AIR/SEA BIOMETRIC EXIT PROJECT Regulatory Impact Analysis

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1 Executive Summary

Pursuant to Executive Order (EO) 12866 US-VISIT has prepared a regulatory impact analysis (RIA) of the proposed rulemaking.

The United States Visitor and Immigrant Status Indicator and Technology (US-VISIT) Program addresses the Department of Homeland Security's (DHS) mission by supporting accurate risk and eligibility decisions about individuals through a range of biometric and biographic identity services, as well as providing new biometric-based capabilities that support the mission of operational agencies.

In order to build on the identity management services used to determine which aliens may be allowed to enter the U.S., US-VISIT will deploy a biometric exit system. DHS has preliminarily determined that the proposed Air/Sea Biometric Exit (Exit) system will verify in a reliable and timely manner whether those people who entered the U.S. legally have departed, and will be a significant improvement on the information currently available through the paper-based Form I-94 process. This new capability will provide much needed information for decision makers within the immigration and border management enterprise.

This Regulatory Impact Analysis (RIA) document identifies and estimates the stream of costs and benefits of the assessed alternatives that will inform policy makers of the relative worthiness of the current Exit alternatives. Its objective is to serve as one key decision criteria in evaluating and selecting among alternatives for inclusion in the proposed Exit rule.

1.1 Required Capabilities of Air/Sea Exit

The Air/Sea Biometric Exit Project requires commitment and participation from two key organizations – namely, the air and sea carriers and the Department of Homeland Security including Customs and Border Protection (CBP) and US-VISIT. Together, these organizations will provide the following capabilities to support Air/Sea Biometric Exit:

- Capture biographic and biometric data from the alien traveler at exit from the U.S.
- Screen against the biographic Watch Lists
- Screen against the biometric Watch List
- Biometrically verify identity
- Match the alien traveler's exit record with the traveler's entry record

In the Notice of Proposed Rulemaking (NPRM), DHS has proposed that the first of these capabilities is the responsibility of the air and sea carriers, and that the second is the responsibility of CBP. DHS has also proposed that the US-VISIT program has responsibility for providing the remaining capabilities. The focus of this RIA is on the incremental capabilities to be implemented under the guidance of US-VISIT.

1.1.1 Alien Populations

The initial and current scope of the impacted traveler population is foreign nationals who have gained admission to the U.S. and are required to depart according to the terms of their admission. This includes travelers who have entered the U.S. with the following:

- Nonimmigrant visa (with some exceptions) [1]
- B–1 / B–2 Visa
- Border Crossing Card (Form DSP 150)
- Admission under the terms of the Visa Waiver Program (VWP)

1.2 Alternatives Being Evaluated

There are five alternatives being evaluated for the RIA of Air/Sea Exit. Alternatives vary by the location of the biometric collection and the entity which pays for and operates the system:

Proposed Rule: At a Location at the Carrier's Discretion – Airline/Sea Carrier is responsible for implementation and management. An airline representative collects biometric data of the aliens at a location at any in-scope airport selected at the discretion of the airline based on the airport terminal layout, current and future business practices, and/or operational efficiency. Possible locations for collection include, but do not consist solely of, the locations listed in the alternative solutions. For this option, DHS assumes the most efficient compliance method for Sea carriers is to collect biometric data of in-scope aliens at the check-in counter.

Alternative 1: At the Check-in Counter – Airline/Sea Carrier is responsible for implementation and management. An airline/sea carrier representative collects biometric data of the alien traveler at the airline or sea carrier check-in counter.

Alternative 2: At Security Check-Point – U.S. Government is responsible for implementation and management. A U.S. Government representative collects biometric data of the alien traveler at the Transportation Security Administration (TSA) security checkpoint. This is not applicable to sea carrier passengers as there are no TSA checkpoints at seaports.

Alternative 3: At a Location at the Carrier's Discretion – U.S. Government pays for implementation and management. An airline representative collects biometric data of the aliens at a location at any in-scope airport selected at the discretion of the airline based on airport terminal layout, current and future business practices, and/or operational efficiency. Possible locations for collection include, but do not consist solely of, the locations listed in the alternative solutions. Sea carriers will collect biometric data of in-scope aliens at the

[1] For a full explanation of in-scope populations, exempt categories, procedures for individual exemption, and potential in-scope populations see 8 CFR 215.8(a) (2).

check-in counter. A U.S. government representative supervises the collection of the biometric data for both air and sea carriers.

Alternative 4: At a Kiosk – U.S. Government pays for implementation and management. An alien passenger will be instructed by the carrier to proceed to a US-VIST exit kiosk at the time of their departure. The carrier will be required to notate on the boarding pass (whether paper or electronic) that the person must provide biometrics before departure. The kiosk will be available before or after the security checkpoint. The carrier is subject to penalty for boarding an alien passenger who has not complied with exit requirements. A cruise line passenger provides biometrics at the time of check-in.

1.3 Summary of Results

The primary purpose of this Proposed Rule is to place DHS in a better position to reliably track foreign visitors to the U.S. by collecting finger scans of alien travelers departing the U.S. by air and sea. With such information, DHS can be more certain that an individual did, in fact, depart the U.S., and will be better able to match the record of his or her exit to his or her entry record. This information aids decision makers within the immigration and border management enterprise and supports the mission of numerous operational agencies.

The alternative assessment within this RIA consists of capital costs, operating, maintenance and implementation costs, disruption and delay costs, and various security and operational benefits categories. For each alternative total costs to society are estimated. In addition, costs to carriers by size are estimated. All costs and monetized benefits are also presented in present value using both 7% and 3% discount rates. The final results are presented in Table 1-1.

Table 1-1 reports that expenditure and delay costs for the proposed rule over a ten-year period are estimated at $3.5 billion. The discounted estimate is about $2.6 billion using a discount rate of 7% and $3.1 billion when using a discount rate of 3%. The table also shows that the ten-year benefits are estimated at $1.1 billion, which are about $772 million with a discount rate of 7% and $936 million with a discount rate of 3%.

Table 1-1. Air/Sea Biometric Exit RIA Summary, $ Million, 2008

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4
10 Year total Expenditure plus Delay Costs	-$3,549.3	-$6,404.4	-$4,775.6	-$3,696.3	-$3,123.9
20 Year total Expenditure plus Delay Costs	-$7,457.0	-$13,330.2	-$10,079.0	-$7,960.3	-$6,722.5
10 Year PV 7% discounting	-$2,623.6	-$4,725.8	-$3,480.9	-$2,685.9	-$2,303.6
10 Year PV 3% discounting	-$3,096.3	-$5,583.2	-$4,142.9	-$3,202.0	-$2,722.5

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4
10 Year total Economic Benefits	$1,093.3	$1,093.3	$1,093.3	$1,093.3	$1,093.3
20 Year total Economic Benefits	$2,091.5	$2,091.5	$2,091.5	$2,091.5	$2,091.5
10 Year PV 7% discounting	$771.7	$771.7	$771.7	$771.7	$771.7
10 Year PV 3% discounting	$935.6	$935.6	$935.6	$935.6	$935.6

The RIA incorporates an uncertainty analysis to estimate a range of costs to carriers resulting from the Rule. There are several sources of uncertainty inherent in the implementation of Air/Sea Exit. The first of which is the initial and ongoing costs of implementation, which are difficult to accurately quantify prior to actual implementation. Cost uncertainty ranges are discussed in Section 4.1.2 and are displayed in detail in Table 4-1. Secondly, there are various variables used to quantify benefits that have uncertainty ranges. These are discussed in Chapter 5 and listed in detail in Appendix B.

Table 1-2 provides a summary of the costs of the Proposed Rule to applicable entities: large and medium air carriers and sea carriers with international departures. Large air carriers are defined as those air carriers with more than 16,000 employees. Medium air carriers are carriers with more than 1,500, but less than 16,000 employees. Sea carriers are defined as the nine sea carriers that have international departures. Small air carriers, carriers with less than 1,500 employees, are expected to be exempt from the Proposed Rule. For the high end of the range, we estimate that first year costs will be $379.2 million with an average annual recurring cost of $443.6 million. This would result in a 10 year present value total of $3,685.1 million at a 3 percent discount rate and $3,116.5 million at a 7 percent discount rate. For the low end of the range, we estimate that first year costs will be $223.0 million with an average annual recurring cost of $206.1 million. This would result in a 10 year present value of $1,855.6 million at a 3 percent discount rate and $1,594.1 million at a 7 percent discount rate.

Table 1-2. Air/Sea Biometric Exit Costs to Large and Medium Carriers Summary, $ Million, 2008

	First Year Costs	Avg. Recurring Costs	10 Year PV (3%)	10 Year PV (7%)
Median Estimates				
Large Airlines	229.1	270.4	2,301.8	1,955.5
Medium Airlines	7.1	8.4	71.2	60.5
Sea Carriers	57.6	34.3	317.9	273.4
Total	**293.7**	**313.1**	**2,690.9**	**2,289.4**
High Estimates				
Large Airlines	295.7	382.5	3,151.5	2,662.6
Medium Airlines	9.1	11.8	97.5	82.3
Sea Carriers	74.4	49.2	436.1	371.5
Total	**379.2**	**443.6**	**3,685.1**	**3,116.5**
Low Estimates				
Large Airlines	174.0	178.1	1,582.8	1,356.9
Medium Airlines	5.4	5.5	49.0	42.0
Sea Carriers	43.6	22.5	223.8	195.2
Total	**223.0**	**206.1**	**1,855.6**	**1,594.1**

We assess seven categories of economic impacts other than direct expenditures. Of these two are economic costs and five are benefits, which includes costs that could be avoided, for each alternative:

1. Improved detection of aliens overstaying visas
2. Cost avoidance resulting from improved Immigrations and Customs Enforcement (ICE) efficiency attempting apprehension of overstays
3. Improved efficiency of processing Exit/Entry data
4. Improved compliance with the National Security Entry-Exit Registration System (NSEERS) requirements
5. Improved national security environment
6. Costs resulting from increased traveler queue and processing time
7. Costs resulting from increased flight delays

The benefits are measured either quantitatively or qualitatively. For a more detailed assessment of the benefits, see Section 5.3[2].

1.4 Accounting Statement

As required by OMB Circular A–4, DHS has prepared an accounting statement indicating the classification of the expenditures associated with this rule. The table provides our best estimate of the dollar amount of these costs and benefits, expressed in 2008 dollars, at three percent and seven percent discount rates. We estimate that the cost of this rule will be approximately $366.9 million annualized (7 percent discount rate) and approximately $369.9 million annualized (3 percent discount rate). Quantified benefits are $47.1 million annualized (7 percent discount rate) and $48.8 million annualized (3 percent discount rate). The non-quantified benefits are enhanced security and the enabling of the expansion of the Visa Waiver Program.

Table 1-3. Accounting Statement: Classification of Expenditures, 2008 Through 2017, $ Million, 2008

	Estimates			Units		
	Primary Estimate	Low Estimate	High Estimate	Year Dollar	Discount Rate	Period Covered
Benefits						
Annualized Monetized ($millions/year)	99.9	47.9	164.4	2008	7%	2008-2017
	103.5	49.6	170.4	2008	3%	2008-2017
Annualized Quantified	0.0	0.0	0.0		7%	
	0.0	0.0	0.0		3%	
Qualitative	Improvement to National Security; Enables Expansion of the VWP Program					
Costs						
Annualized Monetized ($millions/year)	366.9	252.9	495.8	2008	7%	2008-2017
	369.9	254.5	500.6	2008	3%	2008-2017
Annualized Quantified	0.0	0.0	0.0		7%	
	0.0	0.0	0.0		3%	
Qualitative						

1.5 Regulatory Flexibility Analysis

Impacts to Small Businesses

The Proposed Rule, as well as the alternatives, includes an exemption for small carriers. DHS believes that due to this exemption the rule will not have a significant economic impact on a substantial number of small entities. With the exemption of small carriers, DHS believes Air/Sea

[2] Note that some negative economic impacts, such as an increase in air and sea carrier processing time have been addressed as direct costs, i.e., the financial value of additional resources needed to staff any new operational processes.

Biometric Exit will be deployed at 73 International Airports only. DHS also believes that none of these airports are owned by small jurisdictions. DHS requests public comments on these assumptions.

1.6 Comments

There is a lack of data concerning several of the variables used in this analysis. Therefore, we have had to make assumptions and calculate estimates in an environment of uncertainty and variance in industry and government operations. The key assumptions that drive the cost and benefit analyses are described in detail in the regulatory impact assessment, and are summarized in Appendices A and B. We solicit any comments to improve the analysis to the greatest extent possible. Comments may be submitted to 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 Introduction

The United States Visitor and Immigrant Status Indicator Technology (US-VISIT) Program records the arrival and departure of alien travelers;[3] conducts certain terrorist, criminal, and immigration violation checks on alien individuals; and compares biometric identifiers to those collected on previous encounters to verify identity. US-VISIT is being implemented in phases, which began with an entry program and a pilot exit program.

US-VISIT integrates the immigration information collected into a combined picture of an individual. As a result, more complete and timely information is available for appropriate decision-makers, such as consular officers overseas, Customs and Border Protection (CBP) officers at the ports of entry, United States Citizenship and Immigration Service (USCIS) adjudicators, Immigration and Customs Enforcement (ICE) agents in the interior of the U.S., and United States Coast Guard (USCG) officers offshore.

The next significant deployment to further the US-VISIT Program is this proposed rule, which when implemented will provide the capability to collect finger scans of alien travelers departing the U.S. by air and sea. With such information, DHS can better track departures from the U.S. and will be better able to match entry and exit records. This Air/Sea Biometric Exit system will verify in a reliable and timely manner whether those people who entered the U.S. have departed via air or sea.

Under this Proposed Rule, DHS intends to require that airlines and sea carriers collect biometric finger scan data from alien passengers and transmit that data to DHS within 24 hours of departure. Collection of biometrics must take place on-site at the airport or sea-port, respectively, but location of deployment is otherwise left to the discretion of the carrier. This Regulatory Impact Analysis (RIA) examines the costs and benefits of this proposed requirement and four regulatory alternatives.

This Proposed Rulemaking is considered to be an economically significant regulatory action under section 3(f)(1) of Executive Order (EO) 12866 because it may result in the expenditure of over $100 million in any one year. DHS is thus required to conduct an in-depth evaluation that considers the costs and benefits of the proposed regulatory action as well as a host of alternatives. Accordingly, this analysis has been reviewed by the Office of Management and Budget (OMB).

2.1 Purpose and Need

The ability to biometrically record exit would enable the Government to more effectively identify and track individuals through a range of biometric and biographic identity services. This capability would also more fully meet the protective purpose of the statutory requirements of the Enhanced

[3] Details regarding aliens who are subject to US-VISIT biometric requirements are provided in Section 3.2.

Border Security Act in addition to supporting the mission of numerous operational agencies by providing much needed information to immigration and border management decision-makers.

The key outcome sought in proposing this rule is to place DHS in a better position to reliably track foreign visitors leaving the U.S. by collecting finger scans of alien travelers departing the U.S. by air and sea. With such information, DHS can be more certain that an individual did, in fact, depart the U.S., and will be better able to match the record of his or her exit to his or her entry record.

DHS believes that for large air and sea carriers the Proposed Rule provides reliable collection of biometric information while allowing the most flexibility to the air and sea carrier industry and causing the least disruption to the traveling public. Alien travelers subject to US-VISIT may be processed at distinct nodes in the air and sea travel departure process (i.e., at the check-in counter, at the departure gate) and concurrently with existing travel processes (i.e., checking in, showing identification, checking luggage, receiving boarding pass, submitting boarding pass) outside of the security checkpoint process. It is also the regulatory option that DHS believes provides the greatest amount of flexibility to alien travelers and carriers with prior domestic connections while imposing the least amount of burden on existing government processes (security screening). DHS recognizes, however, that small international air and sea carriers will not find implementing the Proposed Rule feasible at this time.

Although this RIA attempts to mirror the terms and wording of the proposed regulation, no attempt is made to precisely replicate the regulatory language and readers are cautioned that the actual regulatory text, not the text of this evaluation, is binding.

2.2 Document Purpose

Pursuant to EO 12866, US-VISIT has prepared an RIA of the Proposed Rulemaking. This RIA provides an estimate of the future benefits and costs of the Air/Sea Biometric Exit alternatives considered for full deployment as part of the Comprehensive Exit Program. The assessment of benefits and costs that a RIA provides allows DHS decision makers to consider the impacts of a major investment like Air/Sea Biometric Exit before selecting an implementation alternative. OMB Circulars A-4, A-11, and the Clinger-Cohen Act of 1996 require that as part of credible and defensible regulatory actions, capital planning exercises, and investment control process, an agency must perform an investment analysis providing estimates of benefits and costs prior to selecting an alternative.

An RIA meets this requirement by providing a benefit-cost analysis, which OMB Circular A-4 describes is a primary tool used for regulatory analysis. Where all benefits and costs can be quantified and expressed in monetary units, benefit-cost analysis provides decision makers with a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society (ignoring distributional effects). Along with other analyses of impacts, such as the required privacy and environmental impact analyses and impacts to small entities, the Air/Sea Biometric Exit RIA will provide DHS executives with a valuable input into the decision making process.

The objectives of this report are to:

- Provide an impartial analysis of alternatives that have been developed by business and information technology stakeholders to achieve Air/Sea Biometric Exit objectives;
- Provide credible analysis to inform, guide and allow for subsequent program planning and design activities, including follow-on Regulatory Analysis work;
- Better inform policy selection decisions; and
- Provide justification and support to the business case for funding and investments for future fiscal years.

2.3 Comments

There is a lack of data concerning several of the variables used in this analysis. Therefore, we had to make assumptions and calculate estimates in an environment of uncertainty and variance in industry and government operations. The key assumptions that drive the cost and benefit analyses are described in detail in the following chapters, and are summarized in Appendices A and B. We solicit any comments to improve the analysis to the greatest extent possible. Comments may be submitted to 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.

Document Organization

This RIA contains sections describing the calculation of the costs, benefits, and risks associated with pursuing each of the Air/Sea Exit solution alternatives. Specifically, this document includes the following sections:

Section 1: Executive Summary – Presents Air/Sea Exit RIA overview including analysis outcomes expressed in terms of costs and benefits

Section 2: Introduction – Provides an overview of the Air/Sea Exit project

Section 3: Scope of Alternatives – Presents the Air/Sea Exit alternatives and defines the scope of capabilities delivered by each in detail

Section 4: Costs Estimation – Contains the Air/Sea Exit cost categories, assumptions and analysis for each Air/Sea Exit alternative

Section 5: Benefits Estimation – Contains the Air/Sea Exit benefit categories, measures and estimates by alternative and agency

Section 6: RIA Outcomes – Presents the outcomes of the analysis including costs by alternative. Also, for each alternative total costs to society, inclusive of delay and disruption costs, are estimated. In addition costs to carriers by size are estimated. All costs and monetized benefits are also presented in present value using both 7% and 3% discount rates. A sensitivity analysis to show the impact of variation of key drivers on RIA outcomes is also presented.

Section 7: Comprehensive Exit – Explains the Air/Sea Exit Program as part of Comprehensive Exit

Section 8: Analysis Framework – Describes the methodology used in the analysis to measure the costs and benefits of Air/Sea Biometric Exit

Section 9: Regulatory Flexibility Analysis – Describes the analysis of impacts to small entities and other regulatory review requirements

Section 10: Abbreviations and Acronyms – Provides descriptions for abbreviations and acronyms that appear in the document

Appendices A – F: Provide supporting detail for key topics in the analysis including Cost Assumptions by Alternative (Appendix A), Benefits Data Sources and Assumptions (Appendix B), Structure and Logic Diagrams (Appendix C), Performance Measurement and Tracking (Appendix D), Gap Analysis (Appendix E), and Air/Sea Biometric Exit Alternative Selection Process (Appendix F).

2.4 Air/Sea Exit Background

The U.S. Government, through the Department of Homeland Security (DHS), must provide for the security for our citizens and visitors, facilitate legitimate travel and trade, ensure the integrity of our immigration system, while protecting the privacy of our citizens and visitors. To do so, decision makers involved in immigration and border management must accurately and consistently distinguish those few individuals who represent a potential threat from the millions of legitimate individuals interacting with the U.S. Government every year. Key to this distinction is the capability to provide decision makers, in a timely manner, with the necessary information about an individual to make the right decision.

2.5 RIA Air/Sea Exit Stakeholders

Multiple stakeholders have a vested interest in the Air/Sea Biometric Exit Project and potentially will be impacted by it. Among them are federal departments and agencies involved with law enforcement, intelligence services, and national security, as well as non-criminal justice agencies authorized by statute to access DHS collected and shared data, state and local law enforcement organizations, Congress, international partners, air and sea carriers, alien travelers, out-of-scope travelers and the airline and cruise industries.

It is anticipated that the Project will have an operational impact on private entities, including air and sea carriers, DHS, and other U.S. Government agencies. Federal agencies involved in immigration and border management will benefit from Air/Sea Biometric Exit by having the ability to query and generate reports from the US-VISIT databases of entry and exit information. Key immigration and border management stakeholders who are involved in this effort are the following:

- DHS
- Department of State (DOS)

2.5.1 Stakeholder Impacts

Air and Sea Carriers

Under the Proposed rule, air and sea carriers will take on additional responsibilities to prepare for the Air/Sea Biometric Exit Project and operate as part of the enhanced exit process. Among these responsibilities are the following:

- Develop and implement new departure procedures for alien travelers for each port from which the carrier operates departures to international destinations
- Educate alien travelers on the departure procedures
- Acquire fingerprint scanners that are in accordance with DHS interface standards
- Develop a strategy for capturing fingerprints for alien travelers who are connecting to the carrier's international departure flights
- Install or develop solutions for fingerprint scanners at various locations of each airport or seaport where the carrier conducts international departures, which may include locations at or near the check in counter, or closer to the departure gate, in accordance with the air carrier's strategy for connecting travelers
- Train personnel to be able to identify which travelers are aliens subject to US-VISIT, obtain quality fingerprints, and use and maintain the fingerprint scanners
- Develop software to gather the required biometric data and associated Carrier Unique Identifiers and transmit to the Exit system within 24 hours of an international departure's departure time (the "out" time of a flight's Out-Off-On-In (OOOI) times)
- Develop procedures to purge fingerprints after receiving from DHS acknowledgement of fingerprint receipt
- Prepare for DHS Security-related and Privacy-related audits of fingerprint scanners, storage and purge procedures, and data transmission procedures
- Develop procedures and conduct internal auditing to ensure it has collected the required biometric data from each alien traveler
- Respond to reports of DHS-conducted analyses of quality of fingerprints received from the carrier

DHS

- The Automated Biometric Identification System (IDENT) will have as many as 20,000,000 alien travelers[4] added to its database every year with a resulting impact upon data storage requirements. As a result, the IDENT system will be required to process approximately 52,000,000 more transactions[5] annually, roughly doubling the number of transactions being completed currently. Additional automated machines, called matchers,

[4] *US-VISIT/IDENT Business Capacity Baseline Report – Release 0*, page 9, December 28, 2007.

[5] *US-VISIT Annual Report on the Integrated Entry and Exit Data System* as required by the Data Management Improvement Act of 2000 (Public Law 106-215) and the Visa Waiver Permanent Program Act (Public Law 106-396), page 6, May 2007.

will be required to process the incoming scans. More fingerprint examiners may be needed to attempt to match any poor quality exit scans with the corresponding entry scan and verify biometric watch list hits. Associated transaction volume may also impact server capacity and efficiency, data memory storage and data center footprint. (See also Appendix A, Section A.1.3.2, Impact to IDENT.)

- CBP's data center will be affected to the extent that Air/Sea Biometric Exit uses the existing Advanced Passenger Information System (APIS) network. If there were full compliance and all aliens were required to provide biometric data on exit, approximately 52,000,000 transactions yearly would be added to the traffic already flowing through the APIS network.
- Overstays identified as a result of Air/Sea Biometric Exit matching are likely to be the subject of lookouts subsequently created in Treasury Enforcement Communications System (TECS). In addition to the data storage impact of those additional records, as these confirmed overstays are encountered during subsequent applications for admission, CBP officers will be required to determine admissibility in light of the previous overstay and make disposition of every alien who is refused admission.
- Some aliens who are refused admission based on a confirmed overstay can be expected to attempt to seek entry without inspection. This could have an impact on the Border Patrol, ICE's Office of Detention and Removal Operations (DRO), the Immigration Court, and other related organizations.
- Exit records may identify passengers who have not been reported to CBP via APIS. If DHS determines to fine the carrier who failed to transmit an APIS record, the workload of the National Fines Office will increase.
- CBP may be impacted due to increased record watches as the result of mismatches on exit data during the identity verification process. For example, if a traveler provides fingerprints that do not match those on file, that traveler may be flagged for additional screening at their next entry, thus increasing CBP workload.
- ICE will benefit from an increased rate of the matching of entry and exit records. However, this benefit may be offset by the increase in the number of suspected overstays identified based upon the lack of a departure record. (The manifest data will still be provided, but there may be some number of records removed if there is a mismatch between the traveler's name and the biometric provided.) This will impact the DRO and Immigration Courts.

DOS

- The VWP requires the termination of any country whose violation rate (for example, overstays) exceeds a certain threshold. Removal of a country from participation could have an impact on visa application volumes and U.S. foreign relations.

- All visas issued are automatically void following the period of authorized admission, if the holder of the visa has not departed the United States.[6] The DOS will need to receive notice of these overstays in order to evaluate potential action.

2.6 Air/Sea Exit Gap Analysis

This Section summarizes the Gap Analysis undertaken for the Air/Sea Biometric Exit Project. The detailed Gap Analysis can be found in Appendix E.

The Gap Analysis helps support the justification to undertake the Air/Sea Biometric Exit initiative by assessing the state of the current exit environment, describing a desired future exit environment, and identifying gaps in operational performance between the current and future environments. It allows the Integrated Product Team (IPT) to determine the scope and magnitude of the organizational, technological, and procedural changes required to implement the future environment. A gap analysis also builds the foundation for an RIA by developing the performance metrics that will measure success in closing gaps identified in the analysis. The performance metrics will be used in the estimation of benefits. Closing performance gaps also requires actions which, in turn, result in costs. Thus, the gap analysis also provides the foundation for estimation of costs.

The following figure illustrates the approach for the Gap Analysis.

Figure 2-1. Gap Analysis Approach

The following section provides a summary of the current state, future state and the gaps identified, along with a description of how the future state will either eliminate or mitigate those gaps.

2.6.1 Current State

The Immigration and Nationality Act (INA) requires carriers to provide DHS with passenger and crew manifests for ships and vessels arriving from or departing to foreign ports in other than contiguous territory. When departing the U.S. by air or sea, the carrier examines the in-scope traveler's passport or other documentation (such as an alien registration card) and collects such biographic data as last name, first name, middle initial, date of birth, and citizenship. This information may be collected by passing the document's machine readable zone (MRZ) through an automated reader or by the carrier personnel typing the information for transmission to DHS, or by the traveler entering the data for check-in over the internet. The biographic data are sent to CBP's Treasury Enforcement Communications System (TECS) via the Advance Passenger Information System (APIS) data interchange system. Today CBP does not send any information back to the carrier to indicate further carrier action.[7] If the carrier does not collect the biographic information at the check-in counter (because, for example, the passenger has printed out the boarding pass at home and has no luggage to check in), then the carrier will verify this information at the departure gate.

By regulation, Form I-94 has been designated as the arrival/departure document for certain nonimmigrant aliens. Upon arrival in the U.S. by air or sea, these passengers must present a completed Form I-94 at time of inspection. For nonimmigrants arriving via the land borders, required I-94s are prepared at the POE after passing through primary inspection lanes. In both cases, the CBP officer endorses both the arrival and the departure sections of the Form I-94 with the date, place, category of admission, and authorized length of stay. The officer then returns the departure portion to the traveler. The arrival portions are forwarded for data entry and eventual uploading to TECS.

Carriers are required to collect the departure I-94s for passengers departing the U.S. by air or sea and forward the forms to the DHS office at the POE. Nonimmigrants departing the U.S. via the Canadian or Mexican land borders are requested to return the departure I-94s to the U.S. or Canadian inspectors at departure. Those collected by the Canadian officials are returned to the DHS office at the POE. DHS forwards all the forms for input into TECS and ADIS in the same

[7] This will change by February 2008, with the implementation of the Advance Passenger Information System rulemaking in the air environment. After TECS has received the biographic data and conducted a biographic watch list checking, it will return data to the carrier's system indicating carrier action – for example, whether to issue a boarding pass or not, or to identify the passenger as selectee status. See 19 CFR 122.49a and 122.75a; 72 FR 48320.

manner as the arrival forms. Arrival and departure information are matched through the unique admission number which appears on both the arrival and departure sections of the Form I-94.

Not all persons departing the U.S. leave through CBP-staffed POEs. International flights routinely depart the U.S. at small and medium sized airports that do not service international arrivals. Persons may depart the U.S. by land on roads that are not adjacent to a CBP-staffed POE. At some locations, traffic enters the U.S. on a one-way street and departs from the U.S. at a location separated from the POE by the distance of a block or more. At a few locations, persons leave the U.S. by train; others leave by small pleasure boats. Although Canadian officials collect and return I-94s to DHS on the northern land border, there are no corresponding official collection procedures on the southern land border. In these cases, the departure from the U.S. is recorded only if the nonimmigrant affirmatively seeks to return the departure I-94 form to DHS.

2.6.2 Future Exit Environment

Air/Sea Biometric Exit involves the coordinated efforts of three key organizations: air/sea carriers, CBP, and US-VISIT. US-VISIT processing will all be *back-end*. Because the carriers are required to provide biometric data from the in-scope traveler within 24 hours of aircraft or vessel departure, the data will not be used to intercept or otherwise influence the flow of the in-scope traveler within the airport or seaport at the time of departure.

This section provides a description of processes to be implemented as part of Air/Sea Biometric Exit. While the focus is on US-VISIT, to provide context this section describes, at a high level, the processing expected of the air and sea carriers and CBP. In the paragraphs of this section, a brief description of the each major process is provided. Of the five processes identified, the last three are specifically US-VISIT processes. A process flow chart below shows the logical order of steps to complete a thread.

2.6.2.1 Air/Sea Carrier Process

All commercial air and sea carriers operating passenger aircraft or vessels that depart the U.S. will develop and deploy operational processes and solutions that capture data required by DHS to enable the activities described herein.

2.6.2.2 CBP Process

CBP automation systems are already in place in most commercial airports and seaports for CBP's needs. Specific CBP Air/Sea Biometric Exit process steps include searching for biometric identifiers (for example, a FIN) that match the biographic data collected for the traveler and transmission of required biometric information to US-VISIT.

2.6.2.3 Biometric Watch List Search

The Air/Sea Biometric Exit solution will search the biometric Watch List for each in-scope traveler.

2.6.2.4 Identity Verification

The Air/Sea Biometric Exit process includes verifying the identify of the in-scope traveler by determining whether they have been encountered by US-VISIT before – for example, by providing fingerprints during the Entry or Pre-Travel (visa application) processes.

2.6.2.5 Entry/Exit Matching

US-VISIT maintains a record of each entry to and exit from the U.S. by an in-scope traveler. Air/Sea Biometric Exit matches entry and exit transactions so that various analyses can be conducted and reports generated, such as determining which in-scope travelers may have overstayed the terms of their entry.

A high-level process flow diagram for Air/Sea Biometric Exit is shown in Figure 2-2 below. In this diagram, process boxes are colored gold if the process is not conducted in real time, meaning that passenger flow is not dependent on process completion.

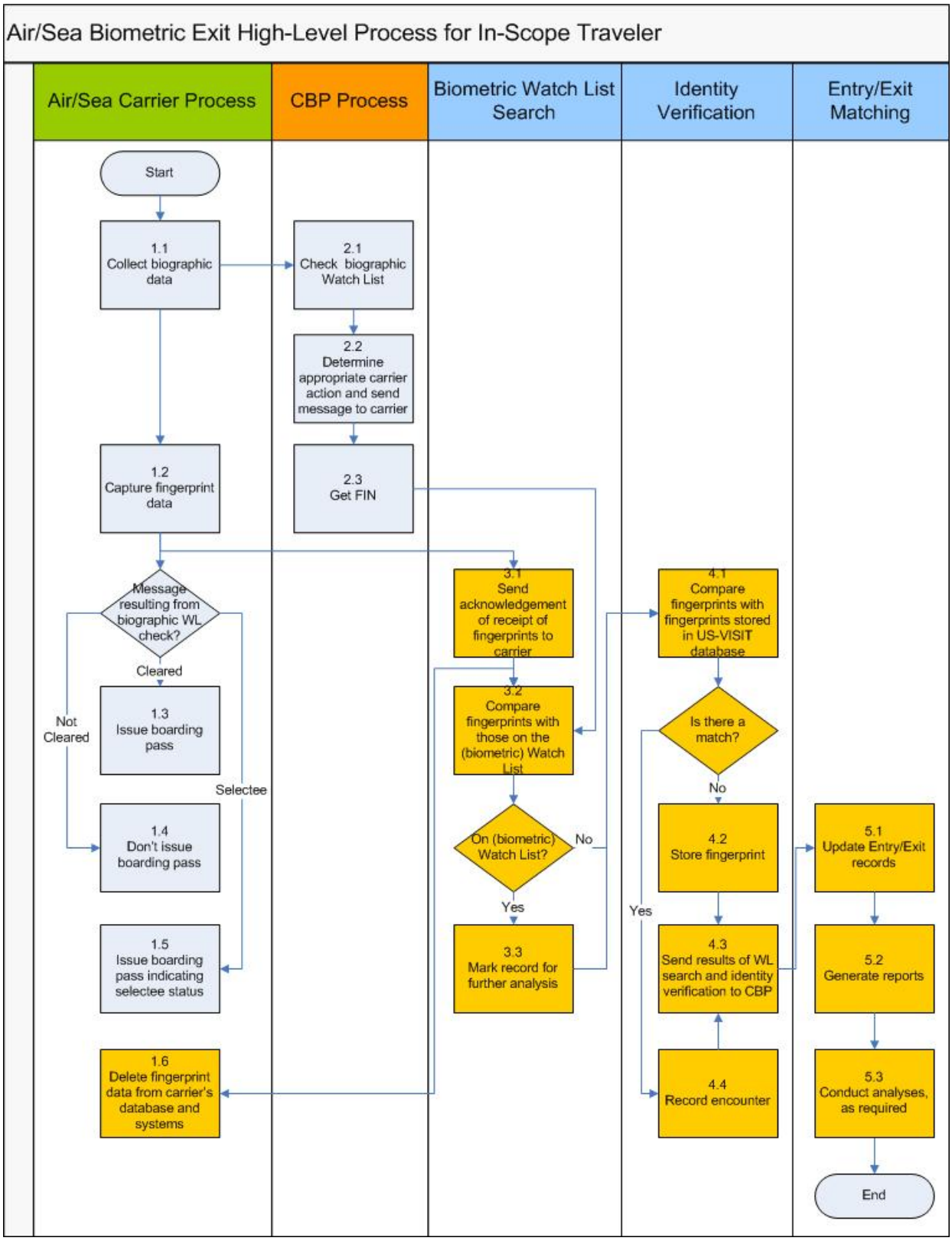

Figure 2-2. Air/Sea Biometric Exit High-Level Process Flow Diagram

2.6.3 Gaps Identified

A discussion of the gaps between the current air/sea exit environment and the desired future exit environment is provided below:

1. Ability to determine whether an in-scope traveler has left the country

Gap: In the current environment, because of the many manual steps and length of time to enter the I-94 data into the entry-exit system, the likelihood is high that not all departures of in-scope travelers are recorded in the Air/Sea environment. Furthermore, there is a lag in time between the departure of the traveler and the record of his or her exit from the country

To-Be: Biometric data (fingerprints) of an in-scope traveler will be collected as a condition of being able to board the aircraft or vessel. Air/Sea Biometric Exit will automatically record the exit on the traveler's entry-exit record within 24 hours of the alien's departure.

2. Accurate and immediate recording of exit information

Gap: The time-consuming manual process of entering exit data for each traveler provides the opportunity for incomplete and delayed recording of the exit. Furthermore, if the traveler were to attempt to re-enter the U.S., the delay in recording the exit data might not allow the most recent exit status or notices for further screening to be displayed to the CBP officer.

To-Be: The Air/Sea Biometric Exit system will automatically record the exit on the traveler's entry-exit record.

3. Ability to determine which in-scope travelers have overstayed the terms of their admission

Gap: In the current environment, because of the many manual steps and length of time to enter the I-94 data into the entry-exit system, the likelihood is high that not all departures of in-scope travelers are recorded in the Air/Sea environment. Because determination of overstays is dependent today on the process of collecting and recording departure data from I-94 forms, the likelihood is high that not all overstays are identified.

To-Be: The future entry-exit system will rely on the more accurate and timely exit biometric data to identify the departed travelers who overstayed the terms of their admittance.

4. Level of confidence in the identity of an exiting traveler

Gap: Reliance on biographic data, such as matching the name provided by the traveler to stored names, has inherent risk. A simple misspelling of the name – which may occur, for example, during the visa issuance process – could mean the identity of the traveler would not be confirmed. More importantly, individuals may wish to enter and/or exit the U.S. fraudulently by using false names and aliases.

To-Be: The traveler will be identified using both biographic and biometric data. The entry-exit system will determine whether the traveler has been encountered by US-VISIT before and whether the biometric data submitted at exit matches the biometric data submitted at entry for the person possessing the same biographic data. If the traveler has not been encountered by US-VISIT before, then the entry-exit system will search through its entire database of fingerprints to determine whether the traveler may have entered the country using different biographic data.

5. Ability to obtain an accurate history of a traveler's entry to and exit from the U.S.

Gap: Without accurate and immediate recording of an in-scope traveler's exit, the traveler's entry-exit record is not complete. A risk exists that the traveler will be admitted into the U.S. without sufficient understanding of his or her entry-exit history, including actions or events that may be relevant to an officer's decision to admit an individual or grant other benefits.

To-Be: The entry-exit record will still be a tool for the CBP officer. However, in the future, the traveler's exit from the U.S. will be automatically and immediately recorded. The exit data will be compared to the traveler's entry data, so that an overstay can be determined.

6. Ability to expedite the entrance of in-scope travelers

Gap: When the entry-exit, identity, or watch list information on a traveler is not current or accurate, or if the CBP Officer does not trust the data, the CBP Officer may request the traveler be sent for secondary inspection more often than would otherwise be the case. This delays the entrance of the specific traveler and potentially the admission of other travelers.

To-Be: The process followed by the CBP Officer will not change. However, with Air/Sea Biometric Exit, the information about the traveler's entry and exit history will be biometrically verified and current. After the traveler provides biometric data at exit, the Air/Sea Biometric Exit system will search biometric watch lists and verify the identity of the traveler. If any of the checks turns up suspicious information, analyses will be conducted and the traveler's record will be noted. If the traveler attempts to enter the country again, the appropriate flags will be displayed to the CBP Officer.

7. Ability to support the evaluation of the inclusion of a country in the Visa Waiver Program (VWP)

Gap: The database of entry-exit records of in-scope travelers risks being incomplete. Thus, calculation of a particular country's overstay rate would be inaccurate.

To-Be: In-scope travelers will be required to provide biometric data on exit from the U.S. The Air/Sea Biometric Exit system will ensure that a traveler's exit data are automatically and immediately recorded within 24 hours of the traveler's departure. This will allow US-VISIT to accurately determine any given country's collective overstay rate.

8. Support resource allocation decisions for law enforcement

Gap: Resources are sometimes expended for the wrong reason: e.g., the alien has already left the country.

To-Be: A law enforcement agency still will rely on the entry-exit record to make determine whether to expend resources to seek out the alien of interest. However, confidence that the record is more complete and current is higher because the in-scope traveler is required to provide biometric data at exit, and the exit data are automatically recorded.

2.7 Summary of Methodology

The RIA provides an assessment of proposed regulation and four alternatives based on the costs, benefits, risks and other criteria. This Section outlines the approach taken for this quantitative and qualitative assessment.

Step 1: Identify Alternatives

This step refers to scoping alternatives, which includes major investments, populations affected and general implementation timeframes. Identifying the scope of each alternative provides the foundation to define, quantify and evaluate costs, benefits and risks.

Step 2: Analyze Alternative Costs

This step involved defining the capital expenditure, operations and maintenance costs for each alternative, through research of prior cost estimates and consultation with Government and subject matter experts.

To learn more about the cost analysis methodology, assumptions and detailed costs for each alternative, please refer to Section 4.0, Cost Estimation and Appendix A, Cost Assumptions.

Step 3: Analyze Alternative Benefits

Benefits analysis refers to defining and evaluating the monetized and non-monetized benefits associated with each alternative. To determine the extent to which each alternative contributes to the overall success of the enterprise, benefits for each alternative were aligned to the goals of the Department of Homeland Security. For monetized benefits, conservative estimates were applied for the value of detection, efficiency, and other impacts. For non-monetized (qualitative) benefits, the value provided to the traveler or to the enterprise was captured, but no dollar amount was placed on the benefit. Additionally, negative economic consequences of the implementation of the alternatives is also considered and estimated. These include the social cost of disruption and delay. To learn more about the benefits analysis methodology, assumptions and detailed benefits for each alternative, please refer to Section 5.0, Benefits Estimations and Appendix B, Benefit Assumptions and Data.

Step 4: Perform Uncertainty Analysis

Uncertainty, or risk, analysis involves incorporating uncertainty in the cost and benefit estimates, which, in turn, are reflected in the overall outcome of the analysis. This process involved capturing expert opinions and analyzing primary and secondary data in order to develop a probability distribution around certain estimates. Once the probability distributions were established, a Monte Carlo simulation was run to compute overall uncertainty ranges for costs and benefits. To learn more about the risk analysis methodology please refer to Section 6.1.2 for a discussion of the outcome risk.

Step 5: Perform Sensitivity Analysis

Sensitivity analysis addresses the impact to outcomes when a single assumption is varied. Sensitivity analyses should be performed on key assumptions to determine the sensitivity of the outcome to such variables independent of all other assumptions. Please refer to Section 6.2 for a discussion of the Sensitivity Analysis.

Step 6: Perform Break-Even Analysis

This RIA does not monetize certain important security benefits that are deemed to a rationale for the Air/Sea Biometric Exit program. As a baseline of terrorist activities can not be specified, a specific level of prevention can not be forecasted. This step assesses the minimum level of terrorism prevention necessary to return a net present value of 0 for this rule. Please refer to Section 6.3 for a discussion of the Break-Even Analysis approach.

Step 7: Report Outcomes

This step involves reporting a set of estimated expenditures, other economic costs of disruption and delay, and benefits by alternative in this analysis. For each alternative total costs to society are reported. In addition, costs to carriers by size are estimated. All costs and monetized benefits are also presented in present value using both 7% and 3% discount rates. For more information, please refer to Section 8.0, Analysis Framework.

3 Scope of Alternatives

This report evaluates the proposed regulation and four different alternatives, varying by location of collection of the biometric data and whether carrier collection is managed by and paid for by the carriers or the U.S. Government. For detailed information regarding the alternative selection process and the breadth of alternatives analyzed during the selection process, refer to Appendix F.

