenger Loading Zones (Medical / Long-Term Care). NPV = -489.0



Top Positive Requirements (NPV \$ millions)

Figure 19 illustrates the relative impact of various assumptions on the Passenger Loading Zones NPV. The range of estimates (incorporated to account for uncertainty regarding the actual figure) on likelihood that a user would experience benefits is the most significant driver on the requirement's NPV range, followed by the range of estimates around the likelihood that the element occurs and around the frequency of using the element.

Figure 19: Distribution of Sensitivities for Requirement 23: Passenger Loading Zones. NPV = 1,835.3

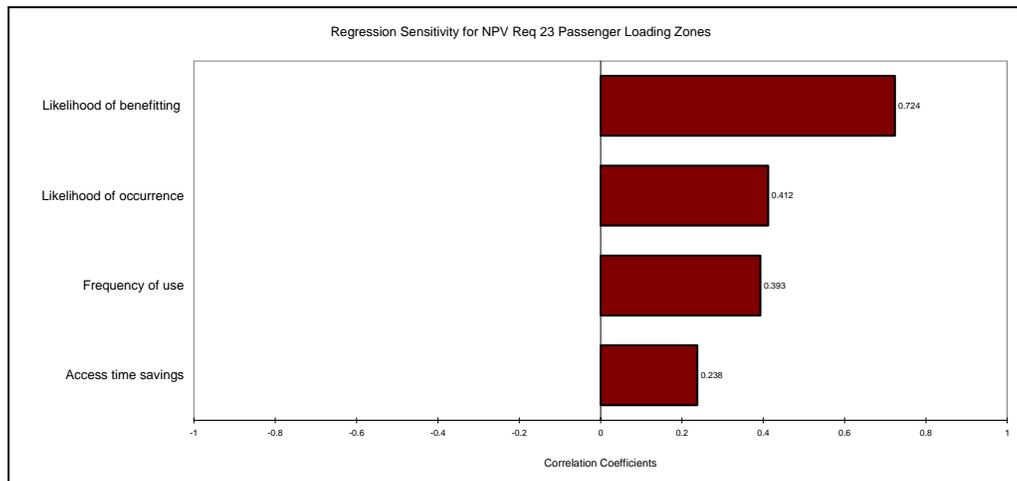


Figure 20 illustrates the relative impact of various assumptions for the Accessible Route to Exercise Machines and Equipment NPV. The range of estimates on likelihood that a user would experience benefits is the most significant driver on the requirement's NPV range, followed by range of estimates for the frequency of using the element and around the access time savings.

Figure 20: Distribution of Sensitivities for Requirement 70: Accessible Route to Exercise Machines and Equipment. NPV = 1,100.4

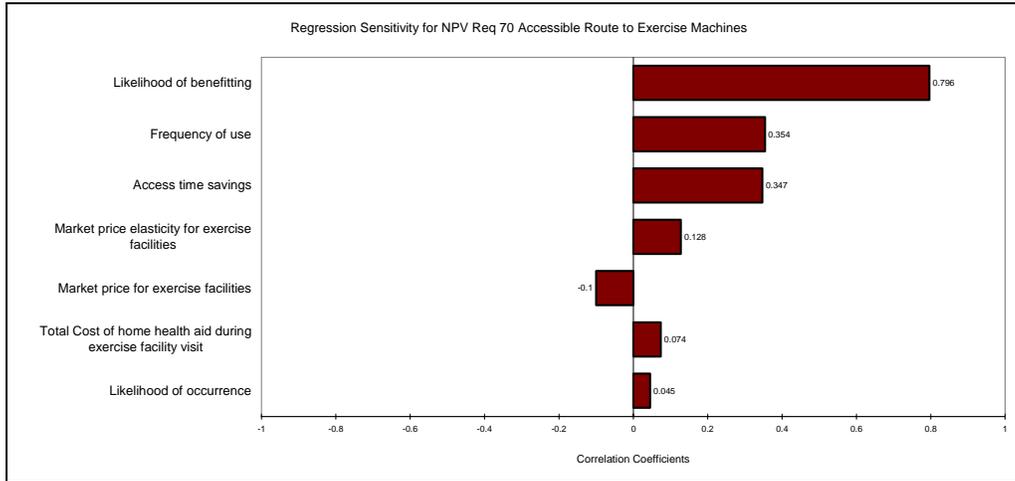
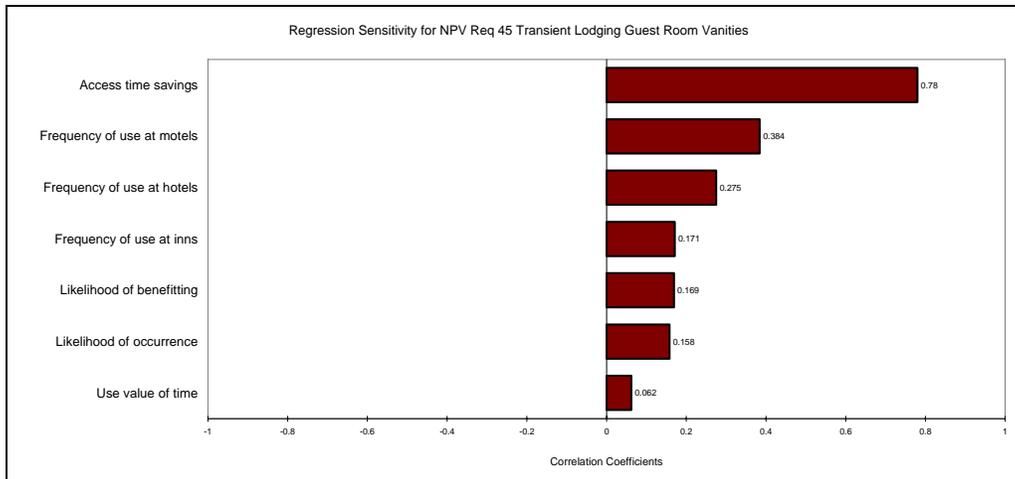


Figure 21 illustrates the relative impact of various assumptions on the Transient lodging Guest Room Vanities NPV. The range of estimates on access time savings is the most significant driver on the requirement’s NPV range, followed by the range of estimates around the frequency of its use at motels, at hotels, and at inns.

Figure 21: Distribution of Sensitivities for Requirement 45: Transient lodging Guest Room Vanities. NPV = 1,071.5



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 costs estimates ranges, which were developed separately at high, medium, and low for each requirement (and at new construction, alterations, and barrier removal).

5.4 Unquantified Benefits -- Option and Existence Values

In addition to the monetized benefits presented above, there are numerous other benefits that are likely to result from the proposed standards. Many of these benefits cannot be quantified, let alone monetized.⁵⁶ These benefits include: harmonized guidelines; increased business opportunities; increased social development; improved health benefits; higher social equity levels; user benefits for people without disabilities; and benefits to employees. Other qualitative benefits that are important, but unaccounted for, in the user benefits include option (or insurance) value and existence value. The option value is the value that people with and without disabilities derive from the opportunity to obtain the benefit of accessible facilities. The 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 Unquantifiable Benefits

Substantial effort was taken in the development of the guidelines upon which the proposed standards will be 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 proposed standards represent essentially one set of requirements which eliminates confusion and unintentional failure to meet standards. It also reduces administrative costs associated with determining the exact requirements. The proposed standards will also make it easier for State and local codes to be certified as meeting or exceeding Federal standards.

Evidence supports the notion of children both with and without disabilities benefiting from interaction with one another.⁵⁷ Therefore, there will undoubtedly be social development benefits 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.

Increased access to play areas (for children) and recreational facilities such as gyms (for adults) can also provide improved health benefits.⁵⁸ Although, again, there may be an overlap with other

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

⁵⁷ 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>.

⁵⁸ 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>.

opportunities for exercise,⁵⁹ this makes the actual impact of the new requirements difficult to quantify.

In addition, the proposed standards will substantially increase social equity, particularly for newly scoped facilities like play areas, recreational facilities, and judicial, detention and correctional facilities. Methods of measuring existence value attempt to measure some portion of this benefit, but only that portion of increased equity that is valued by non-users.

Finally, there is clearly a use benefit that individuals without disabilities get from certain accessibility features. Curb cuts in sidewalks make life easier for those using wheeled suitcases and backpacks or pushing a baby stroller. For people with a lot of baggage or a need to change clothes, the larger bathroom stalls can be a highly valued commodity. It is not just persons with disabilities who derive use value from accessibility features.

Employees with disabilities will also benefit from the proposed standards. Employees of the establishments in compliance with the proposed standards 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 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 generate the benefits per employee per facility.

From all this it can be determined that, in some cases, benefits may be underestimated. However, it is also possible to overestimate benefits. For example, consider a city block that already contains two facilities with play areas. Under the proposed standards, 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 away from these sorts of details. However, the possibility that benefits will actually fall short of median levels is taken into account using risk analysis.

Non-User Benefits: Insurance Value

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. 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.

Non-User Benefits: Existence Value

As the name suggests, existence value is the benefit that individuals get from the mere existence of a good, service or resource – in this case, accessibility. Unlike user value and insurance value,

⁵⁹ Although clearly there will be fewer alternatives absent the proposed standards.

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,⁶⁰ 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 proposed standards, it is unclear whether they will stand long enough to accumulate substantial bequest valuations.

Empathy and/or feelings of 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 proposed standards. However, it is difficult to measure and even more difficult to separate from other existence value benefits, like altruism which risks double-counting.⁶¹

Existence values run into an additional problem, in that even with appropriate surveys, users tend to carry over their use values into their evaluation of existence values. This makes the existence valuations of users and nonusers inconsistent with one another.⁶² What remains are estimates of willingness-to-pay. One method which can be employed is to evaluate how much nonusers of one resource are willing to pay to use another similar resource. This option does not appear to be available in the case of accessibility features, however. As with altruism, the literature relies on surveys to estimate the actual willingness-to-pay values.

Relation to Model Results

Given that the range of possible NPV values for the entire rule is unlikely to be less than zero (see Section 5.1), the foregoing discussion of unquantified benefits has greatest potential impact on those particular requirements with negative NPVs. 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.

⁶⁰ 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 notion of general altruism 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.

⁶¹ See, for example, Lazo, McClelland, and Schulze. “Economic Theory and Psychology of Non-Use Values.” *Land Economics* 73, No. 3 (August, 1997): 358-371.

⁶² Silberman, Gerlowski, and Williams. “Estimating Existence Value for Users and Nonusers of New Jersey Beaches.” *Land Economics* 68, no. 2 (May, 1992): 225-236.

6. SMALL BUSINESS IMPACT ANALYSIS

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 its proposed regulations 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 proposed standards. 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.⁶³ 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 US 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. 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 US 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.⁶⁴ In addition, estimates of the total number of inns, hotels and motels came from a US 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

⁶³ The data sources used in this small business impact analysis (i.e., data from the Small Business Administration and the US 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 proposed regulations 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 proposed regulations 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).

⁶⁴ 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.

(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 US Economic Census.⁶⁵ 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.

Table 17 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 17 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; the average sales of small private entities and small governments by facility group; and average sales for small facilities as a percent of sales for facilities of all sizes in that group. In Table 17, 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.⁶⁶

⁶⁵ See Appendix 5 for data from the 2002 Census of Governments used for calculations on small governments and their expenditures.

⁶⁶ 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 17: 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 (2007)	Number of Small Entity Facilities (2007)	% 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
Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)						
Inns	16,865	16,528	98%	\$174,229	\$174,229	100%
Hotels	14,941	4,023	27%	\$9,070,260	\$966,319	11%
Motels	21,047	20,626	98%	\$317,586	\$317,586	100%
Restaurants	508,800	396,530	78%	\$708,184	\$245,187	35%
Motion Picture House	5,233	2,383	46%	\$2,298,721	\$304,075	13%
Theatre / Concert Hall	9,778	9,411	96%	\$1,245,637	\$295,104	24%
Auditoriums	1,786	1,314	74%	\$3,337,107	\$357,682	11%
Single level stores	863,964	587,708	68%	\$3,187,539	\$307,436	10%
Shopping malls ⁶⁷	9,368	8,244	88%	\$1,970,212	\$1,970,212	100%
Indoor Service Establishments	3,330,412	1,261,961	38%	\$1,436,740	\$331,585	23%
Offices of health care providers	499,088	438,734	88%	\$1,097,588	\$335,931	31%
Hospitals	4,432	1,193	27%	\$126,517,640	\$1,227,697	1%
Nursing homes	15,080	6,358	42%	\$9,450,156	\$1,160,413	12%
Museums, historical sites & libraries	4,812	4,388	91%	\$1,376,516	\$285,429	21%
Parks or zoos	1,189	995	84%	\$1,721,325	\$346,502	20%
Amusement parks	467	375	80%	\$19,637,837	\$1,615,544	8%
Nursery schools - Daycare	72,653	62,301	86%	\$335,961	\$130,773	39%
Elementary private schools	18,257	15,073	83%	\$1,563,323	\$453,000	29%
Secondary Private Schools	2,826	2,333	83%	\$2,925,513	\$847,719	29%
Ski facilities	407	312	77%	\$4,964,767	\$521,604	11%
Homeless Shelter	7,867	7,015	89%	\$1,553,137	\$329,147	21%
Food banks	4,075	2,990	73%	\$854,756	\$209,885	25%
Social service establishments	61,110	44,924	74%	\$1,021,435	\$287,140	28%
Exercise facilities	26,580	24,247	91%	\$632,156	\$200,715	32%
Aquatic centers / swimming pools	9,559	9,233	97%	\$291,944	\$131,829	45%
Bowling alleys	5,175	4,548	88%	\$666,093	\$284,255	43%
Golf courses (private public access)	9,391	8,346	89%	\$1,405,054	\$515,973	37%
Golf courses (private only)	4,599	4,088	89%	\$1,405,054	\$515,973	37%

⁶⁷ 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 (2007)	Number of Small Entity Facilities (2007)	% 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
Miniature golf courses	8,750	8,428	96%	\$130,944	\$50,061	38%
Recreational boating facilities	5,095	4,908	96%	\$737,471	\$632,178	86%
Shooting facilities	3,096	2,982	96%	\$370,039	\$317,207	86%
Parking garages	12,640	2,887	23%	\$612,717	\$240,457	39%
Self service storage facilities	9,846	7,408	75%	\$418,472	\$394,369	94%
Public Facilities (Owned or Operated by Small Governmental Jurisdictions)						
Elementary public schools	68,416	19,668	29%	\$2,777,138	\$333,758	12%
Secondary public schools	23,264	6,556	28%	\$10,746,237	\$1,001,274	9%
Public housing	27,492	7,262	26%	\$522,437	\$427,464	82%
State and local judicial facilities (courthouses)	36,810	10,010	27%	\$511,410	\$259,573	51%
State and local correctional facilities (prisons)	1,761	467	27%	\$11,772,094	\$4,626,310	39%
Hospitals (public)	1,130	305	27%	\$32,835,980	\$32,835,980	100%
Parks or zoos (public)	112,128	30,216	27%	\$211,375	\$202,100	96%
Office buildings (public)	78,057	20,113	26%	\$108,804	\$108,804	100%

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

Once the number of facilities and their receipts had been estimated, net costs 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 3-H), the number and mix of elements in facilities of each type (Appendix 3-E), the likelihoods for change (Appendices 3-F & 3-G), 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 3-I through 3-L). In addition, as with the “main” regulatory analysis, this small business analysis also generally took into account, as applicable, exemptions and exceptions proposed by the Department 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; and reduced scoping for certain other recreational facilities (i.e., play areas over 1,000 square feet and swimming pools with over 300 linear feet of pool wall) operated by either Title II or Title III entities.⁶⁸ Lastly, overall calculations of the net cost impact of the proposed regulations on small entities (versus “typical” facilities) were modeled in

⁶⁸ The net cost calculations in this small business analysis do not, however, incorporate the Department’s barrier removal exemption for “qualified small businesses” (i.e., an exemption capping annual barrier removal obligations if, in preceding tax year, a small entity spent at least 1% of gross revenue on barrier removal compliance measures).

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 3-E.

Table 18, which follows below, provides a comparative analysis of the net costs of the proposed regulations to small entities (*i.e.*, small businesses, small nonprofit organizations, and small governments) versus typical facilities for each facility group. 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. Cost savings may 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. Net costs are presented both for all facilities and per facility, for each facility group.

Table 18: Net Cost Comparison: Small vs. Facilities of All Sizes, by Facility Group

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 ⁶⁹
Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)					
Inns	\$7.80	\$7.64	\$462.32	\$462.31	1.00
Hotels	\$170.57	\$28.63	\$11,416.18	\$7,116.58	0.62
Motels	\$136.20	\$133.48	\$6,471.37	\$6,471.43	1.00
Restaurants	\$441.85	\$330.24	\$868.42	\$832.83	0.96

⁶⁹ 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 ⁶⁹
Motion Picture House	\$140.75	\$11.35	\$26,896.64	\$4,763.61	0.18
Theatre / Concert Hall	\$196.74	\$102.89	\$20,121.70	\$10,933.42	0.54
Auditoriums	\$13.43	\$4.65	\$7,521.73	\$3,540.81	0.47
Single level stores	\$388.55	\$261.05	\$449.73	\$444.18	0.99
Shopping malls	\$33.72	\$29.67	\$3,599.13	\$3,599.04	1.00
Indoor Service Establishments	\$1,634.33	\$513.60	\$490.73	\$406.99	0.83
Offices of health care providers	\$339.58	\$127.66	\$680.40	\$290.98	0.43
Hospitals	\$19.29	\$2.54	\$4,353.18	\$2,132.34	-
Nursing homes	\$114.70	\$4.16	\$7,606.11	\$654.13	-
Museums, historical sites & libraries	\$6.97	\$0.69	\$1,447.74	\$157.89	-
Parks or zoos	\$2.77	\$2.28	\$2,330.23	\$2,293.63	0.98
Amusement parks	\$71.36	\$6.48	\$152,912.63	\$17,255.77	0.11
Nursery schools - Daycare	\$107.30	\$82.34	\$1,476.86	\$1,321.73	0.89
Elementary private schools	\$113.71	\$77.48	\$6,228.19	\$5,140.27	0.83
Secondary Private Schools	\$20.40	\$5.73	\$7,221.32	\$2,456.85	0.34
Ski facilities	\$0.09	\$0.06	\$223.84	\$194.38	0.87
Homeless Shelter	\$85.51	\$76.25	\$10,868.91	\$10,869.61	1.00
Food banks	\$1.11	\$0.65	\$271.80	\$217.03	0.80
Social service establishments	\$31.18	\$19.99	\$510.16	\$444.94	0.87
Exercise facilities	\$524.18	\$270.40	\$19,720.68	\$11,151.90	0.57
Aquatic centers / swimming pools	\$820.51	\$788.43	\$85,836.62	\$85,391.69	0.99
Bowling alleys	\$1.57	\$1.06	\$303.46	\$232.65	0.77
Golf courses (private public access)	\$271.12	\$238.75	\$28,870.54	\$28,606.60	0.99
Golf courses (private only)	\$135.04	\$116.47	\$29,360.96	\$28,492.15	0.97
Miniature golf courses	\$83.30	\$79.89	\$9,519.66	\$9,479.75	1.00
Recreational boating facilities	\$15.31	\$13.32	\$3,004.80	\$2,713.13	0.90
Shooting facilities	(\$0.30)	(\$0.29)	(\$97.46)	(\$97.45)	1.00
Parking garages	\$4.83	\$0.49	\$381.74	\$168.10	0.44
Self service storage facilities	\$4.39	\$3.13	\$445.82	\$423.16	0.95
Public Facilities (Owned or Operated by Small Governments)					
Elementary public schools	\$278.82	\$53.65	\$4,075.40	\$2,727.71	0.67
Secondary public schools	\$135.67	\$2.54	\$5,831.73	\$387.78	0.07
Public housing	\$169.01	\$40.06	\$6,147.63	\$5,516.11	0.90
State and local judicial facilities (courthouses)	\$517.80	\$78.29	\$14,066.91	\$7,821.71	0.56
State and local correctional facilities (prisons)	\$4.42	\$0.41	\$2,512.40	\$878.78	0.35
Hospitals (public)	\$0.66	\$0.18	\$583.43	\$584.37	1.00

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 ⁶⁹
Parks or zoos (public)	\$151.61	\$40.80	\$1,352.12	\$1,350.15	1.00
Office buildings (public)	\$105.56	\$27.20	\$1,352.39	\$1,352.38	1.00

The final table below (Table 19) presents estimates of annual costs and annual costs as a percent of sales for both typical and small facilities. For facilities owned or operated by small private entities, annual costs are less than 1% of sales for all but two types of facilities: aquatic centers/swimming pools (4.9%) and miniature golf courses (1.4%).⁷⁰ Annual costs are between 0.20% and 1.0% for five facility types: exercise facilities (0.42%); golf courses (private with public access) (0.42%); golf courses (private only) (0.41%); and theatre / concert halls (0.28%). For the rest of the facility groups, annual costs for small entities are less than 0.20% of sales.

For small governmental jurisdictions, Table 19 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) (0.23%)), 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 (10.24), ski facilities (8.27), and hotels (5.85) 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 (5.57), public housing (1.10), and state and local judicial facilities (courthouses) (1.10).

⁷⁰ As discussed previously, these cost calculations do not incorporate the Department’s proposed monetary limit (*i.e.*, 1% of gross revenue) on barrier removal obligations for “qualified small businesses.” Application of this monetary limit on barrier removal costs would potentially afford small businesses that owned or operated miniature golf facilities or Aquatic Centers – the only two types of facilities for which net costs are estimated to exceed 1% of sales – exemptions from readily achievable barrier removal obligations for some years. Thus, in any given year, the estimated costs per small facility of 10% (miniature golf facilities) and 5% (Aquatic Centers) of sales would not occur if that small facility had otherwise satisfied the requirements for this barrier removal exemption. Note that application of this exemption would also lead to a parallel reduction in the net benefits for any postponed barrier removal measures.

Table 19: 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 ⁷¹
Private Facilities (Owned or Operated by Small Businesses or Small Nonprofit Organizations)					
Inns	\$35	\$35	0.020%	0.020%	1.00
Hotels	\$856	\$534	0.009%	0.055%	5.85
Motels	\$485	\$485	0.153%	0.153%	1.00
Restaurants	\$65	\$62	0.009%	0.025%	2.77
Motion Picture House	\$2,017	\$357	0.088%	0.118%	1.34
Theatre / Concert Hall	\$1,509	\$820	0.121%	0.278%	2.29
Auditoriums	\$564	\$266	0.017%	0.074%	4.39
Single level stores	\$34	\$33	0.001%	0.011%	10.24
Shopping malls	\$270	\$270	0.014%	0.014%	1.00
Indoor Service Establishments	\$37	\$31	0.003%	0.009%	3.59
Offices of health care providers	\$51	\$22	0.005%	0.006%	1.40
Hospitals	\$327	(\$160)	0.000%	-0.013%	-
Nursing homes	\$571	(\$49)	0.006%	-0.004%	-
Museums, historical sites & libraries	\$109	(\$12)	0.008%	-0.004%	-
Parks or zoos	\$175	\$172	0.010%	0.050%	4.89
Amusement parks	\$11,470	\$1,294	0.058%	0.080%	1.37
Nursery schools - Daycare	\$111	\$99	0.033%	0.076%	2.30
Elementary private schools	\$467	\$386	0.030%	0.085%	2.85
Secondary Private Schools	\$542	\$184	0.019%	0.022%	1.17
Ski facilities	\$17	\$15	0.000%	0.003%	8.27
Homeless Shelter	(\$815)	(\$815)	-0.052%	-0.248%	4.72
Food banks	\$20	\$16	0.002%	0.008%	3.25
Social service establishments	\$38	\$33	0.004%	0.012%	3.10
Exercise facilities	\$1,479	\$836	0.234%	0.417%	1.78
Aquatic centers / Swimming pools	\$6,439	\$6,405	2.205%	4.859%	2.20
Bowling alleys	\$23	\$17	0.003%	0.006%	1.80
Golf courses (private public access)	\$2,166	\$2,146	0.154%	0.416%	2.70
Golf courses (private only)	\$2,202	\$2,137	0.157%	0.414%	2.64
Miniature golf courses	\$714	\$711	0.545%	1.420%	2.60
Recreational boating facilities	\$225	\$204	0.031%	0.032%	1.05
Shooting facilities	(\$7)	(\$7)	-0.002%	-0.002%	1.17
Parking garages	\$29	\$13	0.005%	0.005%	1.12
Self service storage facilities	\$33	\$32	0.008%	0.008%	1.01
Public Facilities (Owned or Operated by Small Governments)					
Elementary public schools	\$306	\$205	0.011%	0.061%	5.57

⁷¹ 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 ⁷¹
Secondary public schools	\$437	\$29	0.004%	0.003%	0.71
Public housing	\$461	\$414	0.088%	0.097%	1.10
State and local judicial facilities (courthouses)	\$1,055	\$587	0.206%	0.226%	1.10
State and local correctional facilities (prisons)	\$188	\$66	0.002%	0.001%	0.89
Hospitals (public)	\$44	\$44	0.0001%	0.0001%	1.00
Parks or zoos (public)	\$101	\$101	0.048%	0.050%	1.04
Office buildings (public)	\$101	\$101	0.093%	0.093%	1.00

The foregoing analysis indicates that the proposed regulations would 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 – are annualized costs estimated to exceed 0.5% of sales.)

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

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 proposed 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 proposed regulations. 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 proposed regulations 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.

APPENDIX 2: SUMMARY OF REQUIREMENTS

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 U.S. Access Board.

Key:

ABRA -- Access Board Regulatory Assessment.

ADAAG -- Americans with Disabilities Act Accessibility Guidelines.

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 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. 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 current nor the proposed standards 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 would 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 route⁷² 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 would 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 would have to coincide with or be located in the same area as the circulation path⁷³ 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, 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.

Revision would incorporate by reference the International Building Code (IBC)⁷⁴ requirements for accessible means of egress. The 1991 Standards generally incorporate scoping and technical

⁷² 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.

⁷³ 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.

⁷⁴ The IBC is a voluntary model building code that has been adopted by many States.

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 would 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 would 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 would be more flexible. These more flexible requirements would 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. The 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 would 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.

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 would 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 410.5.

Except for platform lifts that serve only one or two landings and have manual doors on both sides, platform lifts would be required to have power-operated doors. 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 would 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 would be permitted to install a LULA instead. This provision would 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 and (21) Mechanical Access Parking Garages

ABRA 6.9. ADAAG 208.2; 209.4-5.

Facilities with valet-only parking services, which currently must provide an accessible passenger loading zone but are not required to provide accessible parking spaces, would now have to provide accessible parking spaces as well. Mechanical access parking garages⁷⁵ would no longer be exempt from providing an accessible passenger loading zone, which would be required at vehicle drop-off and pick-up areas.

⁷⁵ Mechanical access garages use lifts, elevators, or other mechanical devices to move vehicles from the street level to a parking tier.

(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 would 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 would have to provide one accessible passenger loading zone for every 100 feet of loading space. Access aisles would 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 would clarify 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, would 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 would 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 accessible loading zones are required to have a canopy or roof overhang. Under the revised provision, they would 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 total of toilet compartments and urinals is six or more, at least one toilet compartment would 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 would now have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory would 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 revision would 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 would 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 would 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%) would 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 would 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 would now have to provide clearance for both a forward and a parallel approach (the current provision permits one or the other), and the lavatory would no longer be permitted to overlap the water closet clearance, except in special dwelling unit cases. The in-swinging doors would 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 would allow greater flexibility for the placement of the centerline of water closets, and would 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 would 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 would 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 would 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 would be required to be accessible. Both the 1991 and proposed standards permit the clear floor space for sinks to be positioned for a parallel approach, but the revised provision would make an exception for spaces that include a cook top or conventional range, which would 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 would have a lower maximum (48" instead of the current 54") and higher minimum (15" instead of 9"). The requirement would 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 would 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 requirement would specify the number of machines of each type required to be accessible (1-2 depending upon the total number provided). An exception would permit 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.

Revision would 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, all such facilities must be accessible.

(43) Limited Access Spaces and Machinery Spaces

ABRA 5.1. ADAAG 203.4-5.

The revised requirement would 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.”

(44) Operable Parts

ABRA 5.2. ADAAG 205.1, Exceptions.

Various exceptions would 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) Transient Lodging Guest Room Vanities

ABRA 7.13. ADAAG 806.2.4.1.

If vanity countertop space is provided in a hotel’s inaccessible guest toilet or bathing rooms, vanity counter top space that is comparable, in terms of size and proximity to the lavatory, would be required in its mobility-accessible rooms. This requirement may make the 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 would have to be accessible (i.e., meet the technical requirements for operable windows). An exception would apply to accessible rooms in public dwelling units. This requirement would 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)

(48) Dwelling Units with Communication Features (UFAS)

ABRA 7.14. ADAAG 809.5; 708.4.

At least 2% of public housing units would 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 would clarify what constitutes a “pass-through” kitchen, but would make 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 cooktop or conventional range would be exempt from kitchen clearance requirements. ABRA 7.12 states that this revision would primarily affect “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 would provide more flexible specifications for transfer-type and roll-in showers. Specifications for transfer-type showers (which must be 36" x 36") would 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) would 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 would 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 would 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 would have to connect to an accessible route. The accessible route does not, however, have to extend through the lawn seating area.

(54) 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.

Revised formula would reduce the number of wheelchair spaces required in larger assembly areas with fixed seating. Revised formula would provide 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 would also clarify that these requirements would 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 would have to be provided to 25% of tiered dining areas. Each tier would have to provide the same services and the accessible route would 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 would 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 would 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 would 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 would 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) would be required to have volume controls; identifying signs would no longer be required. The revision would 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 would be required to have visible as well as audible signals. Handsets, if provided, would be subject to minimum handset cord length requirements.

(61) ATMs and Fare Machines

ABRA 6.26. ADAAG 707.

Revision would add specific technical requirements for privacy, speech output, tacitly discernable input controls, display screens, and Braille instructions to current general accessibility requirements. Exceptions would be made that relate to the type of network or information provided (for example, audible tones would 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

ABRA 6.25 and 5.17. ADAAG 706, 219.3, Exception 2.

Technical specifications for assistive listening systems would be included, such as standard mono jacks and certain specifications for sound level pressure, signal-to-noise ratio, and peak clipping level, as well as 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.) 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 would 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 would no longer be subject to the requirement for detectable warnings. Detectable warnings would still be required at transit platform edges. New technical requirements would 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

ABRA 5.17. ADAAG 219.2, Exception; 219.3, Exceptions 1-2.

Revised formula would reduce the number of receivers required for assistive listening systems in larger assembly areas. Revised formula would 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 would be able to calculate the number of receivers based on total seats in the facility. Assembly areas (except courtrooms) without audio amplification systems would 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 would 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 would 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 would 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 would 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 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) and (111) Accessible Saunas and Steam Rooms

ABRA–REC Chapter 10. ADAAG 241; 612.

Saunas and steam rooms would 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 would 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 would 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 would 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) would have to be served by accessible route. In court sports, the route would 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 would be required to each bowling lane. Where bowling lanes are provided in clusters, 5% but at least one lane in each cluster would 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 would 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 would 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) and (112) Accessible Means of Entry to Pools

ABRA–REC Chapter 10. ADAAG 242.2; 1009.2-6.

At least two accessible means of entry are required for larger pools (300 or more linear feet) and one entry would be required for smaller pools. At least one entry would have to be a sloped entry or a pool lift; the other could be a transfer wall or a transfer system. For purposes of the readily achievable barrier removal requirement, swimming pools that have over 300 linear feet of swimming pool wall will be required to provide only one (rather than two) accessible means of entry, at least one of which must be a sloped entry or a pool lift and swimming pools that have less than 300 linear feet of swimming pool wall would be exempt.

(80) Accessible Means of Entry to Wading Pools⁷⁶

ABRA–REC Chapter 10. ADAAG 242.3; 1009.3.

At least one sloped means of entry would 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.

⁷⁶ The Department is aware that this requirement may not be feasible in many circumstances and is soliciting comments from the public regarding feasibility. The requirement has been included in this analysis, but with an extremely low likelihood of occurrence.

Spas would 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 would have to be accessible. Either a pool lift or a transfer wall or a transfer system would be permitted.

RECREATIONAL BOATING FACILITIES⁷⁷ AND FISHING PIERS

(82) Accessible Route

206.2.10; 1003.2

New Construction Requirement: An accessible route would 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 would be provided from the general standards for accessible routes in order to take into account the difficulty of meeting accessibility slope requirements due to fluctuations in water level.

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) and (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, would 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) and (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 would 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'

⁷⁷ 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.

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 would reduce the total number (or widths) of boat slips.

(87) Accessible Route

ABRA–REC Chapter 6. ADAAG 206.2.14; 1005.1.

New Construction Requirement: An accessible route would be required to each accessible fishing pier and platform. The exceptions described under recreational boating would 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 would 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 would 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 would 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 accessible route would also be required to connect any practice putting greens, practice teeing grounds, and teeing stations at driving ranges that would be required to be accessible. 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 Practice Grounds (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 Practice Grounds (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 would 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 would be required to connect accessible miniature golf holes and would be required from the last accessible hole directly to the course entrance or exit; generally, the accessible holes would have to be consecutive ones. 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 would be required to be accessible (includes specified clear space at start of play and specified golf club reach range area).