3.1 Summary of Selected Alternatives

Proposed Rule: At a Location at the Carrier's Discretion – Airline/Sea Carrier pays for implementation and management. An airline/sea carrier representative collects biometric data of the aliens at a location at any in-scope airport selected at the discretion of the airline based on airport terminal layout, current and future business practices, and/or operational efficiency. Possible locations for collection include, but do not consist solely of, the locations listed in the alternative solutions. Sea carriers will collect biometric data of in-scope aliens at the check-in counter.

Alternative 1: At the Check-in Counter – Airline/Sea Carrier pays for implementation and management. An airline/sea carrier representative collects biometric data of the alien traveler at the airline or sea carrier check-in counter.

Alternative 2: At Security Check-Point – U.S. Government pays for implementation and management. A U.S. Government representative collects biometric data of the alien traveler at the Transportation Security Administration (TSA) security checkpoint. This is not applicable to sea carrier passengers as there are no TSA checkpoints at seaports.

Alternative 3: At a Location at the Carrier's Discretion – U.S. Government pays for implementation and management. An airline representative collects biometric data of the aliens at a location at any in-scope airport selected at the discretion of the airline based on airport terminal layout, current and future business practices, and/or operational efficiency. Possible locations for collection include, but do not consist solely of, the locations listed in the alternative solutions. Sea carriers will collect biometric data of in-scope aliens at the check-in counter. A U.S. government representative supervises the collection of the biometric data for both air and sea carriers.

Alternative 4: At a Kiosk – U.S. Government pays for implementation and management. The alien passenger will be instructed by the carrier to proceed to a US-VIST exit kiosk at the time of their departure. The carrier will be required to notate on the boarding pass (whether paper or electronic) that the person must provide biometrics before departure. The kiosk will be available before or after the security checkpoint. The carrier is subject to penalty for boarding the alien who has not complied with exit requirements. A cruise line passenger provides biometrics at the time of check-in.

Table 3-1. Summary of Alternatives

EXIT Capture Location	Entity Managing Biometrics Capture	
	Carrier	Department of Homeland Security
Discretionary Location	Proposed Rule	Alternative 3
Check-In Counter	Alternative 1	
TSA Checkpoint		Alternative 2
Kiosk		Alternative 4

Note: Shaded areas represent location-entity combinations that are not analyzed options, due to DHS's preliminary conclusions that they are not viable.

The Proposed Rule will be deployed at the following air and sea ports:

Table 3-2. In-Scope Airports

Size	Location	Airport Code	Departure Airport Name
Small	Agana, Guam	GUM	Antonio B. Won Pat International Airport
Small	Albany, NY	ALB	Albany International Airport
Small	Allentown, PA	ABE	Lehigh Valley International Airport
Small	Bakersfield, CA	BFL	Meadows Field
Small	Fresno, CA	FAT	Fresno Yosemite International Airport
Small	Grand Rapids, MI	GRR	Gerald R. Ford International Airport
Small	Harrisburg, PA	MDT	Harrisburg International Airport
Small	Kailua Kona, HI	KOA	Kona International Airport
Small	McAllen, TX	MFE	McAllen-Miller International Airport
Small	Palm Springs, CA	PSP	Palm Springs International Airport
Small	Rochester, NY	ROC	Greater Rochester International Airport
Small	Sanford, FL	SFB	Orlando Sanford International Airport
Small	Sarasota, FL	SRQ	Sarasota/Bradenton International Airport
Small	St. Thomas, VI	STT	Cyril E. King Airport
Small	White Plains, NY	HPN	Westchester County Airport
Medium	Anchorage, AK	ANC	Ted Stevens International Airport
Medium	Austin, TX	AUS	Austin-Bergstrom International Airport
Medium	Buffalo, NY	BUF	Buffalo Niagara International Airport
Medium	Cleveland, OH	CLE	Cleveland Hopkins International Airport
Medium	Columbus, OH	CMH	Port Columbus International Airport
Medium	Fort Myers, FL	RSW	Southwest Florida International Airport
Medium	Indianapolis, IN	IND	Indianapolis International Airport
Medium	Kahului, HI	OGG	Kahului Airport
Medium	Kansas City, MO	MCI	Kansas City International Airport

Size	Location	Airport Code	Departure Airport Name
Medium	Manchester, NH	MHT	Manchester-Boston Regional Airport
Medium	Memphis, TN	MEM	Memphis International Airport
Medium	Milwaukee, WI	MKE	General Mitchell International Airport
Medium	Nashville, TN	BNA	Nashville International Airport
Medium	Oakland, CA	OAK	Oakland International Airport
Medium	Ontario, CA	ONT	Ontario International Airport
Medium	Pittsburgh, PA	PIT	Pittsburgh International Airport
Medium	Portland, OR	PDX	Portland International Airport
Medium	Raleigh, NC	RDU	Raleigh/Durham International Airport
Medium	Sacramento, CA	SMF	Sacramento International Airport
Medium	San Antonio, TX	SAT	San Antonio International Airport
Medium	San Jose, CA	SJC	Norman Y. Mineta San Jose International Airport
Medium	San Juan, PR	SJU	Luis Munoz Marin International Airport
Medium	Santa Ana, CA	SNA	John Wayne Airport - Orange County
Medium	St. Louis, MO	STL	Lambert - St. Louis International Airport
Medium	Tucson, AZ	TUS	Tucson International Airport
Medium	Warwick, RI	PVD	Theodore Francis Green State Airport
Medium	West Palm Beach, FL	PBI	Palm Beach International Airport
Medium	Windsor Locks, CT	BDL	Bradley International Airport
Large	Arlington, VA	DCA	Ronald Reagan Washington National Airport
Large	Atlanta, GA	ATL	Atlanta Hartsfield-Jackson International Airport
Large	Boston, MA	BOS	General Edward Lawrence Logan International Airport
Large	Charlotte, NC	CLT	Charlotte/Douglas International Airport
Large	Chicago, IL	MDW	Chicago Midway International Airport
Large	Chicago, IL	ORD	Chicago O'Hare International Airport
Large	Denver, CO	DEN	Denver International Airport
Large	Detroit, MI	DTW	Detroit Metropolitan Wayne County International Airport
Large	Dulles, VA	IAD	Washington Dulles International Airport
Large	Fort Lauderdale, FL	FLL	Fort Lauderdale/Hollywood International Airport
Large	Fort Worth, TX	DFW	Dallas/Fort Worth International Airport
Large	Glen Burnie, MD	BWI	Baltimore/Washington International Thurgood Marshall Airport
Large	Hebron, KY	CVG	Cincinnati/Northern Kentucky International Airport
Large	Honolulu, HI	HNL	Honolulu International Airport
Large	Houston, TX	IAH	George Bush Intercontinental Airport
Large	Las Vegas, NV	LAS	McCarran International Airport
Large	Los Angeles, CA	LAX	Los Angeles International Airport
Large	Miami, FL	MIA	Miami International Airport
Large	Minneapolis, MN	MSP	Minneapolis-St. Paul International Airport (Wold Chamberlain Field)
Large	New York, NY	JFK	John F. Kennedy International Airport
Large	New York, NY	LGA	La Guardia Airport
Large	Newark, NJ	EWR	Newark Liberty International Airport
Large	Orlando, FL	MCO	Orlando International Airport
Large	Philadelphia, PA	PHL	Philadelphia International Airport
Large	Phoenix, AZ	PHX	Phoenix Sky Harbor International Airport

Size	Location	Airport Code	Departure Airport Name
Large	Salt Lake City, UT	SLC	Salt Lake City International Airport
Large	San Diego, CA	SAN	San Diego International Airport
Large	San Francisco, CA	SFO	San Francisco International Airport
Large	Seattle, WA	SEA	Seattle/Tacoma International Airport
Large	Tampa, FL	TPA	Tampa International Airport

Table 3-3. In-Scope Seaports

Port	Size
Long Beach, CA	Large
Los Angeles, CA	Large
Miami, RCI, FL	Large
New York City, NY	Large
San Diego, CA	Large
Cape Canaveral, FL	Medium
Galveston, TX	Medium
Honolulu, HI	Medium
Jacksonville, FL	Medium
New Orleans, LA	Medium
Norfolk, VA	Medium
Palm Beach, FL	Medium
Port Everglades, FL	Medium
San Francisco, CA	Medium
Seattle, WA	Medium
St. Croix, VI	Medium
St. Thomas, VI	Medium
Tampa, FL	Medium
Baltimore, MD	Small
Bayonne, NJ	Small
Boston, MA	Small
Charleston, SC	Small
Corpus Christi, TX	Small
Guam, GU	Small
Houston, TX	Small
Juneau, AK	Small
Key West, FL	Small
Maui, HI	Small
Mobile, AL	Small
San Juan Pan-American, PR	Small

Port	Size
Seward, AK	Small
Skagway, AK	Small
Whittier, AK	Small

3.2 Alien Populations

The initial and current scope of the impacted traveler population consists of foreign nationals who have gained admission to the U.S. and are required to depart according to the terms of their admission. This includes travelers who have entered the U.S. with the following:

- Nonimmigrant visa (with some exceptions) [8]
- B–1 / B–2 Visa
- Border Crossing Card (Form DSP 150)
- Admission under the terms of the Visa Waiver Program (VWP)

3.3 Detailed Scope of Air/Sea Biometric Exit Alternatives

This section presents the detailed scope of the five alternatives evaluated.

Global Assumptions

The following assumptions pertain to the analysis of the Proposed Rule as well as all alternatives:

- All alternatives will allow for auditing capabilities to ensure that business, security and privacy requirements are met.
- All alternatives will allow for the same quality of print collection and identity verification.
- Collection will be primarily used to verify identity and confirm exit.
- Providing biometric data will not trigger a law enforcement response at the time of exit under the proposed rule. However, enforcement action may be taken when an alien presents for possible readmission into the U.S. or in the final destination country of the alien with the cooperation of local law authorities.
- There will be no significant costs incurred to coordinate with TSA and CBP for the Proposed Rule and the alternatives; incremental costs have been incorporated into the cost estimates.

[8] For a full explanation of in-scope populations, exempt categories, procedures for individual exemption, and potential in-scope populations see 8 CFR 215.8(a) (2).

- Sufficient outreach and education will be provided.
- Benefits to enhancing the security and integrity of our immigration system are primarily away from the airport/seaport, in terms of identifying overstays for interior enforcement, and adjudicating re-entry or visa renewal.
- All Personally Identifiable Information (PII) will be collected, used, disclosed, and retained in accordance with applicable statute, regulation, treaty, department and component policy.
- Exit will not be recorded at "general aviation" airports. It will only be recorded at airports that have regularly scheduled international departures.
- Small carriers, carriers with less than 1,500 employees, will be granted an exemption from Exit requirements under all of the alternatives.
- APIS has or will invest in the necessary capacity to handle additional data volume stemming from implementation.
- All carriers affected by the rule will have access to APIS.
- Entities affected by the rule will not rely on eAPIS to transmit biometrics.

Solution-Specific Base Assumptions

The following assumptions pertain to the Proposed Rule and the alternatives on a case-by-case basis:

- For the Proposed Rule and Alternatives 1, 2, and 4 the entity (whether U.S. Government or other) that collects the biometric data purchases, owns, deploys, certifies, and maintains all the biometric collection equipment and software.
- For Alternative 3, carrier personnel will collect the biometric data but the Government will purchase, own, deploy, certify, and maintain all the biometric collection equipment and software.
- For the Proposed Rule and Alternatives 3 and 4, the solution will deploy to 73 airports, those airports with international flights served by carriers with more than 1,500 employees.
- For Alternative 1, the solution will deploy to 304 airports, those airports with a TSA presence that serve medium and large airports.
- For Alternative 2, the solution will deploy to 455 airports, those airports with a TSA presence.
- For the Proposed Rule and Alternative 3, the modeling assumption is that the solution will deploy to the gate for 80% of covered airports and to the counter for 20% of covered airports.

The Regulatory Analysis seeks to provide comprehensive documentation of all assumptions. We solicit any comments to improve upon our assumptions. Comments may be submitted to the regulatory docket using any of the methods listed under ADDRESSES in the preamble to this Proposed Rule.

3.3.1 Baseline

A RIA examines selected alternatives in comparison to a baseline, consistent with OMB Circular A-4 and DHS guidance set forth in the Department of Homeland Security Capital Planning and Investment Control Cost-Benefit Analysis Workbook.

The baseline condition was reported in the gap analysis where it was referred to as "Current State." Key features of the current state include:

- No current biometric capture at exit
- Biographic capture through passport electronic MRZ capture or hand entry by carrier personnel at air and sea exits
- Biographic capture through submission of I-94 and I-94w documents collected by carriers at air and sea exits
- Biographic capture through collection of I-94 and I-94w documents collected by U.S. and Canadian immigration officials at some land exits
- No biographic capture at some land exits
- Remote matching of entries to exits through the manual comparison of entry and exit I-94 and I-94w document portions

3.3.2 Proposed Rule

The Proposed Rule allows processing of alien travelers at a location of each airline's choosing based on airport terminal layout, current and future business practices, and/or operational efficiency. By providing this flexibility, DHS estimates that this rule permits a significant reduction in airport coverage from the 455 airports where TSA maintains a presence to the 73 airports with international flights served by carriers with more than 1,500 employees. Approximately 27% of air passengers (whether aliens or otherwise) connect from a purely domestic airport to an international airport for departure from the United States.[9] Under a pure counter-based capture option, the connecting flight problem means that (1) aliens may have to exit the secure area and return to a front counter for biometrics capture and then be re-screened by TSA, or (2) all aliens must have biometrics captured at over 455 airports, whether domestic or international. To reduce

[9] See Appendix B for details on estimation of proportion of travelers originating international travel with a domestic journey.

the overall burden, the Proposed Rule reflects a critical element not present in the other counter-based and TSA security checkpoint alternatives: the carriers would be given the flexibility to capture at a location at the carrier's discretion including the capture of biometrics from those aliens making a first domestic leg on an international voyage. This flexible processing path offers greater convenience and lowers risk of missed flights for those passengers arriving on connecting flights, who would otherwise need to exit the sterile area for biometric processing.

Carrier Discretion Solution – Carrier Implementation. The Carrier Discretion Solution involves the airlines installing the scanning devices at a location of each airline's choosing based on airport terminal layout, current and future business practices, and/or operational efficiency.

Because of the layout of a typical seaport, DHS assumes for the purposes of this proposed rule analysis that the biometric collection will occur only in the check-in area. This seaport process is assumed to be identical for all the other alternatives and at each of the 33 seaports. The text describing the Carrier Discretion Solution will refer primarily to airlines for this reason.

Operational Impacts to the Alien, Carrier, and DHS – Operational impacts are assumed to be significant for the alien in terms of processing time no matter where biometrics are collected. The carrier would experience operational impacts such as waiting and processing delays, which may result in flight delays. Operational impacts to the Government would be low, with no additional time or process for this alternative.

Need for Additional Network or Connectivity – At the check-in counters, there is existing network and connectivity available. Biometric collection would have to be integrated with these systems. However, the Carrier Discretion Solution collected by the carrier does not offer a high level of IT security since the carrier must transfer the biometric information to the Government. Infrastructure would most likely need to be established for gate verification or any other non-counter location.

Privacy – Successful compliance with the Privacy, Homeland Security, and E-Government Acts and applicable DHS and US-VISIT policies requires limiting the collection of PII and securing the PII against unauthorized access, use, disclosure, or retention. This includes PII collected on behalf of the Government for non-Governmental purposes. The Carrier Discretion Solution with carrier collection has the lowest degree of privacy of all alternatives since the biometric data must be collected by a private company and then transferred to the Government as with all solutions utilizing carrier collection business processes.

3.3.3 Counter Solution

The Counter Solution consists of Alternative 1, in which departing alien travelers are processed once at air and sea exit at the check-in counter, with no further verification before departure. With the Counter Solution, international air travelers with a connecting domestic flight would have their biometrics collected at the check-in counter of the domestic carrier, which would greatly expand the number of in-scope airports and air carriers.

Counter Solution Highlights

Alternative 1: At the Check-in Counter – Airline/Sea Carrier collection. An airline/sea carrier representative collects biometric data of the alien traveler at the airline or sea carrier check-in counter.

Counter Solution with airline/sea carrier collection highlights include:

- Little to no implementation costs for U.S. Government
- Low training costs to Government
- Minimal impact to operational activity of traveler and Government

Operational Impacts to the Alien, Carrier, and DHS – Operational impacts are significant for the alien in terms of processing time since a new information collection process would be established. However, as mentioned above, airlines have made it increasingly more convenient to travel without visiting the check-in counter. The carrier would experience operational impacts such as waiting and processing delays, which may result in flight delays. Operational impacts to the Government would be minimal.

Need for Additional Network or Connectivity – At the check-in counters, there is existing network and connectivity available. Biometric collection would have to be integrated with these systems. However, the Counter Solution collected by the carrier does not offer a high level of IT security since the carrier must transfer the biometric information from to the Government.

Privacy – Successful compliance with the Privacy, Homeland Security, and E-Government Acts and applicable DHS and US-VISIT policies requires limiting the collection of PII and securing the PII against unauthorized access, use, disclosure, or retention. This includes PII collected on behalf of the government for non-governmental purposes. The Counter Solution with carrier collection has the lowest degree of privacy of all alternatives since the biometric data must be collected by a private company and then transferred to the Government as with all solutions utilizing carrier collection business processes.

3.3.4 TSA Solution

Alternative 2: At Security Check-Point – U.S. Government collection. A U.S. Government representative collects biometric data of the alien traveler at the security checkpoint.

Alternative 2 is also referred to as the TSA Solution. The alien traveler is processed once at exit at the TSA Security Checkpoint by a Government employee, after air or sea check-in and with no further verification or processing before departure. There is no TSA presence at seaports; therefore this alternative is not applicable to sea carriers.

TSA Solution Highlights

TSA Solution highlights include:

- Relatively high percentage of population captured
- No additional operational impact to the airlines
- Low implementation cost to the airlines

- Low likelihood of non-U.S. Government use of PII
- High confidence in IT security
- Low number of collection points (one)
- Low training cost to airlines

Operational Impacts to the Alien Traveler, Carrier, and DHS – The TSA Solution may add additional processing time for the alien air traveler as opposed to other solutions, where biographic data are taken for association with the biometric collection are already taken in conjunction with existing processes.

The TSA Solution does not directly impact the operations of airlines since the biometric information is collected by a Government employee at an established non-carrier security checkpoint.

The TSA Solution would either add significant processing time to DHS operations, or require a significant expansion of labor in order to maintain current processing times. The existing processes at the TSA security checkpoint do not deal with identity management, but rather their primary purpose is to screen persons and luggage; therefore, an entirely new process would have to be established operationally by DHS.

Conceptual Financial Burden to Carriers and DHS – The conceptual financial burden, which includes development and implementation of all biometric collection equipment and related software, is most significant for DHS under the TSA Solution, since capture occurs at TSA security checkpoints and not at carrier check-in or departure gates. Accordingly, the conceptual financial burden is the least significant for airlines under the TSA Solution.

Need for Additional Network for Connectivity – The TSA Solution would require installation and operation of a network and connectivity structure, since one does not currently exist at the TSA security checkpoint. Network connectivity does currently exist at carrier counters and gates; however, biometric collection would still have to be integrated with existing carrier systems. Therefore, the TSA Solution has a greater need for additional network and connectivity infrastructure than the Counter or Carrier Discretion Solutions.

IT Security Complexity – The TSA Solution has a high level of IT security since DHS has sole custody of the biometric information from collection to transmission to storage and retrieval. This would not be the case under the Counter or Carrier Discretion Solutions, where carrier networks would collect and then transmit the biometric information to DHS's network. The chance of any unauthorized use or misuse or intentional or unintentional compromise of equipment, data, software, or communication infrastructure is lower with one entity (DHS) than many (international air and sea carriers and DHS).

Privacy – Successful compliance with the Privacy, Homeland Security, and E-Government Acts and applicable DHS and US-VISIT policies requires limiting the collection of PII and securing the PII against unauthorized access, use, disclosure, or retention. This includes PII collected on behalf of the Government for non-Governmental purposes. The TSA Solution has a higher degree of privacy confidence than the Counter or Carrier Discretion Solutions since DHS maintains custody of PII throughout its lifecycle.

3.3.5 Carrier Discretion Solution with Government Implementation

The Carrier Discretion Solution, with its two alternatives (the Proposed Rule and Alternative 3), allows processing of alien travelers at a location of each airline's choosing based on airport terminal layout, current and future business practices, and/or operational efficiency. By providing this flexibility, these two alternatives permit a significant reduction in airport coverage from a significant portion of the 455 airports where TSA maintains presence, to the 73 major airports with international flights served by airlines with more than 1,500 employees. Furthermore, this flexible processing path offers greater convenience and lowers risk of missed flights for those passengers arriving on connecting flights, who would otherwise need to re-enter the airport for departure processing.

Carrier Discretion Solution Highlights

Alternative 3: Carrier Discretion Solution, U.S. Government Implementation. In this alternative, US-VISIT (rather than the airlines and sea carriers) will develop and deploy the solution to the location chosen by each airline. The carriers will have responsibility to assist with connectivity to their network to enable set up of an electronic connection to a DHS server to send transactions. US-VISIT will build the biometric collection devices and deploy them to the chosen locations. While government Work Station Attendants (Attendants) will be available to provide assistance and respond to problems as necessary, carrier personnel will mainly be responsible for the actual collection of the biometrics.

With the preceding exceptions, all other application, development, and acquisition costs will be incurred by the Government.

Carrier Discretion Solution with U.S. Government collection highlights include:

- Flexible solution allows airline to place the scanning devices at the location that best fits that particular airline and/or international airport.
- High level of confidence of departure with possible gate collection
- Low cost of implementation to airline
- High level of privacy ensured
- High confidence in security

Operational Impacts to the Alien, Carrier, and DHS – Operational impacts are assumed to be significant for the alien in terms of processing time, whether biometrics are collected at the counter or the gate. The carrier would experience processing delays from the new procedure implemented at their counters or gates, which may result in flight delays. Operational impacts to the Government would also be significant because DHS currently does not have a presence at the counter or boarding gate; therefore, an entirely new process would have to be established by DHS.

Conceptual Financial Burden to the Carriers and DHS – When the Government collects the biometrics, the cost burden is favorable for the carriers.

Need for Additional Network or Connectivity – At the check-in counters, there is existing network and connectivity structures available. Biometric collection would have to be integrated with these systems. Also, the Carrier Discretion Solution collected by the Government offers a

high level of IT security since DHS holds the information from the point of collection to storage and retrieval.

Privacy – Successful compliance with the Privacy, Homeland Security, and E-Government Acts and applicable DHS and US-VISIT policies requires limiting the collection of PII and securing the PII against unauthorized access, use, disclosure, or retention. This includes PII collected on behalf of the Government for non-Governmental purposes. The Carrier Discretion Solution with Government collection has a higher degree of privacy since the biometric data are collected by the Government and will not be transferred through other agencies or entities.

3.3.6 Kiosk Solution with Government Implementation

Alternative 4: Kiosk Solution, U.S. Government Implementation. The alien will be instructed by the carrier to proceed to a US-VISIT exit kiosk at the time of their departure. The carrier will be required to notate on the boarding pass (whether paper or electronic) that the person must provide biometrics before departure. The kiosk will be available before or after the security checkpoint for passengers newly arriving at airports. The carrier is subject to penalty for boarding the alien who has not complied with exit requirements. A cruise line passenger provides biometrics at the time of check-in.

Kiosk Solution Highlights

Kiosk Solution highlights include:

- Low operational impact to the airlines
- Low implementation cost to the airlines
- Zero likelihood of non-U.S. Government use of PII
- High confidence in IT security
- Low number of collection points (one in many cases[10])
- Low training cost to airlines
- High confidence in departure with receipt collection at gate

Operational Impacts to the Alien Traveler, Carrier, and DHS – The Kiosk Solution may add additional processing time for the alien traveler as opposed to other solutions, where biographics taken for association with the biometric collection are already taken in conjunction with existing processes.

The Kiosk Solution does not directly impact the operations of airlines since the biometric information is collected by a Government employee at an airport kiosk cluster location not associated with the carriers. The only implementation cost to the carrier is to determine if a

[10] One collection point assumes that there is only location for kiosks that is used by both newly arriving passengers at an airport and connecting flight passengers.

traveler is an alien. Verification at gates can be done at minimal additional cost assuming no biometric verification; the gate attendant would only need to examine a receipt from the kiosk.

The Kiosk Solution adds a new process to US-VISIT and would require an expansion of labor.

Conceptual Financial Burden to Carriers and DHS – The conceptual financial burden, which includes development and implementation of all biometric collection equipment and related software, is significant for DHS under the Kiosk Solution, since capture occurs at kiosks which are staffed by DHS personnel. The conceptual financial burden is the less significant for airlines under the Kiosk Solution. Airlines would have to add new applications to identify aliens at ticketing and reservations as well as produce two dimensional barcodes on boarding passes.

Need for Additional Network for Connectivity – The Kiosk Solution would require installation and operation of a network and connectivity structure, since one does not currently exist at the kiosk cluster areas. Network connectivity does currently exist at carrier counters and gates. The Kiosk Solution would have the greatest infrastructure needs, requiring extensive cabling, negotiation of lease space with port authorities and the installation of signage.

IT Security Complexity – The Kiosk Solution has a high level of IT security since DHS has sole custody of the biometric information from collection to transmission to storage and retrieval. This would not be the case under the Counter or Carrier Discretion Solutions, where carrier networks would collect and then transmit the biometric information to DHS's network. The chance of any unauthorized use or misuse or intentional or unintentional compromise of equipment, data, software, or communication infrastructure is lower with one entity (DHS) than many (international air and sea carriers and DHS).

Privacy – Successful compliance with the Privacy, Homeland Security, and E-Government Acts and applicable DHS and US-VISIT policies requires limiting the collection of PII and securing the PII against unauthorized access, use, disclosure, or retention. This includes PII collected on behalf of the Government for non-Governmental purposes. The Kiosk Solution has a higher degree of privacy confidence than the Counter or Carrier Discretion Solutions since DHS maintains custody of PII throughout its lifecycle.

4 Cost Estimation

This section provides an overview of the cost modeling approach, key cost assumptions, and summary tables for the cost estimates. The cost modeling approach explains the steps taken to gather and model costs and details the work breakdown structure elements and cost categories, as well as explains the risk factors applied to the cost estimates. Global cost assumptions are explained in the key cost assumptions section, with detailed cost assumptions available in Appendix A.

4.1 Cost Modeling Approach

Cost estimation is critical because it provides a basis for comparing dollar and resource commitments necessary to achieve each alternative, and allows for a determination of the feasibility of funding a given alternative. Once an alternative is selected, the costs associated with that alternative can be used as a benchmark for internal US-VISIT planning purposes.

The costs in this document, for each alternative, reflect incremental costs relative to the current "As-Is" state; that is the system capabilities prior to implementing any changes. These costs were estimated using a combination of estimating techniques, including (in descending order of level of rigor):

- Buildup cost modeling based upon analogous project experience
- Parametric cost estimation using appropriate sizing of project scope
- Negative economic impact analysis based on additional processing time, estimated frequency of flight delay and the value of time in dollars
- Expert opinion based upon cost estimation best practices for those project elements lacking specificity of scope definition

Multiple approaches are used because the objective is to develop the best estimates possible in the formative stage of the Air/Sea Biometric Exit project. As such, the underlying assumptions behind cost estimation relationships are documented to provide transparency.

The cost model generates present value costs for each alternative, on a yearly basis, over the next 20 years. The period of investment for the workstream occurs over the first 15 months. A workbook organized by alternatives was created within the model for each alternative.

4.1.1 Cost Phases, Categories, and Elements

Costs are organized by life cycle phase and each phase is broken down into as many as seven cost categories. Costs are assigned to either DHS or Airlines/Sea Carrier workstreams. The primary cost elements of the life cycle phase used in this analysis are:

Planning –the planning costs include capital expenditure (labor, hardware, software, and facilities), program management costs, hardware refresh costs, and cost efficiencies from retired or replaced systems.

Analyze – the analyze costs include studying the problem and the creation of the program requirements and the project strategy documents.

Design – the design costs include looking at the potential solutions and determining the most effective and efficient way to construct the solution.

Build – the build costs include the preliminary construction of the solution.

Test – the test costs include proving that the solution meets the business requirements and is correct, while at the same time proving that there are no errors or defects.

Deploy – the deploy costs include the final process of moving the solution from development status to production status. This process is often called implementation, go-live, roll out and installation.

After all assumptions and costs are collected, detailed summary costs are generated for each alternative, covering nine cost categories:

Program Management – the cost associated with all the tasks that go into the investigation, scoping and definition of the selected alternative.

Independent Verification & Validation – the cost associated with the independent verification and validation pertaining to all software and hardware for the solution.

Information Technology – the cost associated with the acquisition of the information technology required for the solution, including labor, software and hardware costs.

Facilities Cost – the cost associated with modifying, leasing, or expanding space in support of performing a given alternative. Facilities costs can include physical infrastructure modifications, process space modifications, leased technology support service space, technology support modifications, related expansion construction, and mobilization/outreach/field support.

Training Cost – the cost associated with familiarizing the workforce with new technology, business processes and standard operating procedures as a result of an alternative being implemented.

Outreach Cost – the cost associated with the requirement to support an information campaign related to the alternative exit solutions to all stakeholders through each phase of the initiative.

Disruption Costs – the cost associated with the extra processing time for collecting biometrics to all stakeholders, including travelers.

Delay Costs – the cost to the airlines of incremental flight delay caused by passenger delays during biometrics collections.

Other Costs – includes all other costs necessary to deliver an operating capability to all stakeholders.

4.1.2 Cost Estimates Probability-Based Ranges

Original cost estimates were developed as most probable costs. For the Air/Sea Biometric Exit RIA, generally accepted cost engineering risk ranges are applied to these most probable cost estimates at the cost category level. The Association for the Advancement of Cost Engineering (AACE)

publishes the following table with suggested risk ranges dependent on the current level of project definition.

Table 4-1. Cost Estimate Risk Classification Matrix

	Primary Characteristic	Secondary Characteristic			
Estimate Class	**Level of Project Definition** **Complete Definition (%)**	**End Usage** **Typical Purpose of Estimate**	**Methodology** **Typical Estimating Method**	**Expected Accuracy Range** **Typical Variation in Low and High Range***	**Preparation Effort** **Typical Degree of Effort Relative to Least Cost Index of 1****
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/Tender	Detailed Unit Cost with Forced Detailed Takeoff	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Takeoff	L: -3% to -10% H: +3% to +15%	5 to 100

[1]Table Source: AACE International Recommended Practice No. 18R-97, Cost Estimate Classification System as Applied in Engineering, Procurement, and Construction for the Process Industries, 2003. Page 2, Figure 1: Cost Estimate Classification Matrix.

*The state of process technology and availability of applicable reference cost data affect the range markedly. The ± value represents typical percentage variation of actual costs from the cost estimate after application of contingency for a given scope (typically a 50% level of confidence).

**If the range index value of 1 represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

Based on the current level of project definition for Air/Sea Biometric Exit, Class 5 risk factors have been applied to all stakeholder estimates. The nature of these cost risk factors lead to risk adjusted costs, which are used to calculate key outcomes, being higher than the most probable values

provided by stakeholders. In the cost section of this document the most probable values, consistent with those provided by stakeholders, are reported.

4.1.3 Negative Economic Impact Analysis

Air/Sea Biometric Exit will negatively affect carriers and travelers due to the additional time required for the collection and processing of biometric information. It is anticipated that Exit will increase traveler queue and processing time and have an impact on flight delays.

The rationale for increased traveler queue and processing time is as follows:

- Collection of biometric data is beyond the current processing requirements for an alien traveler and may create additional processing time for travelers.
- Out-of-scope travelers will also be impacted by the longer processing times required of other travelers since they will be in the same processing locations throughout the airport/cruise line terminal.
- Additional processing time will create longer queues at processing locations for travelers, increasing waiting times at airports/cruise line terminals.

The rationale for an impact on flight delays is as follows:

- The new process of collecting biometrics at the airport may create longer processing times for travelers. The longer processing times may create flight delays as airline carriers and travelers adjust to the new processing systems.
- For airlines, the operational impact of collecting biometrics is calculated by the value of annual flight delay and the flight delays caused by additional processing time. In the long run, carriers may run fewer flights.

4.2 Key Cost Assumptions

Operations and Maintenance – Based upon the consensus of experts, O&M was estimated to be 15% of development costs in year 1 and year 2, 12% in year 3, and 9% in year 4 and beyond over the course of the life cycle of the solution, with the following exceptions: program management costs would be sustained at a rate of 40 percent of the investment total per year through the O&M period and data communication circuits will be an annually recurring cost. Also included in O&M are hardware refresh costs and operational labor that differ by alternative. The O&M cost covers all recurring costs associated with training, hardware and software. Workforce has an annual recurring factor of 100% of all labor acquisition costs, which includes both contractor and government labor costs.

Program Management – Program management cost to airlines and sea carriers is estimated at 15 percent of their acquisition costs. The cost to the government is also estimated at approximately 15 percent of the acquisition cost. Program management cost applies to the

management and oversight of all investments and because of its nature; it was estimated for the years when investments were made.

Discount Rate – OMB Circulars A-94 and A-4 require the use of a 7% and a 3% real discount rate when analyzing public investments and regulations. Both are used in this analysis to provide contrasting present value estimations.[11]

In the Proposed Rule, the Carrier Discretion Solution with Carrier Implementation, the key cost assumptions are:

- Deployment will be a total of 73 airports with international departures and 33 seaports.
- The cost of the collection device will be $7,500, assuming that the airlines and sea carriers will not be able to negotiate greater discounts than the government.
- The total number of collection devices to be acquired is 7,176 (4,434 for airports, 2,742 for seaports). The number of stations used to calculate the number of staff is slightly lower. This is based on the inclusion of additional gates to which the solution will be deployed at the airports and the assumption that the staff will not need to increase to accommodate this increase in gates as the numbers of flights and travelers will not change. The number of stations used to calculate the staffing level is 6,166 (3,424 for airports, 2,742 for seaports).
- All software development for US-VISIT effort will be the responsibility of the government.

For a more detailed account of key cost assumptions by alternative, see Appendix A, Section A.1.9.

Differences between cost estimates for each of the alternatives vary based on assumptions made for the costs of:

- Type of collection device
- Industry software engineering
- Construction
- Government software engineering
- Work station attendants (Attendants)

Cost Category Assumptions for the Proposed Rule:

Program Management cost assumptions:

- Government program management costs will be factored at a rate of 15 percent of the total cost of the program.
- Carrier program management costs will be factored at a rate of 15 percent of the total cost of the program.

Independent Verification and Validation cost assumptions:

[11] OMB Circular A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" (10/29/1992), page 8.

- IV&V costs for the government are estimated based on supporting 8 planning/working group meetings during the development phase, development of all UDM artifacts, and on historical costs.
- IV&V costs for the carriers are factored at a rate of 1 percent of the total application development costs.

Other government partners cost assumptions:

- Costs associated with IDENT, ADIS, and CBP were estimated as described in Sections A.1.3.2, A.1.3.3, and A.1.3.4.

Information Technology cost assumptions:

- Application development costs are estimated according to the methodology as described in Section A.1.3.5. The carriers will develop the application to communicate with and send biometric data to the government servers, while US-VISIT will develop the application to receive the communication from the carriers. The carriers will develop and deploy their own applications, and the government will develop and deploy its application.
- The number of devices to be deployed was estimated in the same manner as described in Section A.1.3.6. The devices will be deployed to departure gate areas in 80 percent of airports, and to counter areas in the remaining airports where a departure gate solution is infeasible, and to the counter area in all seaports.[12] The devices will be purchased by the carriers at a cost of $7,500 per device.[13]
- The development and test hardware costs for the carriers were estimated at a factor of 5 percent of the total acquisition costs. The development and test hardware costs for the government are estimated based on an estimate provided by ITM, and include costs for lab setup, and support testing for CBP, ADIS, and IDENT.
- The data communications circuit and network connectivity costs are estimated based on the methodology described in Sections A.1.3.8 and A.1.3.9.

Facilities cost assumptions:

- Facilities costs are estimated based on the methodology described in Section A.1.4.
- All Facilities costs are incurred by the carriers.

Training cost assumptions:

- Training costs for both the carriers and the government are estimated based on the assumptions and methodology outlined in Section A.1.5.

Outreach cost assumptions:

- Outreach costs are assumed to be $2,000,000 for the government. This is in line with an estimate provided by the US-VISIT Office of Program Integration and Mission Services.

[12] Due to the requirements of the cost modeling, the proportion of deployment to counter and gate is a fixed, base assumption. The Counter Solution, which deploys only to the counter, can be considered a variation on this assumption.

[13] Uncertainty in the cost of devices is addressed using generally accepted cost engineering risk ranges as described in Section 4.1.2.

- Outreach costs for the carriers are estimated to be 5 percent of the total program cost less program management and training costs.

O&M cost assumptions:

- As the investment phase is anticipated to last 3 months into the second fiscal year of the program lifecycle, it is assumed that the O&M will begin in the second quarter of FY2009.
- Those costs associated with maintaining the updates to ADIS, CBP, and the development of the application will continue at a steadily declining rate (15 percent in year 2, 12 percent in year 3, 9 percent in years 4 and beyond) as it is assumed that major problems with the system will decrease as the program matures. As the investment phase extends three months into the second year of the program, annual costs are reduced by 25 percent in the first year of O&M. This 25 percent reduction factor does not apply to years beyond year two.
- Program Management costs will continue at a rate of 40 percent of the investment total Program Management cost, beginning in the second quarter of year two
- Hardware and COTS software maintenance costs will continue at rates of 10 percent and 18 percent respectively of the investment costs of the program, beginning one year after installation.
- Data communications circuit costs ($30 per carrier per port per month) will remain at the same rate as estimated in the Investment Phase, as these costs will remain constant through the life of the program.
- Each counter and gate at an airport would be in operation for 18 hours per day, 7 days per week. As sea carriers do not process a continuous flow of departing passengers 7 days a week, it was assumed that sea carriers would be in operation for 6 hours per day, 4 days per week. Attendants will be present to handle technical issues and problem resolution for the scanning devices.
    - At the airport check-in counters, each attendant will be able to monitor each of the workstations installed at an individual counter location (about 6 in the large airports, 4 in the medium airports, 2 in the small airports). At the seaport check-in counters, each attendant will be able to monitor 6 workstations, the number installed at a counter in a seaport.
    - At the departure gates, each attendant will be able to monitor 2 workstations. Interviews with SMEs at TSA revealed that the existing carrier staff at the departure gates will be able to absorb 1/3 of the functionality of US-VISIT Biometric Exit with no additional staffing. Additional staff will be added to accommodate the remaining 2/3 of the Exit functionality. While the number of devices deployed to the gates has been increased by 50 percent to compensate for airlines that do not segregate their departure gates by domestic and international flights, the number of staff has not been increased since the numbers of flights and in-scope alien travelers is not assumed to change as a result of this increase. Even though devices will be deployed to additional gates, not all of these gates will need to be in operation at the same time.
    - This results in 7,073,014 additional attendant hours to be billed.
        - Attendant support begins at FOC, currently the second quarter of FY 2009.
- The labor rate was assumed to be $33.52 per hour. This rate was determined based on the hourly rate of a conservative annual salary estimate of $60,000 per year for the carrier-employed counter representatives divided by 1,790 billable hours per year.

- 52 million aliens per year would exit through the ports, each requiring an average of 66.6 seconds worth of additional time to process, the majority of which is additional queue time. Current carrier counter personnel will assist with the majority of transactions as part of the normal check-in process with carrier-employed attendants assisting with uncharacteristic transactions and responding to problems and questions.
  - This results in about 962,000 total counter hours per year to staff the devices.
  - In year 2, counter support begins in the second quarter of FY 2009.
  - These new hours will be charged at the above described labor rate.
- Important observation about attendant headcounts and costs:
  - The total number of attendants appears large in comparison to the number of stations to be deployed. This happens because each attendant will work a 40 hour week, and each station is in operation for 18 hours per day, seven days per week, or 126 hours per week (at the airports) or 6 hours per day, four days per week (at the seaports). Even though each attendant monitors more than one station at a time, the operational time per year of each station requires multiple shifts per day, which in turn causes the number of full-time attendants to be relatively high in comparison to the number of devices.
  - The table below shows the total headcount of attendants required to implement the Proposed Rule.

Table 4-2. Total Attendant Headcount, Proposed Rule

Counter/Gate Solution, Carriers	Total Attendants	Total Devices
Airports	3,633	3,424
Seaports	319	2,742
Total	**3,952**	**6,166**

Disruption Cost Assumptions

- The additional queue time is estimated at 53.6 seconds and the additional processing time at 13 seconds per alien.[14] With two exceptions:
  - The Proposed Rule and Alternative 3 both have a larger processing and queue time estimate for medium and small airports. This is due to the fact that a fraction of alien travelers arriving in the sterile area of an airport that has deployed biometric collection at the counter from an out-of-scope domestic airport must leave the sterile area to submit their biometric information and then return to the sterile area prior to exiting the country.
  - The TSA alternative will have a slightly longer processing time, but due to increased operational labor no additional queue time is expected.

[14] Time is estimated based on information obtained from US-VISIT and TSA subject matter experts (SMEs).

- The Kiosk alternative has an additional processing time of 73.2 seconds and an average of 63.7 seconds of additional queue time per alien traveler. Processing time only affects alien travelers.

- For out-of-scope travelers, travelers not required to provide biometric exit information, it is assumed that their travel is only impacted by the queue delay of 53.6 seconds. Approximately 43%[15] of out-of-scope travelers will be affected by delays due to the deployment of biometric collection at the counter, or deployment at kiosks where receipt collection at the gate will increase queue time for all travelers. Also, since the Proposed Rule and Alternative 3 have biometric collection taking place at the counter at 20 percent of airports, it is assumed that 8.6 percent of out-of-scope passengers will be affected.

Delay Cost Assumptions

- It is assumed that the average number of annual flight delays caused by the exit solution is 587[16] and the average flight delay is estimated at 50 minutes.[17]

- The cost per minute of delay for airlines is calculated as $57.11[18] and the analysis assumes a value of time for air travelers of $28.60.[19]

- For the TSA Solution, there is assumed to be an additional 7 seconds in preparation and processing time required for a Machine Readable Zone (MRZ) scan of the alien's travel documents. This is due to the need to associate biometric information with biographics. TSA does not currently collect biographic information during the security screening process, therefore this is incremental time that must be added for the TSA Solution. Carriers currently collect this information during check-in.

- The number of delays is assumed to grow at 4% annually, the growth rate of travel.

- It is also assumed that there is no difference in flight delays between the alternatives being considered for Exit.

We solicit any comments to improve the analysis to the greatest extent possible. Comments may be submitted to the regulatory docket using any of the methods listed under ADDRESSES in the preamble to the Proposed Rule.