AMUSEMENT RIDES AND PLAY AREAS⁷⁸

(95) Accessible Route to Rides

ABRA–REC Chapter 4. ADAAG 206.2.9; 1002.2.

An accessible route would be required to serve each ride, including the load/unload area.

(96) Wheelchair Space or Transfer Seat or Transfer Device

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, would 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).

⁷⁸ 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.

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

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 Park 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.

(99), (101) and (103) Accessible Route to Play Components

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). For purposes of barrier removal only, existing play areas that are less than 1,000 square feet are exempt, as per the regulatory proposal.

(100), (102) and (104) Accessible Play Components

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. For purposes of barrier removal only, an equal number of accessible ground components can be substituted for the required elevated play components, as per the regulatory proposal.

(105) Open Captioning in Sports Stadium

Sports stadiums with seating capacities of 25,000 or more shall provide captioning on the scoreboards and video monitors of safety and emergency information.

(106) Post Secondary School Multi-Story Dorm Facility

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 proposed standards require broader access for people with disabilities than UFAS.

(107) Mobility Accessible Prison Cell & (108) Communication Accessible Prison Cell

Fewer mobility-accessible cells (from 5% to 2%) and fewer communication-accessible cells (from 5% to 2%) will be required.

(109) Social Service Establishment (UFAS)

In facilities such as group homes, halfway houses, and homeless shelters where there are sleeping rooms with more than 25 beds, five percent minimum of the beds shall have clear floor space.

(110) Social Service Establishment (ADAAG)

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.

APPENDIX 3: COST ESTIMATION DATA

A. Numbers of Facilities

The following table shows the data collected on the numbers of facilities of each facility group. Generally, this data is collected from the 2002 US Economic Census for private facilities and the Census of Employment and Wages for public facilities. The number of state and local judicial and detention facilities is estimated from the total number of public order and safety buildings, reported by the Energy Information Administration (EIA), 2003 Commercial Buildings Energy Consumption Survey. The number of office buildings is also collected by this EIA survey. Data for all facilities were adjusted to estimates for 2007 using growth rates from the May 2007 McGraw-Hill Dodge Construction Potentials Bulletin.

Facility Group	Facility data	Source
Inns	15,992	2002 Economic Census, NAICS Code: 7211
Hotels	14,305	2002 Economic Census, NAICS Code: 7211
Motels	19,896	2002 Economic Census, NAICS Code: 7211
Restaurants	504,641	2002 Economic Census, NAICS Code: 722
Motion Picture House	4,979	2002 Economic Census, NAICS Code: 512131
Theatre / Concert Hall	9,303	2002 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	1,699	2002 Economic Census, NAICS Code: 71131
Convention centers	167	Tradeshows Week Major Exhibit Hall Directory reports there are 417 exhibit halls in the US in 2006, 38% of which are privately owned.
Single level stores	856,473	2002 Economic Census, NAICS Code: 441, 442, 443, 444, 445, 448, 451, 453
Shopping malls	8,826	2002 Economic Census, NAICS Code: 5311203
Indoor Service Establishments	3,301,275	2002 Economic Census, NAICS Code: 446, 447, 522, 523, 524, 525, 541, 5615, 812
Offices of health care providers	489,021	2002 Economic Census, NAICS Code: 621
Hospitals	4,400	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	4,533	2002 Economic Census, NAICS Code: 71211
Parks or zoos	1,131	2002 Economic Census, NAICS Code: 71213 & 71219

Facility Group	Facility data	Source
Amusement parks	444	2002 Economic Census, NAICS Code: 71311
Nursery schools - Daycare	69,127	2002 Economic Census, NAICS Code: 6244
Elementary private schools	17,200	2002 Estimate of elementary private schools: http://nces.ed.gov/pubs2006/2006319.pdf
Secondary Private Schools	2,694	2003 Estimate of secondary private schools: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006319
Undergraduate and postgraduate private schools	2,441	2003 Estimate of postgraduate schools: http://nces.ed.gov/programs/digest/d05/tables/dt05_213.asp
Ski facilities	387	2002 Economic Census, NAICS Code: 71392
Homeless Shelter	7,485	Estimated 87% of 2002 Economic Census, NAICS Code: 62422, 62423 to be private facilities
Food banks	3,877	2002 Economic Census, NAICS Code: 62421
Social service establishments	58,144	2002 Economic Census, NAICS Code: 6241, 6243
Exercise facilities	25,290	2002 Economic Census, NAICS Code: 71394
Aquatic centers / swimming pools	9,095	2002 Economic Census, NAICS Code: 61162
Bowling alleys	4,924	2002 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	2,946	2002 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: http://nces.ed.gov/programs/digest/d05/tables/dt05_213.asp
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)	35,500	2003 EIA CBECS survey found 70,000 public service buildings / 2
State and local detention facilities (jails)	35,500	2003 EIA CBECS survey found 70,000 public service buildings / 2
State and local correctional facilities (prisons)	1,668	http://www.ojp.usdoj.gov/bjs/abstract/csf00.htm survey year, 2000
Parking garages	12,027	2002 Economic Census, NAICS Code: 81293
Self service storage facilities	9,368	2002 Economic Census, NAICS Code: 53113
Theatre / Concert Halls (public)	8	2005 Quarterly Census of Employment and Wages, NAICS 711110 data extracted July 25, 2007
Stadiums (public)	1,294	75% of stadiums are assumed to be publicly owned. (2007 estimate of stadiums in US)

Facility Group	Facility data	Source
Auditoriums (public)	126	2005 Quarterly Census of Employment and Wages, NAICS 71131 data extracted July 25, 2007
Convention centers (public)	250	Tradeshow Week Major Exhibit Hall Directory reports there are 417 exhibit halls in the US 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 = 9,207 (http://www.ala.org/ala/alalibrary/libraryfactsheet/alalibraryfactsheet1.cfm) and 2005 Quarterly Census of Employment and Wages, NAICS 71212 (historical sites) 71211 (Museums) and extracted July 25, 2007
Parks or zoos (public)	111,025	From Access Board and Census of Earnings and Wages
Homeless Shelter (public)	1,119	Estimated 13% of 2002 Economic Census, NAICS Code: 62422, 62423 as public facilities
Exercise facilities (public)	1,103	2005 Quarterly Census of Employment and Wages, NAICS 713940 data extracted July 25, 2007
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)	111	2005 Quarterly Census of Employment and Wages, NAICS 81293, data extracted July 26, 2007
Golf courses (public)	2,438	National Golf Estimate for 2000
Restaurants (public)	18	2005 Quarterly Census of Employment and Wages, NAICS 722110 and 722211, data extracted July 26, 2007
Amusement parks (public)	10	2005 Quarterly Census of Employment and Wages, NAICS 713110, data extracted July 26, 2007

B. Annual Growth Rates of Facilities

The following table lists the rates of new construction for each facility group. These are determined from the May 2007 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	1.1%
Hotels	0.9%
Motels	1.1%
Restaurants	0.2%
Motion Picture House	1.0%
Theatre / Concert Hall	1.0%
Stadiums	1.0%
Auditoriums	1.0%
Convention centers	1.0%
Single level stores	0.2%
Shopping malls	1.2%
Indoor Service Establishments	0.2%
Offices of health care providers	0.4%
Hospitals	0.4%
Nursing homes	0.4%
Terminal (private airports)	1.0%
Depots	1.0%
Museums, historical sites & libraries	1.2%
Parks or zoos	1.0%
Amusement parks	1.0%
Nursery schools - Daycare	1.0%
Elementary private schools	1.2%
Secondary Private Schools	1.2%
Undergraduate and postgraduate private schools	1.2%
Ski facilities	1.0%
Homeless Shelter	1.0%
Food banks	1.0%
Social service establishments	1.0%
Exercise facilities	1.0%
Aquatic centers / swimming pools	1.0%
Bowling alleys	1.0%
Golf courses (private with public access)	1.0%
Golf courses (private only)	1.0%
Miniature golf courses	1.0%
Recreational boating facilities	1.0%
Fishing piers and platforms	1.0%
Shooting facilities	1.0%
Office buildings	0.9%
Elementary public schools	1.2%
Secondary public schools	1.2%
Undergraduate, postgraduate public schools	1.2%
Public housing	1.0%
State and local judicial facilities (courthouses)	0.9%

Facility Group	Average growth rates for new construction
State and local detention facilities (jails)	0.9%
State and local correctional facilities (prisons)	0.8%
Parking garages	1.0%
Self service storage facilities	1.0%

C. Assumptions With Respect to Estimated Typical Facility Size

This table is compiled 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	Concert halls, theaters	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, lecture halls, or other places of public gathering	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	Bakeries, grocery stores, clothing stores, hardware stores, or other single-level sales or rental establishments	SF: 100-200,000	25,000 SF

Item	Facility Type	Assumptions (Units, Space, Seats, Rooms, Seats, Acres, Etc)	Median Size
K	Shopping centers (malls)	SF: 200,000-4,000,000; 2 story, 3 anchor stores	750,000 SF
L	Laundromats, dry cleaners, banks, barber shops, beauty shops, travel services, or other service establishments	SF: 100-10,000; 1 story	5,000 SF
M	Professional 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	SF (airport); three story, two gate piers	750,000 SF
Q	Depots, or other stations used for specified public transportation	SF (rail, bus); two story	25,000 SF
R	Museums, libraries, galleries, or other places of public display or collection	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 - private	SF: 2 rooms @ 250 + 500	1,000 SF
V	Elementary schools - private	SF: 20 rooms @ 200 + 800; 300 students	5,000 SF
W	Secondary schools - private	SF: 2 x elem.; 2 story, 700 students	10,000 SF
X	Undergraduate and postgraduate private schools	SF: 4 x 2 nd ary + dorm + athletic facility 4 ed bldgs + 4 dorms (2,400 students, 1,200 on site)	160,000 SF
Y	Day care centers, senior citizen centers	SF: 25 people x 50/SF	1,250 SF
Z	Homeless shelters	SF: 20 people x 50/SF	1,000 SF
AA	Food banks	SF	2,500 SF
AB	Social service center establishments	SF	1,000 SF
AC	Gymnasiums and health spas	SF: 5,000 to 40,000	20,000 SF

Item	Facility Type	Assumptions (Units, Space, Seats, Rooms, Seats, Acres, Etc)	Median Size
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: public	Course length in yards for 18 holes	6,000 SF
AG	Golf courses: semi-private (paid membership, but public access)	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
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	Public schools : elementary	SF: 30 rooms @ 200 + 1,000, 450 students	70,000 SF
AO	Public schools : secondary	SF: 2 x private 2 nd ary, 2 story, 1,400 students	200,000 SF
AP	Public schools : undergraduate, postgraduate	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: 200 inmates @ 80 sf/inmate x 1.5 buildings at 96,000 SF; 3 story	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
9	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 - exception	passenger loading zones (option for provision of instead of parking spaces)
25	Parking Spaces - signage	space no longer required to have sign (or accessible space sign)
26	Passenger loading zones at medical/LT 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	Toilet room doors	single user toilet and bath rooms

ID	Requirement	Element
32	Water closet clearance in toilet rooms	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	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
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	Hotel guest room vanities	bathrooms in accessible guest rooms
46	Operable windows	public access windows in accessible spaces
47	Dwelling units with communication features	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
63	Visual alarms in alterations to existing facilities	N/Q
64	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
66	Assistive listening systems	receivers required by ADAAG
67	Accessible courtroom stations	anticipated combination of stations by courtroom size
68	Accessible witness stands	stands

ID	Requirement	Element
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 steams 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
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	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 practice grounds (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
105	Open Captioning in Sports Stadium	Captioning display and electrical connections
106	Post Secondary School Multi-Story Dorm Facility	Equipment
107	Mobility Accessible Prison Cell	Accessible prison cells
108	Communication Accessible Prison Cell	Accessible prison cells
109	Social Service Establishment (UFAS)	elevator
110	Social Service Establishment (ADAAG)	Beds

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					

		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	
17	Platform Lifts in Hotel Guest Rooms and Dwelling Units																						
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	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							

		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
27	Ambulatory Accessible Toilet Compartments					1	2		1	1		1			1		1			1	2	
28	Water closet clearance in single-user toilet rooms - out swinging door	1	7	5			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

		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
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	
40	Washing Machines and Clothes Dryers (technical)																					
41	Washing Machines and Clothes Dryers (Scoping)																					
42	Self-Service Storage Access																					
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	Transient lodging Guest Room Vanities	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															

		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	
56	Accessible Route to Tiered Dining Areas in Sports Facilities (NC)							1															
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			33	32	285	4	85					8				4		32		
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	

		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
65	Detectable Warnings (technical)																				1	
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							
71	Accessible Machines and Equipment		3												10							
72	Accessible Saunas and Steam Rooms (NC)							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
73	Accessible Lockers							4													4	
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	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 Practice Grounds 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 Practice Grounds at Golf Courses (NC)																						
92	Accessible Practice Grounds at Driving Ranges																						
93	Accessible Route to Minigolf Holes																						
94	Accessible to Minigolf Holes																						
95	Accessible Route to Rides																				30		
96	Wheelchair Space or Transfer Seat or Transfer Device																				30		
97	Maneuvering Space in Load and Unload Area																				30		
98	Signs at Amusement Park rides																				30		
99	Accessible Route to Play Components (BR)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)	

		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
100	Accessible Play Components (BR) ⁷⁹			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)
104	Accessible Play Components (NC)			1 (small)	1 (small)							1 (small)								1 (large)	1 (medium)	1 (small)
105	Open Captioning in Sports Stadium							1														
106	Post Secondary School Multi-Story Dorm Facility																					

⁷⁹ 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
107	Mobility Accessible Prison Cell																					
108	Communication Accessible Prison Cell																					
109	Social Service Establishment (UFAS)																					
110	Social Service Establishment (ADAAG)																					
111	Accessible Saunas and Steam Rooms (ALT/BR)							2														
112	Accessible Means of Entry to Pools (BR)		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	
#	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 Access																				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	Transient lodging Guest Room Vanities																				
46	Operable Windows			22																	
47	Dwelling Units with Communication Features [1991]																				

		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	
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																	
60	Two-Way Communication Systems at Entrances																				
61	ATMs and Fare Machines																				

		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	
62	Assistive Listening Systems (technical)		16	63																	
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 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								
75	Wheelchair Spaces in Team or Player Seating Areas		2	6					2	2	2										
76	Accessible Route in Court Sport Facilities																				

		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
77	Accessible Route to Bowling Lanes										1									
78	Shooting Facilities with Firing Positions																1			
79	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							
90	Accessible Practice Grounds at Golf Courses (Alt/BR)											40	40							
91	Accessible Practice Grounds at Golf Courses (NC)											40	40							

		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	
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 or Transfer Seat or Transfer Device																				
97	Maneuvering Space in Load and Unload Area																				
98	Signs at Amusement Park 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.)																			
104	Accessible Play Components (NC) [1]	1 (med.)																			
105	Open Captioning in Sports Stadium																				
106	Post Secondary School Multi-Story Dorm Facility																				
107	Mobility Accessible Prison Cell																				

		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	
108	Communication Accessible Prison Cell																				
109	Social Service Establishment (UFAS)					1															
110	Social Service Establishment (ADAAG)					1															
111	Accessible Saunas and Steam Rooms (ALT/BR)			1					2	1											
112	Accessible Means of Entry to Pools (BR)		1	1						1											

[1] See Footnote 79.

3E1: 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	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	20	2	24	2	6	12		3										6	6				
10	Stairs (ALT/BR)			270	16	6	20	2	24	2	6	12		3										6	6				
11	Handrails Along Walkways																												
12	Handrails		10	540	32	12	4	40	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 Compartments		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	7	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															

		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
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	25		
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																								

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41	Washing Machines and Clothes Dryers (Scoping)			20	2																								
42	Self-Service Storage Access																												
43	Limited Access Spaces and Machinery Spaces	1	2	40	1	2	2	2	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	Transient lodging Guest Room Vanities																												
46	Operable Windows			82	20																								
47	Dwelling Units with Communication Features [1991]				3																								
48	Dwelling Units with Communication Features [UFAS]				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)	
49	Galley Kitchen Clearances			40	2																								
50	Shower Compartments with Mobility Features		4	180	2	4	7	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	
55	Wheelchair Spaces in Assembly Areas			39					1	115																			

		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)	
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)		24	235		8			32	285	4	85	8		4														32
63	Visible Alarms in Alterations to Existing Facilities																												

		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)
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																						
70	Accessible Route to Exercise Machines and Equipment		2	4				1					1					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)	
71	Accessible 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									
76	Accessible Route in Court Sport Facilities																												
77	Accessible Route to Bowling Lanes																												

		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)
78	Shooting Facilities with Firing Positions																											
79	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						
83	Accessible Boarding Piers (NC)															1						2						
84	Accessible Boarding Piers (ALT/BR)															1						2						
85	Accessible Boat Slips (NC)																					5						

		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)
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		
90	Accessible Practice Grounds at Golf Courses (Alt/BR)																									40		
91	Accessible Practice Grounds at Golf Courses (NC)																									40		
92	Accessible Practice Grounds at Driving Ranges																									1		
93	Accessible Route to Mini Golf Holes																				2							

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94	Accessible to Mini Golf Holes																				1							
95	Accessible Route to Rides																											30
96	Wheelchair Space or Transfer Seat or Transfer Device																											30
97	Maneuvering Space in Load and Unload Area																											30
98	Signs at Amusement Park 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
101	Accessible Route to Play Components (ALT) [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)
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
105	Open Captioning in Sports Stadium								1																			
106	Post Secondary School Multi-Story Dorm Facility			5																								
107	Mobility Accessible Prison Cell																											
108	Communication Accessible Prison Cell																											

F. Likelihood of Element in a Typical Facility

This table represents the Cost RAP panelists' assumptions and HDR's assumptions on 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%
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%

#	Requirement	Conditions for change	Likelihood that Element at Facility AND Subject to Change for Compliance
14	Standby Power for Platform Lifts	<p>Facility has or will install a platform lift as part of an accessible means of egress.</p> <p>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.</p> <p>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.</p>	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	<p>Existing facility is large enough to have a bank of elevators (or more than one elevator responding to the same call button).</p> <p>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.</p>	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%
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	<p>Facility has bathtubs or showers that are required to be accessible.</p> <p>The revision will primarily affect bathtubs and shower compartments in newly constructed hotel guest rooms, patient sleeping rooms, and dwelling units with mobility features.</p>	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	Transient lodging Guest Room Vanities	Facility provides vanity counter top space in non-accessible transient lodging guest rooms.	90%
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[1]	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[2]	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. ⁸⁰	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%

⁸⁰ 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
51	Location of Accessible Route to Stages	Facility has a stage that is directly connected to the seating area by fixed (not portable) stairs.	50%
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%
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.) ⁸¹	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. Currently available assistive listening systems meet the new specifications.	20%
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 RIA, only rail facilities associated with places of public accommodation (e.g., monorails in amusement parks) have been considered.	90%
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

⁸¹ 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
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

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 73 % 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 (73%) 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-year 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 77)	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 (req 93-94)	Accessible amusement rides (req 95-98)	BR Play areas (reqs 99-100)	ALT Play areas (reqs 101-102)	NC Play areas (reqs 103-104)	Open Captioning in Sports Stadium (req 105)	Post Secondary School Dorm Facility (req 106)	Social Service Establishment (UFAS) (req 107)	Social Service Establishment (ADAAG) (req 108)	Accessible Saunas and Steam Rooms (ALT/BR) (req 111)	Accessible Means of Entry to Pools (BR) (req 112)	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	N/A	
Hotels	5%	10%	50%	N/A	20%	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	N/A	N/A	12%	1%
Motels	N/A	10%	50%	N/A	N/A	20%	20%	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	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	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	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	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	75%	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	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	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	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	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	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	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	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	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	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	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	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	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	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	N/A	5%	50%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Elementary	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	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 77)	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 (req 93-94)	Accessible amusement rides (req 95-98)	BR Play areas (reqs 99-100)	ALT Play areas (reqs 101-102)	NC Play areas (reqs 103-104)	Open Captioning in Sports Stadium (req 105)	Post Secondary School Dorm Facility (req 106)	Social Service Establishment (UFAS) (req 107)	Social Service Establishment (ADAAG) (req 108)	Accessible Saunas and Steam Rooms (ALT/BR) (req 111)	Accessible Means of Entry to Pools (BR) (req 112)	ATM and Fare Machines (req 61)
private schools																						
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	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	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	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	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	N/A
Social service center est.	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	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	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	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	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	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	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	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	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	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	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	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 77)	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 (req 93-94)	Accessible amusement rides (req 95-98)	BR Play areas (reqs 99-100)	ALT Play areas (reqs 101-102)	NC Play areas (reqs 103-104)	Open Captioning in Sports Stadium (req 105)	Post Secondary School Dorm Facility (req 106)	Social Service Establishment (UFAS) (req 107)	Social Service Establishment (ADAAG) (req 108)	Accessible Saunas and Steam Rooms (ALT/BR) (req 111)	Accessible Means of Entry to Pools (BR) (req 112)	ATM and Fare Machines (req 61)
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	N/A
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	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	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	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	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	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	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	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	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	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	75%	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	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	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	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	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 77)	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 (req 93-94)	Accessible amusement rides (req 95-98)	BR Play areas (reqs 99-100)	ALT Play areas (reqs 101-102)	NC Play areas (reqs 103-104)	Open Captioning in Sports Stadium (req 105)	Post Secondary School Dorm Facility (req 106)	Social Service Establishment (UFAS) (req 107)	Social Service Establishment (ADAAG) (req 108)	Accessible Saunas and Steam Rooms (ALT/BR) (req 111)	Accessible Means of Entry to Pools (BR) (req 112)	ATM and Fare Machines (req 61)
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	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	N/A
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	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	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	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	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	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	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	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	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	N/A
Golf courses (public)	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	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	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	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.

71. Accessible Machines and Equipment: Facility provides exercise machines but they lack adequate clear floor space

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 Alternate conditions: Facility has more than 20 of each type of bowling lane.

78. Shooting Facilities with Firing Positions Alternate conditions: Facility has more than 20 of each type of firing position.

79. Accessible Means of Entry to Pools (NC/ALT): Facility has or would have installed a pool with only 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 Shelters (Alt): 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 Shelters (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.
105. Open Captioning in Sports Stadiums: Will only apply to sports stadiums with seating capacities of 25,000 or more.
106. Post Secondary Multi-Story Dorm Facility
107. Mobility Accessible Prison Cell
108. Communication Accessible Prison Cell
109. Social Service Establishment (UFAS)
110. Social Service Establishment (ADAAG)
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. Accessible Means of Entry to Pools (BR): Will only apply to facilities that have existing 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	-\$150	-\$200	-\$250	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	\$350	\$500	\$600	\$350	\$500	\$600	\$350	\$500	\$600	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	\$250	\$300	\$350	\$1,500	\$2,000	\$2,500	Door, frame & hardware design and operation changes	2'-8" width clear
4	Thresholds at Doorways	\$0	\$150	\$300	na	na	na	na	na	na	Change in threshold requirements for sliding doors	3'-0" width door
5	Door and Gate Surfaces	\$200	\$275	\$500	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	\$1,000	\$2,000	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	\$400	\$800	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	\$3,000	\$7,500	\$15,000	\$3,000	\$7,500	\$15,000	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	\$250	\$2,500	\$0	\$250	\$2,500	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	-\$50	-\$100	\$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	-\$1,000	-\$2,000	-\$12,000	\$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	\$400	\$700	\$0	\$500	\$800	\$0	\$600	\$2,500	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	\$1,500	\$2,500	\$3,500	\$1,500	\$2,500	\$3,500	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	\$350	\$1,500	\$2,500	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	-\$17,000	-\$20,000	-\$23,000	-\$17,000	-\$20,000	-\$23,000	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	-\$17,000	-\$20,000	-\$23,000	-\$17,000	-\$20,000	-\$23,000	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	\$150	\$200	\$450	\$150	\$200	\$450	\$150	\$200	\$450	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	\$150	\$250	\$1,200	\$150	\$250	\$650	\$550	\$1,500	\$2,500	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	\$150	\$250	\$1,200	\$150	\$250	\$650	\$550	\$1,500	\$2,500	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	\$400	\$650	\$1,200	\$650	\$900	\$1,700	\$650	\$900	\$1,700	Costs include striping, signage & curb cut.	13'-0" wide x 20'-0" long
24	Parking Spaces (addition of loading zones)	\$400	\$650	\$1,200	\$650	\$900	\$1,700	\$650	\$900	\$1,700	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	-\$100	-\$100	-\$150	-\$100	-\$100	-\$150	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)	-\$15,000	-\$50,000	-\$100,000	-\$15,000	-\$30,000	-\$50,000	na	na	na	Deleting the cost of a canopy at loading zones	Canopy 20'x20' & 30'x35'
27	Ambulatory Accessible Toilets	\$350	\$450	\$550	\$350	\$450	\$550	\$400	\$600	\$650	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	\$100	\$125	\$150	\$2,000	\$3,000	\$3,500	\$2,500	\$3,500	\$3,800	Added space requirement in toilet room from water closet clearance requirement. Minimum impact on NC. Alt assumes some rework of the room may be required, this is unlikely. BR assumes plumbing rework has to be done.	Space saving of i.25 sf in NC, additional space of 10 SF in ALT/BR

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		
29	Shower Spray Controls	\$150	\$200	\$250	\$150	\$200	\$250	\$175	\$225	\$275	Cost for shower spray unit with on/off control.	1 fixture
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	-\$1,600	-\$2,000	-\$2,400	-\$400	-\$800	-\$1,200	na	na	na	Costs assume the reduction in space required to be dedicated to the HC toilet room.	reduced space requirement & grab bars

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		
32	Water Closet Clearance in Single-User Toilet Rooms with In-Swinging Doors	\$150	\$200	\$250	\$2,050	\$3,100	\$3,600	\$2,550	\$3,600	\$3,900	Added space requirement 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, this is unlikely. BR assumes plumbing rework has to be done.	3'-0" x 3'-0" area
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	-\$1,750	-\$2,150	-\$2,600	-\$550	-\$950	-\$1,350	na	na	na	Room design changes make it smaller without the grab bars, this a no cost issue.	1 room
35	Drinking Fountains	\$0	\$0	\$0	\$450	\$650	\$900	\$2,000	\$2,500	\$2,900	Cost of fixture is additional + cost of space required. BR assumes demolition added.	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		
36	Sinks, in Hotels	\$0	\$0	\$0	\$500	\$700	\$1,000	\$750	\$950	\$1,050	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	\$150	\$1,500	\$50	\$150	\$1,500	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
38	Sales and Service Counters (NC)	-\$100	-\$200	-\$300	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	-\$100	-\$200	-\$300	na	na	na	Costs for shorter counters -- 24" instead of 36"	12' length of counter & base

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		
40	Washing Machines	\$250	\$500	\$700	\$250	\$500	\$700	\$250	\$500	\$700	Cost of the accessible washing machine	1 equipment
41	Clothes Dryers	\$200	\$300	\$400	\$200	\$300	\$400	\$200	\$300	\$400	Cost of the accessible clothes dryer	1 equipment
42	Self-Service Storage Facility Spaces	\$0	\$0	\$0	\$350	\$500	\$750	\$350	\$500	\$750	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
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

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		
45	Hotel Guest Room Vanities	\$0	\$0	\$0	\$500	\$750	\$1,000	\$750	\$1,000	\$1,250	Costs include cost of additional vanity & added room for clearances	room area & length of counter (range - 3', 4', & 5')
46	Operable Windows	\$0	\$0	\$0	\$350	\$500	\$550	\$600	\$700	\$800	There is no cost impact in NC; Alt/BR will encounter cost of hardware as a minimum.	1 window - 2'-0" width & clear space
47	Dwelling Units with Communication Features[1]	\$450	\$550	\$1,000	\$450	\$500	\$1,000	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[2]	\$450	\$550	\$1,000	\$450	\$500	\$1,000	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.	

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		
49	Galley Kitchen Clearances	\$650	\$1,000	\$1,500	\$650	\$1,000	\$1,500	\$800	\$1,200	\$1,700	Costs to increase the circulation area of a galley kitchen	Adding 13 SF of room area
50	Shower Compartments	\$0	\$0	\$0	-\$350	-\$500	-\$700	-\$350	-\$500	-\$700	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	\$8,000	\$15,000	\$30,000	\$8,500	\$20,000	\$35,000	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	\$500	\$650	\$900	\$850	\$1,200	\$1,350	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

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		
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
54	Aisle Stairs and Ramps	-\$750	-\$1,750	-\$2,500	-\$750	-\$1,750	-\$2,500	\$0	\$0	\$0	Reduced handrail requirements will affect NC/Alt.	50' length of handrail
55	Wheelchair Spaces in Assembly Areas	-\$600	-\$1,250	-\$1,900	-\$250	-\$650	-\$1,900	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	-\$5,500	-\$10,000	-\$25,000	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)

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		
57	Accessible Routes to Press Boxes	-\$12,000	-\$17,000	-\$20,000	-\$12,000	-\$17,000	-\$20,000	na	na	na	Cost for lift and space needed to install	One lift
58	Public TTYs	\$1,900	\$2,320	\$2,600	\$1,900	\$2,320	\$2,600	\$2,000	\$2,500	\$2,700	Cost of one TTY phone	1 equipment
59	Public Telephone Volume Controls	\$0	\$0	\$0	\$250	\$350	\$400	\$250	\$350	\$400	There is no cost impact to NC.	1 public phone with volume controls
60	Two-Way Communication Systems	\$1,000	\$1,400	\$3,000	\$1,000	\$1,400	\$3,000	na	na	na	Cost to add visual signal to secured entrances equipped with audible signals	1 system
61	Automated Teller Machines / Fare Machines	\$1,000	\$2,000	\$3,000	\$1,000	\$2,000	\$3,000	\$1,000	\$2,000	\$3,000	Cost of one conversion kit for ATM machines and installation	1 kit
62	Assistive Listening Systems	\$350	\$500	\$550	\$350	\$500	\$550	na	na	na	The cost impact is less than the previous requirements credit the cost of 1 receiver	1 system, number of receivers

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		
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	-\$200	-\$250	-\$300	-\$200	-\$250	-\$300	na	na	na	Credit detectable horizontal surface construction materials no longer required	3'-0" length x 6'-0" width
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	-\$1,000	-\$1,250	-\$1,500	-\$1,000	-\$1,250	-\$1,500	na	na	na	The cost impact is less than the previous requirements credit the cost of 1 receiver	1 device - receiver

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		
67	Forward Approach - Courtrooms	\$0	\$0	\$0	\$0	\$0	\$0	\$500	\$1,000	\$1,500	This should have no cost impact to NC/Alt, & minimal cost impact to BR	Accessibility Space Required
68	Attorney Areas and Witness Stands	\$2,500	\$15,000	\$25,000	\$2,500	\$15,000	\$25,000	\$3,500	\$18,000	\$30,000	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	\$5,000	\$7,500	\$10,000	\$1,250	\$1,900	\$2,500	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
70	Exercise— Accessible route	na	na	na	na	na	na	\$250	\$500	\$1,000	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

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		
71	Exercise— Accessible machines	\$400	\$1,500	\$2,300	\$400	\$600	\$800	\$500	\$700	\$1,000	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
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

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		
73	Accessible Lockers	\$0	\$0	\$0	\$250	\$400	\$600	\$350	\$500	\$700	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
74	Accessible Dressing Rooms	\$0	\$0	\$0	\$0	\$0	\$0	\$1,000	\$1,500	\$2,000	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	\$150	\$250	\$500	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

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		
76	Court Sport— Accessible route	\$600	\$1,500	\$2,100	\$600	\$1,500	\$2,100	\$900	\$1,800	\$2,500	NC/Alt & BR cost of new pavement to provide an accessible path of travel	3'-0" wide x 100' length
77	Accessible route to bowling lanes	\$0	\$0	\$0	\$0	\$0	\$0	\$500	\$1,000	\$1,500	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	\$300	\$500	\$0	\$300	\$500	\$300	\$500	\$700	Costs are for the additional space required. No additional costs should be incurred for providing compliant counters, etc.	1 location
79	Accessible Entry to Swimming Pools (NC/ALT)	\$5,000	\$10,000	\$18,000	\$8,000	\$15,000	\$23,000	na	na	na	Costs range from a low cost lift to a high end lift	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	\$22,500	\$142,500	\$145,000	\$25,000	\$145,500	\$150,000	\$25,000	\$145,000	\$150,000	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	\$3,500	\$4,500	\$6,000	\$5,000	\$6,000	\$8,000	\$5,000	\$6,000	\$8,000	Cost of either steps with rail or a lift	1 item
82	Boating— Accessible route	\$1,000	\$1,500	\$2,000	\$1,000	\$1,500	\$2,000	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	\$550	\$750	\$850	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)	\$250	\$300	\$400	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	\$250	\$300	\$400	\$1,000	\$1,500	\$2,000	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	\$250	\$300	\$350	\$250	\$300	\$350	\$350	\$500	\$600	Cost to provide 100' of accessible route (difference between accessible & non-accessible).	100' travel distance
88	Accessible Fishing Piers	\$1,000	\$1,500	\$2,000	\$1,000	\$1,500	\$2,000	\$5,000	\$7,000	\$10,000	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	\$1,000	\$2,500	\$0	\$1,000	\$2,500	\$1,000	\$2,000	\$3,000	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 Shelters at Golf Courses (ALT/BR)	na	na	na	na	\$1,000	\$2,500	\$1,000	\$1,500	\$3,000	Re-grading & landscaping to ramp up to teeing ground	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		
91	Accessible Teeing Grounds, Putting Greens, and Weather Shelters at Golf Courses (NC)	\$0	\$0	\$0	na	na	na	na	na	na	Re-grading & landscaping to ramp up to teeing ground; not expected to be a cost in new construction.	200' travel distance
92	Golf— Accessible practice areas at Driving Ranges	\$0	\$0	\$0	\$0	\$1,000	\$2,500	\$1,000	\$1,500	\$3,000	Re-grading & landscaping to ramp up to area.	200' travel distance
93	Mini Golf— Accessible route	\$700	\$1,000	\$1,100	\$700	\$1,000	\$1,100	\$2,500	\$3,500	\$4,000	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	\$4,500	\$9,000	\$10,000	\$4,500	\$9,000	\$10,000	\$15,000	\$25,000	\$40,000	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	\$5,000	\$35,000	\$0	\$5,000	\$35,000	\$0	\$7,500	\$50,000	Low cost assumes little to no cost, med a ramp, & high an elevator or lift.	50' travel distance
96	Amusement Rides— wheelchair space	\$300	\$1,000	\$2,500	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	\$350	\$500	\$0	\$350	\$500	\$500	\$750	\$1,000	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	\$150	\$250	\$500	\$150	\$250	\$500	\$150	\$250	\$500	Detectable sign design and surface construction	1 sign