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[15] This is the assumed percentage of out-of-scope travelers who check in at airline ticket counters, based on David Jones, "Business Travel; Speeding Flight Check-In At Self-Service Kiosks", *New York Times*, February 3, 2004.

[16] See Impact on flights delays in Section 4.4.2.

[17] Source: Department of Transportation, Bureau of Transportation Statistics, TranStats database.

[18] Source: Evaluating the True Cost to Airlines of One Minute of Airborne or Ground Delay, University of Westminster, May 2004. Value in 2004 Euros, converted to dollars using the exchange rate of $1.364 per Euro in 2004, and inflated to 2008 dollars.

[19] Economic Values for FAA Investment and Regulatory Decisions, A Guide, Contract No. DFTA 01-02-C00200, prepared by GRA Inc.

4.3 Cost Scope

This section examines the cost estimates of the Proposed Rule and four alternative Air/Sea Exit solutions. The alternatives examine four distinct solutions, at different locations throughout the airport where a biometric collection could take place. Because of the layout of a typical seaport, the biometric collection will occur only at the check-in area. These alternatives also vary based on whether the airlines/sea carriers or the government would be implementing the solution.

Depending on the solution, there are differing combinations of airport/seaport and airline/sea carrier that will affect the number of devices that will be required for each solution. The specific cost elements that feed each solution are described in the appropriate sections below.

4.4 Cost Estimates

This subsection provides a high-level table summary of costs by alternatives followed by an analysis of the key cost drivers and major cost differences between the alternatives.

4.4.1 Table Summary of Costs By Alternatives

The following tables summarize costs, including disruption and delay costs from increased queue time, across the five alternatives. The first table summarizes total costs for each alternative by acquisition cost category and program management and operations and maintenance costs. The second table separates the costs to the Government and carriers. All costs are presented as present value total costs from 2008 to 2027 in millions of 2008 dollars.

The difference in investment costs are a result of the differing numbers of carriers and ports assumed for each alternative. In the Proposed Rule, it is assumed that 80 airlines and 9 sea carriers will deploy the solution to 73 airports and 33 seaports, with the assumption being that each carrier will have to develop their own solution. In Alternative 1, it is assumed that 104 airlines and 9 sea carriers would develop individual solutions and deploy them to 304 airports and 33 seaports. In Alternative 2, the government will be developing a single solution, but will be deploying to a much larger number of ports, as it will need to provide the capability in each airport with a TSA presence. In Alternative 3, it is assumed that the government will deploy the solution, and will be able to develop a single solution, rather than each of the carriers needing to develop their own. The number of devices needed for a counter and/or gate-based solution is also significantly larger than the number needed for the TSA checkpoint solution (3,734 devices for the TSA checkpoint solution, anywhere from 6,166 to 11,990 for counter and gate-based solutions). In Alternative 4, it is assumed that the government will deploy the solution, a total of 1,952 kiosks.

As is evident in looking at the following total cost tables, the biggest differences in costs are found in the O&M costs. This is primarily a result of the staff necessary to operate the solution, primarily driven by the type and number of devices used in each solution. For example, in Alternative 2, even though the number of devices is smaller than the other alternatives, the fact that they are mobile devices means that a single attendant can only monitor one device at a time. In other solutions, the layout of the counter and gate-based devices allows for each attendant to cover multiple devices simultaneously. Also, in Alternative 2, additional Travel Document Checkers

(TDCs) were included to minimize the impact on the delays that could result from the current TDCs need to determine which travelers are in scope. This effectively doubled the number of staff that was estimated for the TSA checkpoint solution.

Table 4-3. Total Present Value Costs by Alternative and Cost Type ($M)

Comparison of Total Costs Across all Alternatives (2008-2027)					
	Proposed Rule Carrier Discretion - Carrier	**Alternative 1** Counter - Carrier	**Alternative 2** TSA - Gov't	**Alternative 3** Carrier Discretion - Gov't	**Alternative 4** Kiosk – Gov't
Acquisition Costs	**269.0**	**447.3**	**133.5**	**137.5**	**222.7**
Independent Verification & Validation (IV&V)	1.4	2.2	0.2	0.2	0.9
Information Technology	216.6	340.3	76.1	85.8	157.7
Facilities	22.2	64.1	51.9	27.5	31.9
Training	15.4	18.9	3.3	22.0	18.8
Outreach	13.3	21.8	2.0	2.0	13.3
Program Management	**40.1**	**66.8**	**20.0**	**20.6**	**33.3**
Operation and Maintenance (O&M)	**5,918.1**	**11,556.1**	**9,587.0**	**6,572.4**	**4,742.1**
Disruption / Delay Costs	**1,229.8**	**1,260.0**	**338.5**	**1,229.8**	**1,724.4**
TOTAL COSTS	**7,457.0**	**13,330.2**	**10,079.0**	**7,960.3**	**6,722.5**

Table 4-4. Total Present Value by Alternative of Costs to Government and Carriers by Type ($M)

Comparison of DHS Costs Across All Alternatives (2008-2027)					
	Proposed Rule Carrier Discretion - Carrier	**Alternative 1** Counter - Carrier	**Alternative 2** TSA - Gov't	**Alternative 3** Carrier Discretion - Gov't	**Alternative 4** Kiosk - Gov't
Acquisition Costs	**29.7**	**30.1**	**133.4**	**137.5**	**123.4**
IV&V	0.2	0.2	0.2	0.2	0.2
Information Technology	25.4	25.8	76.0	85.8	86.4
Facilities	0.0	0.0	51.9	27.5	31.9
Training	2.1	2.1	3.3	22.0	2.8
Outreach	2.0	2.0	2.0	2.0	2.0
Program Management	**4.4**	**4.5**	**20.0**	**20.6**	**18.5**
O&M	**70.2**	**79.5**	**9,520.8**	**5,979.0**	**3,955.4**
TOTAL COSTS	**104.3**	**114.1**	**9,674.2**	**6,137.2**	**4,097.3**
Comparison of Airline/Sea Carrier Costs Across All Alternatives (2008-2027)					
	Proposed Rule Carrier Discretion - Carrier	**Alternative 1** Counter - Carrier	**Alternative 2** TSA - Gov't	**Alternative 3** Carrier Discretion - Gov't	**Alternative 4** Kiosk - Gov't
Acquisition Costs	**239.3**	**417.1**	**0.1**	**0.0**	**99.3**
IV&V	1.2	2.0	0.0	0.0	0.7
Information Technology	191.2	314.4	0.1	0.0	71.3
Facilities	22.2	64.1	0.0	0.0	0.0
Training	13.3	16.8	0.0	0.0	16.0
Outreach	11.3	19.8	0.0	0.0	11.3
Program Management	**35.7**	**62.3**	**0.0**	**0.0**	**14.8**
O&M	**5,847.9**	**11,476.6**	**66.1**	**593.3**	**786.7**
TOTAL COSTS	**6,122.9**	**11,956.0**	**66.2**	**593.3**	**900.8**

Proposed Rule

The following tables represent summary costs.

Table 4-5. Proposed Rule 20-Year Total Present Value Costs ($M)

Carrier Discretion Solution – Airline/Sea Carrier Deployment Overall Costs	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**269.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**269.0**
Independent Verification & Validation	1.4	0.0	0.0	0.0	0.0	0.0	1.4
Information Technology	216.6	0.0	0.0	0.0	0.0	0.0	216.6
Facilities	22.2	0.0	0.0	0.0	0.0	0.0	22.2
Training	15.4	0.0	0.0	0.0	0.0	0.0	15.4
Outreach	13.3	0.0	0.0	0.0	0.0	0.0	13.3
Program Management	**40.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**40.1**
Operation and Maintenance	**0.0**	**210.6**	**262.8**	**289.2**	**226.5**	**146.4**	**3,184.9**
Disruption/Delay Costs	**0.0**	**32.7**	**44.0**	**44.4**	**44.8**	**48.5**	**892.8**
TOTAL COSTS	**309.1**	**243.3**	**306.8**	**333.6**	**271.3**	**194.9**	**4386.9**

DHS Costs							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**29.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**29.7**
Independent Verification & Validation	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	25.4	0.0	0.0	0.0	0.0	0.0	25.4
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Training	2.1	0.0	0.0	0.0	0.0	0.0	2.1
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**4.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.4**
Operation and Maintenance	**0.0**	**2.5**	**3.6**	**3.0**	**2.8**	**1.7**	**37.9**
TOTAL COSTS	**34.1**	**2.5**	**3.6**	**3.0**	**2.8**	**1.7**	**72.0**

Airline/Sea Carrier Side							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**239.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**239.3**
Independent Verification & Validation	1.2	0.0	0.0	0.0	0.0	0.0	1.2
Information Technology	191.2	0.0	0.0	0.0	0.0	0.0	191.2
Facilities	22.2	0.0	0.0	0.0	0.0	0.0	22.2
Training	13.3	0.0	0.0	0.0	0.0	0.0	13.3
Outreach	11.3	0.0	0.0	0.0	0.0	0.0	11.3
Program Management	**35.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**35.7**
Operation and Maintenance	**0.0**	**208.2**	**259.2**	**286.2**	**223.7**	**144.7**	**3,147.1**
TOTAL COSTS	**275.0**	**208.2**	**259.2**	**286.2**	**223.7**	**144.7**	**3,422.1**

Counter Solution

The following tables represent summary costs as well as detailed costs

Table 4-6. Counter Solution 20-Year Total Present Value Costs ($M)

Counter Solution - Airline/Sea Carrier Deployment Overall Costs	2008	2009	2010	2011	2012.0	Avg. Annual	Total Costs
Acquisition Costs	**447.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**447.3**
IV&V	2.2	0.0	0.0	0.0	0.0	0.0	2.2
Information Technology	340.3	0.0	0.0	0.0	0.0	0.0	340.3
Facilities	64.1	0.0	0.0	0.0	0.0	0.0	64.1
Training	18.9	0.0	0.0	0.0	0.0	0.0	18.9
Outreach	21.8	0.0	0.0	0.0	0.0	0.0	21.8
Program Management	**66.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**66.8**
O&M	**0.0**	**410.5**	**516.8**	**556.1**	**446.5**	**285.9**	**6,218.4**
Disruption/Delay Costs	**0.0**	**33.5**	**45.0**	**45.5**	**45.9**	**49.7**	**914.8**
TOTAL COSTS	**514.0**	**443.9**	**561.8**	**601.5**	**492.4**	**335.6**	**7,647.2**

DHS Costs	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**30.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**30.1**
IV&V	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	25.8	0.0	0.0	0.0	0.0	0.0	25.8
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Training	2.1	0.0	0.0	0.0	0.0	0.0	2.1
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**4.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.5**
O&M	**0.0**	**2.5**	**4.0**	**3.5**	**3.2**	**2.0**	**42.8**
TOTAL COSTS	**34.6**	**2.5**	**4.0**	**3.5**	**3.2**	**2.0**	**77.4**

Airline/Sea Carrier Costs							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**417.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**417.1**
IV&V	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Information Technology	314.4	0.0	0.0	0.0	0.0	0.0	314.4
Facilities	64.1	0.0	0.0	0.0	0.0	0.0	64.1
Training	16.8	0.0	0.0	0.0	0.0	0.0	16.8
Outreach	19.8	0.0	0.0	0.0	0.0	0.0	19.8
Program Management	**62.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**62.3**
O&M	**0.0**	**407.9**	**512.7**	**552.6**	**443.3**	**283.9**	**6,175.6**
TOTAL COSTS	**479.4**	**407.9**	**512.7**	**552.6**	**443.3**	**283.9**	**6,655.0**

TSA Solution

The following tables present summary costs.

Table 4-7. TSA Solution 20-Year Total Present Value Costs ($M)

TSA Solution - DHS Deployment Overall Costs							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**133.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**133.5**
IV&V	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	76.1	0.0	0.0	0.0	0.0	0.0	76.1
Facilities	51.9	0.0	0.0	0.0	0.0	0.0	51.9
Training	3.3	0.0	0.0	0.0	0.0	0.0	3.3
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**20.0**
O&M	**0.0**	**392.2**	**456.8**	**405.3**	**398.2**	**235.5**	**5,184.5**
Disruption/Delay Costs	**0.0**	**9.0**	**12.1**	**12.2**	**12.3**	**13.3**	**245.8**
TOTAL COSTS	**153.5**	**401.2**	**468.9**	**417.5**	**410.6**	**248.8**	**5,583.8**

DHS Costs

	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**133.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**133.4**
IV&V	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	76.0	0.0	0.0	0.0	0.0	0.0	76.0
Facilities	51.9	0.0	0.0	0.0	0.0	0.0	51.9
Training	3.3	0.0	0.0	0.0	0.0	0.0	3.3
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**20.0**
O&M	**0.0**	**389.7**	**453.7**	**402.4**	**395.5**	**233.8**	**5,148.9**
TOTAL COSTS	**153.4**	**389.7**	**453.7**	**402.4**	**395.5**	**233.8**	**5,302.3**

Airline/Sea Carrier Costs

	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
IV&V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information Technology	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Training	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Outreach	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Program Management	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
O&M	**0.0**	**2.5**	**3.1**	**2.9**	**2.7**	**1.6**	**35.6**
TOTAL COSTS	**0.1**	**2.5**	**3.1**	**2.9**	**2.7**	**1.6**	**35.7**

Carrier Discretion Solution

Table 4-8. Carrier Discretion Solution 20-Year Total Present Value Costs ($M)

Carrier Discretion Solution – DHS Deployment Overall Costs	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**137.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**137.5**
IV&V	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	85.8	0.0	0.0	0.0	0.0	0.0	85.8
Facilities	27.5	0.0	0.0	0.0	0.0	0.0	27.5
Training	22.0	0.0	0.0	0.0	0.0	0.0	22.0
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**20.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**20.6**
O&M	**0.0**	**231.9**	**293.8**	**312.2**	**256.2**	**162.7**	**3,534.9**
Disruption / Delay Costs	**0.0**	**32.7**	**44.0**	**44.4**	**44.8**	**48.5**	**892.8**
TOTAL COSTS	**158.1**	**264.5**	**337.8**	**356.6**	**301.0**	**211.2**	**4,585.8**
DHS Costs							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**137.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**137.5**
IV&V	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	85.8	0.0	0.0	0.0	0.0	0.0	85.8
Facilities	27.5	0.0	0.0	0.0	0.0	0.0	27.5
Training	22.0	0.0	0.0	0.0	0.0	0.0	22.0
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**20.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**20.6**
O&M	**0.0**	**209.7**	**266.2**	**286.3**	**232.0**	**148.1**	**3,215.2**
TOTAL COSTS	**158.1**	**209.7**	**266.2**	**286.3**	**232.0**	**148.1**	**3,373.3**

Airline/Sea Carrier Costs							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
IV&V	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Information Technology	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Training	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Outreach	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Program Management	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
O&M	**0.0**	**22.2**	**27.6**	**25.8**	**24.1**	**14.7**	**319.7**
TOTAL COSTS	**0.0**	**22.2**	**27.6**	**25.8**	**24.1**	**14.7**	**319.7**

Kiosk Solution

Table 4-9. Kiosk Solution 20-Year Total Present Value Costs ($M)

Kiosk Solution – DHS Deployment Overall Costs							
	2008	2009	2010	2011	2012	Avg. Annual	Total Costs
Acquisition Costs	**222.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**222.7**
Independent Verification & Validation	0.9	0.0	0.0	0.0	0.0	0.0	0.9
Information Technology	157.7	0.0	0.0	0.0	0.0	0.0	157.7
Facilities	31.9	0.0	0.0	0.0	0.0	0.0	31.9
Training	18.8	0.0	0.0	0.0	0.0	0.0	18.8
Outreach	13.3	0.0	0.0	0.0	0.0	0.0	13.3
Program Management	**33.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**33.3**
Operation and Maintenance	**0.0**	**168.9**	**216.0**	**220.8**	**186.6**	**117.3**	**2,552.0**
Disruption/Delay Costs	**0.0**	**45.8**	**61.6**	**62.2**	**62.8**	**68.0**	**1,251.9**

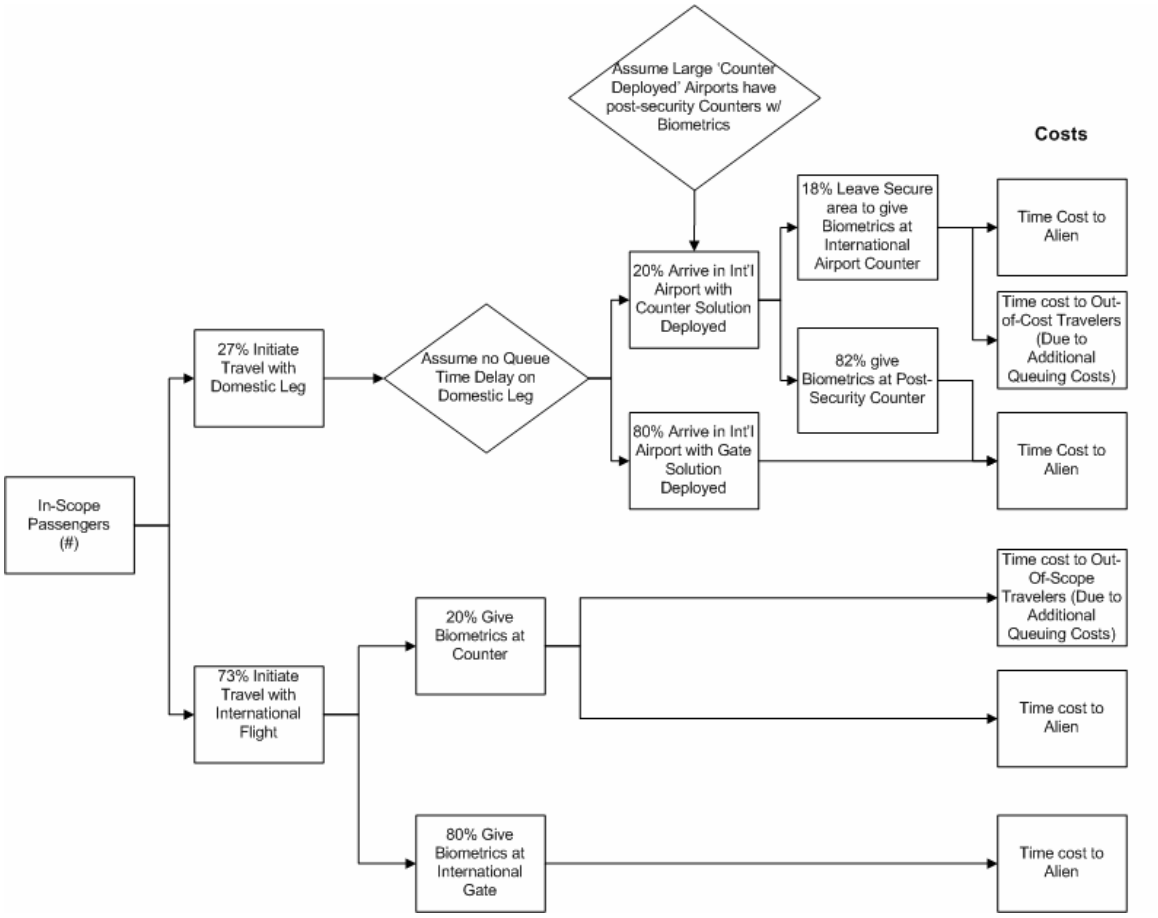
TOTAL COSTS	**256.0**	**214.7**	**277.7**	**283.0**	**249.5**	**185.3**	**4,059.9**
DHS Costs							
	2008	**2009**	**2010**	**2011**	**2012**	**Avg. Annual**	**Total Costs**
Acquisition Costs	**123.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**123.4**
Independent Verification & Validation	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Information Technology	86.4	0.0	0.0	0.0	0.0	0.0	86.4
Facilities	31.9	0.0	0.0	0.0	0.0	0.0	31.9
Training	2.8	0.0	0.0	0.0	0.0	0.0	2.8
Outreach	2.0	0.0	0.0	0.0	0.0	0.0	2.0
Program Management	**18.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**18.5**
Operation and Maintenance	**0.0**	**133.5**	**177.9**	**186.9**	**155.0**	**98.1**	**2,124.8**
TOTAL COSTS	**141.9**	**133.5**	**177.9**	**186.9**	**155.0**	**98.1**	**2,266.7**
Airline/Sea Carrier Costs							
	2008	**2009**	**2010**	**2011**	**2012**	**Avg. Annual**	**Total Costs**
Acquisition Costs	**99.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**99.3**
Independent Verification & Validation	0.7	0.0	0.0	0.0	0.0	0.0	0.7
Information Technology	71.3	0.0	0.0	0.0	0.0	0.0	71.3
Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Training	16.0	0.0	0.0	0.0	0.0	0.0	16.0
Outreach	11.3	0.0	0.0	0.0	0.0	0.0	11.3
Program Management	**14.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**14.8**
Operation and Maintenance	**0.0**	**35.5**	**38.1**	**33.9**	**31.6**	**19.2**	**427.3**
TOTAL COSTS	**114.1**	**35.5**	**38.1**	**33.9**	**31.6**	**19.2**	**541.4**

4.4.2 Disruption Costs

This section discusses the logic and measurement of delay and disruption cost estimates. The estimate calculations use the disruption and delay cost assumptions mentioned previously in Section 4.2.

Figure 4-1 describes the logic employed to estimate delay and disruption costs to passengers (both aliens and out-of-scope travelers).

Figure 4-1. Disruption Costs Structure and Logic Diagram, Proposed Rule with Post-Security Biometric-Enabled Counters at 6 Large Counter-Deployed Airports



Increased traveler queue and processing time

Collecting biometric data is beyond the current processing operations and may create additional processing and waiting time for travelers. The impact of these delays is expected to vary depending on implementation alternative, as different populations may be impacted, and by airport size. For example, in the TSA Solution, all travelers may be impacted, not simply alien

travelers, whereas in a carrier discretion solution, the impact on out-of-scope travelers may be less. This negative economic impact is measured by the value of time for the traveler and the estimated time increase created by the collection of biometric data at the counter, security checkpoint, or gate.

To calculate this negative economic impact, the total incremental waiting and processing time is determined based on the additional step of processing biometrics at exit. For the Proposed Rule, the additional queue time is estimated at 53.6 seconds and the additional processing time at 13 seconds. The TSA prep and processing time estimate for aliens is 20 seconds (13 seconds for the biometric scan and 7 seconds for biographic information collection).[20] Due to increased operational labor, the TSA Solution is not expected to increase queue times. However, the TSA Solution has an additional 7 seconds of processing time compared to the Carrier Discretion Solution since biographic information collection would be an entirely new process at the TSA checkpoint. This time involves taking a MRZ scan of an alien's travel documents.[21] The Kiosk Solution involves an increase in queue time and processing time but these increases primarily affect the alien travelers. In this solution, it is assumed that out-of-scope passengers that check in at the counter will be affected by a 10 second processing delay.

Table 4-10. Delay Time to Alien Travelers by Alternative and Airport Size

Delay Time to Alien Travelers by Alternative (seconds)			
	Processing	Queue	Total
Proposed Rule			
Large Airports	13.0	53.6	66.6
Medium Airports	14.1	194.7	208.8
Small Airports	14.1	194.7	208.8
Alternative 1			
Large Airports	13.0	53.6	66.6
Medium Airports	13.0	53.6	66.6
Small Airports	13.0	53.6	66.6
Alternative 2			

[20] Time is estimated based on information obtained from US-VISIT subject matter experts (SMEs) and is broken down as follows: 4 seconds biometric scan prep, 5 seconds biometric scan (max scan time allowed by the reader), 4 seconds confirmation, and 7 seconds document prep and MRZ swipe for those alternatives requiring additional collection of biographic data.

[21] US-VISIT has estimated that a MRZ scan of alien travel documents will take 7 seconds per alien.

Delay Time to Alien Travelers by Alternative (seconds)			
	Processing	Queue	Total
Large Airports	20.0	0.0	20.0
Medium Airports	20.0	0.0	20.0
Small Airports	20.0	0.0	20.0
Alternative 3			
Large Airports	13.0	53.6	66.6
Medium Airports	14.1	194.7	208.8
Small Airports	14.1	194.7	208.8
Alternative 4			
Large Airports	73.1	49.8	122.9
Medium Airports	79.2	52.7	131.9
Small Airports	67.3	88.5	155.8

For out-of-scope travelers, travelers not required to provide biometric exit information, it is assumed that their travel is only impacted by queue delays. Under the Proposed Rule, using the 53.6 seconds of additional queue time and a volume of out-of-scope travelers estimated at 67.5M annually, with approximately 43%[22] of these travelers impacted by the exit solution, results in 60.3 million minutes of additional waiting time. Based on an hourly value of time of $28.60,[23] this results in an annual negative economic impact of $28.7M for out-of-scope travelers. This value is assumed to grow at the 4% annual growth rate in travel.

To compute the total time increase for alien travelers, this additional time is applied to the total number of aliens exiting. This is multiplied by the value of time of aliens to determine the total cost of delay to aliens. The additional wait time created by the new biometric collection process may also impact out-of-scope travelers, depending on the implementation location. Under

[22] This is the assumed percentage of out-of-scope travelers who check in at airline ticket counters, based on David Jones, "Business Travel; Speeding Flight Check-In At Self-Service Kiosks", *New York Times*, February 3, 2004.

[23] Economic Values for FAA Investment and Regulatory Decisions, A Guide, Contract No. DFTA 01-02-C00200, prepared by GRA Inc.

alternatives where wait times for out-of-scope travelers are increased, these wait times are multiplied by the estimated number of out-of-scope air travelers impacted in each alternative. This is monetized using the value of time for these travelers. These total delay costs for both alien and out-of-scope travelers are summed resulting in the total value of additional time brought about by the Exit procedures, represented as a negative economic impact.

Impact on flight delays

The expected increase in traveler queue and processing time may lead to flight delays as airline carriers and travelers adjust to new processing systems. For the negative economic impact affecting airlines, the operational impact of collecting biometrics is calculated by the cost of flight delays to the airlines and the flight delays caused by additional processing time. For the negative economic impact to passengers, the operational impact is measured by the passengers' value of time and the length of the delay.

Multiplying the average number of annual flight delays caused by the Exit solution of 587[24] by the average flight delay of 50 minutes[25] yields an aggregate flight delay in minutes per year of 29,350 minutes. Using a cost per minute of delay for airlines of $57.11[26] results in a total economic cost impact of flight delay of $1,676,179.

The impact of passenger delays is estimated in a similar manner. Based on the 29,350 minutes of annual delay time and an average of 77 passengers per international flight,[27] this results in an annual wait time for passengers of 2,259,950 minutes. Assuming a value of time for air travelers of $28.60[28], results in an annual economic cost impact of $64,634,570. The number of delays is assumed to grow at 4% annually, the growth rate of travel. It is assumed that there is no difference in flight delays between the alternatives being considered for Exit.

The calculation of the impact of flight delays begins with the base case of flights that are delayed. This is impacted by an assumed percentage of flights delayed caused from the implementation of collecting biometrics of aliens at airline counters, gates or security checkpoints. This incremental increase of flights delayed is broken down by the delay in minutes and the total outbound flights to determine the incremental aggregate flight delay in minutes. This total delay is then monetized by the average delay cost for airlines, which results in the total value of flight delay for airlines. The total delay in minutes is also monetized by the total number of passengers' average value of time, resulting in the total value of flight delay for travelers.

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[24] For a more thorough discussion, see the section of Appendix A entitled "Average Number of Flights Annually that are Delayed as a Result of Implementing Exit."

[25] Source: Department of Transportation, Bureau of Transportation Statistics, TranStats database.

[26] Source: Evaluating the True Cost to Airlines of One Minute of Airborne or Ground Delay, University of Westminster, May 2004. Value in 2004 Euros, converted to dollars using the exchange rate of $1.364 per Euro in 2004, and inflated to 2008 dollars.

[27] Based on 54.1M Alien Travelers, plus 67.5M out-of-scope travelers annually, divided by a total of 1.6M annual international flights, resulting in an average number of 77 total passengers per flight.

[28] Economic Values for FAA Investment and Regulatory Decisions, A Guide, Contract No. DFTA 01-02-C00200, prepared by GRA Inc.

4.4.3 Cost Differences Between Alternatives

The cost estimation varies by alternative due to assumptions about who is responsible for implementation, deployment, and operation, including variations in the cost of operational labor provided for the management and support of the program. The Carrier Discretion Solution is assumed to deploy at the counter or gate at 73 airports which requires significantly less operational labor than the counter-based solution, which is assumed to deploy at 304 airports or at the TSA security checkpoint which is assumed to deploy at 455 airports. It is also important to note that the government can access significant cost savings on the biometric collection devices when they are responsible for implementation of the alternative.

Assumptions about labor hours should especially be of note for the TSA implementation for two reasons. First, the TSA Solution assumes a mobile collection device that requires a one-to-one ratio of collection devices to Attendants. This impacts the operational labor required for the solution. Second, there is currently no TSA presence for sea carriers and to make up for this fact deployment at the security checkpoint will require higher operational labor throughout the life cycle of the solution. Costs estimated for solutions at the Counter will tend to be higher because it is assumed to be deployed at a total of 304 airports.

Delay and disruption costs vary based on the location of the alternative and airport size; however, these delays and disruptions are assumed not to vary based on which stakeholder is responsible for implementation of the alternative. The location of deployment determines the number of travelers estimated to be affected by the solution. The Counter Solution will cause delays for both alien travelers and out-of-scope travelers to increase by an estimated 66.6 seconds and 53.6 seconds per traveler, respectively.[29] The TSA Solution, which has the lowest delay costs of all the alternatives, affects only alien travelers by an estimated 20.0 seconds per traveler. The Kiosk Solution will increase alien and out-of-scope travelers' queue time by 58.6 seconds per traveler; processing time will increase 73.2 seconds per traveler for alien travelers. It is assumed that the out-of-scope passengers that check in at the counter will be affected by a 10 second processing delay. The Carrier Discretion Solution, which is a hybrid solution that, for the purposes of this analysis, assumes 20 percent of airports implement the counter solution and the remaining 80 percent implement the gate solutions, will affect alien travelers as well as a small fraction of out-of-scope travelers.

Alien travelers leaving the country via large airports, who have arrived in the airport from a prior domestic flight, will incur an estimated delay of 66.6 seconds per traveler. It is estimated that the majority of these travelers will not have to exit the sterile area during transfer solely for the purpose of submitting biometrics, since it is assumed that all large airports will either have deployed at the gate or have ticket counters in the sterile area. However, for small and medium size airports that have chosen the counter option there will be a fraction of alien passengers arriving on a domestic flight into the sterile area of these airport who will need to exit the sterile area to submit biometrics at the check-in counter. These alien passengers are assumed to incur a 45 minute delay to leave the sterile area and submit to biometric collection and return to their gate. It is estimated that approximately 1 percent of all alien travelers will incur this larger delay.

[29] Estimates described in this section are the median estimates. For the range estimates please see Appendices A and B.

However, the remaining alien travelers with flights out of small and medium sized airports that have deployed the gate option will incur delays of 66.6 seconds per traveler with no delays to out-of-scope passengers. For further discussion of passenger delays, please see Section 4.4.2.

Counter solutions are estimated to be the most expensive in terms of total cost to deploy and operate after deployment, followed by locating the collection activities at the security checkpoint. However, the TSA Solution is estimated to have the lowest overall disruption and delay costs. This is due to the fact that by placing an extra Travel Document Checker (TDC) at the document checking station, in addition to the Attendant taking the biometric information, there is estimated to be no queue time impact in aggregate. For this reason, the Proposed Rule and Alternative 3 are estimated to be much more costly than the TSA Solution in terms of disruption and delay costs. This is largely due to the fact that, in order to facilitate estimation of costs, a modeling assumption was made that 80% of airports deploy at the gate while 20% deploy at the counter. However, these two alternatives (the Proposed Rule and Alternative 3), actually allow airlines to deploy as they see fit, within certain boundaries. One might imagine that if a pure gate solution is, in fact, the least costly, airlines would deploy at the gate to the greatest extent possible. It should also be noted that government deployment alternatives are estimated to be less costly in terms of acquisition costs than alternatives with the same deployment location or terms, but for which the carriers pay and operate. This is due to an assumption that government can access volume discounts not available to individual carriers as well as the reduced development needs that occur when a single entity manages the IT development.

4.4.3.1 Comments

A complete discussion of all the assumptions employed in the estimation of the costs of the Proposed Rule and the alternatives assessed can be found in Appendix A. We solicit any comments to improve the analysis to the greatest extent possible. Comments may be submitted to 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.

5 Benefits Estimation

This chapter describes the process employed to develop the measures and estimates of benefits and discusses what those measures are and how they relate to Departmental goals. The goal of benefits estimation is to determine the value of cost avoidance and social benefit to be created through the implementation of each alternative. To achieve this goal, a set of measurable benefits has been defined and a process of measurement undertaken that engages stakeholders and subject matter experts, relies on quantifiable, measurable inputs, and utilizes advanced statistical techniques to account for uncertainty. The benefits estimates apply equally to the Proposed Rule and all alternatives; there is no difference in values across the Proposed Rule and the alternatives. It needs to be stressed that in some cases quantifiable may not imply monetizable. For example, a quantitative assessment of a key performance improvement may be valued as percent improvement in achieving desired results.

A synopsis of the benefit categories that have been identified for Air/Sea Biometric Exit is provided in the next section of this chapter. Also included is a rationale explaining how Air/Sea Biometric Exit provides each specific category of benefit.

5.1 Air/Sea Biometric Exit Benefits Summary

The proposed Air/Sea Biometric Exit implementation alternatives deliver a range of benefits related to the capture and processing of biometric information. To establish the benefits attributable to Air/Sea Exit, the Cost Benefit Analysis Team reviewed key planning documents and developed a list of approximately eight potential benefits attributable to Exit. This list was condensed through further review and stakeholder interviews. A final condensed set of proposed benefits was developed and approved by US-VISIT. The final list of attributable benefits includes those benefits that staff and stakeholders believe are measurable and those which are qualitative in nature, and for which the impact associated with Air/Sea Biometric Exit can be distinguished from the impact of other initiatives. The majority of identified benefits are measured quantitatively, while others are measured through a qualitative assessment process. Table 5-1 lists all the potential benefits identified along with whether they were treated as monetized, quantitative but not monetizable, qualitative, or not assessed.

The following table describes the final list of Air/Sea Biometric Exit benefits for which estimation has been conducted.

Table 5-1. Benefits Categories with Rationales for Benefits

Exit Benefit	Rationale for Benefit from Exit	Monetized	Quantitative but not Monetized	Qualitative	Not Assessed
Increased National Security	• US-VISIT, which Exit is a fundamental part, improves the capabilities to manage and screen aliens against watch list records, which includes wanted persons and immigration violators.			X	
Improved Detection of Visa Overstays	• Accurate reporting of departure of alien travelers, coupled with information collected at entry into the U.S., may better indicate who has left the U.S. beyond their allotted visa time period and by how much. • Detection of visa overstays allows for better decision making and management of the immigration and visa issuance systems and produces timely information and efficiencies for law enforcement. • Cost savings to the government from preventing an individual who has overstayed their visa and who has left the U.S. from re-entering the U.S. Costs that would be avoided with successful Exit implementation include detection and possible detention, prosecution, incarceration, and removal for egregious cases.	X X		X	
Improved Exit Processing over I-94 System	• Automated processing of biometric data allows for more efficient matching with Entry data. • Increased accuracy of matching arrival and departure records creates time savings for data analyst.	X X			

Exit Benefit	Rationale for Benefit from Exit	Monetized	Quantitative but not Monetized	Qualitative	Not Assessed
Improved ICE Efficiency Attempting Apprehension	• Accurate departure reporting of alien travelers allows ICE investigators to determine whether fugitive or targeted individuals can be apprehended within the U.S. (value associated with the reduction of time spent seeking wanted persons). • Accurate and timely departure reporting of alien travelers allows ICE investigators to identify more effectively and efficiently those individuals who have overstayed their visas and are still in the U.S.	X		X	
Improved DIG Efficiency Processing Exit/Entry Data	• The timely collection and validation of biometric information will improve processing and analytical efficiencies within the Data Integrity Group (DIG). • Expected decrease in the non-matched (entry to exit) population will reduce the total workload handled by the DIG. • Biometric matching of entry to exit will improve the certainty of a no-match designation.	X			X X
Improved compliance with NSEERS requirements due to the improvement in ease of compliance	• Replacing the departure requirements under the National Entry-Exit Registration System (NSEERS) with the requirements under Exit will improve the compliance rates of NSEERS since all out-bound alien travelers must be processed through Exit in order to depart the U.S. from air and sea ports. The time savings of biometric information collection under Exit compared to the person-to-person processing under NSEERS will also result in more individuals willing to comply with NSEERS.			X	

Exit Benefit	Rationale for Benefit from Exit	Monetized	Quantitative but not Monetized	Qualitative	Not Assessed
Increase in economic activity created through the expansion in the number of Visa Waiver Program (VWP) eligible countries	• Better data collection and analysis on a particular country's travelers facilitates the process that determines if a country should become a member of the VWP. The economic impact of an expanded VWP is measured by increased economic activity in the U.S. from more accessible tourism and business travel. • Implementation of a Biometric Exit Program is required before any new countries may be admitted to the VWP. However another rule would have to be implemented to cause the specific admittance of any new VWP country. As such, this RIA considers the value of an expanded VWP which is predicated on a Biometric exit system, but does not include those benefits in the aggregated present value of total benefits.			X X	

5.2 Air/Sea Biometric Exit Benefits Supporting Department Goals

Mapping the Department of Homeland Security's goals to the benefits of the Air/Sea Exit Program enables a determination of how (or if) the Department's goals are fulfilled. The benefits to be derived from Air/Sea Exit, mapped to the Department's goals, can be seen in the table below. Further discussion of the measures of performance of the Air/Sea Biometric Exit Program is presented in Appendix D, Performance Measures.

Table 5-2. Mapping of DHS Goals with Air/Sea Biometric Exit Benefits

DHS Strategic Goal / Objective Supported	US VISIT Goals / Objectives	Exit Objectives	Exit Benefit	Measure
Strategic Goal 2 – Prevention				
Strategic Objective 2.1 Secure borders against terrorists, means of terrorism, illegal drugs, other illegal activity	**Security** Enhance the security of United States (U.S.) citizens and travelers.	**Biometrically verify aliens' identity**	Increased National Security	Qualitative in terms of cost of terrorism and reduction of costs due to border security as well as unquantified security benefits.
Strategic Objective 2.6 Improve the security and integrity of our immigration system	**Integrity** Ensure the integrity of the U.S. immigration system.	**Provide mechanism to identify visa overstays**	Improved Detection of Visa Overstays	Percentage of visa overstays (number of visa overstays detected as percentage of total alien travelers)
				Cost savings from preventing a prior visa overstayer from entering U.S. (Subsequent detection and prosecution cost avoided)

DHS Strategic Goal / Objective Supported	US VISIT Goals / Objectives	Exit Objectives	Exit Benefit	Measure
		Accurate Matching of Arrival and Departure Records	Improved Exit Processing over existing biographic systems	Dollar value of accurately matching records
				Percentage of exit records matched to entry records (Number of exit transactions matched to entry transactions as percentage of total exit transactions)
		Improvement in Effectiveness of Government Resources	Improved ICE Efficiency Attempting Apprehension	Value associated with the reduction of time spent seeking wanted persons no longer in the country
				Qualitative improvement in efficiency in geographic targeting of visa violators
			Improved DIG Efficiency Processing Exit/Entry data	Value of improved processing efficiency
			Improved compliance with NSEERS requirements due to the improvement in ease of compliance	Quantitative, not monetized: Increase in expected NSEERS compliance rates.

DHS Strategic Goal / Objective Supported	US VISIT Goals / Objectives	Exit Objectives	Exit Benefit	Measure
		Facilitate travel	Increase in economic activity created through the expansion in the number of Visa Waiver Program eligible countries	Value of additional domestic economic activity created by the increased number of travelers arriving from countries with relaxed visa requirements. Measured but not included in the aggregate present value of benefits

5.3 Measurement

This section discusses the measurement methodology employed and the results of the benefits estimation by alternative.

5.3.1 Measurement Approach

The comprehensive RIA methodology is discussed in Section 7. Specific to the measurement of benefits, the following approach details should be noted:

Statistical data

Where possible, measurement is based on historical statistical data culled from a variety of government sources, including Bureau of Justice Statistics, Uniform Crime Reporting, CIS statistical abstracts, and other official sources. See Appendix B for a complete list of all data sources.

Stakeholder input

Where historical statistical data was unavailable, subject matter expert opinion was applied. Subject matter experts included technical and policy representatives from DHS and field experts.

Uncertainty Ranges

Key variables are stated in terms of a high, low, and median range of possible outcomes. The high represents the 95th percentile and the low represents the 5th percentile. These ranges are incorporated into a Monte Carlo analysis along with the cost uncertainty ranges discussed in Section 4.1.2 to produce risk ranges which describe the likelihood of a range of outcomes.

Timeframe Analyzed

The analysis covered a 20-year timeframe.

Ramp-up and Roll-out

This estimate assumes an investment phase of 15 months, and four years of supplemental Operations and Maintenance, for a total of five years of costs. Costs are presented in FY 2008 dollars. Ramp up and Roll out schedule is defined for the purposes of benefits estimation using the expected schedule of deployment.

Discounting

Discount rates of 7% and 3% are applied to the analysis. This is consistent with direction in OMB circulars A-4 and A-94.

5.3.2 Results of the Benefits Analysis

This section presents the results of the benefits estimation by benefit type. It should be noted that discussion of the net negative social impacts due to disruption and delay can be found in Cost Chapter 4.

Improved Detection of Visa Overstays

This benefit is realized prior to or at entry for those who have previously visited and exited under any of the Exit solution alternatives. The biometric data collected upon exit will allow for improved accuracy in reporting departure. In estimation of this benefit, only egregious overstays, defined as overstays of 181 days or greater, are considered. Detection of egregious overstays prior to or at entry is estimated as a cost savings to the Government, as the cost to search for, detain and deport an egregious overstayer is avoided. This cost savings benefit is estimated based on the probability that an alien has previously overstayed by 181 days or greater, the estimated annual alien travel volume, the improved ability to identify prior visa overstays due to exit solution, and the cost associated with searching, detaining and deporting an egregious overstayer.

This benefit is quantified and monetized as follows. The probability that an alien has overstayed his/her visa in the past by 181 days or more is calculated based on the historical percentage of visa applications rejected on the grounds of prior egregious overstay. In 2006, there were 7.7 million visa applications filed, of which, 7,890 were rejected on the grounds of prior egregious overstay. This results in 0.1% of visa applications being rejected for egregious overstay reasons.[30] The alien air travel volume, which this percentage is applied to, is estimated to be 51.1M in 2006.[31] It is estimated that the current ability to match entries to exits using the biographic exit system is 88.1%[32] (current match rate in ADIS), whereas under the biometric exit solution, this number is expected to improve to 95% in 2008, 97% in 2009 and 99% in 2010.[33] Given that some aliens may attempt to evade or otherwise not comply with the requirements of the process, it is expected that a certain portion of the expected improvement may be eroded. Using the 97% matching under each solution and assuming an equal distribution of overstays and non-overstays in the additional 8.9% of successful matches, there will be a 8.9% improvement in detecting egregious visa overstays. Using the estimated 2008 travel volume of 55.3M (51.1M times 4% growth for two years) multiplied by the 0.1% probability of a prior egregious overstay results in a number of 42,679 egregious overstayers detected in the baseline. Applying the 8.9% improvement in detecting egregious overstays results in an additional 4,900 egregious overstays detected annually under the exit solution. This volume when multiplied by the estimated cost of $19,202[34] for removal had the alien not been detected prior to entry, results in an annual benefit of $94.1M.