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		
99	Play Areas— Accessible route (BR)	na	na	na	na	na	na	\$0 (sm) \$950 (med) \$1,200 (lg)	\$0 (sm) \$4,180 (med) \$5,280 (lg)	\$0 (sm) \$5,510 (med) \$6,960 (lg)	Low cost assumes engineered wood fiber (“EWF”) is used for any accessible routes; medium cost assumes a combination of EWF and rubber mats/tiles; and, high cost assumes poured-in-place rubber.	See endnote for Play Areas at end of Unit Cost table.
100	Play Areas— Accessible play components (BR)	na	na	na	na	na	na	\$0 (sm) \$550 (med) \$1,100 (lg)	\$0 (sm) \$1,100 (med) \$2,200 (lg)	\$0 (sm) \$2,210 (med) \$4,400 (lg)	Incremental costs to add any additional ground 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)	\$1,365 (sm) \$2,457 (med) \$4,550 (lg)	\$7,392 (sm) \$15,620 (med) \$32,230 (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.

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		
102	Play Areas— Accessible play components (ALT)	na	na	na	\$0 (sm) \$0 (med) \$0 (lg)	\$500 (sm) \$1,000 (med) \$2,000 (lg)	\$1,000 (sm) \$1,100 (med) \$2,900 (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)	\$832 (sm) \$1,757 (med) \$2,930 (lg)	\$4,805 (sm) \$10,153 (med) \$21,975 (lg)	\$7,392 (sm) \$15,620 (med) \$32,230 (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.
104	Play Areas— Accessible play components (NC)	\$0 (sm) \$0 (med) \$0 (lg)	\$500 (sm) \$1,000 (med) \$2,000 (lg)	\$500 (sm) \$1,100 (med) \$2,900 (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.
105	Open Captioning in Sports Stadium	\$500	\$2,000	\$3,000	\$500	\$2,000	\$3,000	\$500	\$2,000	\$3,000	Assume existing staff can type necessary messages; cost are for any additional equipment or changes to existing equipment. The	Equipment & electrical connection costs.

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		
											equipment is a scrolling LED board on the high end. The low end assumes that large stadiums have boards that are already capable of being programmed to accept & display text.	
106	Post Secondary School Multi-Story Dorm Facility - Elevator	\$70,000	\$75,000	\$80,000	\$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	\$15,000	\$20,000	\$25,000	\$25,000	\$30,000	\$35,000	\$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	\$5,000	\$6,000	\$7,000	\$6,000	\$7,000	\$8,000	\$6,000	\$7,000	\$8,000	NC/Alt include the cost to install a security type communication system	1 communication system per cell
109	Social Service Establishment (UFAS)	-\$70,000	-\$150,000	-\$250,000	\$0	\$0	\$0	\$0	\$0	\$0	NC eliminates the need for an elevator (See item 101 for description of elevator). Assumes no impact to Alt/BR	1 elevator
110	Social Service Establishment (ADAAG)	\$2,500	\$3,500	\$4,500	\$1,000	\$1,500	\$2,000	\$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	\$7,000	\$10,000	\$20,000	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	Accessible Means of Entry to Pools (BR)	na	na	na	na	na	na	\$8,000	\$15,000	\$23,000	Costs range from a low cost lift to a high end lift and installation	1 lift

[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:

NA – small playground areas are exempt.

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 **one** ground component
- Medium cost – cost to add **two** ground components
- High cost – cost to add **four** ground components

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 **two** ground component
- Medium cost – cost to add **four** ground components
- High cost – cost to add **eight** 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. 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 190 (low, medium and high). For large play area, sq ft to be covered 1,095 (low, medium and high); alterations – low, 0; medium, 280; high, 1,095; Barrier removal 240 (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			Explanation
	Low-	Med-	High	
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 2nd 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	Transient lodging Guest Room Vanities	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) ¹	4.00%	5.00%	6.00%
Ext	48	Dwelling Units with Communication Features (UFAS) ²	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 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	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 Putting Greens, Practice Teeing Grounds, 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 rides	0.00%	0.00%	0.00%
Int/Ext	96	Wheelchair Space or Transfer Seat or Transfer Device	0.00%	0.00%	0.00%
Ext	97	Maneuvering Space in Load and Unload Area	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	105	Open Captioning in Sports Stadium	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 Establishment (UFAS)	0.00%	0.00%	0.00%
Ext	110	Social Service Establishment (ADAAG)	0.00%	0.00%	0.00%
Int	111	Accessible Saunas and Steam Rooms (ALT/BR)	2.00%	3.00%	4.00%
Ext	112	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 SF for facility scaled by the ratio of income per SF of office space to construction cost per SF of office space. 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.

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 RSMMeans Square Foot Costs, 2005 and The Building Owners and Managers Association (BOMA) 2006 Experience Exchange Report: US 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	375	500	625	300	400	500
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 ⁸²	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
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
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

⁸² 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.

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
101	Aquatic Chair	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.

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 Chapter 4, Section 4.2.1.

Facility Group	Annual visits made by average US adult
Inns	1.72
Hotels	2.53
Motels	2.27
Restaurants	198.23
Motion Picture House	4.44
Theatre / Concert Hall	1.25
Stadiums	0.57
Auditoriums	0.61
Convention centers	0.16
Single level stores	75.29
Shopping malls	10.00
Indoor Service Establishments	98.11
Offices of health care providers	3.39
Hospitals	0.29
Nursing homes	2.03
Terminal (private airports)	0.00
Depots	0.09
Museums, historical sites & libraries	6.79
Parks or zoos	0.36
Amusement parks	1.03
Nursery schools - Daycare	12.70
Elementary private schools	2.09
Secondary Private Schools	0.66
Undergraduate and postgraduate private schools	3.55
Ski facilities	0.18
Homeless Shelter	0.41
Food banks	0.79
Social service establishments	3.41
Exercise facilities	4.59
Aquatic centers / swimming pools	1.14
Bowling alleys	0.94
Golf courses (private with public access)	0.68
Golf courses (private only)	0.27
Miniature golf courses	0.94
Recreational boating facilities	0.15
Fishing piers and platforms	0.02
Shooting facilities	0.10
Office buildings	0.25
Elementary public schools	14.03
Secondary public schools	18.45

Facility Group	Annual visits made by average US adult
Undergraduate, postgraduate public schools	0.05
Public housing	0.35
State and local judicial facilities (courthouses)	0.01
State and local detention facilities (jails)	0.05
State and local correctional facilities (prisons)	3.74
Parking garages	6.35
Self service storage facilities	0.17
Theatre / Concert Halls (public)	0.00
Stadiums (public)	1.71
Auditoriums (public)	0.04
Convention centers (public)	0.24
Hospitals (public)	0.07
Nursing homes (public)	0.20
Museums, historical sites & libraries (public)	13.81
Parks or zoos (public)	5.54
Homeless Shelter (public)	0.06
Exercise facilities (public)	0.19
Social service establishments (public)	1.46
Aquatic centers / swimming pools (public)	0.21
Miniature golf courses (public)	0.10
Recreational boating facilities (public)	0.23
Fishing piers and platforms (public)	0.02
Office buildings (public)	0.79
Parking garages (public)	0.06
Golf courses (public)	0.19
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	US 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.	Enplanments at general aviation depots and fields
Depot	US 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 US
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 US
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 vests 6 days a week and part-time students averaged 3 visits a week; all for 34 weeks a year.
Ski facilities	US 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	US 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
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)
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 US

Facility Type	Source	Notes
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 2007. When adjusted for the adult population, the percent of the US population 18 years of age and older was used to make the adjustment.

B. Total US Population

The 2006 and 2007 population estimates by age group are based on the US Census projections of population age groups for July 1, 2005 (released March 2004). To estimate the population in 2007, it is assumed the population grows at a 1% annual rate.

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 US population 18 years and older, adjusted for disability type.

US Census Projections of the Population by Selected Age Groups	Census Projections July 1, 2005	Age group, % of Total	HDR Projections For July 1, 2006	HDR Projections For July 1, 2007
Total US Population	295,507,134	100%	298,462,205	301,446,827
Under 5 years	20,495,480	7%	20,700,435	20,907,439
5 to 13 years	35,968,115	12%	36,327,796	36,691,074
14 to 17 years	17,175,462	6%	17,347,217	17,520,689
18 to 24 years	29,156,112	10%	29,447,673	29,742,150
25 to 44 years	83,203,691	28%	84,035,728	84,876,085
45 to 64 years	72,812,370	25%	73,540,494	74,275,899
65 years and over	36,695,904	12%	37,062,863	37,433,492

Source: US Census Bureau and HDR Estimates

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 2002 US Economic Census.

Facility Group Name	NAICS Code	Sales Receipts / Revenues in 2007 dollars	Data Year	NAICS Code Definition / Source
Inns	7211	\$2,938,455,605	2002	Traveler Accommodation (less than 10 - 24 guestrooms)
Hotels	7211	\$107,770,939,419	2002	Traveler Accommodation (25-99 guestrooms)
Motels	7211	\$6,684,148,336	2002	Traveler Accommodation (100+ guestrooms)
Restaurant / Bar, other establishments serving food or drink	722	\$360,323,736,335	2002	Food Services and Drinking Places
Motion Picture House	512131	\$12,029,159,098		Motion Picture Theater
Theatre / Concert Hall	7111	\$12,179,271,702	2002	Performing Arts Companies
Stadiums	7112	\$25,015,683,620	2002	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	\$5,958,958,163	2002	Promoters of Performing Arts, Sports, and Similar Events with Facilities
Convention Center	561920	\$9,598,759,157	2002	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	\$512,280,311,958	2002	Food and Beverage Stores
Clothing Store	448	\$188,271,733,658	2002	Clothing and Clothing Accessories Stores
Hardware Store	444	\$276,420,618,060	2002	Building Material and Garden Equipment and Supplies Dealers
Motor vehicle & parts dealers	441	\$898,794,593,962	2002	Motor vehicle & parts dealers
Furniture & home furnishings stores	442	\$102,933,375,562	2002	Furniture & home furnishings stores
Electronics & appliance stores	443	\$92,186,246,068	2002	Electronics & appliance stores
Sporting goods, hobby and music stores	451	\$82,078,573,600	2002	Sporting goods, hobby and music stores
General merchandise stores	452	\$499,143,984,256	2002	General merchandise stores
Miscellaneous store retailers	453	\$101,809,503,613	2002	Miscellaneous store retailers

Facility Group Name	NAICS Code	Sales Receipts / Revenues in 2007 dollars	Data Year	NAICS Code Definition / Source
Laundromats, Dry Cleaner, Shoe Repair, Funeral Parlor, Beauty Shop / Barber Shop	812	\$120,347,500,485	2002	Personal and Laundry Services (less parking garages, see Parking Garage facility group)
Pharmacy	446	\$201,959,335,625	2002	Health and Personal Care Stores
Banks / Insurance	522, 523, 524, 525	\$3,160,489,911,132	2002	Finance and Insurance
Professional, Scientific, and Technical Svcs	541	\$994,197,132,377	2002	Professional, Scientific, and Technical Services
Travel Services	5615	\$28,627,769,776	2002	Travel Arrangement and Reservation Services
Gas Stations	447	\$279,313,698,059	2002	Gasoline Stations
Professional Offices of healthcare providers	621	\$547,792,704,956	2002	Ambulatory health care services
Hospitals	622	\$560,679,037,440	2002	Hospitals
Nursing and Residential Facilities	623	\$142,507,662,247	2002	Nursing and Residential Care Facilities
Museums, historical sites, & similar institutions	71211	\$6,623,227,487	2002	Museums
Library			2006	American Library Association
Zoos	71213	\$2,005,710,768	2002	Zoos and Botanical Gardens
Parks	71219	\$40,415,165	2002	Nature parks & similar institutions
Amusement Park	7131	\$9,163,966,587	2002	Amusement Parks
Nursery schools/Day Care	6244	\$24,408,648,952	2002	Child Day Care Services
Ski facilities	71392	\$2,019,373,676	2002	Ski facilities
Homeless Shelter	62422	\$6,506,300,713	2002	Community Housing Services
Emergency Relief services	62423	\$5,712,713,042	2002	Emergency & other relief services
Food banks	62421	\$3,482,930,368	2002	Community food services
Family services	6241	\$50,052,474,286	2002	Individual and family services
Vocational Rehab services	6243	\$12,367,370,709	2002	Vocational rehabilitation services
Fitness & Recreational Sports Ctrs & Skiing Facilities	71394	\$16,802,726,914	2002	Fitness and Recreational Sports Centers & Skiing Facilities
Aquatic centers / swimming pools	61162	\$2,790,676,020	2002	Sports and recreational instruction
Bowling Alley	71395	\$3,447,148,058	2002	Bowling Centers
Golf Course (semi-private: paid membership, but public access)	71391	\$3,757,631,378	2002	Golf Courses and Country Clubs
Miniature Golf Course	7139908	\$1,145,758,746		All Other Amusement and Recreation Industries
Recreational Boating Facility	71393	\$3,757,631,378	2002	Marinas
Other Amusement & Recreational Svcs:	7139908	\$3,437,620,000	2002	All Other Amusement and Recreation Industries
Fishing Pier or Platform	7139908	\$1,145,758,746		All Other Amusement and Recreation Industries
Shooting Facility	7139908	\$1,145,758,746		All Other Amusement and Recreation Industries
Parking garages	81293	\$7,745,052,297.83	2002	Parking lots & garages
Self service storage facilities	53113	\$4,120,221,420	2002	Lessors of miniwarehouses & self-storage units

Source (unless otherwise noted): 2002 US Economic Census

D. Consumer Price Index

The percentage change of the consumer price index (CPI) is applied to the 2002 Economic Census data to estimate the total sales receipts for 2007.

CPI: Annual Percentage Change	
2002	1.6%
2003	2.3%
2004	2.7%
2005	3.4%
2006	3.2%

Source: Bureau of Labor Statistics, US Department of Labor

E. Percentage of Disability, by Type

The following table shows the percentage of the total US population 15 years and older that reported a specific type of disability.

Disability Type	Percent of Total US Population 15 Years and older
Seeing/Hearing/Speaking	
Difficulty seeing words/letters	3.5%
Difficulty hearing conversation	3.5%
Difficulty with speech	1.2%
Walking/Using Stairs	
Total with a disability	11.4%
Used a wheelchair or similar device	1.2%
Selected Physical Tasks (Upper body limitation)	
Total with a disability	8.2%

Source: US Census Bureau, Survey of Income Program Participation, 2002.