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[30] Based on data collected by the U.S. Department of State: Table I, Immigrant and Nonimmigrant Visas Issued at Foreign Service Posts, Fiscal Years 2002-2006, preliminary data; Table XX, Immigrant and Nonimmigrant Visa Ineligibilities (by Grounds for Refusal Under the Immigration and Nationality Act), FY 2006. Egregious overstay rejections based on pre-appeal rejections.

[31] Based on: US-Visit, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007.

[32] Ibid.

[33] "Percentage of Exit Records Matched to Entry Records" performance measure targets from Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART) Evaluation, August 2007 data.

[34] Cost from the Local Fiscal Effects of Illegal Immigration, A Report of a Workshop, National Academy of Sciences, inflated to 2008 dollars. This cost is based on the cost to taxpayers to remove illegal aliens.

Over the timeframe of analysis, this benefit is expected to grow at a rate of 4%, the projected growth in alien air travel.

Increased Efficiency in DIG Workload due to Improved Matching Success of Entry to Exit Records

The automated processing of biometric data improves processing and analytical efficiencies for the Data Integrity Group (DIG). DIG performs human analysis primarily using ADIS data to identify data integrity issues for correction. Additionally, the DIG provides tactical data integrity support for operational units requiring complete and accurate alien entry, exit and status update information. Data integrity issues are analyzed to improve record matching algorithms and systemic data integrity. Operational support includes providing validated, probable in-country overstay records to ICE for further investigative follow-up and providing CBP, Citizenship and Immigration Services (CIS) and consular officers with notifications of out-of-country overstays. The value of this benefit is estimated based on the improvement in matching of entries to exits, annual DIG workload measured in number of cases, the time spent analyzing non-matching records, and the fully burdened pay rate for DIG analysts.

The number of entries successfully matched to exits is expected to increase from 88.1%, which currently results in 11.9% of records referred to DIG for additional processing, to 97%. Under the solution, the number of successfully matched records is assumed to increase to 97%, resulting in 3% of records referred to DIG, a roughly 75% reduction in DIG workload from 11.9%.[35] The baseline DIG workload is estimated at 371,093 for FY 2006.[36] At 30 minutes of processing time per record,[37] the 371,093 annual records require 185,547 labor hours. With the estimated reduction of 75%, due to the improvement in record matching due to the exit solution, annual labor hours are reduced by approximately 139,160. At an average loaded hourly rate of $43.00, the cost savings from this benefit is estimated at $6M annually. This volume is assumed to grow annually at a 4% rate, the estimated growth in alien travel.

Improved ICE Efficiency Attempting Apprehension

The better accuracy of departure records collected with biometrics compared to the biographical data from I-94s provides ICE investigators the knowledge of whether a fugitive or targeted individual can be apprehended in the U.S. This accuracy is measured by the value associated with the reduction of time spent seeking suspects who are no longer in the country. This benefit is calculated based on the annual number of ICE cases, the amount of time ICE agents work on a case before classifying it as unresolved, the current ability to accurately match entries to exits, and the estimated improved ability to match entries to exit under the biometric exit solution. It is

[35] Based on: US-Visit, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007 and "Percentage of Exit Records Matched to Entry Records" performance measure targets from Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART) Evaluation, August 2007 data.

[36] Data Integrity Group Subject Matter Expert Estimates, September 20, 2007.

[37] Ibid.

estimated that the baseline ICE overstayer apprehension workload is 13,890 cases annually.[38] In the current state, it is estimated that 11.9% of records are not matched, whereas under the biometric exit solution, this number is expected to fall to 3%.[39] Assuming an even probability of ICE cases along the distribution of recording matching, there would be 1,653 unresolved cases in the current state.[40] Under the Exit solution, this number would be reduced to 417.[41] Therefore improvement in status tracking under the solution reduces the ice unresolved caseloads by 1,236 annually.

DHS estimates that ICE agents spend 35 hours pursuing a case before designating it as unresolved.[42] When multiplied by the reduction in unresolved cases, 1,236, this results in a reduction in workload hours on unresolved cases of approximately 43,260 hours annually. Using a fully burdened, average hourly wage of $41.09[43] for an ICE agent, this results in an annual benefit of $1.8M. This volume is assumed to grow annually at a 4% rate, the estimated growth in alien travel.

As a result of the implementation of Exit, ICE will have information on aliens overstaying their visas in a more timely manner than through the current I-94 system. In addition, the electronic based biometric based Exit system (as opposed to the paper based I-94) will enable ICE to obtain a better picture of characteristics of visa overstayers (i.e., geographic location, nationality, etc.) in that shorter time frame. This information has the potential to assist ICE in increasing its efficiency with respect to resource allocation as it pertains to apprehending visa overstayers.

Subject matter experts from ICE's Investigation Staff were asked to opine regarding the value of this information. The values assignable values were "none", "low", "medium" and "high". According to the ICE subject matters, neither the proposed rule nor the other alternatives are expected to provide any benefits related to improved data to ICE in their investigations efforts. The consensus obtained from ICE Investigation Staff subject matter experts can be found in the table below.[44]

Table 5-3. Qualitative Benefits Resulting from Improved Data Available to ICE

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4

[38] Hearing of the Senate Homeland Security and Governmental Affairs Committee, Subject: The nomination of Julie L. Myers to Continue as Assistant Secretary for Immigration and Customs Enforcement (ICE), Department of Homeland Security, Chaired by Senator Joseph Liberman, Witness: Julie Myers, September 12, 2007; DHS statistics

[39] Based on: US-Visit, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007 and "Percentage of Exit Records Matched to Entry Records" performance measure targets from Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART) Evaluation, August 2007 data.

[40] 13,890*7.7%.

[41] 13,890*3.6%.

[42] ICE subject matter expert

[43] Based on: Office of Personal and Management, GS Salary Table 2007-GL (Law Enforcement Officer)

[44] This consensus was obtained during a meeting attended by representatives of these organizations. The meeting was held on November 1, 2007.

Location:	Discretionary Location	Check-In Counter	TSA Checkpoint	Discretionary Location	Kiosk
Operator:	Air/Cruise Lines	Air/Cruise Lines	DHS	DHS	DHS
	None	None	None	None	None[45]

Increase in economic activity created through the expansion in the number of Visa Waiver Program (VWP) eligible countries

Implementation of a Biometric Exit Program is required before any new countries may be admitted to the VWP. However, another rule would have to be implemented to cause the specific admittance of any new VWP country. As such, this RIA measures the value of an expanded VWP which is predicated on the Biometric Exit Program, but does not include those benefits in the aggregated present value of total benefits.

The value of an expanded VWP is calculated by estimating increased economic activity in the U.S. engendered through the increased number of travelers arriving from countries with relaxed visa requirements. US-VISIT, of which Exit is an essential program, allows for better tracking of entry and exits, one of the criteria of becoming a VWP. Exit does not claim these benefits as a direct result in implementation of, but these benefits are presented to provide the implications of Exit.

This value is calculated from the estimated growth of travel expected with eased visa requirements from the potential VWP countries' travelers. This rate of increase in baseline travel, due to transitioning from non-VWP to VWP is estimated at 68%.[46] This is applied to the baseline travel from 12 countries with the potential to be classified as VWP countries in the coming years. This volume of travelers to the US from these countries is estimated at 2.1 million in 2005.[47] A 68% increase in this baseline volume results in an additional 1,428,000 trips annually. It is estimated that the average spending per visitor is $1,274 in year 2000 dollars.[48] Inflated to 2008 dollars this value is $1,562.[49] Applying this value to the total number of additional annual trips due to

[45] Alternative 4 was not assessed in the November 1 meeting, however, it is assumed to have the same data improvement characteristics as the Counter Solution.

[46] Based on analysis of VWP and potential VWP countries, using data from: U.S. Census Bureau, International Database; Department of Homeland, Office of Immigration Statistics, Various Yearbooks of Immigration Statistics; International Monetary Fund.

[47] The twelve countries are: Argentina, Brazil, Cyprus, Czech Republic, Estonia, Greece, Israel, Malta, Slovakia, South Korea, Taiwan, and Uruguay; figures from Department of Homeland Security, Office of Immigration Statistics, 2005 Yearbook of Immigration Statistics.

[48] Obtained from: GAO report number GAO-03-38, 'Border Security: Implications of Eliminating the Visa Waiver Program', November 22, 2002.

[49] Assumes that inflation will continue at its historical average rate of 2.5% (rate between 1996 and 2006), between 2000 and 2008.

VWP inclusion, 1,428,000, results in an annual benefit of $2.2 billion. This value is assumed to grow by 4% annually.[50]

Improved compliance with NSEERS requirements due to the improvement in ease of compliance

Replacing the departure requirements under NSEERS with the requirements under Exit will improve the compliance rates of NSEERS since all out-bound alien travelers must be processed through Exit in order to depart the U.S. from air and sea ports. The ease of access to biometric information collection systems under Exit compared to the person-to-person processing under NSEERS will also result in more individuals willing to comply with NSEERS. Currently NSEERS registers exits at 25 selected POEs, the proposed rule Exit solution will be located in at least 73 in-scope airports. Given the significantly more widespread presence of the Exit solution, it is anticipated that NSEERS exit registration compliance will improve.

Improvement in National Security

US-VISIT handles a large workload, offers diverse services, and provides timely responses to all of its stakeholders. US-VISIT improves capabilities to manage and screen against watch list records, which include terrorists, wanted persons and immigration violators. Together, these measures strengthen national security, foster government collaboration, and meet user needs.

The principal reason for implementation of an Air/Sea Biometric Exit Program is the need to ascertain with greater certainty the identity of those aliens departing the United States and whether those aliens who have entered for limited times and purposes have, in fact, left the United States in accordance with the terms of their admission. DHS must have a precise understanding of which aliens have left the United States, based on more reliable identity information, in order to better assess the nature or likelihood of a domestic terrorist threat posed by any given alien and to better allocate interior immigration enforcement resources to enforce the immigration laws of the United States.

The National Commission on Terrorist Attacks upon the United States (the 9/11 Commission) investigated the events leading up to the terrorist attacks on the United States on September 11, 2001.[51] The 9/11 Commission's final report illustrates the shortcomings of a system without exit controls, showing that several of the 9/11 hijackers (Mohamed Atta, Ziad Jarrah, Satam Suqami, Salam al Suqami, and Nawaf al Hazmi) could have been denied admission for having previously

[50] Based on analysis of traveler growth rates compiled from: Travel Association of America, www.tia.org.; United States Department of Commerce, International Trade Administration; Border Agency Reports First-Year Successes, Customs and Border Protection, January 11, 2005.

[51] See Intelligence Authorization Act for Fiscal Year 2003, Pub. L. No. 107-306, 116 Stat 2408 (November 27, 2002).

overstayed their terms of admission.[52] The Staff Statement emphasizes the consequences of this particular unfinished Congressional mandate: "Congress required the Attorney General to develop an entry-exit system in 1996. The system's purpose was to improve INS' ability to address illegal migration and overstays for all types of foreign visitors . . . . [W]hen hijackers Suqami and Nawaf al Hazmi overstayed their visas, the system Congress envisaged did not exist. Moreover, when federal law enforcement authorities realized in late August 2001 that [Khalid al] Mihdhar had entered with Hazmi in January 2000 in Los Angeles, they could not reliably determine whether or not Hazmi was still in the United States, along with Mihdhar."

The 9/11 Commission Report emphasizes the importance of screening aliens traveling to and from the United States. The 9/11 Commission recommended that "[t]argeting travel is at least as powerful a weapon against terrorists as targeting their money. The United States should combine terrorist travel intelligence, operations, and law enforcement in a strategy to intercept terrorists, find terrorist travel facilitators, and constrain terrorist mobility."[53] It also recommended that the United States' "border security system should be integrated into a larger network of screening points that includes our transportation system…."[54] The 9/11 Commission Report called for the implementation of a biometric screening system and specifically referred to the implementation of US-VISIT among the 9/11 Commission's many recommendations for strengthening the ability of the United States to detect and deter terrorist attacks on the United States. The 9/11 Commission Report also emphasized the need to make US-VISIT fully operational as soon as possible and that the then-present timetable "may be too slow, given the possible security dangers." The need for better tools and information to assess the continuing terrorist threat is further exemplified by recent attempted and consummated terrorist attacks in the United Kingdom, including at airports. Avowed threats by Al Qaeda and its affiliates to strike inside the United States are frequently renewed.

This RIA does not attempt to monetize the value to national security of a biometric exit system due to the inherent difficulties involved. Instead, a qualitative value is assigned to each alternative that varies from "none" (no benefit to national security from the relevant alternative) to "high" with intermediate values of "low" and "medium". The qualitative benefits for each alternative were derived from a consensus of subject matter experts from US-VISIT (Project Management Branch and other branch staff), Data Integrity Group (DIG) staff and ICE investigation staff.[55] The consensus arrived at by the subject matter experts was that the proposed rule, as well as the Alternatives 2 and 3, provide a "medium" level of benefits related to national security. Alternative 1, the Counter Solution, provides a "low" level of benefit, due to the lower confirmation of departure after biometric collection.

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[52] The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States 564 (ch. 12, note 33) (9/11 Commission Report), and Staff Statement No. 1 to the Report, "Entry of the 9/11 Hijackers in the United States" ("Staff Statement").

[53] 9/11 Commission Report at 385.

[54] Ibid at 387.

[55] This consensus was obtained during a meeting attended by representatives of these organizations. The meeting was held on November 1, 2007.

Table 5-4. National Security Qualitative Benefits

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4
Location:	**Discretionary Location**	**Check-In Counter**	**TSA Checkpoint**	**Discretionary Location**	**Kiosk**
Operator:	**Air/Cruise Lines**	**Air/Cruise Lines**	**DHS**	**DHS**	**DHS**
	Medium	Low	Medium	Medium	Low[56]

[56] Alternative 4 was not assessed in the November 1 session and is assumed to have the same national security related benefits as the counter solution.

6 RIA Outcomes

This section describes the comparative analysis of estimated costs and benefits by alternative. The goal of this chapter is to provide decision makers with quantitative, monetized estimations of investment costs, net social costs, and benefits of the Proposed Rule and the assessed alternatives. This section also discusses the risk evaluation and sensitivities to a few key variables.

6.1 RIA Outcomes Introduction

Alternatives were assessed on qualitative and quantitative grounds. The next section describes the outcomes of the quantitative analysis, while the following section discusses some of the qualitative aspects of the alternatives.

6.1.1 Key Monetized Benefits Assumptions

A significant number of estimates and assumptions are made to develop monetized benefits estimations. For a full list and detailed description of these, Appendix B should be consulted. Some key assumptions include:

An analysis time horizon of 20 years;

An assumed rate of travel volume growth of 3% - 5%;

Two assessed discount rates of 7% and 3%;

Estimated daily transaction volumes (see Appendix B); and

Ramp-up based on planned deployment expenditures.

6.1.2 Monetized Outcomes

Monetized outcomes were estimated for all impacts that met two conditions: (1) volume estimates were available or could be estimated; and (2) values of unit changes in outcomes could be determined or estimated using analogous experience, available statistics, or with acceptable shadow pricing techniques. Impacts meeting these conditions included:

- Improved detection of aliens overstaying visas
- Improved Immigrations and Customs Enforcement efficiency attempting apprehension of overstays
- Improved efficiency processing Exit/Entry data
- Direct expenditures to develop, deploy, operate and maintain the solution
- Social costs resulting from increased traveler queue and processing time

- Social costs resulting from increased flight delays

Once impacts were verified and data required for estimating the scale of impacts was collected, a time frame and a ramp-up period of accrual was established. The time frame for the estimation of Air/Sea Biometric Exit monetized impacts is set at 20 years, which includes a ramp-up period through FY 2009. Ramp-up is determined by the deployment expenditure schedule.

The estimated costs and benefits by alternative were also assessed. Where economic impacts were calculated to be negative, they were added to the estimated expenditures to calculate estimated total social costs.

The following table describes the outcome of the enterprise-wide estimation of costs and benefits by alternative. The table provides a comparison of costs, benefits and net present values (NPV), at a 3 percent and 7 percent discount rate, of the proposed rule and the four alternatives at 10 and 20 year time frames.

Table 6-1. Comparison of Costs and Benefits Totals through 2027 by Alternative and Benefit Category in $M

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4
10 Year total Expenditure plus Delay Costs	-$3,549.3	-$6,404.4	-$4,775.6	-$3,696.3	-$3,123.9
20 Year total Expenditure plus Delay Costs	-$7,457.0	-$13,330.2	-$10,079.0	-$7,960.3	-$6,722.5
10 Year PV 7% discounting	-$2,623.6	-$4,725.8	-$3,480.9	-$2,685.9	-$2,303.6
10 Year PV 3% discounting	-$3,096.3	-$5,583.2	-$4,142.9	-$3,202.0	-$2,722.5

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4
10 Year total Economic Benefits	$1,093.3	$1,093.3	$1,093.3	$1,093.3	$1,093.3
20 Year total Economic Benefits	$2,901.5	$2,901.5	$2,901.5	$2,901.5	$2,901.5
10 Year PV 7% discounting	$771.7	$771.7	$771.7	$771.7	$771.7
10 Year PV 3% discounting	$935.6	$935.6	$935.6	$935.6	$935.6

	Proposed Rule	Alt 1	Alt 2	Alt 3	Alt 4
10 Year NPV 7% discounting	-$1,851.8	-$3,954.1	-$2,709.2	-$1,914.2	-$1,531.8
10 Year NPV 3% discounting	-$2,160.7	-$4,647.6	-$3,207.3	-$2,266.3	-$1,786.9
20 Year NPV 7% discounting	-$2,660.0	-$5,913.4	-$4,059.3	-$2,859.0	-$2,220.8
20 Year NPV 3% discounting	-$3,538.0	-$7,996.7	-$5,503.5	-$3,876.9	-$2,961.1

Benefits Estimates Probability Based Ranges

Applying uncertainty to benefit and cost estimates provides a range of probability-based outcomes for the expected benefits and costs of the Proposed Rule. Figures 6-1 through 6-6 below show the probability distribution of the Present Value (PV) of monetized benefits and costs for the Proposed Rule using 7% and 3% discount rates. The ranges are driven by the uncertainty surrounding the estimation assumptions. Initial probability ranges were developed using objective data and either reaffirmed or recalculated through an iterative interview process, (i.e., a risk analysis process), with US-VISIT subject matter experts to assess the uncertainties underlying the benefit assumptions and drivers. Therefore, the figures illustrate the spectrum of potential outcomes given the RIA model input.

For example, the results of the uncertainty analysis indicate that, using a 7% discount rate, there is a 80% probability that the 20 year cost of implementation will be between $3.3 billion and $5.3 billion and that monetized benefits will be between $772 million and $2.1 billion.

Figure 6-1. Present Value of Net Benefits Using a 7% Discount Rate, Probability Distribution for the Proposed Rule

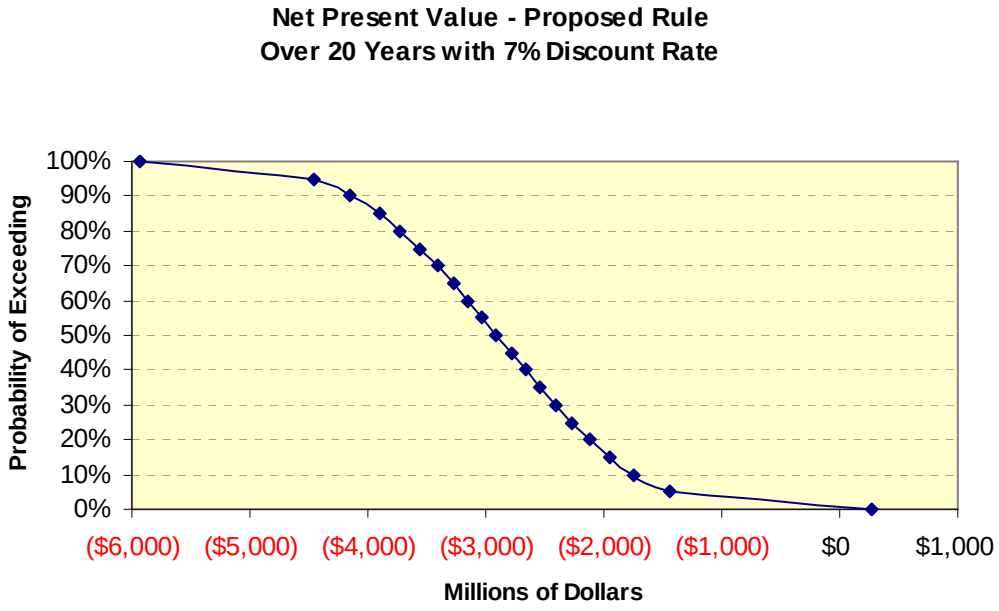


Figure 6-2. Present Value of Net Benefits Using a 3% Discount Rate, Probability Distribution for the Proposed Rule

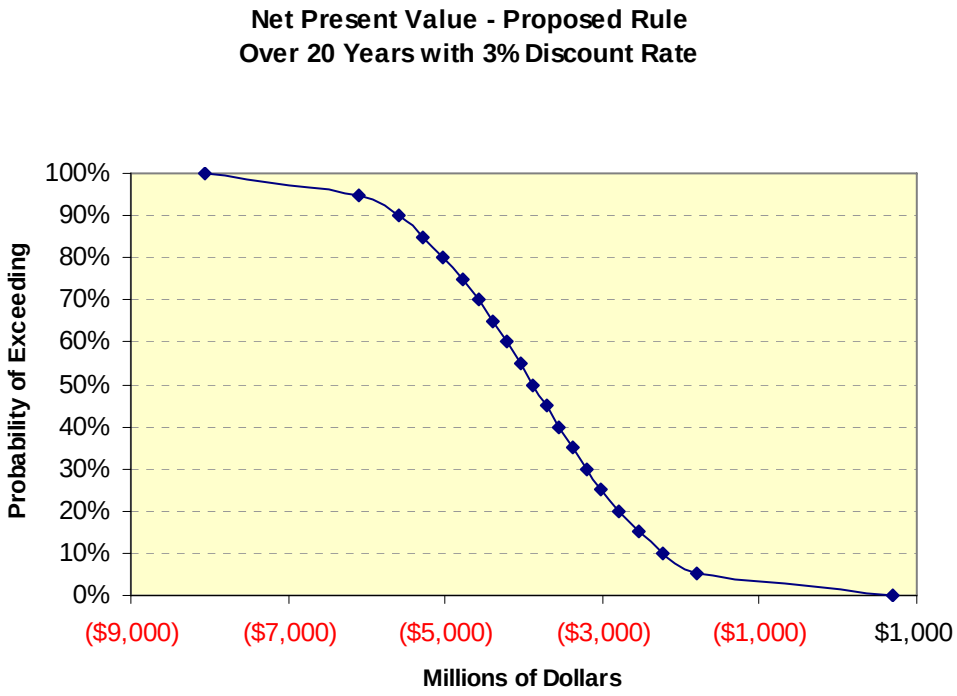


Figure 6-3. Present Value of Benefits Using a 7% Discount Rate, Probability Distribution for the Proposed Rule

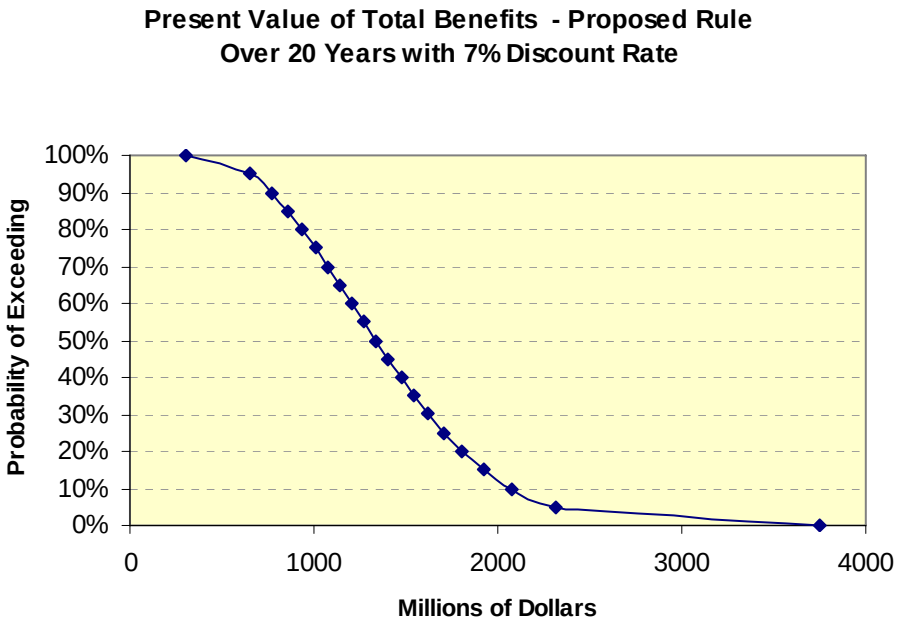


Figure 6-4. Present Value of Benefits Using a 3% Discount Rate, Probability Distribution for the Proposed Rule

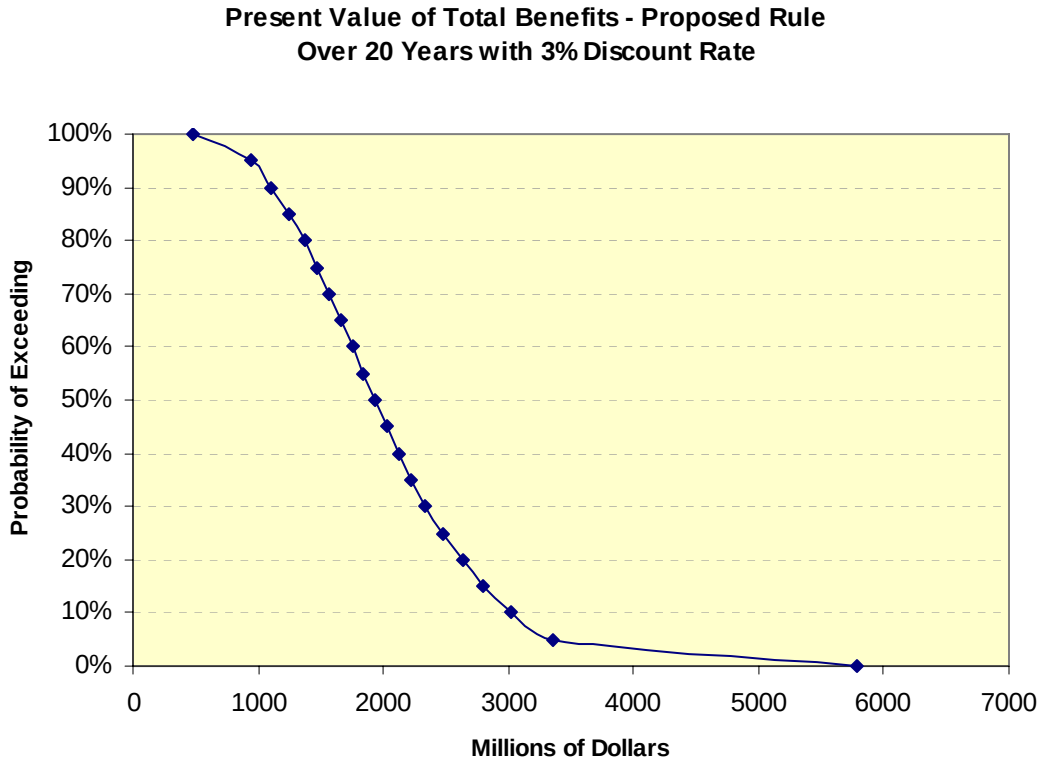


Figure 6-5. Present Value of Total Costs Using a 7% Discount Rate, Probability Distribution for the Proposed Rule

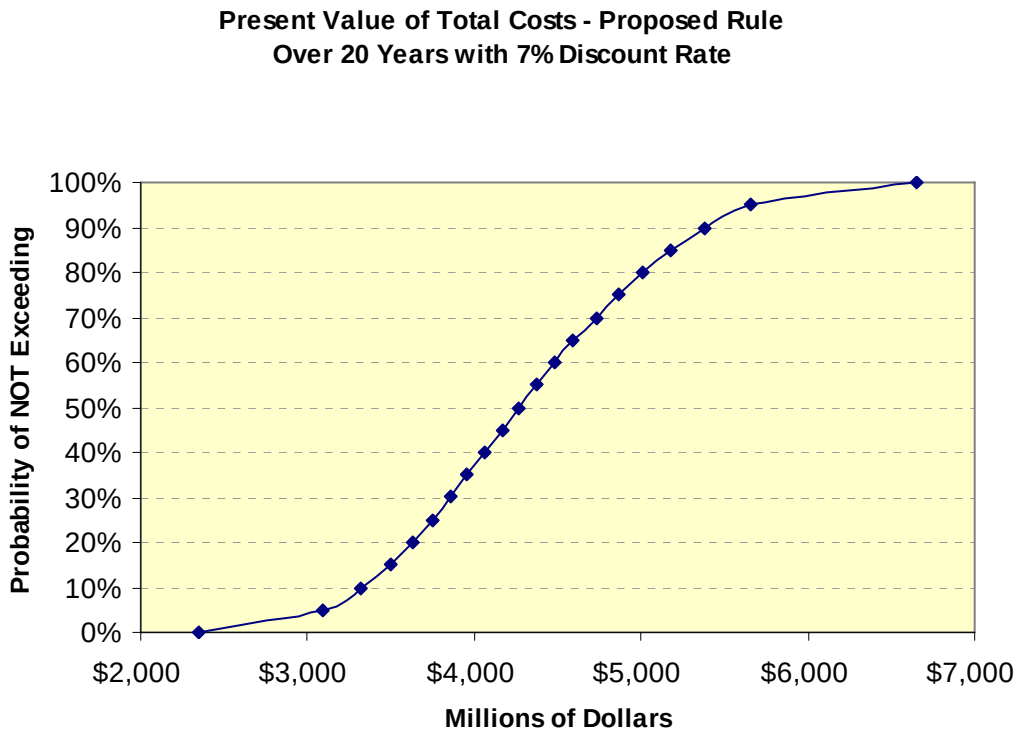
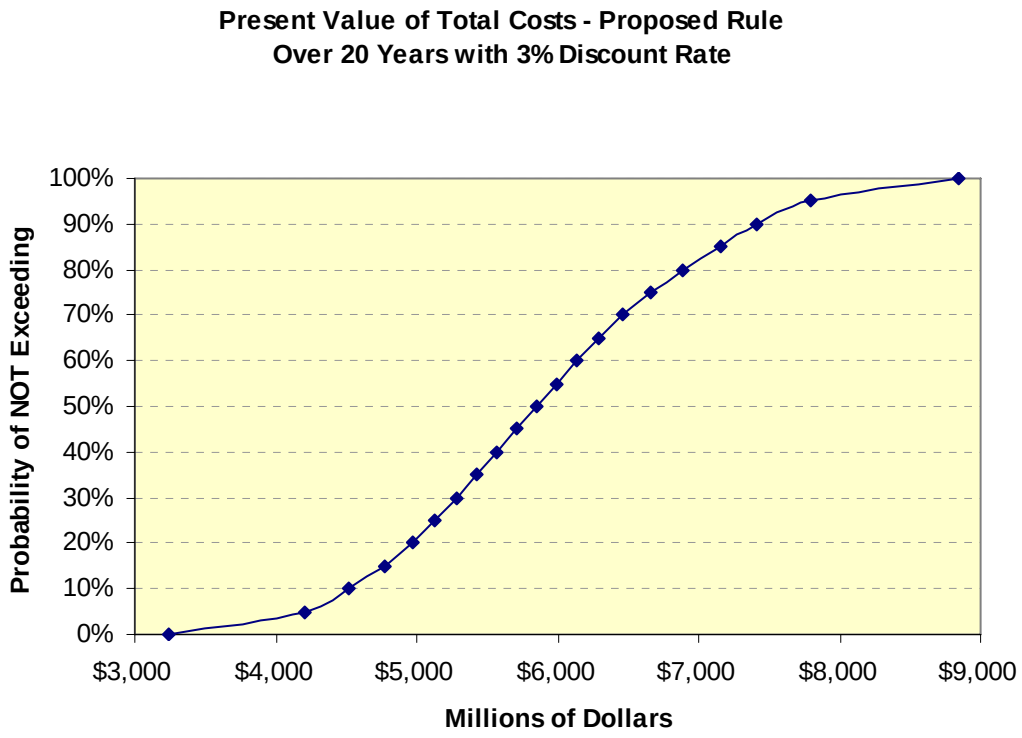


Figure 6-6. Present Value of Total Costs Using a 3% Discount Rate, Probability Distribution for the Proposed Rule



Uncertainty analysis was also used to estimate the range of impacts of the Proposed Rule to the effected carriers. Table 6-2 below describes the median, high and low range costs by carrier size. High estimates represent the 95th percentile and low estimates the 5th percentile in the analysis outcomes.

Table 6-2. Air/Sea Biometric Exit Costs to Large, Medium and Sea Carriers Summary ($millions)

	First Year Costs	Avg. Recurring Costs	10 Year PV (3%)	10 Year PV (7%)
Median Estimates				
Large Airlines	229.1	270.4	2,301.8	1,955.5
Medium Airlines	7.1	8.4	71.2	60.5
Sea Carriers	57.6	34.3	317.9	273.4
Total	**293.7**	**313.1**	**2,690.9**	**2,289.4**
High Estimates				
Large Airlines	295.7	382.5	3,151.5	2,662.6
Medium Airlines	9.1	11.8	97.5	82.3
Sea Carriers	74.4	49.2	436.1	371.5
Total	**379.2**	**443.6**	**3,685.1**	**3,116.5**
Low Estimates				
Large Airlines	174.0	178.1	1,582.8	1,356.9
Medium Airlines	5.4	5.5	49.0	42.0
Sea Carriers	43.6	22.5	223.8	195.2
Total	**223.0**	**206.1**	**1,855.6**	**1,594.1**

6.1.3 Qualitative and Non-monetized Outcomes

Please see Section 5.3.2 for a summary of the results of the qualitative analysis.

6.2 Sensitivity Analysis

In addition to the uncertainty analyses conducted to estimate probability ranges of outcomes, sensitivity analyses were conducted to isolate the impact of a set of key variables.

OMB Circular A-4 provides the following guidance with respect to the conduct of sensitivity analyses:

> Use a numerical sensitivity analysis to examine how the results of your analysis vary with plausible changes in assumptions, choices of input data, and alternative analytical approaches. Sensitivity analysis is especially valuable when the information is lacking to carry out a formal probabilistic simulation. Sensitivity analysis can be used to find "switch points" -- critical parameter values at which estimated net benefits change sign or the low cost alternative switches. Sensitivity analysis usually proceeds by changing one variable or assumption at a time, but it can also be done by varying a combination of variables simultaneously to learn more about the robustness of your results to widespread changes.

Given the OMB guidance, sensitivities tested include the following:

- Increasing costs from the risk adjusted expenditures to 110% of risk adjusted expenditures
- Decreasing the investment lifecycle from 20 years to 10 years
- Increasing the travel volumes from 4% to 5%
- Increase in traveler delayed (queue and processing time) to the upper bound
- Sensitivity to airline collaboration and cost-sharing in the development of a solution.[57]

The outcomes of the sensitivity analysis indicate that the travel growth assumption has a more significant impact to the analysis than the delay assumptions. Only the potential for a major increase in costs has a bigger impact to the outcome.

The following table summarizes the outcomes of the sensitivity analyses.

Table 6-3. Sensitivity Analyses Outcomes

Comparison of Present Value of Monetized Benefits	Sensitivity to 10% Increase in Total Costs	Sensitivity to 10 Year Timeframe	Sensitivity to 5% Annual Travel Growth	Sensitivity to Upper Bound Traveler Delay (Queue and Processing Times)	Sensitivity to Carrier Collaboration
Present Value of Costs ($M)					
Proposed Rule	$4,518.4	$2,623.6	$4,178.0	$4,358.1	$3,993.4
Alt 1	$8,097.2	$4,725.8	$7,433.2	$7,646.5	$7,205.4
Alt 2	$6,057.6	$3,480.9	$5,525.9	$5,559.4	n/a
Alt 3	$4,737.2	$2,685.9	$4,377.0	$4,557.1	n/a
Alt 4	$4,035.2	$2,303.6	$3,767.3	$3,842.5	n/a
Present Value of Benefits ($M)					
Proposed Rule	$1,447.6	$771.7	$1,612.4	$1,447.6	$1,447.6
Alt 1	$1,447.6	$771.7	$1,612.4	$1,447.6	$1,447.6
Alt 2	$1,447.6	$771.7	$1,612.4	$1,447.6	$1,447.6
Alt 3	$1,447.6	$771.7	$1,612.4	$1,447.6	$1,447.6
Alt 4	$1,447.6	$771.7	$1,612.4	$1,447.6	$1,447.6
Net Present Value ($M)					
Proposed Rule	-$3,070.8	-$1,851.8	-$2,565.6	-$2,910.5	-$2,545.8
Alt 1	-$6,649.6	-$3,954.1	-$5,820.8	-$6,198.9	-$5,757.8
Alt 2	-$4,610.0	-$2,709.2	-$3,913.5	-$4,111.8	n/a

[57] This scenario examines the possibility of collaboration among individual airlines in the development of an integrated solution as opposed to each airline developing proprietary systems. The motivation behind such an action among industry competitors is that collaboration could lead to lower individual costs per airline. The analysis assumes lower costs for equipment and implementation for the carrier alternatives and is not applicable to the government alternatives.

Comparison of Present Value of Monetized Benefits	Sensitivity to 10% Increase in Total Costs	Sensitivity to 10 Year Timeframe	Sensitivity to 5% Annual Travel Growth	Sensitivity to Upper Bound Traveler Delay (Queue and Processing Times)	Sensitivity to Carrier Collaboration
Alt 3	-$3,289.6	-$1,914.2	-$2,764.5	-$3,109.5	n/a
Alt 4	-$2,587.6	-$1,531.8	-$2,154.9	-$2,394.9	n/a

Baseline for Sensitivity Analysis is: 20 year timeframe, 7% Discount Rate, Standard Travel Growth Assumption (4% per annum), Standard Delay

6.3 Break-Even Analysis

This "Breakeven Analysis" examines the implementation of the Proposed Rule (location at carrier's discretion with airline/sea carrier being responsible for implementation and management) and the degree by which its implementation must reduce risk of terrorist attack in order to be justified at a "breakeven point". The period examined is from 2008-2017 and three scenarios are examined with respect to terrorist attack. The first involves an attack involving only human casualties, the second human casualties and the loss of a commercial airliner and the third a catastrophic loss along the lines of the Twin Towers Attack of September 11, 2001. The present value of each scenario's benefits and costs are examined using two discount rates, 3% and 7%. The analysis also utilizes three estimates of the Proposed Rule's costs, a high, medium and low.

Ideally, the quantification and monetization of the beneficial security effects of this regulation would involve two steps. First, we would estimate the reduction in the probability of a successful terrorist attack resulting from implementation of the regulation and the consequences of the avoided event (collectively, the risk associated with a potential terrorist attack). Then we would identify individuals' willingness to pay for this incremental risk reduction and multiply it by the population experiencing the benefit. Both of these steps, however, rely on key data that are not available for this rule.

Typically, reductions in the probability of a terrorist attack resulting from a regulation are measured against the baseline probability of occurrence (the current likelihood that a terrorist attack will be attempted and be successful) and combined with information about the consequences of the attack. The difference between the baseline probability of occurrence and the probability of occurrence after the regulation is implemented would represent the incremental probability reduction attributable to the rule.

We cannot use historical data on the frequency of terrorist attacks to estimate the current baseline probability of attack within the United States for several reasons. The data on international events occurring within the United States in the last decade are limited, and little information is available describing the consequences of most of these events. Additionally, use of these data to project future probability of attack requires an understanding of the socioeconomic and political conditions motivating and facilitating these events historically and foresight with regard to how these factors may change in the future. Therefore, for the primary benefits analysis, we do not use these data to estimate the baseline probability of a terrorist attack in the United States or the reduction resulting from improved tracking of Alien exits via the Air/Sea Biometric Exit program.

As a result, and in the absence of more detailed data, we are unable to quantitatively estimate the incremental reduction in the probability of terrorist attack that will result from this rule.

We have conducted reviews of the economic literature to identify existing studies of individuals' willingness to pay to reduce the risk of a terrorist attack. Several articles discuss characteristics of terrorist attacks that might influence willingness to pay to reduce these risks.[58] Given publicly available data, however, we are unable to identify specific estimates of willingness to pay to reduce the risk of terrorist attack in the United States. Although we are unable to identify estimates of willingness to pay for the risk reductions potentially achieved by this regulation, academic literature provides information about how the public's perception of terrorist risks might influence their desire for policy action, and ultimately, their willingness to pay for such regulation. A substantial body of psychometric literature attempts to measure how the perception of risk affects attitudes towards risk reduction.

For example, the work of Slovic et al., clarifies dimensions of risk that influence individual rankings of the importance of reducing these risks.[59] The authors find that the most important determinant of how the public ranks risk is the degree of "dread" associated with the risk. The authors define dreaded risks as a "perceived lack of control...catastrophic potential, fatal consequences, and the inequitable distribution of risks and benefits."[60] In other words, the public is less willing to tolerate risks related to incidents they dread, such as nuclear accidents or terrorist attacks, than incidents that are not dreaded but that pose similar or higher risks, such as riding a motorcycle. Slovic et al., state that the more dreaded an activity, "(a) the higher its perceived risk, (b) the more people want its risk reduced, and (c) the more they want to see strict regulation employed to achieve the desired reduction in risk."[61] Based on existing risk perception literature, it is reasonable to hypothesize that people would be willing to pay more to reduce risks associated with a terrorist attack than similar risks associated with hazards that are familiar, controllable, and that do not have catastrophic consequences.

When it is not possible to obtain a single value estimate that comprises the bundle of benefits derived from the regulation in question, analysts estimate separately the value of individual effects resulting from the regulation and sum them to estimate total benefits. Certain effects are more

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[58] See Sunstein, Cass. 2003. "Terrorism and Probability Neglect." Journal of Risk and Uncertainty. Volume 26, Numbers 2-3. 2003. Pages 121–136, and Fischhoff, Baruch, Roxana M. Gonzalez, Deborah A. Small, and Jennifer S. Lerner. 2003. "Judged Terror Risk and Proximity to the World Trade Center." Journal of Risk and Uncertainty. Volume 26, Numbers 2-3. 2003, Pages 137–151.