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%

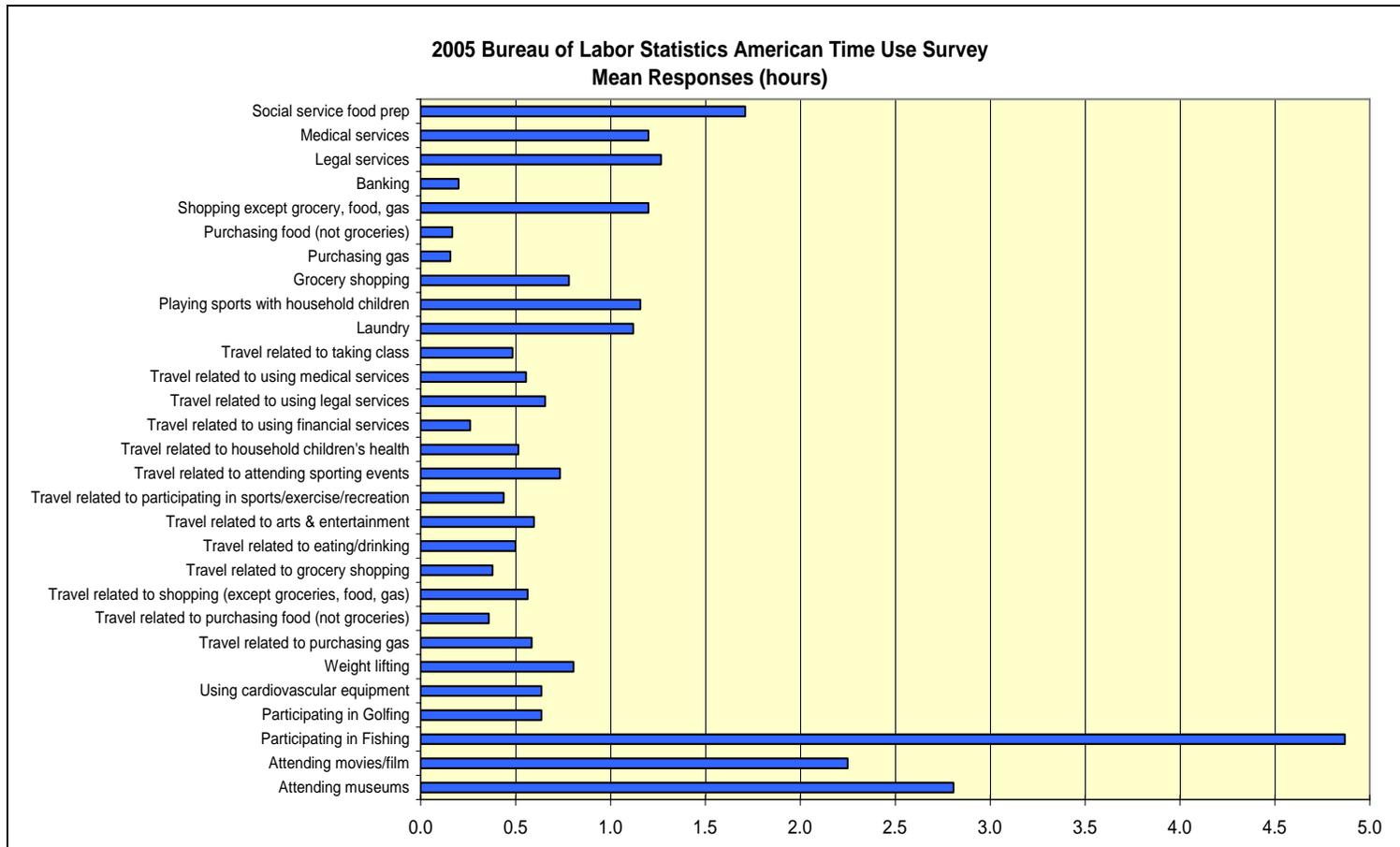
Facility Group	Income Adjustment
Motion Picture House	60%
Theatre / Concert Hall	60%
Stadiums	60%
Auditoriums	60%
Convention centers	60%
Single level stores	60%
Shopping malls	60%
Indoor Service Establishments	60%
Offices of health care providers	140%
Hospitals	140%
Nursing homes	140%
Terminal (private airports)	60%
Depots	60%
Museums, historical sites & libraries	60%
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%
Offices of health care providers (public)	140%
Hospitals (public)	100%
Nursing homes (public)	140%

Facility Group	Income Adjustment
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.



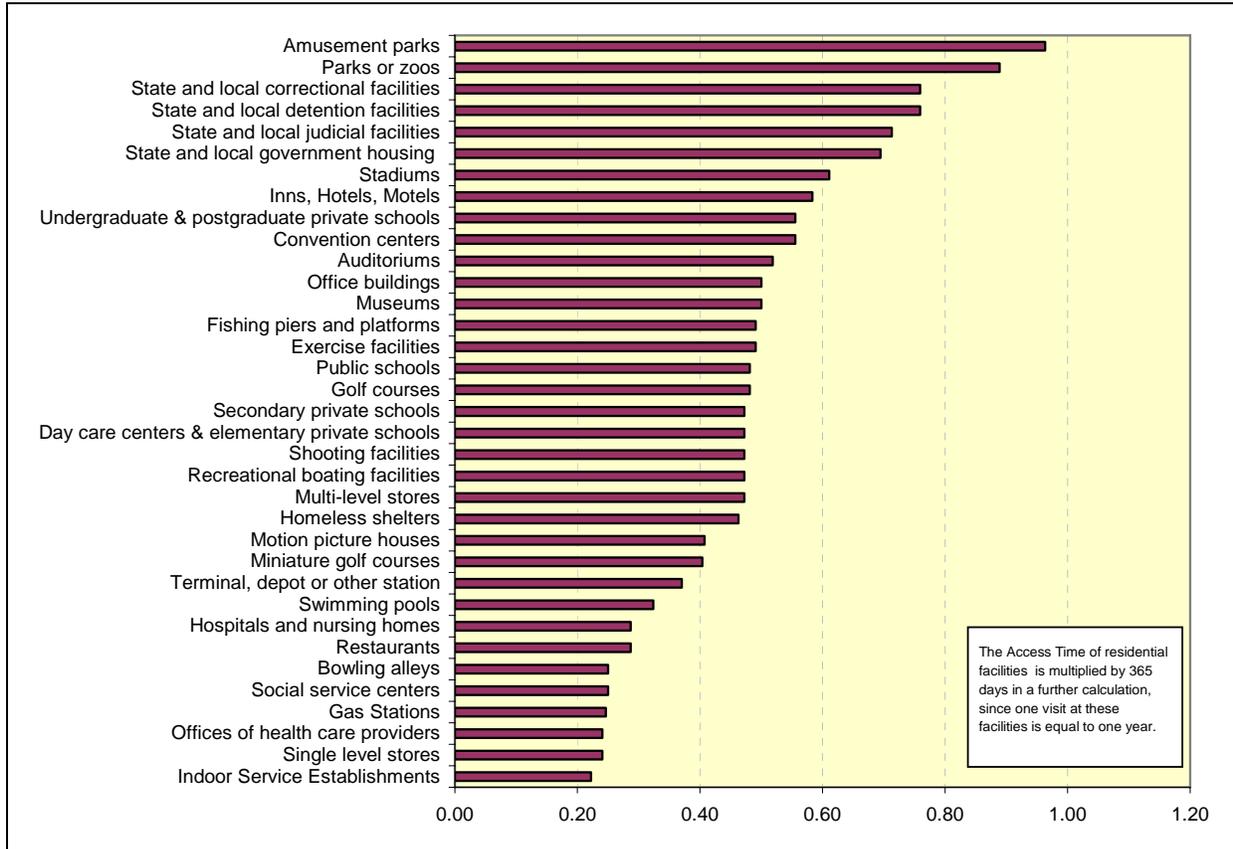
The following table lists the facilities included in the use premium benefits due to the requirements that affect the primary use of a visit, as listed in the second column. The American Time Use Survey (ATUS) description and corresponding code that matches each facilities' primary function is listed 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
Miniature golf courses	minigolf	playing golf, assuming minigolf is 1/2 time golf game, and there are 4 players	130114	0.4

Facility	Reason for using facility as related to requirements	ATUS Description	ATUS code	Time (hrs)
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
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 centers	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

Base Value of Times Per Facility

The value of time is estimated per facility group are based on Bureau of Labor Statistics, US Department of Labor; Average Hourly Earnings of Production Workers for 2006 of the total private sector, not seasonally adjusted. This is reported as \$16.76 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

Time Premiums

The basis for value of time premiums is developed 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.”⁸³

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.⁸⁴

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%.

Recommended Values for Travel Time for Seated and Standing Transit Passengers	
Activity	Value of time relative to prevailing wage rate
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.

⁸³ 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, et al eds. Center for Transportation Studies, University of British Columbia, August 2004.

⁸⁴ 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
Traveling in a Public Vehicle		
Sitting down	1	1
Standing up	1.5	1.5
Traveling in a Segregated Vehicle		
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.

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 toilet rooms	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	Toilet room 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 only	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 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
43	Limited access space/ service only	Ambulatory	Waiting time increase for someone to provide service assistance	Expected number of trips made to and from limited access space/ service only 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)
44	Operable parts	Wheelchair and upper body limitation	Time increase in finding assistance	Expected uses of operable parts while at a facility
45	Hotel guest room vanities	Ambulatory	Time saving in having more bathroom vanity space in stead 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 with communication features	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
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

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)
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	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	ATM 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 requirements)	Hearing	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
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

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)
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	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 machines and equipment	Ambulatory	Time savings in using an accessible route	Expected number of uses of the machines and equipment
71	Accessible 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
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

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)
75	Wheelchair space in team or player seating area	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 connecting both sides of the court 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	Turning space at 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	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	Sloped 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 boat slips and boarding piers	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 at boat launch ramps	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	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 and platforms	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
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

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)
89	Accessible route to all accessible elements in 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 at golf courses	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 in 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 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 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 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 or transfer seat of transfer device at amusement parks	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 at amusement parks	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 parks	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
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

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)
105	Open Captioning in Sports Stadium	Hearing	Time saving in reading emergency announcements in real-time compared to asking others	Likelihood of requiring captioning
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 Establishment (UFAS)	Ambulatory	Time saving in transferring into a bed independently compared to waiting for assistance	Expected number of uses of bed
110	Social Service Establishment (ADAAG)	Ambulatory	Time saving in transferring into a bed independently compared to waiting for assistance	Expected number of uses of bed

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 that no data was collected specifically for, these tables shows 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 Access	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
Transient lodging Guest Room Vanities	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
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 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 for 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 Practice Grounds at Golf Courses (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 Practice Grounds at Golf Courses (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 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 or Transfer Seat or Transfer Device	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	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 Park 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
Open Captioning in Sports Stadium	0.15	0.15	0.15	0.00	0.01	0.01	0.33	0.50	0.42	0.17	0.25	0.01	0.00	0.17	0.02
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

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
	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
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

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
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
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

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
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 Access															
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
Transient lodging Guest Room Vanities	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
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

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
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 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
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 for 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

Number of uses per 100 hours or 100 visits	AVERAGE			MIN			MAX			MEDIAN			IN USE		
	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely	Low	High	Most likely
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 Practice Grounds at Golf Courses (Alt/BR)	200	600	400	200	600	400	200	600	400	200	600	400	200	600	400
Accessible Practice Grounds at Golf Courses (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 Rides	78	173	113	20	30	25	300	900	500	20	30	25	78	173	113
Wheelchair Space or Transfer Seat or Transfer Device	58	153	89	10	20	15	300	900	500	10	20	15	58	153	89
Maneuvering Space in Load and Unload Area	21	43	38	10	20	15	100	200	200	10	20	15	21	43	38
Signs at Amusement Park 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
Open Captioning in Sports Stadium	0.3	0.8	0.5	0.0	0.0	0.0	0.3	0.5	0.4	0.2	0.3	0.0	0	0.5	0.3
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

M. Likelihood of Realizing Benefits

This table represents the assumptions on 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. Broadly, 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 or open captioning 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 dyers. 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 give 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
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

ID	Requirement	Most Likely	Comments
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	Transient lodging Guest Room Vanities	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[1]	0.0001%	probability of power outage
48	Dwelling Units with Communication Features[2]	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
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

ID	Requirement	Most Likely	Comments
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 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
78	Shooting Facilities with Firing Positions	50%	likelihood of realizing full time savings benefits during visit
79	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	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	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 rides	5%	full access time change benefits are realized only when waiting occurs
96	Wheelchair Space or Transfer Seat or Transfer Device	5%	full access time change benefits are realized only when waiting occurs

ID	Requirement	Most Likely	Comments
97	Maneuvering Space in Load and Unload Area	5%	full access time change benefits are realized only when waiting occurs
98	Signs	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
100	Accessible Play Components (BR)	5%	full access time change benefits are realized only when waiting occurs
101	Accessible Route to Play Components (ALT)	5%	full access time change benefits are realized only when waiting occurs
102	Accessible Play Components (ALT)	5%	full access time change benefits are realized only when waiting occurs
103	Accessible Route to Play Components (NC)	5%	full access time change benefits are realized only when waiting occurs
104	Accessible Play Components (NC)	5%	full access time change benefits are realized only when waiting occurs
105	Open Captioning in Sports Stadium	0.0001%	panelist input probably takes the likelihood of use into account
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 (UFAS)	90%	panelist input probably takes the likelihood of use into account
110	Social service establishments (ADDAG)	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	Accessible Means of Entry to Pools (BR)	5%	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
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

	New Access Time	Current Access time	Use time	Time Savings / Current Access Time	Net Time Change
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
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

	New Access Time	Current Access time	Use time	Time Savings / Current Access Time	Net Time Change
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
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

Facility	Reported Elasticity	Service or Product Measured in Reported Elasticity	Elasticity Used in Model	Source (See notes below)
Amusement parks	0.883	Recreation	0.883	6
Social service centers	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

Facility	Reported Elasticity	Service or Product Measured in Reported Elasticity	Elasticity Used in Model	Source (See notes below)
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 proposed regulations.

The EOA is used to account for the fact that, before implementation of the proposed standards, 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 proposed standards 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 proposed standards. 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 proposed regulations. 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%

Facility	Ease of Access before implementing standards
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%
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%

Facility	Ease of Access before implementing standards
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%

Facility	Ease of Access before implementing standards
Amusement parks (public)	60%

Q. 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 US 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 1.2% of the population.

$$Q_0 \text{ visits by those who might benefit from Requirement 32 in Restaurants} = 26.1 \text{ billion} * 1.2\% \text{ of population using a wheelchair} = \mathbf{313.2 \text{ million visits}}$$

Similar calculations for all other requirements in restaurants yield 6.6 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 (ϵ), 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 = $\epsilon * (EOAn/EOA) * (Q_0 \text{ for Requirement } 32 / C)$
 = $0.188 * (100\% / 90\%) * (313.2 \text{ million} / \$8)$
 = 8.179 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 (**Q₁**).

Q₁ for persons using wheelchairs = $Q_0 + [m * VOT * A_t]$
 = $313.2 \text{ million} + [8.179 \text{ million} * \$17 * 0.012 \text{ hours}]$
 = 314.9 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 (314.9 million visits by people using wheelchairs). Restaurant visitors are assumed to have a value of time of **\$8.50/hour**, or half of the hourly earnings rate.⁸⁵ 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 **\$17 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:

$$\begin{aligned} \text{Annual CS per disability category}^{86} &= (Q_0 * VOT * A_t) + \frac{1}{2} (VOT * A_t)^2 * m \\ &= (313.2 \text{ million} * \$17 * 0.012 \text{ hours}) + \frac{1}{2} (\$17 * 0.012 \text{ hours})^2 * 8.179 \text{ million} \\ &= -\$77.19 \text{ million} \end{aligned}$$

$$\begin{aligned} \text{Annual CS assigned per requirement} &= (\text{Annual CS per disability category}) * A_t / (\text{Net time change per disability category}) \\ &= (\$77.19 \text{ million} * 0.00033 \text{ hours}) / (0.012 \text{ hours}) \\ &= \$2.11 \text{ million} \end{aligned}$$

This facility and requirement are not included in either the use value nor 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 \$10.64 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	0.29

⁸⁵ See the Section 4.2.5 and Appendix 4J for details.

⁸⁶ 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
Access time change per element (Req 32) hours	0.03	0.48	0.15
Frequency of use per access hour per element (Req 32)	0.01	0.07	0.05
Likelihood of element in a facility (Req 32)	30%	70%	50%
Likelihood of using element (Req 32)	15%	35%	25%

Example for Accessible Means of Entry to Pools at Aquatic centers / swimming pools

Another example involves computing benefits from accessible means of entry to pools (requirement 79 as indexed in the Draft RIA on July 30) at privately-owned swimming pool facilities (pools).