[59] Slovic, Paul, Baruch Fischhoff, and Sarah Lichtenstein. 1981. "Perceived Risk: Psychological Factors and Social Implications." Proceedings of the Royal Society of London. Series A: Mathematical and Physical Sciences. Volume 430, Number 1878. Pages 17–34, and Slovic, Paul. 1987. "Perception of Risk." Science. Volume 236, April 1987. Pages 280–285.

[60] Slovic, Paul. 1987. "Perception of Risk." Science. Volume 236, April 1987. Page 283.

[61] Slovic, Paul, Baruch Fischhoff, and Sarah Lichtenstein. 1981. "Perceived Risk: Psychological Factors and Social Implications." Proceedings of the Royal Society of London. Series A: Mathematical and Physical Sciences. Volume 430, Number 1878. Page 29.

easily measured than others. Substantial literature exists estimating the value of changes in fatal and nonfatal risks. In addition, the value of lost property and opportunity costs associated with supply chain effects can be determined from market data. Other effects may be more difficult to quantify or monetize—a regulatory action may result in citizens feeling safer or having less fear. Several researchers argue that reductions in fear result in a social good that should be quantified, though "the problem of quantifying and monetizing fear and its consequences…has yet to be seriously engaged in the relevant literature."[62] In addition, people's willingness to pay to protect national historic treasures or sites of cultural importance may exceed the costs of simply repairing or rebuilding these sites. Effects that are not easily monetized using readily available information may be discussed qualitatively. However, lacking information about the incremental decrease in the probability of a successful terrorist attack or reliable information about the consequences of such an attack, we are unable to quantify individual categories of benefits. Without quantifying these benefits, we cannot estimate their value.

In light of these limitations, we conduct a "breakeven" analysis to determine what change in the reduction of risk would be necessary in order for the benefits of the rule to exceed the costs. OMB recommends a threshold or breakeven analysis when nonquantified benefits are important to evaluating the benefits of a regulation.[63] The potential economic impacts of a terrorist attack that are prevented by the regulation represent the costs savings, or benefits, of the regulation. For the costs and benefits of the rule to be equal, the net costs of the rule we are able to monetize in the analysis must equal the reduction in the probability that a successful terrorist attack will occur multiplied by the costs of such an attack, as illustrated in the following formula—

$$\text{Net costs} = \Delta p \text{ (successful terrorist attack)} \times \text{consequences of an attack}$$

We solve for the change in probability (Δp), and the result is the smallest reduction in the probability of a successful terrorist attack resulting from the regulation that would result in the benefits of the rule equaling the costs. We believe that in the absence of a credible estimate of the probability of a terrorist attack, this "breakeven" probability can still be of much use to decision makers and the general public. For example, if decision makers believe that the incremental change in probability of a successful attack achievable with the rule is greater than the change calculated in our analysis, this may lead them to recommend adopting the regulation on the grounds that a reasonable estimate of the benefits of the rule is likely to exceed a reasonable estimate of the costs. Conversely, if decision makers believe the incremental change in probability is likely to be less than the change calculated in this analysis, this may lead them to recommend rejecting the regulation on the grounds that the costs of the rule are likely to exceed the benefits. An important caveat is that this analysis is only useful if the attack scenarios appropriately reflect the types of attacks prevented by this regulation.

The accounting statement that provides the relevant data used for the breakeven analysis can be seen in the below table. The table's figures are the same as presented elsewhere in this report as

[62] See Sunstein, Cass. 2003. "Terrorism and Probability Neglect." Journal of Risk and Uncertainty. Volume 26, Numbers 2-3. 2003. Pages 132 and 133.

[63] US Office of Management and Budget. Circular A-4, September 17, 2003.

are the underlying assumptions used in their calculation. Hence there will not be another duplicative discussion of these assumptions in this section of the report.

Table 6-4. Accounting Statement: Classification of Expenditures, 2008 through 2017, $ Million, 2008

	Estimates			Units		
	Primary Estimate	Low Estimate	High Estimate	Year Dollar	Discount Rate	Period Covered
Benefits						
Annualized Monetized ($millions/year)	$99.9	$47.9	$164.4	2008	7%	2008-2017
	$103.5	$49.6	$170.4	2008	3%	2008-2017
Costs						
Annualized Monetized ($millions/year)	$366.86	$252.94	$495.84	2008	7%	2008-2017
	$369.88	$254.52	$500.57	2008	3%	2008-2017

The Proposed Rule is assumed to reduce the ability of terrorists to conduct attacks against the U.S. through its ability to provide, to CBP and other law enforcement agencies, information on visa overstayers who are considered high risk who may have slipped into the U.S., via legitimate and legal entry means, without having originally being detected as such but later being identified as high risk (i.e., after having entered into the U.S.). It is assumed that Exit, by providing information to CBP and other relevant parties as to whether or not high risk individuals have left the U.S., enables them to better concentrate their resources on those high risk individuals still in the U.S. This would be expected to assist in the apprehension of such individuals quicker than would otherwise be the case hence reducing their ability to carry out terrorist acts in the U.S.

As stated earlier, three terrorist scenarios are examined. The first only involves human casualties and no significant property damage. An example of such an attack may be a chemical or biological attack on a major metropolitan area that causes little, if any, damage to buildings or other types of infrastructure. As it is not possible to infer the number of fatalities that such an attack can cause, a range of human casualties is assumed, from 500 to 3,000. Economic values for within this range are calculated and presented using two assumptions with respect to the value of statistical life (VSL). The first assumption assumes, in accordance with Federal Aviation Administration guidance, that the estimated value of statistical life (VSL) is $3 million per person (in 2004 dollar terms).[64] The second VSL used is $6 million per person (in 2004 dollar terms).[65] This is the value that the Environmental Protection Agency uses.[66]

[64] In 2008 dollar terms this figure is equivalent to $3.38 million. FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.

[65] In 2008 dollar terms this is equal to $6.76 million.

[66] Cited in Elena Ryan, Office of Regulations and Rulings, U.S. Customs and Border Protection, Department of Homeland Security, "Regulatory Assessment and Final Regulatory Flexibility Act Analysis for the Final Rule Passenger Manifests for Commercial Aircraft Arriving in and Departing from the United States; Passenger and Crew Manifests for Commercial Vessels Departing from the United States", July 2007, p. 33.

The second terrorist attack scenario makes the same assumptions regarding human casualties but also assumes, over and above those, that a large commercial airliner is lost and includes the cost of conducting an FAA investigation of the incident. According to the FAA, the average cost of a commercial passenger airliner, in 2004 dollar terms, was $11.5 MN.[67] Converted to 2008 dollar terms, this comes to $13.6 MN. The FAA has estimated the cost of a typical investigation at $400,000 (in 2004 dollar terms).[68]

The last terrorist attack scenario, the "Catastrophic Loss" category, assumes an attack along the lines of the Attacks in New York City on September 11, 2001. As exact human losses cannot be reasonably estimated, a range of fatalities is assumed between 500 and 3,000. In addition it is also assumed that physical damage and foregone business income is equal to that estimated for the New York City September 11th attacks. These costs were estimated, by the Comptroller of the City of New York, to be $21.8 BN (in 2004 dollars).[69] In 2008 dollar terms this translates to $25.8 BN. The costs of a loss of a commercial airliner and associated FAA investigation have not been included.

The results from the derived analysis for the three scenarios, using 7% and 3% discount rates, can be seen in the six tables on the following pages. A number of facts can be derived from these tables. The first is that in the human only and human plus plane scenarios, in those with 500 casualties, significant reductions in risk are needed to justify the expenditures on the Air/Sea Exit program, at least from the perspective of fighting terrorism. In the high cost scenarios for 500 casualty events for example, risk must be reduced by about 20%.

For cases where there are more casualties, for example the human only and human plus plane scenarios for casualties in the range of 1,000 to 3,000, due to the relatively lower implementation cost to benefit ratios, even small improvements in risk reduction can justify the implementation of project. In the aforementioned scenarios, even a risk reduction of 1% to 8% justifies implementation of the Air/Sea Exit program. In the scenarios involving catastrophic loss, again due to relatively high benefits to cost ratio, only a less-than-1% to 1% reduction in terrorist attack would justify implementation.

The full set of calculated risks, for each scenario and using 7% and 3% discount rates, can be seen in the tables below.

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[67] . FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.

[68] In 2008 dollar terms this figure becomes $470,000. FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.

[69] William C. Thompson, Comptroller of New York City, "One Year Later: The Fiscal Impact of 9/11 on New York City", September 2002.

Table 6-5. Annual Risk Reduction Required for Net Costs to Equal Benefits for the Human Casualty Only Terrorist Attack Scenario, Assuming a 7% Discount Rate

Annual Risk Reduction Required for Net Costs to Equal Benefits for Human Casualty Only Attack Scenario (7 percent discount rate, in millions of 2008 $)							
Casualties Avoided	Value of Casualties Avoided	Annualized Net Costs			Risk Reduction Range		
		High	Medium	Low	High	Medium	Low
$3.38	VSL (MN 2008 $)						
500	$1,690	$331	$267	$205	20%	16%	12%
1000	$3,380	$331	$267	$205	10%	8%	6%
3,000	$10,140	$331	$267	$205	3%	3%	2%
$6.76	VSL (MN 2008 $)						
500	$3,380	$331	$267	$205	10%	8%	6%
1000	$6,760	$331	$267	$205	5%	4%	3%
3,000	$20,280	$331	$267	$205	2%	1%	1%

Table 6-6. Annual Risk Reduction Required for Net Costs to Equal Benefits for the Human Casualty plus Plane Terrorist Attack Scenario, Assuming a 7% Discount Rate

Annual Risk Reduction Required for Net Costs to Equal Benefits for Human Casualty Plus Plane Attack Scenario (7 percent discount rate, in millions of 2008 $)							
Casualties Avoided	Value of Casualties Avoided + Plane + FAA Investigation	Annualized Net Costs			Risk Reduction Range		
		High	Medium	Low	High	Medium	Low
$3.38	VSL (MN 2008 $)						
500	$1,704	$331	$267	$205	19%	16%	12%
1000	$3,394	$331	$267	$205	10%	8%	6%
3,000	$10,154	$331	$267	$205	3%	3%	2%
$6.76	VSL (MN 2008 $)						
500	$3,394	$331	$267	$205	10%	8%	6%
1000	$6,774	$331	$267	$205	5%	4%	3%
3,000	$20,294	$331	$267	$205	2%	1%	1%

Table 6-7. Annual Risk Reduction Required for Net Costs to Equal Benefits for the Catastrophic Loss Terrorist Attack Scenario, Assuming a 7% Discount Rate

Annual Risk Reduction Required for Net Costs to Equal Benefits for Catastrophic Loss Attack Scenario (7 percent discount rate, in millions of 2008 $)							
Casualties Avoided	Value of Casualties Avoided + Physical Damage World Trade Towers	Annualized Net Costs			Risk Reduction Range		
		High	Medium	Low	High	Medium	Low
$3.38	VSL (MN 2008 $)						
500	$27,511	$331	$267	$205	1%	1%	1%
1000	$29,201	$331	$267	$205	1%	1%	1%
3,000	$35,961	$331	$267	$205	1%	1%	1%
$6.76	VSL (MN 2008 $)						
500	$29,201	$331	$267	$205	1%	1%	1%
1000	$32,581	$331	$267	$205	1%	1%	1%
3,000	$46,101	$331	$267	$205	1%	1%	>1%

Table 6-8. Annual Risk Reduction Required for Net Costs to Equal Benefits for the Human Casualty Only Terrorist Attack Scenario, Assuming a 3% Discount Rate

Annual Risk Reduction Required for Net Costs to Equal Benefits for Human Casualty Only Attack Scenario (3 percent discount rate, in millions of 2008 $)							
Casualties Avoided	Value of Casualties Avoided	Annualized Net Costs			Risk Reduction Range		
		High	Medium	Low	High	Medium	Low
$3.38	VSL (MN 2008 $)						
500	$1,690	$330	$266	$205	20%	16%	12%
1000	$3,380	$330	$266	$205	10%	8%	6%
3,000	$10,140	$330	$266	$205	3%	3%	2%
$6.76	VSL (MN 2008 $)						
500	$3,380	$330	$266	$205	10%	8%	6%
1000	$6,760	$330	$266	$205	5%	4%	3%
3,000	$20,280	$330	$266	$205	2%	1%	1%

Table 6-9. Annual Risk Reduction Required for Net Costs to Equal Benefits for the Human Casualty plus Plane Terrorist Attack Scenario, Assuming a 3% Discount Rate

Annual Risk Reduction Required for Net Costs to Equal Benefits for Human Casualty Plus Plane Attack Scenario (3 percent discount rate, in millions of 2008 $)							
Casualties Avoided	Value of Casualties Avoided + Plane + FAA Investigation	Annualized Net Costs			Risk Reduction Range		
		High	Medium	Low	High	Medium	Low
$3.38	VSL (MN 2008 $)						
500	$1,704	$330	$266	$205	19%	16%	12%
1000	$3,394	$330	$266	$205	10%	8%	6%
3,000	$10,154	$330	$266	$205	3%	3%	2%
$6.76	VSL (MN 2008 $)						
500	$3,394	$330	$266	$205	10%	8%	6%
1000	$6,774	$330	$266	$205	5%	4%	3%
3,000	$20,294	$330	$266	$205	2%	1%	1%

Table 6-10. Annual Risk Reduction Required for Net Costs to Equal Benefits for the Catastrophic Loss Terrorist Attack Scenario, Assuming a 3% Discount Rate

Annual Risk Reduction Required for Net Costs to Equal Benefits for Catastrophic Loss Attack Scenario (3 percent discount rate, in millions of 2008 $)							
Casualties Avoided	Value of Casualties Avoided + Physical Damage World Trade Towers	Annualized Net Costs			Risk Reduction Range		
		High	Medium	Low	High	Medium	Low
$3.38	VSL (MN 2008 $)						
500	$27,511	$330	$266	$205	1%	1%	1%
1000	$29,201	$330	$266	$205	1%	1%	1%
3,000	$35,961	$330	$266	$205	1%	1%	1%
$6.76	VSL (MN 2008 $)						
500	$29,201	$330	$266	$205	1%	1%	1%
1000	$32,581	$330	$266	$205	1%	1%	1%
3,000	$46,101	$330	$266	$205	1%	1%	1%

7 Analysis Framework

The process for conducting the analysis and developing the content of this RIA is based on a framework issued by DHS and in conformance with OMB Circular A-4. The RIA framework is based on best practices outlined in the Department of Homeland Security CBA Workbook and advanced by the General Accounting Office, and satisfies the following goals: Transparency & Audit Trail, Credibility, and Risk Analysis, Establishment of Measurable/Quantifiable Outcomes, and Continuous Updating. This section describes how the framework was applied to the Air/Sea Biometric Exit RIA work effort.

7.1 RIA Framework Process

At its core, the RIA framework is a methodology for identifying solution benefits and performance metrics, estimating solution costs, and projecting estimated solution value.

The RIA framework process involves four steps:

1. Scope Input – This step entails working with business and IT stakeholders to understand the design and functionality of the investment, including the functional and technical components of each viable alternative.
2. Benefits Estimation – The estimation of benefits involves two components. To estimate the effects and effectiveness of each solution[70], sources of benefits and value creation for each technical component of each viable alternative are ascertained and the identified benefits are linked to the goals and objectives of Air/Sea Biometric Exit stakeholders. To estimate the value of those effects, or benefits, structure and logic diagrams are developed to show how benefits are estimated and data to calculate benefits is obtained (where possible).
3. Cost Estimation – In this step, all sources of capital and operations and maintenance costs are identified via bottoms-up estimates using the best data available.
4. Outcomes and Risks – This step involves quantifying benefits and lifecycle costs, projected outcomes and risk-adjusted present values of costs and benefits. It also includes two types of risk analysis. With analytical risk analysis, benefits and costs are adjusted for uncertainty as part of the RIA framework process. The adjustment indicates the level of uncertainty subject matter experts place on estimated benefits or costs, and is expressed in terms of a range and explained with assumptions. With managerial risk, a sensitivity analysis is conducted by which higher-level and uncontrollable external risks are identified and, where possible, quantified.

[70] This framework addresses a general approach. For Air/Sea Biometric Exit, there are no differences in benefits across the Proposed Rule and alternatives.

7.1.1 Scope Input

The remaining sections of this chapter explain how the team applied this methodology to the Air/Sea Biometric Exit RIA.

In every RIA, this stage is critical because all analysis starts with understanding the scope of alternatives being considered. The RIS team facilitated this process, working with business and IT subject matter experts to document the scope of each alternative and develop assumptions where scope decisions have not been finalized.

The scoping process required defining the Air/Sea Exit alternatives to a sufficient level of detail to allow for in-depth analysis. The alternatives were grouped into meaningful business capabilities based on meeting specific criteria, shown below:

- The alternative should meet the goals and objectives set for the desired capability;
- The alternative should be reasonably feasible from various perspectives (e.g., technologically, financially, politically);
- The alternative should be reasonably different from other alternatives (the alternative should not be a different configuration of another alternative); and
- The alternative can be reasonably assessed against a base case.

For detailed information regarding the alternative selection process and the breadth of alternatives analyzed during the selection process refer to Appendix G.

7.1.2 Benefits Estimation

Benefits estimation refers to determining the effects of the alternatives and how those effects relate to the baseline, or the situation by which no investments will be made. Since effects can stem from multiple aspects of the solution and can affect several performance metrics, structure and logic diagrams were developed to show the logic behind the calculation of the benefits. To "populate" that logic, the RIA team worked with stakeholder organizations to develop a list of benefits and metrics, quantify the anticipated changes to those metrics based on the new solutions, and, using monetization source values (such as the value of time, or of processing costs avoided), to ultimately determine the economic impacts of each alternative.

Two additional categories of benefits were considered and covered in this RIA: quantifiable benefits that could not be monetized and non-quantifiable benefits. In both cases, a lack of data was typically the cause for not being able to monetize the benefits. Some of these benefits reflect potential impacts to society, for which values are not directly observable but for which monetary values can be constructed and ascribed based on closely related observed prices (such as wage rates for the opportunity cost of time). Where applicable, this technique was employed to facilitate the measurement of certain societal benefits. This completes the "benefits picture" for Air/Sea Biometric Exit.

Effects

This phase of the estimation process consisted of four steps:

1. The development of benefits categories—detection, efficiency and other benefits—which correspond to the high level goals of DHS but also apply to all stakeholders.
2. Developing benefits components that would be evaluated side-by-side with the technical components of the alternatives under consideration. This allows a determination to be made about which benefits are likely for each alternative and from what source they stem.[71]
3. The identification of metrics within each benefit component (where possible).
4. The creation of structure and logic diagrams for each identified benefit metric. These diagrams facilitated the consensus building process by allowing technical experts and other stakeholders to evaluate benefits metrics without having to wade through complicated formulas. A sample structure and logic diagram is shown below.

[71] Ibid.

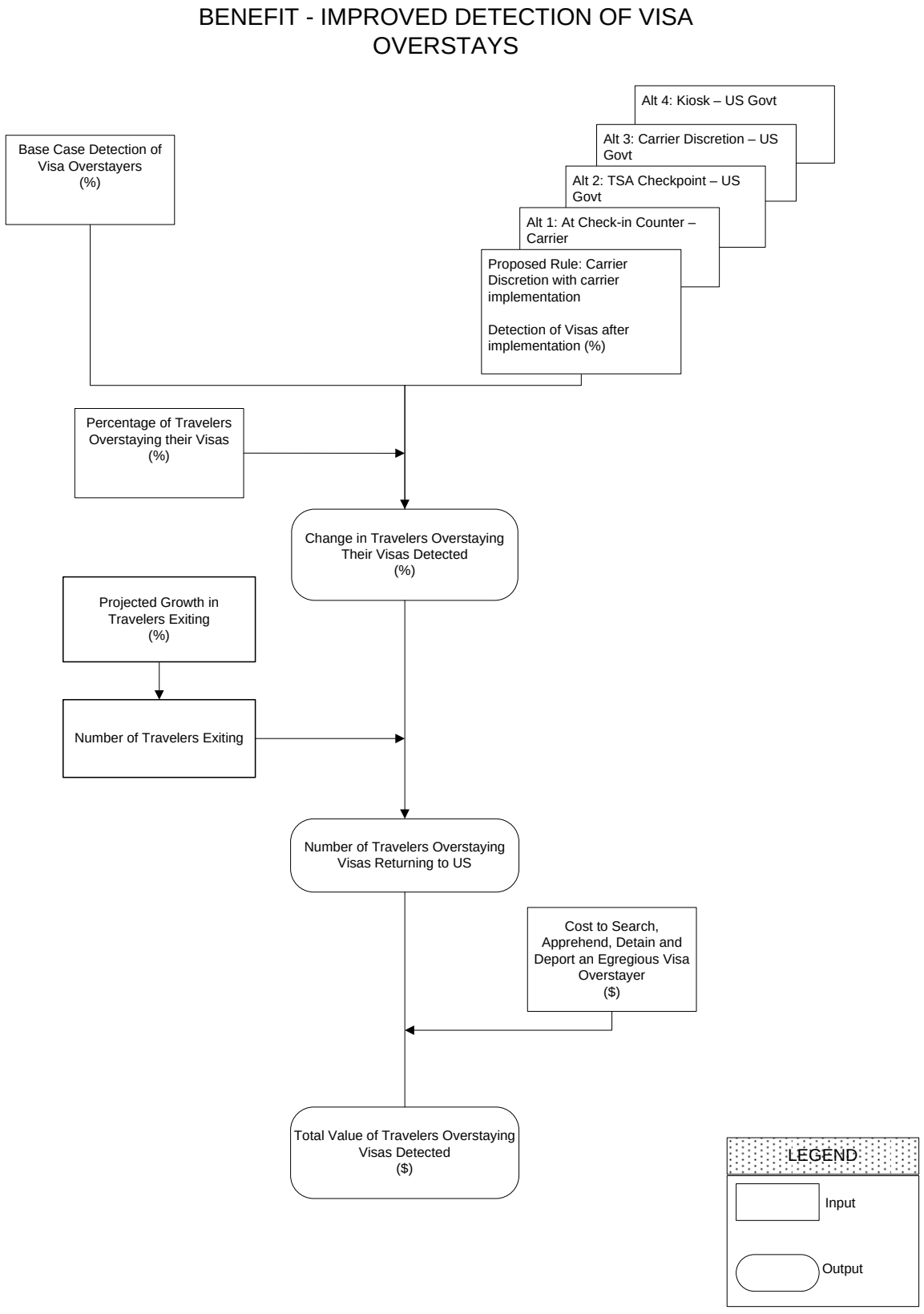

Figure 7-1. EXAMPLE Improved Detection of Visa Overstays Structure and Logic Estimation

Value of Effects (Benefits)

The value of effects refers to the monetizing impacts of benefits. Values were calculated by multiplying the effects by the monetary value of an event, such as the monetary value of preventing a prior visa overstay from entering the U.S. who should have been denied, by the projected volume of that event. That yielded a monetized benefit that could be evaluated against the base case value.

As mentioned earlier, some benefits reflect potential impacts to society, for which values are not directly observable but for which monetary values can be constructed and ascribed based on closely related observed prices (such as wage rates for the opportunity cost of time). Where applicable, this technique was employed to facilitate the measurement of certain societal benefits.

7.1.3 Cost Estimation

Costs, like benefits, stem directly from the scope of the alternatives provided by business and IT Air/Sea Biometric Exit stakeholders. Those same subject matter experts were consulted to itemize costs at the most elemental unit possible, namely prices and quantities, and to define cost factors, such as the average amount of space required to house a server. To adjust those costs for the risk that actual costs would differ, prices and quantities were represented by ranges reflecting their likely values, rather than a rigid one-number estimate.

As part of cost estimation, both costs and cost efficiencies were considered and summed to yield net incremental costs. Examples of cost efficiencies/avoidance include increases in productivity and the eliminated costs that occur when a piece of hardware is retired.

As with benefits, potential societal costs will be evaluated with the use of proxies for the value of some goods, such as time, for which direct prices cannot be observed. Capturing as many societal impacts as possible will provide a more comprehensive estimate of the net impact of the program.

Capital Costs/O&M Costs

A cost model was used to capture cost inputs. In terms of capital costs, the following categories were used: labor (contractor and government), hardware (e.g., servers, scanners, and matchers), software (e.g., matching software), and facilities (e.g., power upgrades, space for servers). Costs in each category were assigned to system development lifecycle phases. Operations and maintenance costs were also captured as part of this process. For a detailed description of cost assumptions, see Section 4.4 and Appendix A.

7.1.4 RIA Outcomes/Risk Analysis

Economic forecasts traditionally 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 statistical 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 uncertainty 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 may be very remote.

Another common approach to providing added perspective on reality is "sensitivity analysis." Key forecast assumptions are varied one at a time to assess their relative impact on the expected outcome. This is a potentially useful tool in order to identify which assumptions or data are driving the outcome of the analysis. This RIA did incorporate several sensitivity analyses of key estimates in addition to analyzing the impact of simultaneous differences between assumptions and actual outcomes.

A more comprehensive uncertainty analysis provides a better picture of the uncertainties inherent in an analysis than either the scenario approach or a sensitivity analysis. 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 attaching ranges (probability distributions) to the forecasts of each input variable. The approach allows all inputs to be varied simultaneously within their distributions, thus avoiding the problems inherent in conventional sensitivity analysis. The approach also recognizes interrelationships between variables and their associated probability distributions. This analytical risk approach was taken for this Air/Sea Biometric Exit RIA.

7.1.5 RIA Principles

The RIA team applied the following principles to its efforts.

1. Account for the Base Case. Proposed alternatives were compared to the "as-is," or "base case" process, where "as-is" essentially assumes that no major investments will be made. Two cost-benefit tests were considered to increase the credibility of results. The first was whether the alternative's incremental benefits exceeded its costs. The second was a comparison of the incremental net benefits of each alternative, where "incremental net benefits" meant that the likely effects of a properly conceived Base Case are completely taken into account. Using these incremental approaches implicitly tests the as-is case in addition to the three proposed alternatives. Had the alternatives failed to produce a positive return on investment, an interpretation would have been an endorsement of the as-is case.
2. Account comprehensively for all major alternatives. The cost benefit analysis was applied to the widest-possible range of feasible strategic and tactical alternatives.
3. Account comprehensively for all costs and benefits, while simultaneously avoiding double-counting. This principle was applied to this RIA.
4. Ask, whenever possible, "whether" and "when." Internal rates of return, net present values, and benefit-to-cost ratios were used to indicate whether a particular investment alternative is economically justifiable and how it compares to other alternatives. Project timing and phasing were also considered.

5. Conduct a valid risk analysis. Every important forecast and assumption will likely be wrong to some degree. Therefore, this RIA accounted for two different kinds of risk: analytical and managerial.
6. Develop a transparent cost and benefit measurement tool to facilitate peer reviews, audits, and updates.
7. Provide a "line of sight" that ties program goals to business case outcomes, scope, and performance measures.

8 Regulatory Flexibility Analysis

Impacts to Small Entities

This chapter has been prepared to examine the impacts of the final rule on small entities as required by the Regulatory Flexibility Act (5 U.S.C. 604, as amended by the Small Business Regulatory Enforcement and Fairness Act of 1996 or SBREFA). A small entity may be a small business (defined as any independently owned and operated business not dominant in its field that qualifies as a small business per the Small Business Act); a small not-for-profit organization; or a small governmental jurisdiction (locality with fewer than 50,000 people).

In this rulemaking, small air carriers are defined as those that employ fewer than 1,500 employees, and small sea carriers are defined as those that employ fewer than 500 employees. As noted previously, these carriers are exempt from collecting biometric information for US-VISIT exit requirements under this Proposed Rule. Based on information obtained from CBP regarding current eAPIS users, this analysis estimates that there are approximately 500 small U.S. air carriers that could be affected by the Proposed Rule were it not for the proposed exemption. There are an estimated 3 small U.S. sea passenger carriers that would be affected. The analysis of the potential number of air and sea carriers that would be directly affected by the Proposed Rule were it not for the small carrier exemption is ongoing. Public comment on the population estimates is requested.

Additionally, costs to airports owned by small governmental jurisdictions must be considered. US-VISIT estimates that 73 international airports are likely to be directly affected by this Proposed Rule. These airports host primarily the large carriers that will be required to comply with the Proposed Rule. In addition to these 73 airports, there are an additional 48 smaller airports that could be affected by this Proposed Rule because they have a small number of international flights. However, US-VISIT does not believe that these airports will be affected because they host primarily chartered international flights by small carriers, which are exempt from the Proposed Rule. Finally, US-VISIT estimates that 33 seaports are likely to be directly affected by this Proposed Rule.

This section addresses:

- The reason the agency is considering this action
- The objectives of and legal basis for the rule
- The number and types of small entities to which the rule will apply
- Projected reporting, recordkeeping, and other compliance requirements of the rule, including the classes of small entities that will be subject to the requirements and the type of professional skills necessary for the preparation of the reports and records
- Other relevant Federal rules that may duplicate, overlap, or conflict with the rule

- Significant alternatives to the component under consideration that accomplish the stated objectives of applicable statutes and may minimize any significant economic impact of the rule on small entities

Reason for Agency Action

The Department of Homeland Security proposes to implement the Secure Travel and Counterterrorism Partnership Act of 2007, which directed the Department to establish a system, by August 3, 2008, to collect and record biometric identifying information from every alien participating in the Visa Waiver Program departing the United States by air and compare such information against terrorist watch lists and available immigration information, and to implement other programmatic and law enforcement authorities. This Proposed Rule would amend existing US-VISIT requirements to establish an exit program at certain air and seaports of departure in the United States. The Proposed Rule would also require that persons subject to US-VISIT biometric requirements upon entering the United States provide biometric identifiers prior to departing the United States from air or sea ports of departure. Finally, the Proposed Rule would require that air and vessel carriers collect and transmit to the Department of Homeland Security the biometric information from applicable passengers and crew members in tandem with the collection of passenger manifest information collected under existing and planned authorities and procedures.

Objectives of and Legal Basis for the Rule

The principal reason for this rulemaking is the need to ascertain with greater certainty the identity of those aliens departing the United States and whether those aliens who have entered for limited times and purposes have, in fact, left the country in accordance with the terms of their admission. DHS must have a precise understanding of which aliens have left the United States, based on more reliable identity information, in order to better assess the nature or likelihood of a domestic terrorist threat posed by any given individual and to better allocate interior immigration enforcement resources to enforce the immigration laws of the United States. More information on the objectives of the rule can be found in the preamble to the Proposed Rule.

The legal basis for the rule can also be found in the preamble to the Proposed Rule.

Number and Types of Small Entities to which the Rule Will Apply

As noted previously, US-VISIT is proposing to exempt small air and sea carriers that are considered small by the definitions set forth by the Small Business Administration. For air carriers [NAICS codes 481111 (Scheduled Passenger Air Transportation) and 481211 (Nonscheduled Chartered Passenger Air Transportation)], the small business threshold is 1,500 employees. For sea carriers [(NAICS code 483112 (Deep Sea Passenger Transportation)], the small business threshold is 500 employees.

The number of exempted small carriers is not known with certainty. Thousands of entities are registered to use CBP's eAPIS, a web-based, no-fee transmission system that is used to transmit APIS data to CBP prior to an aircraft's departure. eAPIS users include not only small air passenger carriers but also large air passenger carriers, air ambulance providers, aircraft leasing companies,

flight instruction schools, large and small air cargo carriers, large and small sea passenger carriers, large and small sea cargo carriers, and several bus and truck operators.[72] CBP reviewed the eAPIS users (as of February 2007), and based on a representative sample of this database estimates that approximately 500 small air carriers would be affected by the proposed US-VISIT exit requirements were it not for the exemptions set forth in the rule.[73] Additionally, CBP identified 3 small sea passenger carriers that would be affected.

Additionally, some airports and seaports will need to work with the large carriers to make modifications to accommodate the US-VISIT exit process. As presented previously in the primary cost-benefit analysis, US-VISIT identified 73 airports and 33 seaports where significant modifications would need to be made due to the large number of in-scope international passengers that these airports host. Additionally, US-VISIT identified 40 airports that service international passengers but because of the exemptions proposed are unlikely to be affected, as they host small air carriers.

Of the 73 airports included in the primary cost-benefit analysis, 23 are owned by a city, 17 are owned by a local airport authority, 15 are owned by a county, 11 are owned by a port authority, and 7 are owned by a state or U.S. territory. Of those airports owned by cities, none are owned by small jurisdictions. In other words, these cities all have a population of at least 50,000 people based on 2006 Census data.[74] Of those airports owned by counties, none are owned by small jurisdictions. None of the airport authorities or port authorities, usually quasi-government organizations at the local, regional, or state level, serves a small jurisdiction. The one privately owned airport (in Kenmore, WA), is a small business based on the threshold for airport services[75] because it earns revenues of less than $6.5 million annually. Of the 33 seaports included in the primary cost-benefit analysis, all are owned by a port authority serving a large jurisdiction or by a state.

The 73 airports and 33 seaports included in the cost-benefit analysis are presented below.

[72] eAPIS user data was provided by CBP's Office of Field Operations, September 17, 2007.

[73] The line of business and size of business for eAPIS users was determined using the Dun & Bradstreet Business Database (www.dnb.com) and ReferenceUSA's Business Database (www.referenceusa.com). Both databases were accessed September 17 to September 20, 2007.

[74] "Population Finder" on www.census.gov. Accessed September 17, 2007.

[75] NAICS code 488119 (Other Airport Operations)

Airports (codes) and seaports included in cost-benefit analysis and their ownership

Type of ownership	Ports	
Airport Authority	Agana, Guam (GUM) Albany, New York (ALB) Columbus, Ohio (CMH) Harrisburg, Pennsylvania (MDT) Indianapolis, Indiana (IND) Allentown, Pennsylvania (ABE) Memphis, Tennessee (MEM) Minneapolis/St. Paul, Minnesota (MSP) Nashville, Tennessee (BNA)	Orlando, Florida (MCO) Sanford, Florida (SFB) Pittsburgh, Pennsylvania (PIT) Raleigh/Durham, North Carolina (RDU) Sarasota/Bradenton, Florida (SRQ) Tucson, Arizona (TUS) Washington Dulles (IAD) Washington National (DCA)
City	Atlanta, Georgia (ATL) Austin, Texas (AUS) Charlotte, North Carolina (CLT) Chicago O'Hare, Illinois (ORD) Chicago Midway, Illinois (MDW) Cleveland, Ohio (CLE) Dallas/Ft. Worth, Texas (DFW) Denver, Colorado (DEN) Fresno, California (FAT) Houston, Texas (IAH) Kansas City, Kansas (MCI) Los Angeles, California (LAX)	Manchester, New Hampshire (MHT) McAllen, Texas (MFE) Ontario, California (ONT) Palm Springs, California (PSP) Philadelphia, Pennsylvania (PHL) Phoenix, Arizona (PHX) Salt Lake City, Utah (SLC) San Antonio, Texas (SAT) San Francisco, California (SFO) San Jose, California (SJC) St. Louis, Missouri (STL)
County	Bakersfield, California (BFL) Hebron, Kentucky (CVG) Detroit, Michigan (DTW) Fort Lauderdale, Florida (FLL) Grand Rapids, Michigan (GRR) Las Vegas, Nevada (LAS) Miami, Florida (MIA) Milwaukee, Wisconsin (MKE)	Orange County, California (SNA) Rochester, New York (ROC) Sacramento, California (SMF) San Diego, California (SAN) Tampa, Florida (TPA) West Palm Beach, Florida (PBI) White Plains, New York (HPN)
Port Authority	Port Authority of New York and New Jersey—JFK, LaGuardia (LGA), Newark (EWR); Bayonne seaport Puerto Rico Ports Authority—San Juan (SJU) and seaport Port of Seattle—Seattle (SEA) and seaport Virgin Islands Port Authority—St Thomas (STT), St Thomas and St Croix seaports Massport—Boston (BOS) and seaport Buffalo, New York (BUF) Fort Myers, Florida (RSW) Oakland, California (OAK) Portland, Oregon (PDX)	Charleston, South Carolina (sea) Corpus Christi, Texas (sea) Galveston, Texas (sea) Guam (sea) Houston, Texas (sea) Jacksonville, Florida (sea) Key West, Florida (sea) Long Beach, California (sea) Los Angeles, California (sea) Miami, Florida (sea) Mobile, Alabama (sea) New Orleans, Louisiana (sea) Norfolk, Virginia (sea) Port Canaveral, Florida (sea) Port Everglades, Florida (sea) San Diego, California (sea) San Francisco, California (sea) Tampa, Florida (sea) West Palm Beach, Florida (sea)

State	State of Hawaii—Honolulu (HNL) and seaport; Kahului (OGG), Kailua Kona (KOA); Maui seaport State of Alaska—Anchorage (ANC); Juneau, Seward, Skagway, Whittier seaports	State of Maryland—Baltimore (BWI) and seaport Providence, Rhode Island (PVD) Hartford/Springfield, Connecticut (BDL)

Of the airports not included in the primary cost-benefit analysis due to the exemption of the small air carriers, 13 are owned by a city, 8 are owned by a local airport authority, 11 are owned by a county, 10 are owned by a port authority, 3 are owned by a state, 2 are owned by the Federal government, and 2 are privately owned. Of those airports owned by cities, 4 are owned by small jurisdictions (Bangor, ME; Del Rio, TX; International Falls, MN; Juneau, AK). Of those airports owned by counties, none are owned by small jurisdictions. One of the airport authorities (that for Portsmouth, NH) serves a small jurisdiction. None of the port authorities serves a small jurisdiction.

The two privately owned airports (in Kenmore, WA; and Sandusky, OH) are both small businesses based on the threshold for airport services.

The airports not included in the primary cost-benefit analysis are presented below.

Airports not included in the primary cost-benefit analysis and their ownership

Type of ownership	Airports	
Airport Authority	Columbus, Ohio (Rickenbacker)	Norfolk, Virginia
	Erie, Pennsylvania	Omaha, Nebraska
	Greenville, South Carolina	*Portsmouth, New Hampshire*
	Jacksonville, Florida	Reno, Nevada
City	Albuquerque, New Mexico	*Juneau, Alaska*
	Bangor, Maine	Laredo, Texas
	Brownsville, Texas	Melbourne, Florida
	Del Rio, Texas	New Orleans, Louisiana
	El Paso, Texas	Portland, Maine
	Fort Lauderdale, Florida (GAF)	Spokane, Washington
	International Falls, Minnesota	
County	Boeing Field, Washington	Richmond, Virginia
	Daytona Beach, Florida	St. Lucie, Florida
	Key West, Florida	St. Petersburg/Clearwater, Florida
	King County, Washington	Wilmington, North Carolina
	Miami, Florida (KTMB)	Yuma, Arizona
	Opa Locka/Miami, Florida	
Port Authority	Aguadilla, Puerto Rico	Mayaguez, Puerto Rico
	Bellingham, Washington	Ponce, Puerto Rico
	Dover/Cheswold, Delaware	St. Croix, Virgin Island
	Fajardo, Puerto Rico	Teterboro, New Jersey
	Isla Grande, Puerto Rico	Vieques Airport, Puerto Rico
State	Crooked Creek, Alaska	Pago Pago, American Samoa
	Fairbanks, Alaska	
Federal government	Andrews AFB, Maryland	Charleston, South Carolina
Private	*Kenmore, Washington*	*Sandusky, Ohio*

Again, US-VISIT does not believe that these smaller airports will be directly affected by the rule because they will not host carriers that must comply with US-VISIT exit requirements. However, US-VISIT is seeking comment on that assumption.

Based on this analysis, DHS does not believe the rule would have a significant economic impact on a substantial number of small entities. DHS requests public comments on that assumption. Commenters should note that the individual aliens to whom this rule applies are not considered small entities as that term is defined in 5 U.S.C. 601(6), and indirect economic impacts are not considered within the scope of the Regulatory Flexibility Act.[76]

Reporting and Recordkeeping

Unless otherwise exempted, this rule requires that air and sea carriers transmit biometric information on passengers within the scope of US-VISIT requirements no later than 24 hours after the passenger has departed the United States. Further detail can be found elsewhere in the primary cost-benefit analysis presented in earlier chapters.

Other Federal Rules

This proposed rule does not duplicate, overlap, or conflict with other Federal regulations.

Regulatory Alternatives

As discussed previously, US-VISIT considered a host of regulatory alternatives. The chosen alternative, the Proposed Rule, minimizes the burden to small entities to the extent possible because it specifically exempts small air and sea carriers.

US-VISIT is seeking comments on any of the regulatory requirements that could minimize the regulatory burden upon small businesses. Comments may be submitted to 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.

[76] See *Mid-Tex Elect. Coop. Inc. v. FERC*, 773 F.2d 327, 342 (D.C. Cir. 1985).

9 Abbreviations and Acronyms

AACE	Association for the Advancement of Cost Engineering
ADIS	Arrival and Departure Information System
APIS	Advanced Passenger Information System
CBP	U.S. Customs and Border Protection
DHS	Department of Homeland Security
DIG	Data Integrity Group
DOS	Department of State
EO	Executive Order
ELCM	Enterprise Lifecycle Methodology
FBI	Federal Bureau of Investigation
FIN	Fingerprint Identification Number
FY	Fiscal Year
ICE	Immigration and Customs Enforcement
IDENT	Automated Biometric Identification System (DHS biometric repository)
INA	Immigration and Nationality Act
INS	Immigration and Naturalization Service
IPT	Integrated Product Team
IT	Information technology
IV&V	Independent Verification and Validation
MRZ	Machine readable zone
NPRM	Notice of proposed rulemaking
NSEERS	National Security Entry-Exit Registration System
O&M	Operation and maintenance
OMB	Office of Management and Budget
PII	Personally Identifiable Information
POE	Port of Entry
PV	Present value
RE	Regulatory Evaluation
RFID	Radio Frequency Identification
SCO	Office of Screening Coordination and Operations
SME	Subject Matter Expert
TECS	Treasury Enforcement Communications System
TDC	Travel Document Checker
TSA	Transportation Security Administration

USCIS	United States Citizenship and Immigration Services
US-VISIT	United States Visitor and Immigrant Status Indicator Technology
VWP	Visa Waiver Program

Appendix A Cost Assumptions

This section describes the assumptions and data used to estimate program costs.

We solicit any comments to improve the analysis to the greatest extent possible.

Schedule used in RIA Cost Model

The beginning and end years represent the fiscal year in which a phase begins/ends, and are used for all alternatives.