It is assumed from data from the Census Bureau’s Economic Census that pools collect \$2.79 billion in sales receipts. It is assumed that the market price per facility visit (C) is \$10. This results in 279 million visits to aquatic centers / swimming pools each year (Sales/Market Price), which is approximately 1 visit per year per average US adult. The number of visits (Q₀) 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 11.4% of the total population.

$$Q_0 \text{ visits to Pools} = 279 \text{ million} * 60\% \text{ (IA)} * 60\% \text{ (EOA)} = 100.4 \text{ million}$$

$$Q_0 \text{ visits by those who might benefit from Requirement 79 in Pools} = 100.4 \text{ million} * 11.4\% \text{ of population with ambulatory disabilities} = \mathbf{11.45 \text{ million. (1.21 million wheelchair users (1.2\%) and 10.15 million non-wheelchair users (10.2\%))}.$$

Similar calculations for all other requirements at pools yield 25.42 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%.

$$A_t \text{ per requirement} = \text{Total time saved per element use} * \text{frequency of element uses per visit} * \text{likelihood of using element} * \text{likelihood of element in a facility}$$

$$A_t \text{ per requirement} = 0.27 \text{ hours} * 2.16 * 50\% * 80\% = 0.235 \text{ hours (about } \mathbf{14.1} \text{ minutes)}$$

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**)⁸⁷ of the demand curve for pools per disability is computed, using elasticity for the facility (ϵ), 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.

$$\begin{aligned} \mathbf{m} \text{ for persons in wheelchairs} &= \epsilon * (\text{EOAn}/\text{EOA}) * (Q_0 \text{ for Requirement } 79/ C) \\ &= 0.813 * (100\% / 60\%) * (1.21 \text{ million visits}/ \$10) \\ &= 0.163 \text{ million visits per dollar of change in generalized use and access cost} \end{aligned}$$

$$\begin{aligned} \mathbf{m} \text{ for persons with other ambulatory disabilities} &= \epsilon * (\text{EOAn}/\text{EOA}) * (Q_0 \text{ for Requirement } 79/ C) \\ &= 0.813 * (100\% / 60\%) * (10.25 \text{ million visits}/ \$10) \\ &= 1.389 \text{ million visits per dollar of change in generalized use and access cost} \end{aligned}$$

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 (**Q₁**).

$$\begin{aligned} \mathbf{Q}_1 \text{ for persons in wheelchairs} &= Q_0 + [m * \text{VOT} * A_t] \\ &= 1.21 \text{ million} + [0.163 \text{ million} * \$8.50 \text{ per hour} * 0.71 \text{ hours}] \\ &= 2.20 \text{ million visits} \end{aligned}$$

$$\begin{aligned} \mathbf{Q}_1 \text{ for persons with ambulatory disabilities} &= Q_0 + [m * \text{VOT} * A_t] \\ &= 10.25 \text{ million} + [1.389 \text{ million} * \$8.50 \text{ per hour} * 0.71 \text{ hours}] \\ &= 28.64 \text{ million visits} \end{aligned}$$

⁸⁷ 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 with people with other ambulatory disabilities. This average slope is just a weighted average of the slopes actually use in the estimation.

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 **\$4.50/hour** (recreational visitors are assumed to have a lower value of time than visitors to other facilities).⁸⁸ A requirement-specific access premium of 100% is applied, resulting in a VOT of **\$8.50/hour**.

Annual consumer surplus (CS)⁸⁹ is computed below per disability and then apportioned to the requirement based on its time savings.

$$\begin{aligned} \text{Annual CS per disability} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (1.21 \text{ million} * \$8.50 * 0.71 \text{ hours}) + \frac{1}{2} (\$8.50 * 0.71 \text{ hours})^2 * 0.163 \text{ million} \\ &= \$12.4 \text{ million} \end{aligned}$$

$$\begin{aligned} \text{Annual CS per disability} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\ &= (10.25 \text{ million} * \$8.50 * 0.71 \text{ hours}) + \frac{1}{2} (\$8.50 * 0.71 \text{ hours})^2 * 1.389 \text{ million} \\ &= \$103.82 \text{ million} \end{aligned}$$

$$\begin{aligned} \text{Annual CS assigned per requirement} &= (\text{Annual CS per disability}) * A_t / (\text{Net time change for} \\ &\quad \text{persons with ambulatory disabilities}) \\ &= (\$12.4 \text{ million} + 103.82) * (0.235 \text{ hours} / (0.71 \text{ hours})) \\ &= \$38.69 \text{ million} \end{aligned}$$

The calculation of benefits for Accessible Means of Entry to Pools at Aquatic Centers/Swimming Pools do 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, requirement (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 follows⁹⁰:

$$\begin{aligned} Q'_1 \text{ for persons in wheelchairs} &= Q_1 + 0.5m * [\text{VOT} * A_t + \text{VOT}_{\text{help}} * \text{UseTime} * \text{VOT adjustment}] \\ &= 2.2 \text{ million} + 0.5 * 0.163 [\$8.50 \text{ per hour} * 0.71 \text{ hours} + \$9.34 * 2.324 \text{ hours} * 90\%] \end{aligned}$$

⁸⁸ See the Section 4.2.5 and Appendix 4J for details.

⁸⁹ 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.

⁹⁰ 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.

= 4. million visits

Q'₁ for persons with other ambulatory disabilities

$$\begin{aligned} &= Q_1 + 0.5m * [VOT * A_t + VOThelp * UseTime * VOT adjustment] \\ &= 10.25 \text{ million} + 0.5 * 1.389 * [\$8.50 \text{ per hour} * 0.71 \text{ hours} + \$9.34 * 2.324 \text{ hours} * 90\%] \\ &= 33.7 \text{ million visits} \end{aligned}$$

The total number of disabled users after the implementation of the new standards is then 37.7

Finally, the Annual CS is then adjusted to incorporate the new users as well as the use value, if any.

$$\begin{aligned} \text{Annual CS wheelchair} &= \frac{1}{2} * m (VOT * A_t + VOT \text{ help} * UseTime * VOT \text{ Adjustment})^2 \\ &= \frac{1}{2} * 0.163 (\$8.50 * 0.71 \text{ hours} + \$9.34 * 2.324 \text{ hours} * 90\%)^2 \\ &= \$27.55 \text{ million} \end{aligned}$$

$$\begin{aligned} \text{Annual CS non-wheelchair} &= (\frac{1}{2} * m (VOT * A_t + VOT \text{ help} * UseTime * VOT \text{ Adjustment})^2 \\ &= \frac{1}{2} * 1.389 * (\$8.50 * 0.71 \text{ hours} + \$9.34 * 2.324 \text{ hours} * 90\%)^2 \\ &= \$232.90 \text{ million} \end{aligned}$$

The consumer surplus assigned to the requirement is then:

$$\begin{aligned} \text{Annual CS assigned per requirement} &= (\text{Annual CS per disability}) * A_t / (\text{Net time change for} \\ &\quad \text{persons with ambulatory disabilities}) \\ &= (\$27.55 + \$232.90) * (0.235 \text{ hours} / (0.71 \text{ hours})) \\ &= \$86.71 \text{ million} \end{aligned}$$

Annual Consumer Surplus including

$$\begin{aligned} \text{New users and Use value} &= \text{Annual CS for requirement} + \text{New Users} + \text{Use Value} \\ &= \$38.69 \text{ million} + \$86.71 \text{ million} + \$0 \text{ million} \\ &= \$125.4 \text{ million} \end{aligned}$$

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 \$233.4 million.⁹¹

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 (pools) hours	2.20	2.48	2.32
Access time change per element (Req 79) hours	0.09	0.52	0.25
Frequency of use per visit per element (Req 79)	1	4	2
Likelihood of element in a facility (Req 79 at pools)	70%	100%	90%
Likelihood of using element (Req 79)	0%	15%	5%

⁹¹ 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 compare to the annual consumer surplus.

Example for Accessible Means of Entry to Pools at Hotels

Another example involves computing benefits from accessible means of entry to pools (requirement 79 as indexed in the Draft RIA on July 30) at hotel facilities.

It is estimated from data collected by The American Travel and Lodging Association that there are 616 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 11.4% of the total population.

Q_0 visits to hotels = 616 million * 60% (IA) * 90% (EOA) = 332.8 million

Q_0 visits by those who might benefit from Requirement 79 (pools) in hotels = 332.8 million * 11.4% of population with ambulatory disabilities = **37.9** million (4 million wheelchair users (1.2%) and 33.9 million non-wheelchair users (10.4%))

Similar calculations for all other requirements at hotels yield 84.2 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 (ϵ), 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.

$$\begin{aligned}
\mathbf{m} \text{ for wheelchair users} &= \varepsilon * (\text{EOAn/EOA}) * (Q_0 \text{ for Requirement 79/ C}) \\
&= 0.7 * (100\% / 90\%) * (4 \text{ million visits/ } \$150) \\
&= 21 \text{ thousand visits per dollar of change in generalized use and access cost}
\end{aligned}$$

$$\begin{aligned}
\mathbf{m} \text{ for persons non-wheelchair users} &= \varepsilon * (\text{EOAn/EOA}) * (Q_0 \text{ for Requirement 79/ C}) \\
&= 0.7 * (100\% / 90\%) * (33.9 \text{ million visits/ } \$150) \\
&= 176 \text{ thousand visits per dollar of change in generalized use and access cost}
\end{aligned}$$

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).

$$\begin{aligned}
Q_1 \text{ for wheelchair users} &= Q_0 + [m * \text{VOT} * A_t] \\
&= 4 \text{ million} + [21 \text{ thousand} * \$17.00 * 0.23 \text{ hours}] \\
&= 4.07 \text{ million visits}
\end{aligned}$$

$$\begin{aligned}
Q_1 \text{ for non-wheelchair users} &= Q_0 + [m * \text{VOT} * A_t] \\
&= 33.9 \text{ million} + [176 \text{ thousand} * \$17.00 * 0.23 \text{ hours}] \\
&= 34.6 \text{ million visits}
\end{aligned}$$

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 **\$8.50/hour**.⁹² A requirement-specific access premium of 100% is applied, resulting in a VOT of **\$17/hour**.

Annual consumer surplus (CS) is computed below per disability group and then apportioned to the requirement based on its time savings.

$$\begin{aligned}
\mathbf{Annual CS} \text{ for wheelchair users} &= (Q_0 * \text{VOT} * A_t) + \frac{1}{2} (\text{VOT} * A_t)^2 * m \\
&= (4 \text{ million} * \$17 * 0.23 \text{ hours}) + \frac{1}{2} (\$17 * 0.23 \text{ hours})^2 * 21 \text{ thousand} \\
&= \$18.77 \text{ million}
\end{aligned}$$

⁹² See Section 4.2.5 and Appendix 4J for details.

Annual CS for wheelchair users = $(Q_0 * VOT * A_t) + \frac{1}{2} (VOT * A_t)^2 * m$
= $(33.9 \text{ million} * \$17 * 0.23 \text{ hours}) + \frac{1}{2} (\$17 * 0.23 \text{ hours})^2 * 176 \text{ thousand}$
= \$154.49 million

Total CS for requirement = (Sum of **Annual CS** per disability)* A_t / (Net time change for persons with ambulatory disabilities)
= $(\$18.77 \text{ million} + 154.49 \text{ million}) * (0.0246 \text{ hours}) / (0.23 \text{ hours})$
= \$19.25 million

This facility and requirement are not included in either the use value nor 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 \$34.2 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	4.58
Access time change per element (Req 79) hours	0.09	0.52	0.25
Frequency of use per visit per element (Req 79)	1	4	2
Likelihood of element in a facility (Req 79 at hotels)	57.6%	86.4%	72%
Likelihood of using element (Req 79)	0%	15%	5%

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 proposed regulations 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 US 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 US 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

Facility Type	2-digit NAICS	NAICS Code	NAICS Description	SBA Definition of small firms	Definition in Use
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 ¹	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	\$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
	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 ²	\$6.5
Hospitals	62	622	Hospitals	31.5 ²	\$31.5

Facility Type	2-digit NAICS	NAICS Code	NAICS Description	SBA Definition of small firms	Definition in Use
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 center 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
Private Schools	NA	NA	NA	50000 ³	50000 ³
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 ⁹³	\$5,855,268,838	\$41,540,661,240
Secondary ⁹⁴	\$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

⁹³ 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 likely to be greater in number but smaller in size than secondary schools).

⁹⁴ Ibid.

Total Expenditures (2007)	Small Entities	Total Entities
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

APPENDIX 6: RAP PRIMER

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 Devices 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 Evaluation⁹⁵

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.⁹⁶

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.

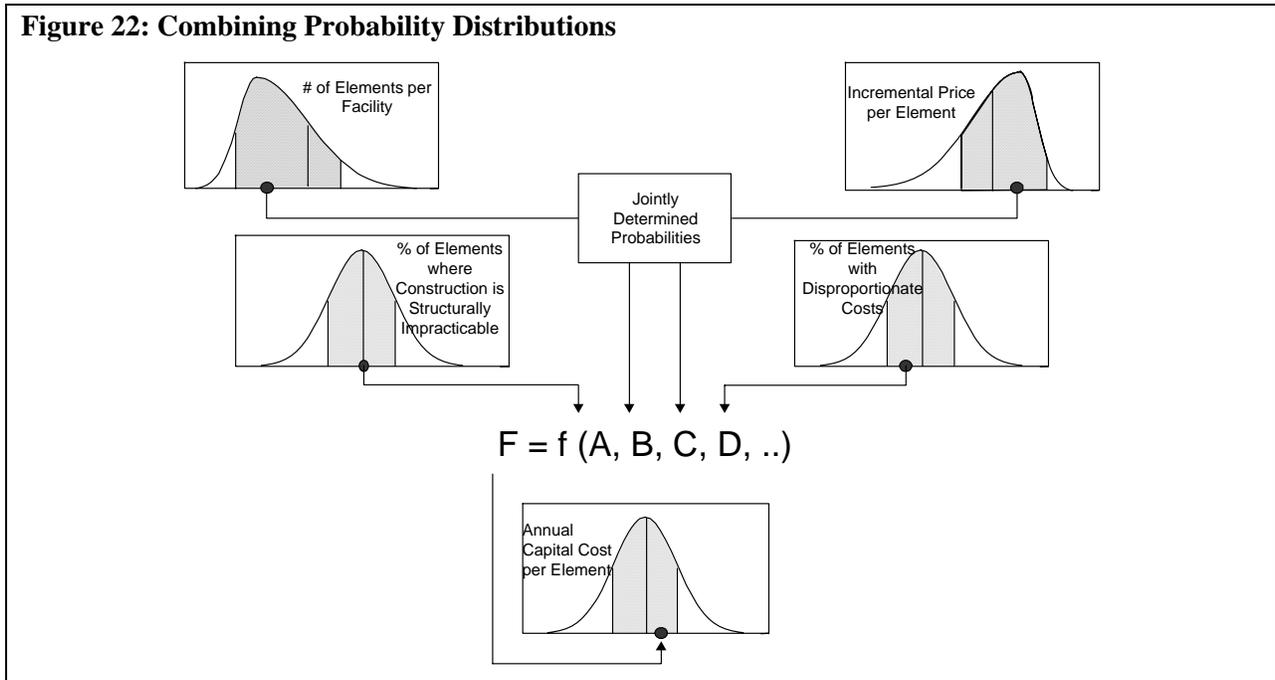
Step 4: Issue Risk Analysis

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 22).

⁹⁵ 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.

⁹⁶ 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 22: 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
94.9	0.10
91.0	0.20
88.2	0.30
85.8	0.40
83.5	0.50
81.2	0.60
78.5	0.70
75.2	0.80
71.3	0.90
65.0	0.95
53.5	0.99
82.9	Mean Expected Outcome

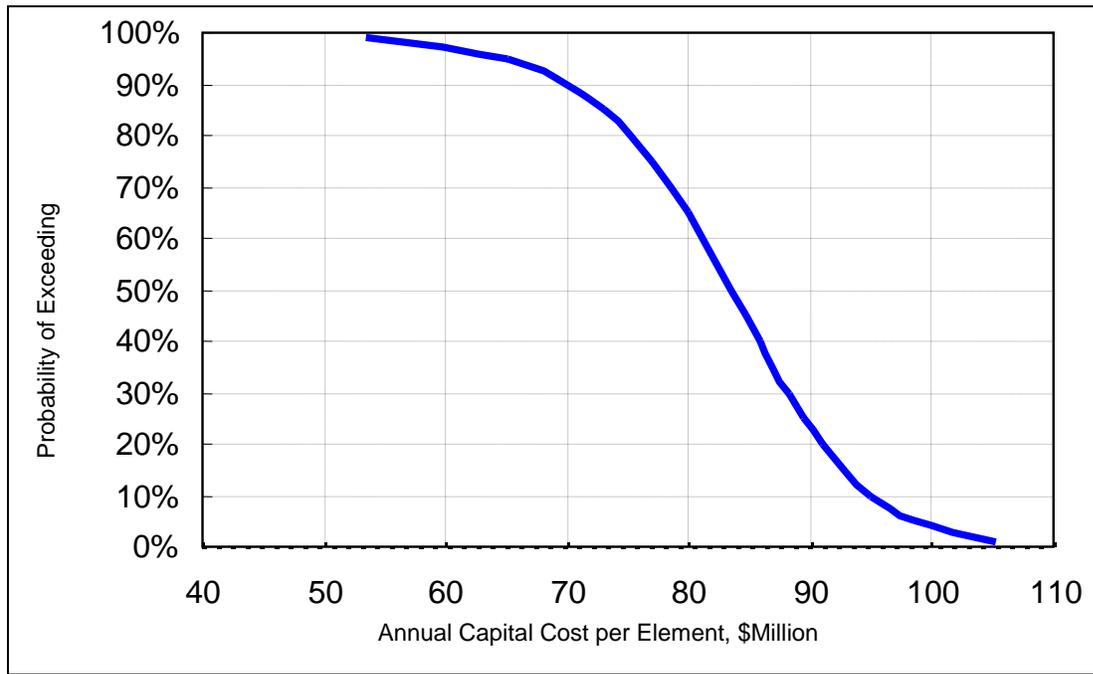


Figure 23: Risk Analysis of Annual Capital Cost per Element, Illustration Only

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.