Table A-1: Schedule

Phase	Fiscal Year	
Planning	Beginning Year	2008
	End Year	2008
Analyze	Beginning Year	2008
	End Year	2008
Design	Beginning Year	2008
	End Year	2008
Build	Beginning Year	2008
	End Year	2008
Test	Beginning Year	2008
	End Year	2008
Deploy	Beginning Year	2008
	End Year	2008

Purpose

This Rough Order of Magnitude cost estimate is designed to support the Air/Sea Exit Solution Notice of Proposed Rule Making (NPRM). The Air/Sea exit solution addresses the United States Visitor and Immigrant Status Indicator Technology (US-VISIT) Program's plan to implement the Proposed Rule, a non-interdiction exit solution. Previous iterations of this estimate focused on a solution where the functionality of Air/Sea Exit would be deployed to the check-in counter area of every airport and seaport in the United States, a total of 455 airports and 33 seaports. This estimate focuses on a counter/gate solution, where biometric scanners and related hardware will be installed at check-in areas (where necessary) and departure gate areas in all 73 U.S. international airports served by medium and large airlines as well as the check-in counter areas at seaports that historically have provided sea transportation to international destinations. The individual airlines and sea carriers will be responsible for all acquisition and implementation efforts for the exit solution as well as related application development and deployment based on guidance and strict data requirements provided to them by US-VISIT. There are a variety of possible alternatives to this solution, based on where in the port the solution is deployed, and

whether the government or the carriers implement the solution. Three of these alternatives are addressed in Section A.1.9.

Scope

The ROM estimate identifies costs to US-VISIT as well as the airline and sea carrier industries associated with the implementation of the Exit solution. This applies to all U.S. airports handling either domestic or international passenger traffic being serviced by medium or large airlines as well as seaports that historically have provided transportation to international destinations.

- Number of Airports – 73 international airports.
  - This is the total number of airports served by medium and large airlines with international flights, based on information received from the Official Airline Guide (OAG) (http://www.oag.com).
  - Sizes are determined based on Federal Aviation Administration (FAA) classifications.
- Number of Airlines – 80 medium and large airlines that depart for international destinations from U.S. airports.
  - This is the total number of airlines with international departures, based on information received from the OAG.
    - Small airlines are those with less than 1,500 employees, based on Small Business Administration definitions.
    - Medium airlines were determined to be those with more than 1,500 employees and less than 16,000 employees.
    - Large airlines were assumed to be those with more than 16,000 employees.
- Number of Seaports – 33.
- Number of Sea Carriers – 9 sea carriers with international departures.

Limitations

- This is intended to be a Rough Order of Magnitude estimate only. Because the formal Concept of Operations did not address the specific methodology to be employed to capture biometrics, the estimates had to make broad assumptions as to the nature of the proposed solutions. These are outlined in the Assumptions and Basis of Estimate in Section A.1. To reflect the high level of risk in this estimate, the higher bound risk categories, similar to an Association for the Advancement of Cost Engineering (AACE) Class 5 estimate should be utilized. Absent a formal risk assessment, the AACE guidelines call for a -50 percent for the lower bound and a +100 percent for the higher bound. Because the estimate is still considered class 5, although approaching class 4, the point estimate should not be viewed as the most probable cost; instead, risk adjusted costs should be used for initial planning purposes.
- The burden on the traveler was not computed. Detailed modeling efforts are underway to determine traveler impact, but were not available in time for inclusion in this estimate. Likewise, the burden to the airline and sea carrier business processes was not taken into account. The solutions are assumed to integrate directly into the current carrier business processes. Additional staff was assumed in a very limited context (Attendants to provide support to biometric collection, and an aggregate of labor hours for the actual collection

time). This labor is discussed in the Operations and Maintenance (O&M) section, Section A.1.7.

Data Sources

- Comprehensive Exit Integrated Product Team and other Transportation Security Administration (TSA) and US-VISIT SMEs.
- *US-VISIT Deploy vs. Airline Deploy Comparison*, an independent estimate provided by ITM.
- US-VISIT, TSA, OAG and FAA websites.
- Other internet resources including Wikipedia.com to identify airport and seaport configurations and airlines and sea carriers.

General Assumptions

Overall

- This estimate assumes an investment phase of 15 months (with overlapping effort). Three and three-quarters years of supplemental O&M were added to the end of the investment phase, for a total of five years of costs. Investment costs are presented in Base Year 2008 dollars (BY08$) unless otherwise noted, while O&M costs are presented in Then Year dollars (TY$).
- At the airports, the solution will be counter-mounted devices at both the check-in counter (where necessary) and the departure gate (the gate portion of the solution would be built into the counters present in the departure area). It is assumed that the solution will be deployed to departure gates at 80 percent of airports, and to counters at 20 percent of airports where the departure gate area is too small and condensed to feasibly accommodate the gate solution or if an airline prefers a counter solution for some other reason. Counters may be at either the check-in area or within the sterile area, where available, to accommodate travelers connecting from other domestic airports. The solution assumes two devices will be installed at each gate area to allow for redundancy. Six devices will be installed at each counter at large airports, four in medium airports, and two in small airports to allow for redundancy and adequate capacity, and for logistical reasons. At seaports, the solution will be installed only at the check-in area. Six devices will be installed at each seaport counter to meet demand, and for logistical reasons.
- The counter and gate solutions are assumed to be a set of component pieces that combine to create the exit solution:
    - Fingerprint scanner
    - PC processor
    - Display screen
    - Document reader
- While it is possible that there will be collaboration within alliances to help offset some of the development costs to the carriers, this collaboration was not factored into the estimate at the current time.
- The airlines and sea carriers lease space from the ports. As such, all industry-incurred costs resulting from the implementation of this solution will be passed on to the carriers. The ports are not expected to incur any costs.

- The Electronic Advance Passenger Information System is not used by the in-scope carriers except as a reporting tool. No modifications to this system are expected to be incurred.
- Airport size for purpose of this analysis is as defined by the FAA.
- Small airlines are defined as any that have fewer than 1,500 employees. These were defined as out-of-scope and excluded from this analysis.

Labor

Labor rates are estimated based on a total of 1,790 billable hours per year. This hour estimate is based upon a factor provided by TSA that 14 percent of the hours in a year are "pay/no work" hours.

Software Engineering

As it was assumed that contractors would be performing the IT work for the government portion of this effort, labor rates for those cost elements were based on analysis of a GSA labor study conducted by Tecolote Research, Inc. in February, 2007. To determine the labor rates to apply to this effort, the most current published GSA IT Schedules were downloaded from IT providers supplying similar services to those included in this effort. Each schedule was obtained from the providers' web site. The following eight companies were used in the analysis: Booz Allen Hamilton, EDS, IBM, Lockheed Martin Mission Systems, Raytheon, SAIC, Technology Planning and Management Corporation, and Northrop Grumman. For purposes of this estimate, software engineers were categorized as outlined in Table A-2.

Table A-2: Software Engineer Classification

Software Engineer Level	Years of Experience
1	0 to 1
2	2 to 5
3	6 to 8
4	9 to 11

Although Software Engineer 5 was not included in this estimate, the data were included to run a multiple regression analysis that combined data from 78 published GSA labor rates. A model was built to predict the hourly rate as a linear function of an intercept and 13 explanatory variables. The model calculated a median hourly rate for a typical level 3 programmer with zero years of experience working for a particular company. An experience factor was then developed to account for each year of experience. Each of the companies was then ranked according to the complexity and consequences of the type of work being performed. For example, those companies engaged in enterprises where the consequences of mistakes could result in catastrophic loss, or loss of life, were ranked highest on the list. An adjustment factor tied to the calculated "typical" company was developed for each of the companies. Because of the complexity of the type of work US-VISIT is involved in, and the potential consequences of mistakes (i.e. terrorist enters the country), US-VISIT was ranked midway between typical and the highest level. For estimating purposes it was assumed the labor mix for the development effort would be as follows. The mix was top weighted to account for the skill level and effort necessary to meet a highly compressed development schedule.

- Level II Software Engineers 20%

- Level III Software Engineers 40%
- Level IV Software Engineers 40%

It is assumed that the carrier industry will use the same labor rates for software engineering as the government. The total average software engineer labor rate is represented in Table A-3 below.

Table A-3: Software Engineering Labor Rates ($)

Software Engineer Category	Hourly Rate	Weekly Rate	Monthly Rate
Software Engineer II	$ 103.25	$ 4,130.00	$ 17,896.67
Software Engineer III	$ 119.48	$ 4,779.20	$ 20,709.87
Software Engineer IV	$ 134.88	$ 5,395.20	$ 23,379.20
Weighting Factor:			
Software Engineer II	20%	20%	20%
Software Engineer III	40%	40%	40%
Software Engineer IV	40%	40%	40%
Composite Rate:			
Software Engineer II	$ 20.65	$ 826.00	$ 3,579.33
Software Engineer III	$ 47.79	$ 1,911.68	$ 8,283.95
Software Engineer IV	$ 53.95	$ 2,158.08	$ 9,351.68
Total	**$ 122.39**	**$ 4,895.76**	**$ 21,214.96**

This composite rate was calculated based on an hourly rate for the contractors in the labor rate survey. To determine the weekly rate, the total hourly rate was multiplied by 40 (hours in a week). To determine the annual labor rate, the weekly rate was multiplied by 52 (weeks in a year). To determine the monthly rate, the annual rate was divided by 12 (months in a year).

Construction

Construction labor rates applicable to counter modification efforts were derived from information obtained from Salary.com. Seventy-fifth percentile national average rates were used for level 1 and 3 carpenters and level 1 and 3 electricians then burdened with average bonuses and benefits to derive average national compensation. This was burdened with overhead, G&A and profit as shown in Table A-3. For estimating purposes it was assumed the labor mix for the construction effort would be as follows:

- Carpenters
  - Level 1 carpenters – 50%
  - Level 2 carpenters – 50%
- Electricians
  - Level 1 electricians – 50%
  - Level 2 electricians – 50%

The total average industry construction rate is represented in Table A-4 below.

Table A-4: Construction Labor Rate ($)

Labor Category	Total Yearly Compensation	Average Hourly Rate Including Benefits	Overhead	G&A	Profit	Monthly Rate	Split	Composite Monthly Rate	Split	Monthly Rate
Carpenter 1	$ 54,958	$ 30.13	$ 30.13	$ 4.52	$ 3.01	$ 10,305	50%	$ 5,152		
Carpenter 3	$ 65,501	$ 35.91	$ 35.91	$ 5.39	$ 3.59	$ 12,281	50%	$ 6,141		
Average	**$ 61,132**	$ 33.52	$ 33.52	$ 5.03	$ 3.35	**$ 11,462**		**$ 11,293**	**50%**	**$ 5,646.52**
Electrician 1	$ 58,440	$ 32.04	$ 32.04	$ 4.81	$ 3.20	$ 10,958	50%	$ 5,479		
Electrician 3	$ 74,682	$ 40.94	$ 40.94	$ 6.14	$ 4.09	$ 14,003	50%	$ 7,001		
Average	**$ 66,479**	$ 36.45	$ 36.45	$ 5.47	$ 3.64	**$ 12,465**		**$ 12,480**	**50%**	**$ 6,240.09**
									Composite	**$ 11,886.61**

This composite monthly rate was the basis for annual, hourly, and weekly rates as well. To derive the annual rate, the monthly rate was multiplied by 12; to derive the weekly rate, the annual rate was divided by 52 (weeks in a year); to determine the hourly rate, the annual rate was divided by 1,864 (working hours in a year).

Attendants and Counter Staff

Attendants will be responsible for assisting travelers with the function of the fingerprint scanning devices at both the check-in counters and the gates. In the Proposed Rule, it was assumed that the attendants would be employees who earn $60,000 per year. In addition to the attendants that carriers employ in carrier-implemented solutions, each alternative assumes some time for carrier personnel to assist the travelers at the counters. Table A-5 below shows how the carrier hourly rate was derived.

Table A-5: Carrier Attendant Labor Rate ($)

Carrier Annual Salary	Working Hours Per Year	Carrier Hourly Rate
$ 60,000	1,790	$ 33.52

For those alternatives assuming government implementation, it was assumed the Attendants would be mid-level labor grade 7 federal employees. Office of Personnel Management (OPM) tables were used to determine the salary rate that was then burdened with published pension, health, and life insurance factors to determine an annual rate. Table A-6 below shows how this government labor rate was derived.

Table A-6: Government Attendant Labor Rate ($)

Grade	Midpoint	Midpoint plus Benefits	Pension	Health	Life	Avg Hourly Rate Including Benefits
7	$ 43,287	$ 55,469	$ 10,822	$ 1,274	$ 87	$ 30.99

These attendant rates were determined based on annual salaries. To determine the hourly rates, the annual salaries were divided by 1,790 working hours in a year.

A.1 General Methodology

- Met with representatives and SMEs within each of the US-VISIT branches directly involved in the following major cost categories:
  - Program Management
  - Information Technology
  - Facilities
  - Training
  - Outreach
- Identified number of in-scope airports and seaports and classified these according to size.
- Identified number of in-scope airlines and sea carriers. Classified airlines according to size to assure that all small airlines remain out-of-scope.
- Developed detailed interactive cost model.
- Determined average number of gates, counters, and stations per size of airport and seaport to identify the number of required devices.
- Determined cost per device to calculate acquisition cost.
- Estimated number of Full Time Equivalents (FTEs) and duration for each stage of the development effort.
- Established average labor rates based on skill level mix and national averages.
- Calculated labor cost for both government and carrier industry.
- Estimated additional hardware and software cost for mid-tier infrastructure, connectivity and networking, and test equipment.
- Estimated additional cost impact on Automated Biometric Identification System (IDENT), U.S. Customs and Border Protection (CBP) and Arrival and Departure Information System (ADIS).
- Estimated facilities impact to carrier industry and government including site surveys, counter modifications, Local Area Network (LAN) room improvements, storage areas and signage.
- Incorporated independent estimate for Training.
- Phased the application development effort to coincide with the December 2008 FOC date. The investment costs allocated to year two were estimated based on the percentages determined in a previous estimate of quarterly costs.
- Estimated O&M costs and phased them to begin at the completion of the investment effort and continue for an additional three years and three quarters to bring the total period of performance to five years. O&M costs were estimated for both the government and the carriers.
- Inflated all out year dollars beginning in year two in accordance with Office of Management and Budget guidelines.

- Identified factors and cost estimating relationships based on historical information and analogies to similar efforts and incorporated them into the cost model.

Basis of Estimate

This cost estimate for the Air/Sea Exit Solution is broken down into six major categories of cost:

1. Program Management
2. Independent Verification and Validation (IV&V)
3. Information Technology
4. Facilities
5. Training
6. Outreach.

A.1.1 Program Management

Costs associated with program management include oversight, business operations, business controls, and facility management.

- Program management includes oversight by Training, Outreach, Facilities, and Information Technology Management (ITM).
- Cost to airlines and sea carriers are estimated at 15 percent of the total cost of the program.
- Cost to the government is also estimated at approximately 15 percent of the total cost of the program.
- Table A-7 below shows the cost breakout for Program Management.

Table A-7: Program Management Costs ($K)

Description	Government	Airlines / Sea Carriers	Total
Information Technology	$ 25,360	$ 191,230	$ 216,590
Facilities	$ -	$ 22,215	$ 22,215
Training	$ 2,139	$ 13,281	$ 15,420
Outreach	$ 2,000	$ 11,336	$ 13,336
Sub-Total	**$ 29,499**	**$ 238,062**	**$ 267,561**
Program Management Factor	15.00%	15.00%	
Program Management	**$ 4,425**	**$ 35,709**	**$ 40,134**

A.1.2 Independent Verification and Validation

This cost accounts for independent verification and validation of the software and hardware for the solution.

- IV&V costs for the airlines and sea carriers are estimated at 1 percent of the total application development costs. This is based on historical averages.
- IV&V costs for the government are estimated based on supporting eight planning/working group meetings during the development phase, development of all UDM artifacts, and on historical costs.
- Table A-8 below shows the cost breakout for IV&V.

Table A-8: Independent Verification and Validation Costs ($K)

Description	Gov't	Airlines / Sea Carriers	Total
Systems Assurance Support	$ 53		
IV&V Testing	$ 39		
Hardware/Software	$ 90		
Sub-Total	**$ 181**		**$ 181**
Total IT Development Costs		$ 121,281	
IV&V Factor		1.00%	
Sub-Total		**$ 1,213**	**$ 1,213**
Total	**$ 181**	**$ 1,213**	**$ 1,394**

A.1.3 Information Technology

Information Technology costs are largely derived from the ITM *US-VISIT Deploy vs. Airline Deploy* comparison estimate. These costs have been adjusted to reflect the populations of airlines and airports, sea carriers and seaports, and to reflect derived labor rate factors.

A.1.3.1 IT Site Surveys

The costs for IT site surveys assume on-site surveys with teams of 2 at a 10 percent sample of airports and seaports prior to deployment.

- Site surveys require sending teams of two to 10 percent of airports or seaports that they serve prior to deployment, at an hourly rate of $122.39 per person. These teams will allow observation of the counter areas where necessary and the gate areas. These site surveys will last two days, and will require one day of travel. Pre-trip preparation will require an equal amount of days for each airport and seaport, 4 hours per day. Travel costs and additional labor for post-trip work are also included.
- The table below shows the cost breakout for IT Site Surveys.

Table A-9: Information Technology Site Survey Costs ($K)

IT Site Surveys	Cost Category	FTEs	Sites/ Forms	Locations	Days	Hours per day	Hours	Rate	Cost	Sampling Factor	Derived Cost
Pre conduct	Large Airports	2	30	12.6	1	4	3,032	$ 122.39	$ 371,099	10%	$ 37,110
	Medium Airports	2	28	2.9	1	4	640	$ 122.39	$ 78,332	10%	$ 7,833
	Small Airports	2	15	2.5	1	4	304	$ 122.39	$ 37,208	10%	$ 3,721
	Sea Ports	2	33	3.9	1	4	1,030	$ 122.39	$ 126,017	10%	$ 12,602
	Form Design	2	5	1	1	8	80	$ 122.39	$ 9,792	10%	$ 979
	Subtotal Hours						5,086				
Conduct	Large Airports	2	30	12.6	2	8	12,128	$ 122.39	$ 1,484,394	10%	$ 148,439
	Medium Airports	2	28	2.9	2	8	2,560	$ 122.39	$ 313,329	10%	$ 31,333
	Small Airports	2	15	2.5	2	8	1,216	$ 122.39	$ 148,831	10%	$ 14,883
	Sea Ports	2	33	3.9	2	8	4,118	$ 122.39	$ 504,067	10%	$ 50,407
	Subtotal Hours						20,022				
Post Conduct Labor	Labor	2	106		5	8	8,480	$ 122.39	$ 1,037,901	10%	$ 103,790
Summary Report Labor	Labor						160	$ 122.39	$ 19,583	10%	$ 1,958
Travel Costs	Travel										
	Flight	2	106	1.50	2			$ 1,000.00	$ 636,945	10%	$ 63,694
	Hotel	2	106	1.50	3			$ 150.00	$ 143,313	10%	$ 14,331
	Car	2	106	1.50	3			$ 100.00	$ 95,542	10%	$ 9,554
	Per Diem	2	106	1.50	3			$ 50.00	$ 47,771	10%	$ 4,777
Total									**$ 5,054,123**		**$ 505,412**

A.1.3.2 Impact to IDENT

Additional hardware will be required to support the increase of biometric data being sent to and stored within IDENT. Additional matcher capacity will be needed to support the biometric search process used within IDENT. Since the Exit prints will be stored in IDENT, additional database storage capacity will also need to be added.

A.1.3.2.1 IDENT Assumptions

- Fingerprints taken at exit will not be used for the purpose of enrollment.
- Both segmented finger and slap images will be stored.

- No enforcement action will be taken at exit so quick turnaround will not be necessary.
- The storage costs are an annual expense.
- The verification ratio on 1:1 matches is 81 percent.
- New exit transactions will use the existing Search & Assign process.
- Additional operational and environmental support costs are anticipated, but have not been included at the current time.

A.1.3.2.2 IDENT Costs

The IDENT costs to the government associated with the exit solution are broken down into storage costs and matcher costs. The table below shows the breakdown of IDENT costs associated with the exit solution.

Table A-10: IDENT Costs

Description	Gov't
Travelers per year	52,000,000
Storage per traveler in kilobytes	400
Kilobytes	20,800,000,000
Megabytes	20,800,000
Gigabytes	20,800
Terabytes	**20.80**
Cost per terabyte ($K)	$ 22.0
Storage Cost ($K)	**$ 458**
Travelers per year	52,000,000
1:1 verifications	42,120,000
1:M Searches	4,480,390
Number of days in one year	365
Daily 1:M	12,275
Daily Updates	0
Additional Daily	12,275
Txn Capacity/Bank	10,000.00
Banks Needed	3.00
Cost per Bank ($K)	$ 4,000.0
Matcher Cost ($K)	**$ 12,000**
Total Incremental Cost to IDENT ($K)	**$ 12,458**

A.1.3.3 CBP Development Costs

CBP development costs are estimated to involve the receipt of data coming from the airlines (as part of the APIS Quick Query (AQQ) message), parse the US-VISIT required data, and forward that data to US-VISIT. Estimates are based upon an analogy to work done by CBP in support of US-VISIT's 10-print effort.

- CBP's Exit level of effort is estimated at 25 percent of the 10-print effort.
- The 10-print effort costs were $13,890,829 in FY07 dollars.
- The table below shows the breakdown of CBP costs associated with the 10-print effort, and the subsequently derived cost for the Exit solution.

Table A-11: CBP Costs ($K)

Description	Category	FY07 Dollars, $K
Client Server Development	Labor	$ 3,502.2
Mainframe Development	Labor	$ 2,012.4
Requirements Analysis and Design	Labor	$ 803.2
Project Support	Labor	$ 500.0
Security Engineering Support	Labor	$ 500.0
Financial Reporting	Labor	$ 166.7
Code Migration and Change Control Support	Labor	$ 40.5
Technical Architecture Support	Labor	$ 37.8
Network Operations Center Support	Labor	$ 30.3
Engineering Support	Labor	$ 90.8
Security Operations Support	Labor	$ 54.1
Help Desk Support	Labor	$ 28.0
SAT Testing	Labor	$ 1,172.7
Independent Testing	Labor	$ 1,102.9
Computer Operations Center Support	Labor	$ 148.2
Developer and Tester Tiger Team Travel	Travel and ODCs	$ 120.0
Data Communications Circuits	Hardware	$ 477.3
Hardware Maintenance	Hardware	$ 1.4
Development, Test, and Production Hardware	Hardware	$ 873.0
Messaging Software	Hardware	$ 468.7
Database Software	Software	$ 672.0
Development, Test, and Production Software	Software	$ 488.4
Management Reserve	Software	$ 600.0
	Total	**$ 13,890.8**
	Factor	25.00%
	CBP Dev Costs	**$ 3,472.7**

A.1.3.4 ADIS

In order to be compatible with the proposed solution, the ADIS system will need to be upgraded. The cost to upgrade the ADIS reporting tool was provided by ITM, but altered to reflect the hourly rate as shown in the Table A-4. The table below shows the cost breakout for ADIS upgrades.

Table A-12: ADIS Upgrade Costs

Description	FTEs	Hours	Rate/Hour	Months	Hardware	Software	Total $K
Interface Enhancement / Upgrade	5.5	173	$122.39	6			$ 698.7
Entity Matching Algorthim Tuning	2.0	173	$122.39	6			$ 254.1
Reporting	3.0	173	$122.39	6			$ 381.1
Database Development and Enhancement	3.0	173	$122.39	6			$ 381.1
Software Tools & Hardware					$200,000	$150,000	$ 350.0
On-Going Report & analysis Management	1.5	2,080	$122.39				$ 381.9
Total	**15.0**	**2,772**					**$ 2,447.0**

A.1.3.5 Application Development

Application development costs include costs for planning, designing, building, testing, and deploying the technical solution. These costs are based largely on estimates provided by ITM. Costs for privacy and IT security are built into these costs.

Table A-13: Application Development Summary ($K)

Description	Gov't	Airlines / Sea Carriers	Total $K
Planning	$ 849	$ 37,763	**$ 38,611**
Design	$ 849	$ 22,658	**$ 23,506**
Build	$ 636	$ 33,986	**$ 34,623**
Test	$ 1,061	$ 16,993	**$ 18,054**
Deploy	$ 2,283	$ 9,881	**$ 12,164**
Total Cost	**$ 5,678**	**$ 121,281**	**$ 126,958**

A.1.3.5.1 Planning

- Airline and Sea carrier planning costs assume 5 FTEs at a monthly rate of $21,215 for 4 months.
- Government planning costs for all alternatives assume 10 FTEs at a monthly rate of $21,215 for 4 months.
- The table below shows the cost estimating methodology for IT planning.

Table A-14: IT Planning Costs ($K)

IT Planning	Gov't	Airlines	Sea Carriers	Total $K
Duration in months	4	4	4	
FTEs	10	5	5	
Number of Airlines		80		
Number of Sea Carriers			9	
Composite Monthly Rate, $K	$ 21.2	$ 21.2	$ 21.2	
Sub-Total, $K	**$ 849**	**$ 33,944**	**$ 3,819**	**$ 38,611**
Complexity Factor	0%	0%		
Complexity	$ -	$ -		
Total $K	**$ 849**	**$ 33,944**	**$ 3,819**	**$ 38,611**

A.1.3.5.2 IT Design

- Airline and Sea carrier design costs assume 3 FTEs at a monthly rate of $21,215 for 4 months.
- Government design costs for all alternatives assume 10 FTEs at a monthly rate of $21,215 for 4 months.
- The table below shows the cost estimating methodology for IT design.

Table A-15: IT Design Costs ($K)

IT Planning	Gov't	Airlines	Sea Carriers	Total $K
Duration in months	4	4	4	
FTEs	10	3	3	
Number of Airlines		80		
Number of Sea Carriers			9	
Composite Monthly Rate, $K	$ 21.2	$ 21.2	$ 21.2	
Total $K	**$ 849**	**$ 20,366**	**$ 2,291**	**$ 23,506**

A.1.3.5.3 IT Build

- Airline and Sea carrier build costs assume 6 FTEs at a monthly rate of $21,215 for 3 months.
- Government build costs for all alternatives assume 10 FTEs at a monthly rate of $21,215 for 3 months.
- The table below shows the cost estimating methodology for IT building.

Table A-16: IT Build Costs ($K)

IT Planning	Gov't	Airlines	Sea Carriers	Total $K
Duration in months	3	3	3	
FTEs	10	6	6	
Number of Airlines		80		
Number of Sea Carriers			9	
Composite Monthly Rate, $K	$ 21.2	$ 21.2	$ 21.2	
Total $K	**$ 636**	**$ 30,550**	**$ 3,437**	**$ 34,623**

A.1.3.5.4 IT Test

These are the costs associated with testing the software for the solution. It is assumed that there will not be an independent lab for testing the software.

- Airline and Sea carrier test costs assume 3 FTEs at a monthly rate of $21,215 for 3 months.
- Government test costs assume 10 FTEs for government testing at a monthly rate of $21,215 for 3 months. Government test costs also include 10 FTEs for test support to carriers at a monthly rate of $21,215 for 2 months.
- The table below shows the cost estimating methodology for IT testing.

Table A-17: IT Test Costs ($K)

IT Planning	Gov't	Gov't Test	Airlines	Sea Carriers	Total $K
Duration in months	3	2	3	3	
FTEs	10	10	3	3	
Number of Airlines			80		
Number of Sea Carriers				9	
Composite Monthly Rate, $K	$ 21.2	$ 21.2	$ 21.2	$ 21.2	
Sub-Total, $K	**$ 636**	**$ 424**	**$ 15,275**	**$ 1,718**	**$ 18,054**
Complexity Factor	0%	0%	0%		
Complexity	$ -	$ -	$ -		
Total $K	**$ 636**	**$ 424**	**$ 15,275**	**$ 1,718**	**$ 18,054**

A.1.3.5.5 Software Deployment

These are the costs associated with deploying the software portion of the solution to the ports. These costs include travel to each of the ports for carriers and government personnel. There is also a cost included for government help desk support to be provided to those deploying the solution for any technical inquiries.

A.1.3.5.5.1 Software Deployment Assumptions

- Airline and Sea carrier personnel will require 1 week per location for software deployment.
- Government oversight personnel will inspect and verify 12 locations (9 airports, 3 seaports), requiring 2 days per location. This is a statistically significant data point sample.
- Help desk will operate 24 hours a day, 6 days a week, 3 people per shift to account for vacations, holidays and other time off for a period of 9 months (39 weeks).
- Overall duration of the deployment effort will be 24 weeks but is dependent on individual airline and sea carrier schedules. Help desk will remain in operation an additional three months to accommodate any further issues.

A.1.3.5.5.2 Software Deployment Labor

- Airline and sea carrier deployment costs assume 2 FTEs per airline/sea carrier per airport/seaport at a weekly rate of $4,895.76 for 1 week.
- Government deployment costs assumed 6 FTEs at a weekly rate of $4,895.76 for 14 weeks.
- Government help desk costs assume 9 FTEs at a weekly rate of $4,895.76 for a total of 39 weeks to staff the help desk.

A.1.3.5.5.3 Software Deployment Travel

A.1.3.5.5.3.1 Software Deployment Travel – Airlines and Sea Carriers

- The deployment travel cost for airlines and sea carriers assumes $3,000 travel cost per trip to each of the ports by each airline/sea carrier serving that port for planning and for deployment. The $3,000 cost includes airfare, hotel, car rental, and per diem.

A.1.3.5.5.3.2 Software Deployment Travel – Government

- The deployment travel cost for the government includes some travel for Program Management.
    - This cost assumes that the government will sample 12 locations (10 percent of the total locations), each requiring 2 days. $1,600 per trip includes airfare, car rental, hotel, and per diem for 8 people at each site (6 employees to deploy the solution, and 2 program management personnel)
    - The table below shows the breakout for software deployment travel costs for the government and the airlines and sea carriers.

Table A-18: Software Deployment Travel Costs ($K)

Deployment Travel Costs	Gov't	Airlines	Sea Carriers	Total $K
Number of sample Ports for Deployment	12			
Cost per trip, US-VISIT deployment, $K	$ 1.6			
Government FTEs going on travel	8			
Sub-Total, $K	**$ 154**			**$ 154**
Cost for 1 Trip, Airlines deployment, $K		$ 3.0	$ 3.0	
Number of ports		73	33	
Average number of carriers per port		6.81	3.90	
Sub-Total, Planning through build travel, $K		**$ 1,491**	**$ 386**	**$ 1,877**
Cost for 1 Trip, Airlines deployment, $K		$ 3.0	$ 3.0	
Number of ports		73	33	
Average number of carriers per port		6.81	3.90	
Sub-Total, Deployment support travel, $K		**$ 1,491**	**$ 386**	**$ 1,877**
TOTAL $K	**$ 154**	**$ 2,982**	**$ 772**	**$ 3,908**

- The table below breaks out the total IT software deployment costs.

Table A-19: IT Software Deployment Costs ($K)

Software Deployment	Gov't	Airlines	Sea Carriers	Total $K
Duration in weeks	14			
FTEs	6			
Composite weekly rate, $K	$ 4.9			
Sub-Total, Government, $K	**$ 411**			**$ 411**
Duration in weeks	39			
FTEs	9			
Composite weekly rate, $K	$ 4.9			
Sub-Total, Government Help Desk, $K	**$ 1,718**			**$ 1,718**
Duration in weeks		1		
FTEs		2		
Composite Average Airlines per Airport		6.81		
Number of Airports		73		
Composite weekly rate, $K		$ 4.9		
Sub-Total, Airlines, $K		**$ 4,866**		**$ 4,866**
Duration in weeks			1	
FTEs			2	
Composite Average Sea Carriers per Sea Port			4	
Number of Seaports			33	
Composite weekly rate, $K			$ 4.9	
Sub-Total, Sea Carriers, $K			**$ 1,260**	**$ 1,260**
Sub-Total, $K	**$ 2,130**	**$ 4,866**	**$ 1,260**	**$ 8,256**
Travel, $K	$ 154	$ 2,982	$ 772	**$ 3,908**
Total, Software Deployment, $K	**$ 2,283**	**$ 7,848**	**$ 2,032**	**$ 12,164**

A.1.3.6 Collection Devices

An assumption was made that collection devices will be deployed to departure gate areas at 80 percent of airports, and to check-in counter areas at 20 percent of airports. It is assumed that 20 percent of each airport size will deploy to the counters (e.g. 20 percent of large airports, 20 percent of medium airports, and 20 percent of small airports). An assumption was made that there will be a device deployed to every counter station at the airports where the counter solution is in effect; two scanning devices would be installed at each counter for international departure gates. In addition, a scanning device would be installed at every attendant station for commercial sea carriers.

A.1.3.6.1 Solution Deployment to Airports

Major variables associated with the deployment of the solution at airports include the number of airports, the total international departure gates at each airport, the total counters at each airport, and the total number of stations per counter.

- Number of in-scope airports – 73 (source – OAG, with FAA size designations)

- Large Airports 30
- Medium airports 28
- Small airports 15

- Number of counters at each airport (based on small sample of airports)
  - Average counters in large airport 28.9
  - Average counters in medium airport 16.8
  - Average counters in small airport 9.2
- Number of stations per counter (based on small sample of airports)
  - Average stations per counter in large airport 6.02
  - Average stations per counter in medium airport 4.0
  - Average stations per counter in small airport 2
- Number of international gates at each airport based on data from the Exit Pilot
  - Average international gates in large airport 30
  - Average international gates in medium airport 10
  - Average international gates in small airport 5
- It was assumed that there would be one biometric collection device installed at every check-in counter station, and two biometric collection devices for every departure gate area counter. To compensate for the fact that airlines do not always segregate their departure gates by whether they serve domestic or international flights, the number of gates to which the solution must be deployed has been increased by 50 percent. This is recognized as the Pareto factor in the table below. For the purposes of this estimate, there is no difference between a counter that is outside the sterile area of an airport and a counter that is within the sterile area of an airport.
- The table below shows the calculations that went into determining the total number of scanners at airports for the solution.

Table A-20: Total Scanning Devices at Airports

Counters						
Size	**Number**	**Avg counters**	**Pareto Factor**	**Net counters per port**	**Avg Stations**	**Total Stations**
Large	6	28.90	100.00%	28.9	6.02	1,044
Medium	5	16.80	100.00%	16.8	4.00	336
Small	3	4.00	100.00%	4	2.00	24
Sub-Total	**14**	**269**		**269**		**1,404**

Gates						
Size	**Number**	**Avg gates**	**Pareto Factor**	**Net gates per port**	**Avg Stations**	**Total Stations**
Large	24	30	150.00%	45	2	2,160
Medium	23	10	150.00%	15	2	690
Small	12	5	150.00%	7.5	2	180
Sub-Total	**59**	**1,010**		**1,515**		**3,030**
TOTAL						**4,434**

The cost per scanning device is estimated to be $7,500. This cost includes:

- fingerprint scanner ($2,500)
- processor ($1,000)

- display ($500)
- document reader ($2,500)
- encasement ($1,000).

This cost estimate was provided by ITM. The cost to install and deliver each scanning device is $500, based on an ITM estimate. The table below shows the total device costs for the airports.

Table A-21: Airport Device Costs ($K)

Airports	Devices, $K	Delivery & Setup, $K
Applicable number of airport stations	4,434	4,434
Collection Device Airlines	$ 7.5	$ 0.5
Sub-Total, $K	**$ 33,255**	**$ 2,217**

A.1.3.6.2 Solution Deployment to Seaports

Major variables associated with the deployment of the solution at seaports include the number of seaports, the average number of terminals per seaport, the average number of counters per terminal, and the average number of stations per counter at a seaport.

- Number of in-scope seaports – 33 (based on discussion with key US-VISIT SMEs)
  - Number of large seaports 5
  - Number of medium seaports 13
  - Number of small seaports 15
- Average number of counters per seaport
  - Number of counters at a large seaport 10
  - Number of counters at a medium seaport 7
  - Number of counters at a small seaport 5
- Average number of stations per counter 6
- It was assumed that there would be one biometric collection device installed for every check-in counter station at the seaports.
- The table below shows the calculations that went into determining the total number of scanning devices at the seaports for the Exit solution.

Table A-22: Total Scanning Devices at Seaports

Port Size	Number of Terminals	Counters	Stations per Counter	Total Stations per Port	Total Ports	Total Stations
Small	1	5	6	30	15	450
Medium	2	7	6	84	13	1,092
Large	4	10	6	240	5	1,200
Total Stations					**33**	**2,742**

The cost per scanning device is estimated to be $7,500. This cost includes:

- fingerprint scanner ($2,500)

- processor ($1,000)
- display ($500)
- document reader ($2,500)
- encasement ($1,000).

This cost estimate was provided by ITM. The cost to deliver and install each scanning device is $500, based on an ITM estimate. The table below shows the total device cost for the seaports.

Table A-23: Seaport Device Costs ($K)

Airports	Devices	Delivery & Setup
Applicable number of seaport stations	2,742	2,742
Collection Device Airlines	$ 7.5	$ 0.5
Sub-Total	**$ 20,565**	**$ 1,371**

A.1.3.7 Development and Test Hardware

The following assumptions were used to derive the development and test hardware costs:

- The cost for the airlines and sea carriers is estimated based on a factor of 5 percent of the total acquisition cost of the collection devices (note that this cost does not include the installation costs for the devices).
- The cost to the government is estimated based on an estimate provided by ITM. This cost includes lab setup, and costs for support testing for CBP, ADIS, and IDENT.
- The table below shows the total cost for development and test hardware.

Table A-24: Development and Test Hardware Costs ($K)

Description	Gov't	Airlines / Sea Carriers	Total $K
Hardware Costs for Development and Test	$205		**$205**
Airport devices		$ 33,255	
Development & Test Hardware factor		5.00%	
Airport devices, $K		**$ 1,663**	**$ 1,663**
Seaport devices		$ 20,565	
Development & Test Hardware factor		5.00%	
Seaport devices, $K		**$ 1,028**	**$ 1,028**
Total Development and Test Hardware, $K	**$205**	**$ 2,691**	**$2,896**

A.1.3.8 Data Communication Circuits

Data communication circuit costs are the costs for circuit availability, rather than circuit usage.

- This cost is based on a circuit cost of $30 per carrier per port per month. This estimated cost was provided by ITM.
- The table below shows the total annual cost for data communication circuits.

Table A-25: Data Communication Circuit Costs ($K)

Location Type	Locations	Carriers per Location	Annual Circuit Cost, $K	Total Circuit Cost, $K
Airports	73	6.81	$0.36	$ 179
Seaports	33	3.90	$0.36	$ 46
			Total $K	**$ 225**

A.1.3.9 Network/Connectivity

Hardware and software costs associated with network and connectivity for the solution are estimated based on the following assumptions:

- It is assumed that some airlines and sea carriers will need to upgrade their connectivity hardware.
    - 33 percent of airlines at small ports will require upgrades, 25 percent of airlines and sea carriers at medium and large airports and sea ports will require upgrades

  - Hardware costs will be $2,000 for airlines at small airports, $6,000 for airlines at medium airports, and $15,000 for airlines and sea carriers at large airports and seaports

- Government software costs are estimated for additional application and client software not currently owned by US-VISIT.
- Airline software costs are estimated based on the following assumptions:
  - This cost is based on a software cost of $100,000 per airline and sea carrier, as it is assumed that the airlines and sea carriers do not currently have the software licenses necessary for the exit solution.
- The table below shows the network connectivity costs for government and carriers.

Table A-26: Network Connectivity Costs ($K)

Network Connectivity Costs	Gov't	Airlines	Sea Carriers	Total $K
Hardware		$ 172	$ 48	**$ 220**
Software	$ 100			**$ 100**
Additional software and licenses		$ 100	$ 100	
Number of carriers		80	9	
Sub-Total, $K		**$ 8,000**	**$ 900**	**$ 8,900**
TOTAL $K	**$ 100**	**$ 8,172**	**$ 948**	**$ 9,220**

A.1.3.10 Mid-Tier Application

The costs for the mid-tier application are as follows:

- Although not identified yet, the equipment required for the mid tier IBM IXM XML interface is estimated based on numbers provided by ITM.
- The table below shows the cost to the government for additional hardware required to support the mid-tier application interface.

Table A-27: Mid-Tier Hardware Costs ($K)

Network Connectivity Costs	Gov't, $K
Equipment for the mid tier XML interface	$ 1,000

A.1.4 Facilities

Facilities costs will be incurred by the carriers at both the airports and the seaports. Facilities costs to the airlines and sea carriers are broken down by site surveys, architecture design/redesign, counter modifications, LAN equipment room modifications, and signage. It is assumed that any government facilities oversight costs are accounted for in the Program Management cost category.

A.1.4.1 Facilities Site Surveys

The costs for IT site surveys assume on-site surveys with teams of 3 at all airports and seaports prior to deployment.

- Site surveys with teams of 3 are conducted at each in-scope airport to observe both the check-in area and the departure area, and once at each seaport by each airline and sea carrier who serves those ports. These surveys will be conducted prior to IT design Critical Design Review. The composite hourly rate for those conducting the survey is $122.39 per person. These surveys will last two days, and will require one day of travel for each visit. Pre-trip preparation will require an equal number of days for each airport and seaport, 4 hours per day. Travel costs and additional labor for post-trip work are also included.
- The table below shows the cost breakdown for the Facilities site surveys.

Table A-28: Facility Site Survey Costs ($K)

Facilities Site Surveys	Cost Category	FTEs	Sites/ Forms	Locations	Days	Hours per day	Hours	Rate	Cost
Pre conduct	Large Airports	3	30	12.6	1	4	4,548	$ 122.39	$ 556,648
	Medium Airports	3	28	2.9	1	4	960	$ 122.39	$ 117,498
	Small Airports	3	15	2.5	1	4	456	$ 122.39	$ 55,812
	Sea Ports	3	33	3.9	1	4	1,544	$ 122.39	$ 189,025
	Form Design	3	89	1	1	8	2,136	$ 122.39	$ 261,434
	Subtotal Hours						**9,644**		
Conduct	Large Airports	3	30	12.6	2	8	18,192	$ 122.39	$ 2,226,592
	Medium Airports	3	28	2.9	2	8	3,840	$ 122.39	$ 469,993
	Small Airports	3	15	2.5	2	8	1,824	$ 122.39	$ 223,247
	Sea Ports	3	33	3.9	2	8	6,178	$ 122.39	$ 756,101
	Subtotal Hours						**30,034**		
Post Conduct Labor	Labor	2	106		5	8	8,480	$ 122.39	$ 1,037,901
Travel Costs	Travel								
	Flight	3	106	3.022	1			$ 1,000.00	$ 960,944
	Hotel	3	106	3.022	2			$ 150.00	$ 288,283
	Car	3	106	3.022	2			$ 100.00	$ 192,189
	Per Diem	3	106	3.022	2			$ 50.00	$ 96,094
Total									**$ 7,431,760**

A.1.4.2 Architecture Design/Redesign

Facilities architecture design/redesign is the cost to the airlines and sea carriers to design and modernize the exit solution.

- Architecture design/redesign costs estimate 2 contractors working two weeks (40 hours per week) at a rate of $122.39 per hour. These costs also include a $5,000 general contracting fee per airline or sea carrier per port.
- The table below shows the architecture design/redesign costs to the airlines and sea carriers.