APPENDIX 7: RAP PANELISTS / AGENDA

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, 15th St. NW, Washington, D.C.

I. INTRODUCTION	8:30 – 9:15 am
A. Description of Project/Framework	
B. Description of Data Sheets	
II. BENEFITS ASSESSMENT	
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
III. CLOSING REMARKS	4:00 – 4:15 pm

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

APPENDIX 8: MATRIX OF CHANGES REPRESENTED BY NEW AND REVISED REQUIREMENTS

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 proposed 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 proposed requirements would 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	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.	Cost for one accessible entrance (minus cost of inaccessible entrance). Assumed one 3' door leaf and signage.	-\$200	na	na
2	7.8	MANEUVERING CLEARANCE OR STANDBY POWER FOR AUTOMATIC DOORS ^{97, 98} 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.	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	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).	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	THRESHOLDS AT DOORWAYS 404.1; 404.2.5, Ex.	Exterior sliding doors that are part of an accessible route ⁹⁹ 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	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.	Provide 10" smooth surface @ bottom of door. Assumed 3' wide door; low cost solution is a kickplate; high cost is gate.	\$275	na	na

⁹⁷ As applied to existing facilities that were newly constructed under the current Standards and will be altered under the proposed Standards. 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.

⁹⁸ As applied to existing facilities that were newly constructed under the current Standards and will be required to comply with the proposed Standards 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.

⁹⁹ 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	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 ¹⁰⁰ 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	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.	Because the life safety requirements for circulation meet the accessibility standard this will have no cost impact.	\$0	\$0	na
8	6.7	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.	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	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.	No additional costs required for redesign of handrails or treads and risers.	\$0	na	na
10	6.10	STAIRS (ALT/BR) 210.1, Ex. 2	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

¹⁰⁰ 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	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.	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	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.)	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	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.	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	STANDBY POWER FOR PLATFORM LIFTS ^{101, 102} 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	POWER-OPERATED DOORS FOR PLATFORM LIFTS 410.5	Except for platform lifts that serve only one or two landings and have self-closing manual doors on opposite ends, platform lifts will be required to have power-operated doors. 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

¹⁰¹ As applied to existing facilities that were newly constructed under the current Standards and will be altered under the proposed Standards. 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.

¹⁰² As applied to existing facilities that were newly constructed under the current Standards and will be required to comply with the proposed Standards 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	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.	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	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.	Cost difference between elevator and lift (2 stops).	-\$20,000	-\$20,000	na
18	5.7	“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.	Cost difference between a 2 stop elevator & a LULA or residential elevator.	-\$20,000	-\$20,000	na
19	7.3	VAN ACCESSIBLE PARKING SPACES 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	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.	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	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.	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	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.	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	\$0 ¹⁰³	\$0 ¹⁰⁴
23	6.8	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).	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	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.	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	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.	Cost of one sign.	-\$100	-\$100	na
26	5.10	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.	Savings is deleting the cost of a canopy at loading zones (assumed Canopies of 20'x20' & 30'x35').	-\$50,000	-\$30,000	na

¹⁰³ Under the assumption that 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, zero is used for cost.

¹⁰⁴ Under the assumption that 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, zero is used for cost.

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
27	7.4	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.	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	WATER CLOSET CLEARANCE IN SINGLE-USER TOILET ROOMS WITH 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. 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. ¹⁰⁵	\$125	\$3,000	\$3,500
29	7.11	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.	Cost for shower spray unit with on/off control.	\$200	\$200	\$225
30	5.13	URINALS 213.3	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	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.	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

¹⁰⁵ 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 21)

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
32	5.23	WATER CLOSET CLEARANCE IN SINGLE-USER TOILET ROOMS WITH IN-SWINGING DOORS 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	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).	A design issue; no cost impact.	\$0	\$0	\$0
34	5.19	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.	One accessible toilet room; smaller room and no grab bars.	-\$2,150	-\$950	na
35	6.11	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.	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	SINKS IN HOTELS 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	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"). 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
38 & 39	5.26	SALES AND SERVICE COUNTERS 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 proposed 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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
40	5.21	WASHING MACHINES 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	CLOTHES DRYERS 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	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.	One storage space. Costs may require moving door for clearances, or installing an overhead door opener	\$0	\$500	\$500
43	5.1	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."	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	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.	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	TRANSIENT LODGING GUEST ROOM VANITIES 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	\$750	\$1,000
46	7.6	OPERABLE WINDOWS 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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
47	7.14	DWELLING UNITS WITH COMMUNICATION FEATURES¹⁰⁶ 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	DWELLING UNITS WITH COMMUNICATION FEATURES 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	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).	Cost of maneuvering clearance for reach (depth, width and height); space; 4’ counter and room area. Estimate adding 13 SF of room area Alternate baseline: UFAS	\$1,000	\$1,000	\$1,200
50	5.25	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.	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
51	7.1	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.	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

¹⁰⁶ 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
52	6.26	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. 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	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.	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	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.	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	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.	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
56	5.4	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.	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	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).	Cost of lift.	-\$17,000	-\$17,000	na

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58	7.5	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 proposed 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	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 (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	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) 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
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 proposed requirement adds specific technical requirements for privacy, speech output, tacitly 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.	\$500	\$500	na

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
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
66	5.17	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 proposed Standards, 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		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).	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		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.	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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
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.	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		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.	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
71		ACCESSIBLE 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.	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		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.	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		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.	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		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.	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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
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.	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		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.	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		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.	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
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.	Cost to provide additional space	\$300	\$300	\$500
79		ACCESSIBLE MEANS OF ENTRY TO POOLS 242.2; 1009.2-6	At least one accessible means of entry will be required for pools of 300 or more linear feet.	Costs range from a low cost lift to a high end lift	\$10,000	\$15,000	\$15,000
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.	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	\$142,500	\$142,500
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).	Cost of either steps with rail or a lift.	\$4,500	\$6,000	\$6,000
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.	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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
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.	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		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.	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		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.	Cost to provide 2 40' accessible slips (difference between accessible & non-accessible) and be dispersed.	\$300	na	na
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.	Cost to provide two 40' accessible slips (difference between accessible & non-accessible) and be dispersed.	na	\$300	\$1,500
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.	Cost to provide 100' of accessible route (difference between accessible & non-accessible).	\$300	\$300	\$500
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.	Cost to provide lower railing & 30" x 12" edge extension in 25% of 100' of pier.	\$1,500	\$1,500	\$7,000
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.	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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
90		ACCESSIBLE TEEING GROUNDS, PUTTING GREENS, AND WEATHER SHELTERS AT GOLF COURSES (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.	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		ACCESSIBLE TEEING GROUNDS, PUTTING GREENS, AND WEATHER SHELTERS AT GOLF COURSES (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.	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
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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
95		ACCESSIBLE ROUTE TO 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 OR TRANSFER SEAT OR TRANSFER DEVICE 234.2; 1002.4-6	Each newly constructed ¹⁰⁷ 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
97		MANEUVERING SPACE IN LOAD AND UNLOAD AREA 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		SIGNS 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		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.	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	\$0 (sm) \$4,180 (med) \$5,280 (lg)
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. 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	\$0 (sm) \$1,100 (med) \$5,280 (lg)

¹⁰⁷ 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
101		ACCESSIBLE ROUTE TO PLAY COMPONENTS (ALT) 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
102		ACCESSIBLE PLAY COMPONENTS (ALT) 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) \$2,00 (lg)	na
103		ACCESSIBLE ROUTE TO PLAY COMPONENTS (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.	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		ACCESSIBLE PLAY COMPONENTS (NC) 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
105		OPEN CAPTIONING IN SPORTS STADIUM (REGULATORY PROPOSAL)	Sports stadiums with 25,000+ seats will have to provide real-time open captioning of emergency announcements. Can appear scoreboard, on a line board, on a handheld device, or by any other effective means.	Assume existing staff can type necessary messages; cost should be for any additional equipment or changes to existing equipment. The equipment is a scrolling LED board on the high end. The low end assumes the large stadiums have boards that are already capable of being programmed to accept & display text.	\$2,000	\$2,000	\$2,000
106		POST SECONDARY SCHOOL MULTI-STORY DORM FACILITY – ELEVATOR (REGULATORY PROPOSAL)	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 proposed standards 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

#	§	ADAAG §	Incremental change	Unit cost assumptions	NC Median cost	Alt Median cost	BR Median cost
107		MOBILITY ACCESSIBLE PRISON CELL (REGULATORY PROPOSAL)	Fewer accessible cells will be required in newly constructed and altered detention facilities (from 5% to 2% for new construction, and from 5% to 3% for alterations).	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
108		COMMUNICATION ACCESSIBLE PRISON CELL (REGULATORY PROPOSAL)	Fewer accessible cells will be required in newly constructed and altered detention facilities (from 5% to 2% for new construction, and from 5% to 3% for alterations).	NC/Alt include the cost to install a security type communication system	\$6,000	\$7,000	\$7,000
109		SOCIAL SERVICE ESTABLISHMENT (UFAS) (REGULATORY PROPOSAL)	In facilities such as group homes, halfway houses, and homeless shelters where there are sleeping rooms with more than 25 beds, five percent minimum of the beds shall have clear floor space.	NC eliminate the need for an elevator (See item 101 for description of elevator). Assumes no impact to Alt/BR	-\$150,000	\$0	\$0
110		SOCIAL SERVICE ESTABLISHMENT (ADAAG) (REGULATORY PROPOSAL)	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

APPENDIX 9: MATRIX OF APPLICABLE BASELINES FOR IBC SCENARIOS

The RIA calculates the net present value of the proposed regulations 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 IBC 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 proposed regulations 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 proposed 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 ¹⁰⁸ 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 ½ 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

¹⁰⁸ 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 ¹⁰⁹ 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

¹⁰⁹ 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 410.5	Except for platform lifts that serve only one or two landings and have self-closing manual doors on opposite ends, platform lifts will be required to have power-operated doors. 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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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 proposed 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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
45	Transient lodging Guest Room Vanities 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
47	Dwelling Units with Communication Features ¹¹⁰ 809.5; 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 ¹¹¹ 809.5; 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

¹¹⁰ 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.

¹¹¹ 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
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
51	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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
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 proposed 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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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 proposed requirement adds specific technical requirements for privacy, speech output, tacitly 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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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 proposed Standards, 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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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 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
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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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	Accessible Means of Entry to Pools 242.2; 1009.2-6	At least one accessible means of entry will be required for smaller pools (300 or more linear feet) (at least one of which will have to be either a sloped entry or a pool lift while the other can be a transfer wall or a transfer system).	ADA	ADA	ADA
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 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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
87	Accessible Route 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.	ADA	ADA	ADA
89	Accessible Route 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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
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
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 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 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

Req #	ADAAG §	Summary of incremental change	IBC 2000	IBC 2003	IBC 2006
95	Accessible Route 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 or Transfer Seat or Transfer Device 234.2; 1002.4-6	Each newly constructed ¹¹² 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
97	Maneuvering Space in Load and Unload Area 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 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

¹¹² 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
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
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

*It is assumed that the regulatory proposals (*i.e.*, Requirement ## 105-107 & 109-110) also have the ADA baseline.

APPENDIX 10: REGULATORY PROPOSALS

In addition to the revised and new requirements, the Department is preparing several regulatory proposals. The regulatory proposals can be grouped into five different categories: 1) those modifying 2004 ADAAG requirements for barrier removal in an effort to decrease the burden on businesses, 2) additional requirements similar to the 2004 ADAAG for certain equipment or facilities, 3) new proposals regarding effective communications, 4) codifications of existing law, and 5) proposals expected to have no cost impact. Regulatory proposals in the first three categories have been incorporated into the benefit-cost model and calculations for the revised 2004 ADAAG, a discussion of the costs, benefits, and scope of the regulatory proposals regarding effective communication is included below. The codifications of existing law and the proposals expected to have no cost impact have not been analyzed here.

Regulatory Proposals Modeled with Revised Requirements

Due to concern for the potentially high burden on businesses, the Department is considering modifying the scope of two of the revised 2004 ADAAG requirements, and is considering three special exemptions. Specifically, the Department is proposing:

- (1) To reduce the scoping for existing play areas by allowing existing play areas that provide elevated play components the ability to substitute an additional number of accessible ground level play components for the number of elevated play components that would have been required to be made accessible.
- (2) Reducing from two to one the number of accessible means of entry that will be required in existing large swimming pools (those 300 or more linear feet).
- (3) For small businesses:
 - Exempting existing play areas from the play area requirements that (a) have less than 1000 square feet or (b) are located in a family child care facility where the proprietor resides,
 - Exempting existing swimming pools with less than 300 linear feet of swimming pool wall from the proposed standards; and
 - A “readily achievable presumption” for existing qualifying small businesses, allowing that spending 1% or more of gross revenue on measures for barrier removal relieves the qualifying small business from additional barrier removal efforts in the following year.

The revisions and exemptions to the requirements for play areas and pools have been incorporated into the analysis. The “readily achievable presumption” for small businesses is treated as another scenario as to what is readily achievable.

Other regulatory proposals affecting certain types of facilities have also been incorporated into the analysis. As discussed below, sports stadiums with seating capacities over 25,000 would be required to provide captioning of safety and emergency information on scoreboards and video monitors. Regulatory proposals would also modify requirements for several other specific types

of facilities such as: dormitories on public school campuses (by subjecting such dormitories to the requirements for transient lodging); social service establishments (by subjecting social service establishments that provide sleeping accommodations to the requirements for residential dwelling units), and detention facilities (by requiring fewer accessible cells in newly constructed and altered detention facilities).

Proposals relating to effective communication and technology

Captioning at Sports Stadiums

Commenters who are deaf or hard of hearing have expressed concerns to the Department that they are unaware of information that is provided over the public address systems. Therefore, the Department's regulatory proposal requires sports stadiums with seating capacities of 25,000 or more spectators to provide captioning of safety and emergency information announcements made over the public address system for patrons who are deaf or hard of hearing. The proposed regulation requires sports facilities to provide captioning of public safety and emergency announcements on scoreboards and video monitors within one year of the effective date of the regulation.

Reservations and ticketing for accessible rooms/seats

In response to public comments, the Department is clarifying the requirements for entities that take reservations for overnight lodging and entities that take seating reservations for events (such as theaters, stadiums and auditoriums). Facilities of this type that allow people to make reservations for a non-accessible room or seat must also allow persons with disabilities to reserve an accessible room or seat, essentially with the same ease as a non-disabled visitor.

For hotels and motels, the Department has determined that most large chains already offer this service; indeed many complaints to the Department relate to the fact that reservations for an accessible room were made but upon arrival, such a room was unavailable. These situations reflect a lack of accurate information internally regarding availability for many establishments. Even calls directly to hotels do not always result in accurate communication regarding the availability of accessible rooms.

This analysis has identified more than 66 thousand such establishments with more than 2.5 billion visits annually. The costs to businesses are most likely to depend on costs to improve information and communication systems, which may vary significantly by facility type, size, and perhaps age (as newer establishments are more likely to have newer systems. Users will benefit both from both greater reliability in reservations made on existing systems as well as from time savings generated by entities which newly provide accessible reservations.

Codifications of current law and Proposals without significant cost implications

The Regulatory Proposals include what the Department describes as codifications of current law. Since these are not new requirements, but, rather, a clarification of interpretations of existing ones, they are not incorporated into the benefit-cost analysis. The Department has also included several proposals, which it concludes will not have significant cost implications.

Codifications of Current Law
Clarification that condo/hotels and timeshares operated like hotels are subject to the requirements applicable to transient lodging facilities ¹¹³
Clarification current policy relating to auxiliary aids

Although these codifications are not being included in the analysis, it can be reasonably expected that some entities may now incur some costs due to new actions towards compliance spurred by these clarifications. Any costs due to the codifications are costs that should have been incurred earlier and are due to earlier rules and standards. Any new actions towards compliance will also lead to benefits, which also should be attributable to previous rules.

Proposals without significant cost implications
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

¹¹³ The number of condo-hotels and timeshare which operate as hotels was estimated and added to the number of hotels for the analysis.