Table A-29: Architecture Design/Redesign Costs ($K)

Description	Airlines / Sea Carriers
Engineer/Facilities Labor Rate, $K	$ 0.12
Engineers design time	160
	80
Sub-Total	**$ 1,567**
Number of airline locations	73
Average number of airlines	6.81
Fee per location, $K	$ 5.00
Architecture Fees	**$ 2,485**
Engineer/Facilities Labor Rate, $K	$ 0.12
Number of hours worked	160
Number of individual sea carriers	9
Sub-Total	**$ 176**
Number of seaport locations	33
Average number of seaports	3.90
Fee per location, $K	$ 5.00
Architecture Fees	**$ 644**
TOTAL	**$ 4,871**

A.1.4.3 Counter Modifications

Facilities modifications are the costs to the airlines and sea carriers to modify the counter areas as necessary to incorporate the exit solution.

- It is assumed that major modifications to the counter structure will not be necessary.
- Counter modification costs estimate 2 contractors per airline and sea carrier working three days (8 hours per day) at each airport and seaport at a rate of $78.20 per hour to modify counters, including any additional power and conduit needs (these costs include modifications at both the check-in counters and departure area counters at the airports).

Materials costs of $100 per scanning device location will cover any materials needed to modify the counter areas.

- The table below shows the counter modification costs to the airlines and sea carriers. Total costs are presented in $K, hourly rate and material costs are in whole dollars.

Table A-30: Counter Modifications Costs ($K)

Description	Airlines / Sea Carriers
Counter Modification rate per hour	$ 78.20
Adder for additional devices	1.000
Counter Hours	48
Average number of airlines per airport	6.81
Number of Airports	73
Sub-Total, $K	**$ 1,866**
Miscellaneous materials cost	$ 100.00
Number of Scanners	4,434
Sub-Total, $K	**$ 443**
Miscellaneous materials cost	$ 100.00
Number of Scanners	2,742
Sub-Total, $K	**$ 274**
Counter Modification rate per hour	$ 78.20
Counter Hours	48
Number of Seaports	33
Average number of cruise lines per Seaport	3.90
Sub-Total	**$ 483**
TOTAL $K	**$ 3,066**

A.1.4.4 LAN Equipment Room Modifications

Facilities LAN equipment room modifications are the costs to the airlines, sea carriers, and the government to modernize the LAN equipment rooms at the airports and seaports to accommodate new requirements.

- LAN equipment room modification costs assume $5,000 modification cost, to cover additional power and air conditioning requirements, per airline or sea carrier per airport or seaport.

- The table below shows the airline and sea carrier costs for LAN equipment room modifications.

Table A-31: LAN Equipment Room Modification Costs ($K)

Description	Airlines	Sea Carriers	Total $K
LAN room modification cost, $K	$ 5.0	$ 5.0	
Average number of airlines per airport	6.81	33	
Number of Ports	73	4	
Total $K	**$ 2,485**	**$ 644**	**$ 3,129**

A.1.4.5 Signage

Facilities signage costs are those costs associated with installing directional signage in the airports/seaports, and installing informational signage at each scanning station.

- The cost of directional signage is $2,500 per carrier per port to make and install signage.
- The cost of informational signage is $300 per sign, one sign per device.
- Table A-33 below shows the informational signage costs for the airlines and sea carriers. Table A-32 shows the directional signage costs.

Table A-32: Directional Signage Costs ($K)

Directional Signage	Airlines / Sea Carriers
Directional signage per airport & seaport	$ 2,500.00
Average number of airlines per airport	6.81
Number of Airports	73
Sub-Total, $K	**$ 1,243**
Directional signage per airport & seaport	$ 2,500.00
Average number of cruise lines per Seaport	3.90
Number of Seaports	33
Sub-Total, $K	**$ 322**
Total Directional Signage	**$ 1,564**

Table A-33: Informational Signage Costs ($K)

Stanchion and Sign Insert	Airlines / Sea Carriers
Seaports	
Informational signage per device	$ 300.00
Total number of seaport stations	2,742
Sub-Total, $K	**$ 823**
Airports	
Informational signage per device	$ 300.00
Total number of airport stations	4,434
Sub-Total, $K	**$ 1,330**
Total Stanchion and Sign Insert, $K	**$ 2,153**

A.1.5 Training

A.1.5.1 Industry

Training cost estimates were provided by the US-VISIT Office of Training.

- The following assumptions were used to derive this estimate.
  - These costs represent only stand-up training costs.
  - These costs represent only training costs associated with the collection of biometrics and associated procedures.
  - These costs include the initial costs of training staff and materials.
  - These costs do not include the costs for training labs and equipment.
  - These costs do not include the costs to train new employees or the costs of knowledge sustainment training.
  - Airline training costs are estimated to be $147,000 per carrier, including personnel manning both counters and gates. These costs are based on an average number of airports per carrier, 3 days of training per air carrier per airport. It is assumed that each carrier will need to train 50 people at each location.
  - Sea carrier training costs are estimated to be $169,000 per carrier. These costs are based on an average number of seaports per carrier, 5 days of training per carrier per seaport. It is assumed that each carrier will need to train 100 people at each location.
  - The cost of lost time for carrier employees was not considered in this estimate.
  - The table below shows the training costs to the airlines and sea carriers.

Table A-34: Airline and Sea Carrier Training Costs ($K)

Description	Airlines / Sea Carriers, $K
Average cost per air carrier	$ 147.0
Number of individual airlines	80
Airline Training Cost	**$ 11,760**
Average cost per sea carrier	$ 169.0
Number of individual sea carriers	9
Sea Carrier Training Cost	**$ 1,521**
TOTAL $K	**$ 13,281**

A.1.5.2 Government

- The following assumptions were used to derive this estimate.
  - These costs are based on the cost of US-VISIT providing training expectations and guidelines to each airline and sea carrier.

- This cost includes costs to develop and provide workforce readiness materials to federal training partners such as CBP, U.S. Customs and Immigration Service (CIS) and Immigration and Customs Enforcement (ICE). US-VISIT will update ADIS, Software Integration Testing (SIT), and IDENT training materials to share with these users. These federal training partners will customize the provided materials to develop their own training courses as appropriate.

- For each of these federal training partners, US-VISIT will need to post materials to Web/LMS, develop a training plan, customize materials, execute train the trainer training, and evaluate the training after completion.

- US-VISIT will not design, develop, or execute training for the carriers.

- The majority of the government training costs are expected to be incurred in developing and executing training for the DHS and IDENT help desks.
- The cost of lost time to government employees was not considered in this estimate.
- The table below shows the training costs to the government for the exit solution.

Table A-35: Government Training Costs

Government Training	Total $K
US-VISIT Training	$ 807
Federal Partners - stakeholders and data users	$ 1,332
TOTAL $K	**$ 2,139**

A.1.6 Outreach

Carrier outreach costs are estimated to be 5 percent of the total program cost less program management and training costs. Government outreach costs are based on a cost estimate provided by the US-VISIT office of Program Integration and Mission Services. The table below shows the outreach factors for both the carriers and the government.

Table A-36: Outreach Costs ($K)

Description	Gov't	Airlines / Sea Carriers	Total $K
US-VISIT Outreach Costs	$ 2,000		**$ 2,000**
Information Technology Costs		$ 191,230	
Facilities Costs		$ 22,215	
Training Costs		$ 13,281	
Sub-Total		**$ 226,726**	
Outreach Factor		5.00%	
Industry Outreach Costs		**$ 11,336**	**$ 11,336**
TOTAL	**$ 2,000**	**$ 11,336**	**$ 13,336**

A.1.7 Operations and Maintenance

After the initial fifteen months of investment costs, the program will move into the O&M phase. During this time, the cost of the program focuses on operating the solution that has been implemented, and maintaining the program. The following assumptions were used to derive the O&M costs.

- As the investment phase is anticipated to extend 3 months into the second fiscal year of the program lifecycle, it is assumed that O&M will not begin until the second quarter of FY 2009.
- Those costs associated with maintaining the updates to ADIS, CBP, and the development of the application will continue at a steadily declining rate (15 percent in year 2, 12 percent in year 3, 9 percent in years 4 and beyond) as it is assumed that major problems with the system will decrease as the program matures. As the investment phase extends three months into the second year of the program, annual O&M costs were reduced by 25 percent in the first year of O&M. This 25 percent reduction factor does not apply to years beyond year 2.
- Program Management costs will continue at a rate of 40 percent of the investment period total Program Management cost, beginning in the second quarter of year two. As a result, year 2 includes only 75 percent of the 40 percent Project Management O&M factor, while years 3 and beyond show the full 100 percent.
- Hardware and COTS software maintenance costs will continue at rates of 10 percent and 18 percent respectively of the investment costs of the program, beginning one year after installation.
- Data communications circuit costs ($30 per carrier per port per month) will remain at the same rate as estimated in the Investment Phase, as these costs will remain constant throughout the life of the program.
- Each counter and gate at an airport would be in operation for 18 hours per day, 7 days per week. As sea carriers do not process a continuous flow of departing passengers 7 days a week, it was assumed that sea carriers would be in operation for 6 hours per day, 4 days per week. Attendants will be present to handle technical issues and problem resolution for the scanning devices.
    - At the airport check-in counters, each attendant will be able to monitor each of the workstations installed at an individual counter location (about 6 in the large airports, 4 in the medium airports, 2 in the small airports). At the seaport check-in counters, each attendant will be able to monitor 6 workstations, the number installed at a counter in a seaport.
    - At the departure gates, each attendant will be able to monitor 2 workstations. Interviews with SMEs at TSA revealed that the existing carrier staff at the departure gates will be able to absorb 1/3 of the functionality of US-VISIT Biometric Exit with no additional staffing. Additional staff will be added to accommodate the remaining 2/3 of the Exit functionality. While the number of devices deployed to the gates has been increased by 50 percent to compensate for airlines that do not segregate their departure gates by domestic and international flights, the number of staff has not been increased since the numbers of flights and in-scope alien travelers is not assumed to change as a result of this increase. Even though devices will be deployed to additional gates, not all of these gates will need to be in operation at the same time.

- This results in 7,073,014 additional attendant hours to be billed.
- Attendant support begins at FOC, currently the second quarter of FY 2009.

- The industry labor rate for attendants was assumed to be $33.52 per hour. This was determined based on the hourly rate of a conservative annual salary estimate of $60,000 per year for the counter representatives divided by 1,790 billable hours per year.
- 52 Million aliens per year would exit through the ports, each requiring an average of 66.6 seconds worth of additional time to process. Current carrier counter personnel will assist with the majority of transactions as part of the normal check-in and departure process, with carrier-employed attendants assisting with uncharacteristic transactions and responding to problems and questions.
  - This results in about 962,000 total counter hours per year to staff the devices.
  - These new hours will be charged at the above described labor rate.
  - In year 2, counter support begins in the second quarter at FY 2009.
- The total number of stations is 7,176 (4,434 for airports, 2,742 for seaports). The number of stations used to calculate the number of staff is slightly lower. This is based on the inclusion of additional gates to which the solution will be deployed at the airports and the assumption that the staff will not need to increase to accommodate this increase in gates as the numbers of flights and travelers will not change. The number of stations used to calculate the staffing level is 6,166 (3,424 for airports, 2,742 for seaports).
- Important observation about attendant headcounts and costs:
  - The total number of attendants appears large in relation to the number of stations to be deployed. This occurs because each attendant will work a 40 hour week, and each station is in operation for 18 hours per day, seven days per week, or 126 hours per week (at the airports) or 6 hours per day, four days per week (at the seaports). Even though each attendant monitors more than one station at a time, the operational time per year of each station requires multiple shifts per day, which in turn causes the number of full-time attendants to be relatively high in comparison to the number of devices.
  - The table below shows the total headcount of attendants required to implement the Exit solution.

Table A-37: Total Attendant Headcount, Proposed Rule

Counter/Gate Solution, Carriers	Total Attendants	Total Devices
Airports	3,633	3,424
Seaports	319	2,742
Total	**3,952**	**6,166**

A.1.8 Delay and Disruption Cost Assumptions

Base Case Percentage of Flights Delayed

Variable Description: This is the percentage of flights that have delayed departures. The definition of a delay is a departure time 15 minutes or more later than scheduled. The delays are for the base case (i.e., period before any of the proposed alternatives are implemented).

Between 1996 and 2006 (inclusively) the average percentage of flights delayed by 15 minutes or more was 17%.[77] This average is for all flights, both domestic and international. As this number has a high degree of uncertainty surrounding it, the upper and lower ranges around the median are wide. They can be seen in the table below.

Data Sources: U.S. Department of Transportation, Bureau of Transportation Statistics' *Transport Statistics Annual Report December 2006*.

Table A-38: Base Case Percentage of Flights Delayed

Variable	Median	Lower 5% Limit	Upper 5% Limit
Base case percentage of fights delayed per year	17%	11%	23%

Average Value of Time for Travelers (per hour)

Variable Description: The average value of time is the premium that the average person places upon time spent waiting in line or being processed at exit. It can be thought of as the value an individual places on the most highly valued alternative use of his or her time. This value applies to all travelers, both aliens and out-of-scope travelers.

In a study prepared for the Federal Aviation Administration (FAA) regarding various aspects of valuing factors such as passenger time, injury, etc.,[78] it was estimated that the value of time for passengers using air carriers ranged from $23.30 per hour for personal trips to $40.10 for business. These dollar figures are in 2000 terms, but per FAA direction are not inflated to 2008 values.[79] The upper 5% limit is assumed to be $35.60, and the median is assumed to be an all

[77] Calculated from data available in the U.S. Department of Transportation, Bureau of Transportation Statistics, *Transport Statistics Annual Report December 2006*, p. 53.

[78] *Economic Values for FAA Investment and Regulatory Decisions, A Guide*, Contract No. DFTA 01-02-C00200, prepared by GRA Inc.

[79] *Economic Values for FAA Investment and Regulatory Decisions, A Guide* (Contract No. DFTA 01-020C00200, prepared by GRA Inc.), p. 1-3, explicitly states: "Updates of the recommended values utilizing newly published source data upon which

purpose average, $28.60. The low range is assumed to be $23.80. These three figures can be seen in the table below.

Data Sources: *Economic Values for FAA Investment and Regulatory Decisions, A Guide*, Contract No. DFTA 01-02-C00200, prepared by GRA Inc.

Table A-39: Average value of time to travelers ($ per hour)

Variable	Median	Lower 5% Limit	Upper 5% Limit
Average value of time to travelers (per hour)	$28.60	$23.80	$35.60

Average Cost of Flight Delays ($ per minute)

Variable Description: Average cost of flight delays to airlines in dollars per minute. This excludes the cost of airline personnel at counters and gates. According to a recent academic report, the costs of delay to an airline in 2004 were broken out as can be seen in the table below.

Table A-40: Breakdown of Costs of Delay to Airlines (Euros per Minute of Delay) in 2004

Cost Variable	Euros per Minute
Fuel Costs	0
Maintenance costs	1
Crew costs	10
Airport charges	0
Aircraft ownership costs (DRL)	-
Passenger compensation	24
Direct cost to an airline	***36***

As of the prevailing exchange rates on December 31, 2004,[80] the 36 Euros cited in the above table came to $49.10. Adjusting for inflation between 2004 and 2006, the $49.10 was estimated as being $52.40 in 2006 dollars.[81] The 2008 dollar equivalent was calculated by assuming that inflation between 2006 and 2008 would be equal to the average inflation rate between 1996 and

the recommended values are built will be provided periodically by OST. Pending such updates, analysts should not make interim adjustments using economy-wide measures of general price inflation".

[80] On that date one Euro was equal to $1.364.

[81] The U.S. CPI deflator, series ID CUUR0000SAO, U.S. city average for all items, 1982—84=100, was used as the basis of this adjustment.

2006, 4.5%.[82] Based on this assumption, a 2008 value of $57.11 was calculated. This number with its assumed range can be seen in the below table.

Data Sources: *Evaluating the True Cost to Airlines of One Minute of Airborne or Ground Delay*, University of Westminster, May 2004 (www.eurocontrol.int/prc/gallery/content/public/Docs/cost_of_delay.pdf).

Table A-41: Cost of Flight Delays ($ per minute)

Variable	Median	Lower 5% Limit	Upper 5% Limit
Cost of Flight Delays ($ per minute of delay)	$57.11	$38.26	$76.15

Preparation Time Delays for Aliens at Airlines Caused by Implementation Location (seconds)

Variable Description: This is the additional delay time caused to all aliens due to the implementation of an alternative by location (i.e., gate, security checkpoint, check-in counter, and kiosk) in seconds. The time includes that required to process an alien's fingerprints (including ancillary paperwork and activity) but does not include the time that an alien is in queue until the actual processing stage commences.

It is assumed that traveler preparation time does not vary between private and public sectors. It is also assumed that preparation times are the same at the check-in counters, security check point and the gates. The median for all locations and airport size is 14.1 seconds with a lower 5% limit of 11 seconds and an upper 5% limit of 17 seconds.

Data Sources: US-VISIT subject matter expert.

This time estimate is composed of three distinct elements: 1) Four seconds biometric scan preparation, 2) five seconds biometric scan, and 3) four seconds biometric scan confirmation. The biometric reader will only scan for a maximum of five seconds before the machine selects an image for transmission.

Time Required for Collecting Biographic Information at TSA Checkpoints (seconds)

Variable Description: This is the time required, at the TSA checkpoint, to process an alien's biographic information. In the current state this time is zero as TSA personnel do not currently collect biographic information. Under the TSA alternative, however, TSA personnel would also have to electronically capture biographic information to associate with the biometric data.

[82] The consumer price index is defined as that for U.S. cities, all items, 1982-4=100, series CUUS0000SA0 (www.bls.gov).

This time is only applicable to TSA checkpoints as biographic information is already processed or available at both the check-in counter and the gates as part of current operating procedures. Hence the implementation of Exit will not impose this task over and above the base case for these alternatives.

Biographic processing at TSA checkpoints, based on available data, requires a median of seven seconds.

Data Sources: US-VISIT subject matter expert.

Table A-42: Time Required for Processing Biographic Information at TSA Checkpoints (seconds)

Variable	Median	Lower 5% Limit	Upper 5% Limit
Time Required for Processing Biographic Information at TSA Checkpoints (seconds)	7	5	10

Queue Time for Travelers Resulting from Implementation of Alternatives by Location (seconds)

Variable Description: This is the additional delay time caused to all travelers due to the queue time required before biometric processing. This time is in seconds. It should be noted that there are no queue time delays caused to TSA security check-in points as a result of implementation of Exit. The reason for this is that TSA is doubling staff at these locations. According to TSA the doubling of the staff will eliminate queues at these check-in points.

Data Sources: US-VISIT subject matter expert.

Table A-43: Queue Time for Travelers Resulting from Implementation of Alternatives (Seconds) [83]

Location	Median (seconds)	Lower 5% Limit	Upper 5% Limit
LARGE AIRPORTS			
At the Check-in Counter	53.6	26.8	80.4
At Gate	53.6	26.8	80.4
At Kiosk	73.1	58.5	87.7
MEDIUM AIRPORTS			
At the Check-in Counter	53.6	26.8	80.4
At Gate	53.6	26.8	80.4
At Kiosk	79.2	63.4	95.0
SMALL AIRPORTS			
At the Check-in Counter	53.6	26.8	80.4
At Gate	53.6	26.8	80.4
At Kiosk	67.3	53.8	80.8
SEAPORTS			
At Check-in Counter	53.6	26.8	80.4
At Kiosk	52.2	41.8	62.6
Note: There no queues at TSA check-in points as TSA plans on doubling staff at these locations after Exit implementation and this, according to TSA, is expected to eliminate queues.			

Average Number of Annual Flights that are Delayed as a Result of Implementing Exit

Variable Description: This is the average number of international airline flights that are delayed annually as a result of the implementation of Exit.

The equation used to estimate the number of outbound international flights delayed in 2008 as a result of the implementation of Exit is as follows:

(% of Passengers Missing Connecting Flights as a Result of implementation of Exit (0.5%) X

% of in-scope travelers in 2008 (55.3 million) /

[83] Seconds rounded off to the nearest whole second. All data calculated from US-VISIT, Exit Pilot Evaluation.

Average fully laden capacity of a 747

= 587.2 Delayed Flights Per Year

Where each term is defined as follows:

% of Passenger Missing Connecting Flights as a Result of the implementation of Exit

The proxy that has been used for this term is the percentage of in-scope travelers missing connecting flights as a result of the implementation of APIS. In a recent CBP report two estimates were provided for the percentage of in-scope travelers who would miss their flights as a result of APIS, a "high" and a "low".[84] The high estimate was 1% and the low 0.5%.[85] APIS is a more delay-intensive process than Exit, because transmission is tied to "wheels up" permission. Therefore, it is assumed that Exit will, on average, cause 0.5% of passengers to get delayed 15 minutes or more beyond their required last boarding time. This analysis assumes a high of 0.75% of passengers will be delayed and a low of 0.25% of passengers will be delayed.

% of In-Scope Travelers in 2008

The estimated number of in-scope travelers in 2008 has been estimated at 55.3 million. This number will increase on an annual basis according to the assumption made in the Regulatory Evaluation (i.e., 4% growth per annum).

Average Fully Laden Capacity of a 747

This is the full passenger carrying capacity of a 747-400. In a three class configuration (first class, business class, economy class) this model of aircraft can hold 416 passengers and in a two class configuration (business and economy class) it can hold 524 passengers. The mid-point of 470 is assumed to be the "typical" fully loaded capacity.

Based on the above figures, a total of 587.2 planes would be expected to be delayed in 2008. That number would increase in direct proportion with the increases in in-scope population per year.

It is assumed that the lower 5% bound is at 293.6, the upper is at 880.9 and the median is in-between, at 587.2.

Table A-44: Average Number of Flights that are Delayed Annually as a Result of Implementing Exit

[84] Elena Ryan, Office of Regulations and Rulings, U.S. Customs and Border Protection, Department of Homeland Security, Regulatory and Final Regulatory Flexibility Act Analysis for the Final Rule Passenger Manifests for Commercial Aircraft Arriving in and Departing from the United States; Passenger and Crew Manifests for Commercial Vessels Departing from the United States, July 2007.

[85] Ibid.

Variable	Median	Lower 5%Limit	Upper 5%Limit
Average Number of Flights that are Delayed Annually as a Result of Implementing Exit	587.2	293.6	880.9

Average Flight Delay (Minutes)

Variable Description: This is the average flight delay (in minutes) of the "typical" delayed flight.

In 2006 the difference between scheduled and actual departure time (i.e., aggregate delay time) for all U.S. domestic non-stop flights was 70,857,247 minutes.[86] During that same period there were a total of 7,141,922 U.S. domestic non-stop flights.[87] Data from the Department of Transportation's Bureau of Transportation Statistics TranStats database for 2006 shows that the percentage of flights delayed 15 minutes or more was 20%.[88] Hence the average delay time for those flights that were delayed is 49.6 minutes. This has been rounded to 50 minutes.

As the data mentioned in the above paragraph is for U.S. domestic non-stop flights and does not include international flights there are reasons to believe the delay estimate to be conservative. This assumption is based on a number of facts. One is that international flights, on average, are lengthier than domestic flights. This causes more problems with respect to maintenance, refueling and weather. In addition, due to the nature of international travel, there are other potential problems that are not encountered in domestic flights (i.e., customs, etc.) that can potentially cause delays. Hence the 50 minute estimate should be thought of as being conservative. It is assumed that if any of the alternatives being considered a cause of a flight delay there will be no difference in the length of the delay.

Data Sources: Department of Transportation, Bureau of Transportation Statistics, TranStats database.

Table A-45: Base Case Average Flight Delay (Minutes)

[86] Department of Transportation, Bureau of Transportation Statistics, TranStats database.

[87] Delay data was not available for international flights.

[88] The Department of Transportation's definition of flight delay is dichotomous. Flights not delayed for 15 minutes or more are not considered "delayed" while all those 15 minutes and over are.

Variable	Median	Lower 5% Limit	Upper 5% Limit
Base case Average Flight Delay (minutes)	50	35	65

Percentage of Aliens on International Flights taking Connecting Flights with Domestic Legs

Variable Description: This is the percentage of aliens on International Flights taking Flights with Domestic Legs. The purpose of this term is to determine the number of aliens who will, in airports upon completing a domestic flight, before boarding an international flight, have to leave the gate area and go to the airline counters for biometric fingerprint processing. This variable is used, with the time required for the trip to the counter, to estimate the amount of total time (and value of that time) that aliens will have spend in this process. It should be remembered that aliens will only need to do this at small and medium sized airports. At the large airports counters for biometric fingerprint processing will be located behind TSA security areas so aliens will not have to spend this time at large airports.

The percentage of aliens falling into this category is estimated to be 27%. This number was estimated from a sample of data, provided by US-VISIT, for the week of April 22 through April 28, 2007. The data used to estimate the 27% can be seen in the table below.

Data Source: Based on data provided by US-VISIT for the week of April 22 through April 28, 2007.

Table A-46: Percentage of Aliens on International Flights with Domestic Legs[89]

Percentage of Aliens on International Flights with Domestic Legs			
Airport	Total US-VISIT In-scope Exiting	% International Flights	% International Flight with Domestic Leg
JFK	105,501	89%	11%
MIA	88,084	72%	28%
LAX	83,093	75%	25%
EWR	44,406	72%	28%
ORD	41,235	63%	37%
SFO	38,277	79%	21%

[89] Calculated from data provided by US-VISIT. The data was a sample from a one week period covering the week of April 22-28, 2007.

Percentage of Aliens on International Flights with Domestic Legs			
Airport	Total US-VISIT In-scope Exiting	% International Flights	% International Flight with Domestic Leg
ATL	30,970	38%	62%
IAH	27,601	48%	52%
IAD	4,620	69%	31%
HNL	24,203	91%	9%
GUM	18,512	88%	12%
MCO	15,349	96%	4%
DTW	14,222	35%	65%
DFW	13,665	42%	58%
BOS	12,244	95%	5%
FLL	8,688	89%	11%
LAS	8,652	93%	7%
SFB	8,113	97%	3%
PHL	7,455	54%	46%
SEA	6,532	78%	22%
SJU	5,663	52%	48%
MSP	4,638	39%	61%
CLT	3,470	38%	62%
DEN	3,420	68%	32%
PHX	3,203	77%	23%
PDX	1,626	79%	21%
SAT	1,556	90%	10%
LGA	1,544	68%	32%
BWI	1,516	98%	2%
CVG	1,474	46%	54%
TPA	1,444	99%	1%
ANC	1,331	60%	40%
RSW	1,010	100%	0%
MEM	904	26%	74%
SJC	873	100%	0%
OAK	863	100%	0%
SMF	570	100%	0%

Percentage of Aliens on International Flights with Domestic Legs			
Airport	Total US-VISIT In-scope Exiting	% International Flights	% International Flight with Domestic Leg
ONT	536	98%	2%
RDU	532	87%	13%
SAN	493	100%	0%
SLC	434	45%	55%
PBI	309	94%	6%
DCA	257	57%	43%
FAT	238	100%	0%
STT	225	100%	0%
MDW	215	100%	0%
CLE	198	50%	50%
MFE	190	90%	10%
AUS	123	99%	1%
BFL	116	87%	13%
MKE	84	85%	15%
TUS	82	99%	1%
BDL	81	70%	30%
PIT	77	57%	43%
STL	69	100%	0%
OGG	64	66%	34%
IND	64	95%	5%
CMH	46	91%	9%
HPN	36	72%	28%
BNA	33	100%	0%
PSP	22	100%	0%
MCI	18	89%	11%
ABE	17	82%	18%
LKE	16	100%	0%
ALB	14	79%	21%
SRQ	10	40%	60%
ROC	10	50%	50%
PVD	9	100%	0%
MHT	8	63%	38%
MLB	7	100%	0%
MDT	5	40%	60%

Percentage of Aliens on International Flights with Domestic Legs			
Airport	Total US-VISIT In-scope Exiting	% International Flights	% International Flight with Domestic Leg
BFI	3	100%	0%
DAB	2	100%	0%
SNA	1	100%	0%
Weighted Average	**661,171 Total**	**73.3%**	**26.7%**

Percentage of Aliens who check-in at Airline Counters

Variable Description: This is the percentage of aliens who are assumed to check in at airline counters. This number is assumed to be 100%.

Percentage of all Out-of-scope Travelers who check-in at Airline Counters

Variable Description: This is the percentage of out-of-scope travelers who check in at airline counters. According to industry analysts cited by the New York Times, more than 25% of all airline travelers used a self-service machine.[90] At some airlines, for example Continental, that number was as high as 60%.[91] The median was assumed to be between these two numbers, 42.5%. These estimates were from 2004, when the technology was not as common as it was today. Hence the estimates should be thought of as being conservative.

Data Sources: David Jones, "Business Travel; Speeding Flight Check-In At Self-Service Kiosks," New York Times, February 3, 2004.

Table A-47: Percentage of all Out-of-scope Travelers who Check-In at Airline Counters

Variable	Median	Lower 5% Limit	Upper 5% Limit
Percentage of all out-of-scope travelers who check-in at airline counters	42.5%	25%	60%

[90] David Jones, "Business Travel; Speeding Flight Check-In At Self-Service Kiosks", New York Times, February 3, 2004.

[91] Ibid.

A.1.9 Examination of Alternatives

This section examines four alternatives to the Proposed Rule. The Proposed Rule involves the airlines installing the scanning devices in the check-in area at 20 percent of domestic airports with international departures and the departure gate area at 80 percent of those airports. Because of the layout of a typical seaport, the biometric collection will occur only at the check-in area.

The alternatives to the Proposed Rule are:

- Biometric collection at the check-in area or departure gate area of domestic airports with international departures; all application, development, and acquisition costs to be incurred by the government (Alternative 3).
- Biometric collection at the check-in area of all domestic airports with a TSA presence serving medium and large carriers; all application, development, and acquisition costs to be incurred by the carriers (Alternative 1).
- Biometric collection at all domestic airports at the TSA security checkpoint; all application, development, and acquisition costs to be incurred by the government (Alternative 2).
- Biometric collection at kiosk locations of domestic airports with international departures; all application, development, and acquisition costs to be incurred by the government (Alternative 4).

Alternatives that examine solution deployment to only the gates in airports are assumed to be an extreme scenario of the Counter/Gate solutions that are presented in this document. As a result, gate solutions are not independently presented.

Depending on the solution, there are differing combinations of airport/seaport and airline/sea carrier that will affect the number of devices that will be required for each solution. The specific cost elements that feed each solution are described in the appropriate sections below.

General Methodology

- The cost estimate for each solution is based heavily on the general methodology information outlined in Section A.1 above.
- Costs in all tables are shown in thousands of dollars unless otherwise indicated.
- Specific methodology for each alternative is described in the appropriate sections below.

Alternatives

The following sections describe the basic methodology that was used to determine the cost of each of the alternatives.

Counter Solution with Carrier Implementation

In this alternative, the airlines and sea carriers will develop and deploy the solution to the check-in counter area. The carriers will need to establish connectivity with the US-VISIT servers to allow their networks to send transactions. The carriers will build the biometric devices and deploy them

to the check-in counter area. Carrier personnel will be responsible for the collection of biometrics.

Alternative Assumptions

General Assumptions

- The solution will be deployed to each airport with a TSA presence that serves medium and large airports, a total of 304 airports.
  - This total assumes 30 large airports, 31 medium airports, and 243 small airports.
- The solution will be deployed to each of the seaports included in the Proposed Rule, a total of 33 seaports.
- The cost of the device will be $7,500, as estimated in the Proposed Rule.
- The total number of collection devices to be acquired will be 11,990 (9,248 at the airports, 2,742 at the seaports).
  - These calculations assumed that a large airport would have an average of 28.9 counters with 6.02 stations at each counter; a medium airport would have an average of 16.8 counters with 4 stations at each counter; a small airport would have an average of 9.2 counters with 2 stations at each counter.
  - These calculations for the seaports are the same as the Proposed Rule.

Cost Element Assumptions

- Program Management cost assumptions:
  - Program Management costs will be factored at the same percentage as the Proposed Rule, 15 percent for both the carriers and the government.
- Independent Verification and Validation cost assumptions:
  - The IV&V factor for the carriers remained at 1 percent of the IT Development costs.
  - Independent Verification and Validation costs for the government have not changed from the Proposed Rule.
- Other government partners cost assumptions:
  - Costs associated with IDENT, ADIS, and CBP development have not changed from the Proposed Rule.
- Information Technology cost assumptions:
  - The 5 percent cost factor for development and test hardware is incurred by the carriers, the same as in the Proposed Rule.
- Facilities cost assumptions:
  - The costs associated with site surveys are increased from the Proposed Rule as the carrier teams will now be visiting 304 airports rather than the 73 in the Proposed Rule.
  - Facilities costs associated with LAN equipment room modifications are assumed to be $15,000 for 25 percent of the airlines at each airport and seaport.

- The facilities costs associated with architecture design/redesign, counter modifications, and signage are estimated in the same manner as the Proposed Rule.

- Training cost assumptions:
  - Training costs for the carriers are increased due to the carriers' need to train employees at a greater number of airports than the Proposed Rule (the seaports remain the same). Training costs for the government remain the same as in the Proposed Rule.

- Outreach cost assumptions:
  - As was the case in the Proposed Rule, Outreach costs for the carriers are based on a factor of 5 percent of total IT, Facilities, and Training costs.
  - Outreach costs for the government are assumed to be $2,000,000. This is in line with an estimate provided by the US-VISIT Office of Program Integration and Mission Services.

- O&M cost assumptions:
  - As the investment phase is anticipated to last 3 months into the second fiscal year of the program lifecycle, it is assumed that the O&M will not begin until the second quarter of FY 2009.
  - Those costs associated with maintaining the updates to ADIS, CBP, and the development of the application will continue at a steadily declining rate (15 percent in year 2, 12 percent in year 3, 9 percent in years 4 and beyond) as it is assumed that major problems with the system will decrease as the program matures. As the investment phase lasts three months into the second year of the program, these costs are reduced by 25 percent in the first year of O&M. This 25 percent reduction factor does not apply to years beyond year two.
  - Program Management costs will continue at a rate of 40 percent of the investment total Program Management cost, beginning in the second quarter of year two.
  - Hardware and COTS software maintenance costs will continue at rates of 10 percent and 18 percent respectively of the investment costs of the program, beginning one year after installation.
  - Data communications circuit costs ($30 per carrier per port per month) will remain at the same rate as estimated in the Investment Phase, as these costs will remain constant through the life of the program.
  - Each counter at an airport would be in operation for 18 hours per day, 7 days per week. As sea carriers do not process a continuous flow of departing passengers 7 days a week, it was assumed that sea carriers would be in operation for 6 hours per day, 4 days per week. Attendants will be present to handle technical issues and problem resolution for the scanning devices.
    - At the airport check-in counter at a large airport, each attendant will be able to monitor about 6 workstations. At each counter at a medium and small airport, each attendant would be able to monitor 4 workstations. Although there are fewer counters at small airports, and the counters there are smaller, it is assumed that since the medium and large airlines are responsible for implementing this solution, they would have larger counter areas at the small airports. At the seaport check-in counters, each attendant will be able to monitor 6 workstations.
    - This results in a total of 15,039,117 attendant hours per year.
    - In year 2, attendant support begins in the second quarter of FY 2009.

- The labor rate was assumed to be $33.52 per hour. This was determined based on the hourly rate of a conservative annual salary estimate of $60,000 per year for the counter representatives divided by 1,790 billable hours per year.
- 52 million aliens per year would exit through the ports, each requiring an average of 66.6 seconds worth of additional time to process. Current carrier counter personnel will assist with the majority of transactions as part of the normal check-in process with carrier-employed attendants assisting with uncharacteristic transactions and responding to problems and questions.
  - This results in about 962,000 total counter hours per year to staff the devices.
  - These new hours will be charged at a rate of $33.52 per hour. This was determined based on the hourly rate of a conservative annual salary estimate of $60,000 per year for the counter representatives divided by 1,790 billable hours per year.
  - In year 2, counter support begins in the second quarter of FY 2009.
- The total number of stations is 11,990 (9,248 for airports, 2,742 for seaports).
- Important observation about attendant headcounts and costs:
  - The total number of attendants appears large in relation to the number of stations to be deployed. This occurs because each attendant will work a 40 hour week, and each station is in operation for 18 hours per day, seven days per week, or 126 hours per week (at the airports) or 6 hours per day, four days per week (at the seaports). Even though each attendant monitors more than one station at a time, the operational time per year of each station requires multiple shifts per day, which in turn causes the number of full-time attendants to be relatively high in comparison to the number of devices. The total attendant headcount is higher under the government-deployed solution than under a carrier-deployed solution because the total billable hours per year is smaller for the government attendants than for the carrier attendants.
  - The table shows the total attendant headcount for the carrier-deployed counter solution.

Table A-48: Attendant Headcount for Counter Solution with Carrier Deployment

Counter Solution, Carriers	Total Attendants	Total Devices
Airports	8,083	9,248
Seaports	319	2,742
Total	**8,402**	**11,990**

TSA Solution with Government Implementation

In this alternative, US-VISIT will develop and deploy the solution to the TSA checkpoint areas. The biometric collection will be taken with a mobile scanning device. Network connectivity will be provided via TSA's network rather than the airlines'. As seaports do not have TSA checkpoints, the solution at the seaport will be identical to the third alternative, with US-VISIT developing and deploying the solution to the sea carrier counters. Note that, as this alternative occurs outside of the area of work of the airline employees, it includes only minimal airline-incurred investment costs. These costs are associated that with the need to indicate in-scope alien travelers on the

boarding pass. This will assist TSA in identifying the in-scope alien travelers which will minimize queuing time at the TSA checkpoints. The majority of carrier costs for this alternative are incurred by sea carriers in the O&M phase.

Alternative Assumptions

General Assumptions

- There are a total of 80 airlines that will need to implement some change to their boarding pass to identify in-scope alien travelers.
- The table below, provided by the Office of Workforce Utilization at TSA lays out the number of airports in each category as designated by TSA. For the purposes of this estimate, airports in Categories X and I are assumed to be large airports, Category II airports are assumed to be medium airports, and airports in Categories III and IV are assumed to be small airports. These categories do not apply to any other alternative in this estimate.

Table A-49: TSA Airport Categories with TSA Checkpoints and Lanes

Category	Total Checkpoints	Total Lanes
X	212	929
I	150	569
II	95	206
III	124	150
IV	174	176
Total	**755**	**2030**

- Based on information received from TSA, it is assumed that there are 455 airports with a total of 755 TSA checkpoints nationwide, with a total of 2,030 lanes at those checkpoints.
- It is assumed that there is currently one Travel Document Checker (TDC) employed by TSA for every two lanes in operation. In order to minimize the delay as a result of the implementation of the Exit solution, the number of TDCs will need to be increased to one for every TSA lane. The number of devices is assumed to be one device for every two TSA lanes, with one Attendant per device. Counter mounted devices and kiosks are not possible due to space constraints.
    - In order to account for possible failures in the mobile devices, a spare device was included for each mobile device deployed to small airports, where only one device was deployed per checkpoint. At medium and large airports, spares will be purchased at a rate of 20 percent of total required devices. These spares will be available in the event one of the mobile devices malfunctions or otherwise becomes unusable.
    - Based on these calculations, there are a total of 1,349 mobile devices will be purchased, 1,015 of which are required to meet the needs of the Exit solution.
- As there is no TSA presence at seaports, the solution for the seaports will be identical to the Proposed Rule, with the exception that the government will purchase the scanning devices. There were assumed to be 2,742 stations at seaports.
- The cost of the devices at the airports will be $5,686 per device. This is based on historical estimates for the mobile devices. At the seaports, the devices will be the same counter-mounted solution deployed in the non-TSA solutions, at a cost of $6,500 per device.

- With the exception of modifications to the boarding passes, all software development effort will be the responsibility of the government.

Cost Element Assumptions

- Program Management cost assumptions:
  - Government Program Management costs will be factored at the same percentage as the Proposed Rule, 15 percent.
- Independent Verification and Validation cost assumptions:
  - Independent Verification and Validation costs for the government have not changed from the Proposed Rule.
- Other government partners cost assumptions:
  - An additional FTE was added to coordinate data sharing between CBP and TSA for the Exit solution.
  - Otherwise, costs associated with IDENT, ADIS, and CBP development have not changed from the Proposed Rule.
- Information Technology cost assumptions:
  - The 5 percent cost factor for development and test hardware is now incurred by the government.
  - Each international airline will need to modify their boarding pass to include some identification that a traveler is an in-scope alien.
    - With the assumption that there is enough space on the boarding passes to include this identifier, the modifications are not expected to be significant. Each of the 80 airlines will need one person working for four hours at a rate of $122.39 to develop this modification.
  - All other IT Development costs are now incurred by the government, and will be reduced because the government will be able to develop a single solution, while each carrier would have been developing an individual solution under a carrier-implemented solution.
- Facilities cost assumptions:
  - The costs associated with site surveys differ from the Proposed Rule as even though only one government team will be visiting each airport once, rather than a team for each airline visiting each airport, there is a larger number of airports to visit. These costs are now incurred by the government.
  - The facilities costs associated with architecture design/redesign are assumed to be 2 engineers working for 2 weeks to design the solution at an hourly rate of $122.39 at each airport and for each carrier at each seaport.
  - It is assumed that space will be needed to store the mobile devices, charge the batteries, upload data from the scanners, and transmit the data to the US-VISIT servers.
    - At 25 percent of TSA checkpoints, current TSA office space will be sufficient to house these new requirements.
      - At 80 percent of these locations, new power and networking capabilities will need to be added to accommodate the Exit requirements.
      - At 20 percent of these locations, no modifications will be necessary.
    - At the remaining 75 percent of TSA locations, new space will need to be leased by the government to house these new requirements.

- At 10 percent of these locations, a new room will need to be built to accommodate the Exit requirements.
- At the remaining 90 percent of these locations, an existing office space in the airport will be modified to house the Exit requirements.
  - At 80 percent of these locations, new power and networking capabilities will be needed to accommodate the Exit requirements.
  - At 20 percent of these locations, no modifications will need to be made to accommodate the Exit solution.

- Locations requiring only updates to power and networking capabilities will require two electricians working for three days at a rate of $100.00 per hour. They will need to install two circuits at each location, requiring $200 for the breakers and installation of 200 feet of conduit and wiring (100 feet per circuit) at a rate of $11.00 per foot at each location for a total of $1,300 in materials per location. The electrical update costs will total $5,054 per location.
- Locations requiring full build-out of new space will cost $300 per square foot for construction of a 100 square foot room. These locations will also require electrical updates for a total of $35,054 per location.
- Locations requiring TSA to lease space that they do not currently lease will require TSA to lease space at a rate of $65 per square foot per year.

- Electricians will need to consult with airport personnel to determine the electrical modifications necessary to each airport. This will cost $5,000 for the contractor per airport.
- There are additional facilities costs associated with the implementation of a mobile solution.
  - Each TSA checkpoint will require a personal computer with 2 SD card readers to upload data from the mobile scanners and transmit data to the LAN rooms and to US-VISIT servers.
    - The personal computer is estimated to cost $2,500, and each SD card reader is estimated to cost $40.
  - For each device purchased, 12 spare batteries will be purchased to power the device at a rate of $88 per battery.
  - For every four batteries purchased, a quad charger will be purchased to charge the batteries, at a cost of $419 per charger.
- At the seaports, counter modifications assume three contractors working for three days at a rate of $100 per hour. While these costs are estimated based on the number of carriers at each seaport, they are incurred by the government.
- Facilities costs associated with LAN equipment room modifications are assumed to be $5,000 for each TSA checkpoint at each airport and each counter area at each seaport, and will be incurred by the government.
- The facilities costs associated with signage are estimated in the same manner as the Proposed Rule. Two directional signs will be installed at each airport, and informational signs will be installed at each TSA lane to support the mobile solution. These costs will be incurred by US-VISIT.

- Training cost assumptions:
  - Training costs are derived based on a need for 6 personnel at each device, at a GS-11 rate of $45.52 per hour. These personnel are trained for 3 days, 8 hours per day. One trainer, at the same GS-11 rate, would train 30 students at a time, and 2

people would spend 9 days preparing the course materials. These costs are added to the government training costs estimated under the Proposed Rule.

- Outreach cost assumptions:
  - Outreach costs are assumed to be $2,000,000 for the government. This is in line with an estimate provided by the US-VISIT Office of Program Integration and Mission Services.
- O&M cost assumptions:
  - As the investment phase is anticipated to last 3 months into the second fiscal year of the program lifecycle, it is assumed that the O&M will not begin until three months into the second program year.
  - Those costs associated with maintaining the updates to ADIS, CBP, and the development of the application will continue at a steadily declining rate (15 percent in year 2, 12 percent in year 3, 9 percent in years 4 and beyond) as it is assumed that major problems with the system will decrease as the program matures. As the investment phase extends three months into the second year of the program, these costs are reduced by 25 percent in the first year of O&M. This 25 percent reduction factor does not apply to years beyond year two.
  - Program Management costs will continue at a rate of 40 percent of the investment total Program Management cost, beginning in the second quarter of year two.
  - Hardware and COTS software maintenance costs will continue at rates of 10 percent and 18 percent respectively of the investment costs of the program, beginning one year after installation.
  - Data communications circuit costs ($30 per carrier per port per month) will remain at the same rate as estimated in the Investment Phase, as these costs will remain constant through the life of the program.
  - At each airport where TSA will need to lease new space to store the mobile devices, TSA will need to lease 100 square feet at a rate of $65 per square foot.
  - Each airport TSA location would be in operation for 18 hours per day, 7 days per week. At airports, the attendants will be responsible for capturing the biometrics with the mobile devices.
    - At the airport TSA checkpoints, each government attendant will be able to monitor 1 device. It is assumed that it will be the sole task of an individual to monitor each mobile device at the TSA checkpoints.
    - This results in a total of 6,517,440 attendant hours per year at the airports beginning in the second quarter of FY2009.
  - As sea carriers do not process a continuous flow of departing passengers 7 days a week, it was assumed that sea carriers would be in operation for 6 hours per day, 4 days per week. Attendants will present to handle technical issues and problem resolution for the scanning devices.
    - At the seaport check-in counter areas, each government attendant will be able to monitor 6 workstations.
    - This results in a total of 570,336 attendant hours per year at the seaports beginning in the second quarter of FY2009.
  - The labor rate was assumed to be $30.99. This is the midpoint of a GS-7 labor rate based on the national average GS schedule from OPM.
  - Additional TDCs will be required to minimize delay. The current staff has one TDC for every two TSA lanes. The new personnel will bring this total up to one TDC for every lane. These personnel are billed at an hourly rate of $37.74, which is the midpoint of a GS-9 on the OPM scale divided by 1,790 billable hours. These

personnel will also require a $13,000 onboarding cost to initiate their employment. It is expected that the modifications to the boarding pass that are being applied by the carriers will mitigate the need for these new staff, but they are included here to account for the possibility that they may be needed.

- This is a total of 1,015 new FTEs, and a total of 3,725 new staff members subject to the $13,000 onboarding costs.

- 52 Million aliens per year are expected to exit through the ports. Of those 52 Million, it is expected that one out of every nine will exit through the seaports. Each of these aliens will require 66.6 seconds worth of additional time at the seaports with carrier-employed counter personnel as a result of the new requirements.
  - This results in about 106,889 total counter hours per year at seaports to staff the devices.
  - In year 2, counter support begins in the second quarter at FOC.
  - As this alternative is outside the realm of the air carrier's scope of work, the air carriers will incur no counter costs in the implementation of this alternative. Counter personnel will, however, still be assisting in the collection of biometric data at the seaports.
  - The cost for counter personnel hours will be charged at a rate of $33.52 per hour. This was determined based on the hourly rate of a conservative annual salary estimate of $60,000 per year for the counter representatives divided by 1,790 billable hours per year.
- The total number of stations is 3,756 (1,015 for airports, 2,742 for seaports).
- Important observations about attendant headcounts and costs:
  - The total number of attendants appears large in relation to the number of stations to be deployed. This occurs because each attendant will work a 40 hour week, and each station is in operation for 18 hours per day, seven days per week, or 126 hours per week (at the airports) or 6 hours per day, four days per week (at the seaports). Even though each attendant monitors more than one station at a time, the operational time per year of each station requires multiple shifts per day, which in turn causes the number of full-time attendants to be relatively high in comparison to the number of devices.
  - The table below shows the total attendant and TDC headcount for the TSA solution.

Table A-50: Attendant Headcount for TSA Solution

TSA Checkpoint Solution	Total Attendants	Total Devices
Airports - Attendants	3,639	992
Airports - TDCs	3,639	
Seaports	319	2,742
Total	**7,597**	**3,734**

Carrier Discretion Solution with Government Implementation

In this alternative, US-VISIT (rather than the airlines and sea carriers) will develop and deploy the solution to the departure gate areas at 80 percent of airports, and at the check-in counter areas at the remaining 20 percent of airports where the layout of the gate areas makes the deployment of a gate solution infeasible. The carriers will have responsibility to assist with connectivity to their network to enable set up of an electronic connection to a DHS server to send transactions. US-VISIT will acquire the biometric collection devices and deploy them to the carrier counters and gates. While government attendants will be available to provide assistance and respond to problems as necessary, carrier personnel will mainly be responsible for the actual collection of the biometrics as part of their normal check-in and departure processing.

Alternative Assumptions

General Assumptions

- The solution will be deployed to a total of 73 airports with international departures, the same airports considered in the Proposed Rule.
- The solution will be deployed to each of the seaports included in the Proposed Rule, a total of 33 seaports.
- The cost of the device will be $6,500, with the assumption that the government will be able to negotiate greater equipment discounts than the airlines and sea carriers.
- The total number of collection devices to be acquired remains the same as the Proposed Rule.
- All software development effort will be the responsibility of the government.

Cost Element Assumptions

- Program Management cost assumptions:
  - Program Management costs will be factored at the same percentage as the Proposed Rule, 15 percent.
- Independent Verification and Validation cost assumptions:
  - Independent Verification and Validation costs for the government have not changed from the Proposed Rule.
- Other government partners cost assumptions:
  - Costs associated with IDENT, ADIS, and CBP development have not changed from the Proposed Rule.
- Information Technology cost assumptions:
  - The development costs incurred by the carriers in the Proposed Rule are now incurred by the government.
  - All IT Development costs are now incurred by the government, and will be reduced because the government will be able to develop a single solution, while each carrier would have been developing an individual application under a carrier-implemented solution.
  - The 5 percent cost factor for development and test hardware is now incurred by the government.
- Facilities cost assumptions:
  - The costs associated with site surveys are reduced from the Proposed Rule as only one government team will be visiting each airport, rather than a team for each airline visiting each airport. These costs are now incurred by the government.
  - Facilities costs associated with LAN equipment room modifications are assumed to be $15,000 for 25 percent of the airlines at each airport and seaport, and will be incurred by the government.
  - The facilities costs associated with architecture design/redesign, counter modifications, and signage are estimated in the same manner as the Proposed Rule, but will now be incurred by the government.
- Training cost assumptions:
  - It is assumed that each attendant monitoring the stations will be able to monitor 6 stations at the check-in counters, and 2 stations at the departure gates. Therefore, the training costs will be similar to those estimated in the Proposed Rule, and will be incurred by the government. These costs will be added to the government-induced training costs under the Proposed Rule.
- Outreach cost assumptions:
  - Outreach costs are assumed to be $2,000,000 for the government. This is in line with an estimate provided by the US-VISIT Office of Program Integration and Mission Services.
- O&M cost assumptions:
  - As the investment phase is anticipated to last 3 months into the second fiscal year of the program lifecycle, it is assumed that the O&M will begin in the second quarter of FY2009.
  - Those costs associated with maintaining the updates to ADIS, CBP, and the development of the application will continue at a steadily declining rate (15 percent in year 2, 12 percent in year 3, 9 percent in years 4 and beyond) as it is assumed that major problems with the system will decrease as the program

matures. As the investment phase extends three months into the second year of the program, annual costs are reduced by 25 percent in the first year of O&M. This 25 percent reduction factor does not apply to years beyond year two.

- Program Management costs will continue at a rate of 40 percent of the investment total Program Management cost, beginning in the second quarter of year two
- Hardware and COTS software maintenance costs will continue at rates of 10 percent and 18 percent respectively of the investment costs of the program, beginning one year after installation.
- Data communications circuit costs ($30 per carrier per port per month) will remain at the same rate as estimated in the Investment Phase, as these costs will remain constant through the life of the program.
- Each counter and gate at an airport would be in operation for 18 hours per day, 7 days per week. As sea carriers do not process a continuous flow of departing passengers 7 days a week, it was assumed that sea carriers would be in operation for 6 hours per day, 4 days per week. Attendants will be present to handle technical issues and problem resolution for the scanning devices.
    - At the airport and seaport check-in counters, each attendant will be able to monitor each of the workstations installed at an individual counter location (about 6 in the large airports, 4 in the medium airports, 2 in the small airports).
    - While the carriers had existing staff at the gates, and were able to absorb some of the functionality of the Exit solution, the government does not currently have a presence at the gates. At the airport departure gates, each attendant will be able to monitor 2 workstations.
    - This results in a total of 9,284,914 attendant hours per year.
    - In year 2, attendant support begins in the second quarter at FOC.
- The labor rate was assumed to be $30.99 per hour. This is the midpoint of a GS-7 labor rate based on the national average GS schedule from the Office of Personnel Management (OPM) divided by 1,790 billable hours per year.
- 52 Million aliens per year would exit through the ports, each requiring an average of 66.6 seconds worth of additional time to process. Current carrier counter personnel will assist with the majority of transactions as part of the normal check-in process with government-employed attendants assisting with uncharacteristic transactions and responding to problems and questions.
    - This results in about 962,000 total counter hours per year to staff the devices.
    - In year 2, counter support begins in the second quarter at FOC.
    - These new hours will be charged at a rate of $33.52 per hour. This was determined based on the hourly rate of a conservative annual salary estimate of $60,000 per year for the counter representatives divided by 1,790 billable hours per year.
- The total number of stations is 7,176 (4,434 at for airports, 2,742 for seaports. The number of stations used to calculate the staff is 6,166 (3,424 for airports, 2,742 for seaports).
- Important observation about attendant headcounts and costs:
    - The total number of attendants appears large in relation to the number of stations to be deployed. This occurs because each attendant will work a 40 hour week, and each station is in operation for 18 hours per day, seven days per week, or 126 hours per week (at the airports) or 6 hours per day,

four days per week (at the seaports). Even though each attendant monitors more than one station at a time, the operational time per year of each station requires multiple shifts per day, which in turn causes the number of full-time attendants to be relatively high in comparison to the number of devices. The total attendant headcount is higher under the government-deployed solution than under a carrier-deployed solution because the total billable hours per year is smaller for the government attendants than for the carrier attendants.

- The table below shows the total attendant headcount for the government-deployed counter/gate solution.

Table A-51: Attendant Headcount for Counter/Gate Solution with Government Deployment

Counter/Gate Solution, Gov't	Total Attendants	Total Devices
Airports	4,868	3,424
Seaports	319	2,742
Total	**5,187**	**6,166**

Kiosk Solution with Government Implementation

In this alternative, US-VISIT (rather than the airlines and sea carriers) will develop and deploy the solution using kiosks spread throughout the airports, and counter-mounted devices at the seaports. The carriers will have responsibility to assure that all in-scope alien travelers have provided a biometric prior to boarding. US-VISIT will acquire the biometric collection devices and deploy them throughout the ports. Government contractor attendants will be available to provide assistance and respond to problems as necessary.

Alternative Assumptions

General Assumptions

- The solution will be deployed to a total of 73 airports with international departures, the same airports considered in the preferred solution.
- The solution will be deployed to each of the seaports included in the preferred solution, a total of 33 seaports.
- Solution deployment to the seaports will be identical to the preferred solution, except that the government will incur the costs of application development and deployment.
- A model provided by the US-VISIT Office of Administration and Logistics provided base data as to the minimum number of kiosks required to service in scope travelers. Using this base data, an independent analysis was conducted that considered number of flights and passengers per flight to determine peak hours of operations and the number of kiosks that will be required to meet the increased demand at that time. Using data from this analysis, a revised number of devices was derived. In addition, approximately 25 percent of international passengers arrive at an international airport via a connecting flight. To accommodate those passengers arriving with a very short connection time, the number of kiosks was then increased by 40 percent. These kiosks will be installed at strategic

locations within the domestic terminals of international airports. The number of kiosks required at the airports will be 1,821, with 131 spares, for a total of 1,952 kiosks.

- The cost of each kiosk at the airports will be $13,220. This is consistent with the US-VISIT 1B pilot with the exception that barcode scanners will now be installed capable of scanning 2 dimensional barcodes and PDAs/cell phones.
- The number of counter-mounted devices required at the seaports is unchanged from the preferred alternative, a total of 2,742 devices.
- The cost of each device at the seaports will be $7,500. This is based on the US-VISIT 1B pilot but modified to include barcode scanners for both the boarding pass and cell phones/PDAs.
- The airlines and sea carriers will develop software to modify the barcodes on the boarding passes, making them compatible with the requirements of US-VISIT and identifying in-scope travelers. The airlines will also need to incorporate a US-VISIT provided decision tree into the reservation process in order to determine in-scope passengers. All other development effort will be the responsibility of the government.

Cost Element Assumptions

- Program Management cost assumptions:
  - Program Management costs will be factored at the same percentage as the preferred solution, 15 percent for both the carriers and the government.
- Independent Verification and Validation cost assumptions:
  - Independent Verification and Validation costs for the government have not changed from the preferred solution.
  - Based upon historical averages, IV&V costs for the carriers are assumed to be 1 percent of the total application development costs.
- Other government partners cost assumptions:
  - Costs associated with IDENT, ADIS, and CBP development have not changed from the preferred solution.
- Information Technology cost assumptions:
  - Airlines will incur IT application development costs to modify the barcodes on the boarding passes in order to make them compatible with the US-VISIT IDENT system. Additional work will be necessary to develop an application, based on a US-VISIT provided decision tree, which will determine whether passengers are in scope.
    - Each airline will require 3 FTEs for 4 months of effort at a monthly rate of $21,215 to plan the solution.
    - Solution design will require 3 FTEs for 4 months per airline at a monthly rate of $21,215.
    - Each airline will require 3 FTEs for 3 months at a monthly rate of $21,215 to build the solution.
    - Application testing will require 3 FTEs for 3 months per airline at a monthly rate of $21,215.
  - The government will incur costs to enable the kiosks to read the modified barcodes on the boarding passes.
    - The government will require 3 FTEs for 4 months each for planning and design of both the front and back-end systems (24 months total), at a monthly rate of $21,215.
    - The government will require 3 FTEs for 3 month to build both the front and the back-end systems (18 months total), at a monthly rate of $21,215

        - The government will require 3 FTEs for 3 months to test the front-end system, and the interaction of the systems (18 months total), and 3 FTEs for 2 months to test the back-end system (6 months total) at a monthly rate of $21,215.
        - The government will require 1 FTE for 14 weeks to deploy the solution to each of the airports, at a weekly rate of $5,303.74.
    - All other IT application development costs are now incurred by the government, and will be reduced from the preferred alternative because the government will be able to develop a single solution for each exit method (airports and seaports), while each carrier would have been developing an individual application under a carrier-implemented solution.
    - The number of kiosks required at the airports is based on analysis of a model provided by TSA wherein the number of devices required is based on the number and sizes of flights departing from a given airport over the course of the day. Using this model, the base number of kiosks required is expected to be 1,301. Approximately 25 percent of international passengers arrive at an international airport via a connecting flight. To accommodate those passengers with a very short connection time, this number was then increased by 40 percent to allow for these additional kiosks to be installed in domestic terminals of international airports. This results in a total requirement of 1,821 kiosks. An additional 131 spare kiosks were added for a total of 1,952 kiosks to be acquired. The number of counter-mounted scanning devices required at the seaports remains unchanged from the preferred solution, 2,742.
    - The 5 percent cost factor for development and test hardware is now incurred by the government.
    - Data circuit costs are doubled from the preferred alternative to account for the acquisition of wireless communication devices for the kiosks and the added cost of wireless communication from the kiosks to the LAN room.
- Facilities cost assumptions:
    - It is assumed that the government will require $11,400 per port for Facilities Site Surveys at medium and small airports, and $22,800 per port at the large airports. This number is higher at the large airports to account for the need to deploy devices to both domestic and international terminals at large airports. An assumption was made that domestic and international terminals at large airports are in separate buildings or at least separated in the same facility. These costs include travel and per diem for teams of 4 to visit each area in each airport, and teams of 2 to write follow-up reports.
    - Facilities design and follow-up will require $20,000 per large port, and $10,000 per medium and small port. These costs include design costs, coordination with the ports, build permits, design reviews, and documentation.
    - Facilities deployment costs are expected to be $8,525 per port for medium and small airports, and $17,050 for large airports. This number is higher at the large airports to account for the need to deploy devices to both domestic and international terminals at large airports. These costs are based on the assumption that 3 FTEs will work for 3 days at each area in each port. There are also costs for reporting and follow-up included in this cost element.
    - The costs for installation of signage, including moving, support, and shipping, are assumed to be $12,500 per port for medium and small airports, and $25,000 per port at the large airports. Again, this number is higher at the large airports to

account for the need to deploy devices to both domestic and international terminals at large airports. These costs include costs for moving assistance, signage and signage posts/holders.

- The facilities costs for modeling the solution are estimated to be $15,710 per port at the medium and small airports, and $31,420 per port at the large airports. This number is higher at the large airports to account for the need to deploy devices to both domestic and international terminals at large airports. These costs include pre and post installation data gathering and follow-on analysis, and assume 4 contractors working for 3 days at each area in each port. These costs also include 3 FTEs for 3 days working on reporting and follow-up following the modeling effort.
- The cost to provide power and networking capabilities to each kiosk is assumed to be $7,763 per kiosk. These costs assume an average distance of 150 feet between the kiosks and the nearest LAN room. Each bank of kiosks will require conduit ($4 per foot) and wire ($10 per foot) to provide power and networking. The installation of each kiosk will require 3 electricians for 2.5 days at a rate of $90 per hour. The electricians' fees and contingency costs are also included in the total cost per kiosk.
- The intention is that the U.S. government will compel the airports to provide space for the exit solution. In the event that does not happen, US-VISIT will need to lease space in which to put the kiosks, and in which to build office space. It is assumed that each kiosk will require 9 square feet, at a cost of $90 per square foot per year. In addition to the base lease cost, an additional 8 percent Public Buildings Service charge will apply to the total leasing cost.
- Office space build-out costs were assumed to be $450 per square foot. Space required for office build-out is airport-specific, and is based on information provided by the US-VISIT Office of Administration and Logistics.

- Training cost assumptions:
  - It is assumed that each attendant monitoring the stations will be able to monitor 3 kiosks, except in the case of the kiosks that are added to accommodate the short-connection times. In those cases, since the kiosks will be more widely spaced, it is assumed that each attendant will be able to monitor only 2 kiosks at a time. This equates to 2,547 attendants. The methodology used to derive the training costs will be similar to that employed in the preferred solution, and will be incurred by the government. WSA training costs were based on three days training per individual at local sites. Training costs recur annually at 20% of the initial workforce training cost. These costs will be added to the costs to train US-VISIT and other government partner personnel incurred by the government under the preferred solution.
  - The carriers will need to train their employees for two purposes. The representatives will need training in order to implement the decision tree, and the gate personnel will need training to determine whether passengers who are in scope have provided biometrics, and to handle those passengers who have not provided a biometric. It is assumed that 10 percent of the workforce for the airlines interact with the traveling public and will therefore need training to prepare for the Exit solution, for a total of 115,631 employees receiving training. Each employee receiving training is expected to receive 4 hours of training at a cost of $32.89 per hour. The airline trainers, and the US-VISIT personnel training the trainers, are expected to require 24,408 hours to conduct their training, at a rate of $32.89 per hour.

- Outreach cost assumptions:
  - Outreach costs are assumed to be $2,000,000 for the government. This is in line with an estimate provided by the US-VISIT Office of Program Integration and Mission Services.
  - Airlines and sea carriers have the incentive to ensure that all in-scope travelers comply with the requirement to provide biometrics. Therefore, they will provide pamphlets, website updates, Public Service Announcements, and other forms of outreach to deliver the message to passengers. These costs are consistent with Outreach costs associated with the preferred alternative.
- O&M cost assumptions:
  - An inflation rate of 1.9 percent was used to inflate costs in the out years.
  - As the investment phase is anticipated to last 3 months into the second fiscal year of the program lifecycle, it is assumed that the O&M will begin in the second quarter of the second year of the program.
  - Those costs associated with maintaining the updates to ADIS, CBP, and the development of the applications will continue at a steadily declining rate (15 percent in year 2, 12 percent in year 3, 9 percent in years 4 and beyond) as it is assumed that major problems with the system will decrease as the program matures. Hardware maintenance costs are estimated at 25% of the acquisition cost. This factor is larger than historical norms to accommodate the fact that the kiosks are remote, stationary, and wireless and will require an on-site technician to repair rather than affording remote access.
  - Program Management costs will continue at a rate of 40 percent of the investment total Program Management cost, beginning in the second quarter of year two.
  - COTS software maintenance costs will continue at a rate of 18 percent of the investment costs of the program, beginning one year after installation. Since the program is government-deployed, there are no carrier-incurred maintenance costs associated with COTS hardware and software.
  - Data communications circuit costs (the cost of wireless communication technology for the kiosks) are estimated at $60 per circuit to account for the wireless installation. In addition, each kiosk will require a leased air-card to communicate and transmit data to the LAN rooms. These costs will remain constant through the life of the program.
  - It is estimated that employee turnover will occur at a rate of about 20 percent per year. Training costs will therefore continue throughout the life of the program at a rate of 20 percent of their investment total per year.
  - Since outreach is a continuous effort, it is assumed that the outreach costs will continue annually at the full rate of outreach investment over the life of the program.
  - It is assumed that each attendant will require a uniform allowance of $360 per year.
  - Each airport kiosk would be in operation for 18 hours per day, 7 days per week. As sea carriers do not process a continuous flow of departing passengers 7 days a week, it was assumed that sea carriers would be in operation for 6 hours per day, 4 days per week. Attendants will be present to handle technical issues and problem resolution for the scanning devices.
    - It is assumed that each attendant will be able to monitor 3 kiosks at the airports, except in the case of the kiosks that are added to accommodate the short-connection times. For those 520 kiosks, it is assumed that each

attendant will be able to monitor only 2 kiosks at a time since the kiosks will be widely spaced.
    - At the seaports, each attendant will be able to monitor all the stations at 1 counter area, a total of 6 stations per attendant.
    - This results in a total of 5,129,040 attendant hours per year.
    - In year 2, attendant support begins in the second quarter at FOC.
- The attendant labor rate was assumed to be $32.89 per hour. This is based on a conservative annual salary of $60,000 divided by 1,824 billable hours per year.
- 52 Million aliens per year are expected to exit through the ports. Of those 52 Million, it is expected that 8 out of every 9 will exit through the airports. The total in-scope population is expected to be about 30 percent of the total international traveler population, for a total of 154,074,074 international travelers per year. It is estimated that 25 percent of the international traveling population will need to speak to an industry representative when making their reservations. The in-scope air travelers (46,222,222 travelers) will require an average of 30 seconds to determine that they are in scope, while the remainder of international travelers would require 15 seconds to determine that they are not in scope. It is assumed that the 38,518,519 passengers who would interact with an industry representative would require an average of 19.5 seconds to determine whether or not they are in scope.
    - This results in about 208,642 total representative hours per year to determine in-scope passengers at the airports.
    - In year 2, representative support begins in the second quarter at FOC.
    - These hours will be charged at a rate of $32.89 per hour.
- In order to verify that in-scope travelers have provided a biometric prior to boarding, the carriers will inspect a receipt issued by the kiosk confirming that each in-scope travelers has provided a biometric. Carrier representatives will require 10 seconds per in-scope passenger to confirm the collection of a biometric.
    - This results in about 128,395 total gate hours to collect a confirmation of biometric collection from each in-scope passenger.
    - In year 2, gate support begins in the second quarter at FOC.
    - These hours will also be billed at a rate of $32.89 per hour.
- The remaining 1 out of every 9 in-scope alien travelers is expected to exit through the seaports. Each of these aliens will require 66.6 seconds worth of additional time at the seaports with carrier-employed counter personnel as a result of the new requirements.
    - This results in about 106,889 total counter hours per year at seaports to staff the devices.
    - In year 2, sea carrier counter support begins in the second quarter at FOC.
    - These hours will be charged at the above-described rate of $32.89 per hour.
- The total number of stations acquired is described in the IT section above, 4,694 (1,952 at airports, including spares, 2,742 for seaports). The number of stations used to calculate the staff is 4,563 (1,821 for airports, 2,742 for seaports).
- Important observations about attendant headcounts and costs:
    - The ratio of attendants to devices at the airports in the table below appears large in comparison to the same ratio for seaports. This occurs because, while each attendant at the seaports can monitor 6 devices at a time, the attendants at the airports can only monitor at most 3 devices at a time.

Another reason for the disparity is that the operational time at the seaports is relatively small (6 hours per day, 4 days per week) compared to the operational time at the airports (18 hours per day, 7 days per week), requiring a greater number of attendants to fill the larger number of shifts required.

- Table A-52 shows the total attendant headcount for the government-deployed kiosk solution.

Table A-52: Attendant Headcount for Kiosk Solution with Government Deployment

Kiosk Solution - Government	Total Attendants	Total Devices
Airports	2,547	1,821
Seaports	313	2,742
Total	**2,859**	**4,563**

A.1.10 List of Acronyms

Acronym	Description
AACE	Association for the Advancement of Cost Engineering
ACEIT	Automated Cost Estimating Integrated Tools
ADIS	Arrival and Departure Information System
APIS	Advance Passenger Information System
AQQ	Advance Passenger Information System Quick Query
BY$	Base-Year Dollars
CBP	U.S. Customs and Border Protection
CIS	U.S. Citizenship and Immigration Services
DHS	Department of Homeland Security
FAA	Federal Aviation Administration
FTE	Full Time Equivalent
IBM	International Business Machines
ICE	Immigration and Customs Enforcement
IDENT	Automated Biometric Identification System
IT	Information Technology
ITM	Information Technology Management
IXM	IBM XML Toolkit
LAN	Local Area Network
NPRM	Notice of Proposed Rulemaking
O&M	Operation and Maintenance
OAG	Official Airline Guide
PoP	Period of Performance
ROM	Rough Order Magnitude
SIT	System Integration and Testing
SME	Subject Matter Expert
TDC	Travel Document Checker
TSA	Transportation Security Administration
TY$	Then-Year Dollars
US-VISIT	United States Visitor and Immigrant Status Indicator Technology
Web/LMS	Web Learning Management System
WSA	Work Station Attendant
XML	Extensible Markup Language

Appendix B Benefits Assumptions and Data

This section presents all data collected, estimations developed, and technical assumptions made to develop benefit estimates for the RIA. We solicit any comments to improve the analysis to the greatest extent possible.

Projected Annual Volume Growth of Travelers in General

Definition: This is the rate at which the volume of all persons entering and leaving the U.S. (i.e., all categories, including VWP, US Citizens, immigrants, non-VWP nonimmigrant, etc.) is forecast to change from one year to the next. The rate of growth between in-bound and out-bound are assumed equal. It is also expected that this rate stays the same throughout the life-span of the project.

Travel association data estimates growth rates of 3.9 percent to 8.5 percent over the next few years.[92] The U.S. Commerce Department estimates a 7 percent growth rate in travel over the next two years.[93] This is consistent with recently released CBP data that cites a 4% projected growth rate in total travelers in 2004.[94] The median estimate, therefore, reflects a conservative forecasted growth rate of 4 percent. That number, along with the estimated lower and upper 10% ranges, can be seen in the table below.

Data Sources: Travel Association of America, www.tia.org.; United States Department of Commerce, International Trade Administration; Border Agency Reports First-Year Successes, Customs and Border Protection, January 11, 2005.

Table B-1. Growth volume of travel to/from the U.S.

Growth Volume of Travel to U.S.			
Variable	**Median**	**Lower 5% Limit**	**Upper 5% Limit**
Projected Volume Growth	4%	2%	5%

Percentage of Visa Applications Rejected on the Grounds of Egregious Overstays

Variable Description: This is the percentage of all non-immigrant visa applications (both accepted and rejected) that were rejected for egregious overstays. An egregious overstay is defined as an

[92] Travel Association of America, www.tia.org.

[93] U. S. Department of Commerce, International Trade Administration.

[94] Border Agency Reports First-Year Successes, Customs and Border Protection, January 11, 2005.

overstay of 181 days or more (within the previous 3 years of application) and 365 or more days (within the previous 10 years of application).[95] Visa applications and egregious overstays are on a pre-appeal basis (as opposed to post-appeal).

In FY 2006 a total of 5,836,718 non-immigrant visas were issued.[96] In that same year a total of 1,931,285 non-immigrant visas were rejected for all reasons, on a pre-appeal basis.[97] Hence the total number of visas applied for in that year was 7,768,003. The number of non-immigrant visa applications rejected for egregious overstay reasons, on a pre-appeal basis, was 7,890. Hence the percentage of visa applications rejected for egregious overstay reasons was 0.1%. It is assumed that this percentage stays constant for the lifespan of the alternatives being examined. As there is a high degree of uncertainty surrounding this number there is a wide range around the median. The upper and lower ranges associated with the medium can be seen in the below table.

Data Sources: Table I, Immigrant and Nonimmigrant Visas Issued at Foreign Service Posts, Fiscal Years 2002-2006, preliminary data; Table XX, Immigrant and Nonimmigrant Visa Ineligibilities (by Grounds for Refusal Under the Immigration and Nationality Act), FY 2006 (table available on the State Department's website).

Table B-2. Percentage of Visa Applications Rejected on the Grounds of Egregious Overstays

Variable	Median	Lower 5% Limit	Upper 5% Limit
Percentage of Visa Applications rejected	0.1%	0.05%	0.15%

Number of Outbound International Flights

Variable Description: This is the number of outbound international flights leaving from the U.S. in FY 2008. For the calendar year 2006 the number of non-stop flights leaving the U.S. for international destinations was 1,469,232.[98] It is assumed that the number of flights leaving the U.S. increases at the same percentage rate as the growth in traveler volume, 4%. Hence it is estimated that, for 2008, the number of non-stop flights leaving the U.S. is 1,586,771. As there is significant uncertainty surrounding this number, there is a wide range associated with its median. This can be seen in the table below.

[95] These correspond to sections 212(a)(9)(B)(i)(I) and 212(a)(9)(B)(i)(II) of the Immigration and Nationality Act.

[96] Table I, Immigrant and Nonimmigrant Visas Issued at Foreign Service Posts, Fiscal Years 2002-2006, preliminary data (table available on the State Department's website).

[97] Table XX, Immigrant and Nonimmigrant Visa Ineligibilities (by Grounds for Refusal Under the Immigration and Nationality Act), FY 2006 (table available on the State Department's website).

[98] U.S. Department of Transportation, *U.S. International Air Passenger and Freight Statistics, December 2006.*

Data Sources: U.S. Department of Transportation, *U.S. International Air Passenger and Freight Statistics, December 2006*; data from Exit.

Table B-3: Annual Number of Outbound International Flights in 2008

Variable	Median	Lower 5% Limit	Upper 5% Limit
Total outbound international flights	1,586,771	1,057,847	2,115,695

The number of international flights, for purposes of the analysis, had to be further broken down by size of airport category. This was due to the structure of the cost model. The breakdown can be seen in the table below.

Table B-4: Annual Number of Outbound International Flights in 2008 by Airport Size

Variable	Median	Lower 5% Limit	Upper 5% Limit
All Airports	**1,586,771**	**1,057,847**	**2,115,695**
Large Airports	1,448,692	965,794	1,931,589
Medium Airports	100,166	66,778	133,555
Small Airports	1,791	1,194	2,387

The numbers in the above table, in turn, were based on the share of each size category's flights. According to the data gathered for the 1B pilot, the break-out of flights can be seen in the table below.

Table B-5: Airport Size Category and Share of Flights.

Airport Size	Share of Flights
Large Airports	91.3%
Medium Airports	6.9%
Small Airports	1.8%

Total Number of Alien Travelers

Variable Description: This is the number of alien travelers. The number, as of 2006, is 51.1 million.[99] As a 4% growth rate is assumed, this number is estimated at 55.3 million in FY 2008.

Data Sources: US-VISIT, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007.

Table B-6: Total Number of Alien Travelers (Millions) in FY 2008

Variable	Median	Lower 5% Limit	Upper 5% Limit
Number of alien travelers in FY 2008 (millions)	55.3	49.7	60.8

In order to be utilized in the regulatory evaluation, the number of alien travelers had to be broken out by airport size category. This, in turn, was based on the percentage of passengers who flew out of in-scope airports in the Increment 1B pilot. That distribution, by airport size category, can be seen in the table below.

Table B-7: Airport Size Category and Share of Passengers

Airport Size	Share of Passengers
Large Airports	81.5%
Medium Airports	9.3%
Small Airports	9.2%

[99] US-Visit, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007.

Based on this distribution of airport passengers, the number of passengers leaving each category of airport and total for seaports can be seen in the table below.

Table B-8: Airport Size Category and Total Seaports and Number of Passengers (Millions)

	Number of Passengers (millions)		
Airport Size	**Medium**	**Lower 5% Limit**	**Upper 5% Limit**
Large Airports	44.5	40.0	48.9
Medium Airports	5.1	4.6	5.6
Small Airports	5.0	4.5	5.5
Seaports	0.7	0.6	0.8

Total Number of Travelers Leaving U.S. Through International Airports

Variable Description: This is the number of total travelers (both in and out-of-scope) taking international flights.

As stated in a previous section of this appendix, the number of alien travelers has been estimated at 55.3 million for FY 2008. This can be seen in the table below. According to Department of Transportation data, for calendar year 2006, foreign citizens accounted for 44.5% of all passengers leaving the U.S. on international flights.[100] Assuming that this ratio also holds for FY 2008, the number of U.S. travelers (i.e., out-of-scope travelers) would be estimated (median) at 68.0 million.

Data Sources: US-Visit, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007.

[100]US-Visit, FY 2006 Annual Report on Integrated Entry and Exit Data Systems, May 2007, table 1. It should be noted that this number is based on ticket sales and hence may not represent the number of unique travelers. As many travelers may make more than one flight per year, the number of unique travelers is probably overstated.

Table B-9: Total Number of Alien Travelers (Millions) in FY 2008 for Airports

Variable	Median	Lower 5% Limit	Upper 5% Limit
Number of aliens travelers in FY 2008 through airports (millions)	54.6	49.1	60.0
Number of out-of-scope travelers (i.e., US citizens) through airports (millions)	68.0	61.2	74.9
TOTAL	**122.6**	**110.4**	**134.9**

Ability to Accurately Match Entries and Exits in Using Biographic Data (Base Case)

Variable Description: This is the percent of biographic entry-exit matches that are made annually using biographic data (i.e., base case). The current matching rate is 88.1%.[101]

Data Sources: US-VISIT, Annual Report on the Integrated and Exit Data System as required by the Data Management Improvement Act of 2000 (Public Law 106-215) and the Visa Waiver Permanent Program Act (Public Law 106-396), May 2007.

Ability to Accurately Match Entries to Exits Using Biometric Exit (to-be Scenario after Alternative Implemented)

Variable Description: This is the percent of entries to exits matched after one of the biometric exit alternatives is implemented. That number, according to a recent US-VISIT report, is 97%.

Data Sources: Performance measure targets from Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART) Evaluation, August 2007 data.

Dollar Value of Visa Overstays Detected ($ per visa overstay)

Variable Description: Dollar value of visa overstays detected reflects the cost of removal. These are costs associated with locating, incarcerating, and removing violators. While each category may

[101] US-VISIT, Annual Report on the Integrated and Exit Data System as required by the Data Management Improvement Act of 2000 (Public Law 106-215) and the Visa Waiver Permanent Program Act (Public Law 106-396), May 2007, p.6.

have some cost differences associated with their particular violation, all have similar costs of removal.

Data Sources: *Local Fiscal Effects of Illegal Immigration*, Report of a Workshop, National Academy of Sciences, National Academy Press, Washington, D.C., 1996.

History of Variable: The table below shows the costs to the taxpayer of illegal aliens. Included in the costs are the incidental costs of monitoring or policing immigration policies, such as checking legal immigration status prior to hiring an employee or providing access to health services. Federal costs include judicial, detention, incarceration, and deportation costs for illegal immigrants.[102] The costs associated with illegal immigrants are used as a proxy for visa violators.

Table B-10: Taxpayer Costs of Illegal Aliens

Removal of Illegal Aliens and Related Costs	
Criminal justice and corrections in 1993[103] ($ in millions)	$540.5
Formal Removals in 1993[104] (number of illegal aliens)	42,542
Cost per Removal in 1993	$12,705
Cost per Removal in 2004[105]	$16,750

The $16,750 in 2004, after adjusting for inflation, was equal to $18,375 in 2007.[106] Assuming that inflation between 2007 and 2008 increases at the same average per annum rate as it had between 1996 and 2006 (4.5%), the $18,375 removal cost would be equal to $19,202 in 2008 dollars.[107] This number can be seen in the below table. The range around that figure was based on SME opinion on the range associated with the $16,750 in 2004.

Table B-11: Cost Savings Per Visa Violation Case Detected

[102] Local Fiscal Effects of Illegal Immigration, Report of a Workshop, National Academy of Sciences, National Academy Press, Washington, D.C., 1996.

[103] Local Fiscal Effects of Illegal Immigration, A Report of a Workshop, National Academy of Sciences

[104] Formal removals include deportations, exclusions, and removals. 2003 INS Yearbook.

[105] The 2004 estimated cost per removal was developed by inflating the 1993 cost per removal using the Consumer Price Index. Since the value of preventing an illegal immigrant from entering is reflected in later removal costs, the same estimates are used for Cost Savings per Fraudulent Document, Cost Savings per Visa Overstay Detected, Cost Savings per Visa Violation Case Detected, and Cost Savings per Fraudulent Asylum Case Detected.

[106] The CPI (1982-4=100) index value was 187.6 in 2004 and for the first half of 2007 205.7.

[107] The consumer price index is defined as that for U.S. cities, all items, 1982-4=100, series CUUS0000SA0 (www.bls.gov).

Variable	Median	Lower 5% Limit	Upper 5% Limit
Cost Savings Per Visa Violation Case Detected	$19,202	$12,001	$26,403

Number of Travelers from Nations that may obtain VWP Status that are Expected to Travel to US for Purposes of Tourism

Variable Description: This is the number of travelers expected to arrive in the U.S. for tourism from countries expected to become VWP nations in the near future. As the government only collects data on business and tourism short-term travel to the U.S. on an aggregated basis, it is not possible to break the two out. For this reason the data used for the analysis assumes that all short term travel to the U.S. is for tourism purposes.

The analysis used to determine the growth in tourism as a result of a country moving from non-VWP to VWP status was based on the travel volume to population rates of current VWP nations. It was assumed that as non-VWP nations gained VWP status, their travel volume to population ratios would become more similar to those of current VWP nations. With respect to the travel volume to population ratios of VWP nations, the ratios of the current VWP nations were calculated minus the following VWP nations: Australia, Iceland, New Zealand and the United Kingdom (as these nations had much higher travel rates for reasons that would not applicable to other future VWP countries [i.e., use of the English language or proximity]), Andorra, Brunei, Liechtenstein, Luxemburg, Monaco, San Marino and Slovenia (no data was available for these nations). With respect to non-VWP nations, those examined included those that were being currently considered for VWP status minus the following nations: Cyprus, Estonia, Malta, Slovakia, and Taiwan.

The travel rates and populations of the countries discussed in the above paragraph were examined in 2000 and 2003. The data for these nations, for travel and population, for these years can be seen in the below table.

Table B-12: Travel Rates and Populations of Current VWP Nations and Nations under Consideration for VWP Status

Current VWP Nations				
	Short-Term Visitors to the U.S. (millions)		Population (millions)	
Nation	2000	2003	2000	2003
United Kingdom	4671	3744	59522	60095
Germany	1925	1033	82188	82398
France	1113	758	61172	62206
Ireland	325	298	3792	3924
Italy	626	483	57719	57998
Portugal	86	64	10336	10480

Current VWP Nations				
	Short-Term Visitors to the U.S. (millions)		Population (millions)	
Nation	2000	2003	2000	2003
Andorra	NA	NA	67	69
Austria	182	95	8113	8163
Belgium	254	119	10264	10331
Denmark	150	111	5337	5394
Finland	95	54	5169	5204
Iceland	27	18	281	291
Liechtenstein	NA	NA	32	33
Luxembourg	NA	NA	439	457
Monaco	NA	NA	32	32
Netherlands	559	405	15908	16223
Norway	144	96	4492	4555
San Marino	NA	NA	27	28
Slovenia	NA	NA	2011	2012
Spain	370	334	40016	40217
Sweden	321	173	8924	8970
Switzerland	400	196	7267	7408
Brunei	NA	NA	325	347
Japan	4946	3000	126729	127358
Singapore	131	43	4037	4277
Australia	535	398	19165	19732
New Zealand	170	160	3820	3951
Greece	60	33	10559	10626
Argentina	515	119	37498	38741
Brazil	706	273	175553	182033
Cyprus	NA	NA	758	772
Czech Republic	44	24	10270	10251
Estonia	NA	NA	1380	1351
Israel	319	191	5842	6117
Malta	NA	NA	390	395
Slovakia	NA	NA	5400	5416
South Korea	606	478	47351	48202
Taiwan	NA	NA	22183	22543

Current VWP Nations				
	Short-Term Visitors to the U.S. (millions)		Population (millions)	
Nation	2000	2003	2000	2003
Uruguay	66	39	3328	3387

Source: Department of Homeland Security, Office of Immigration Statistics, 2000 and 2003 editions of the *Yearbook of Immigration Statistics*; U.S. Census Bureau, International Database, 2000 and 2003.

The result of applying the travel rate to population ratios of the current VWP nations mentioned above to the non-VWP nations yields a lower 95% bound growth rate in travel of 49.4% and an upper 95% bound of 85.9%. The estimated median growth in travel rates as a result of a nation's status changing from non-VWP to VWP is 67.7%. These figures can be seen in the below table. Applying these ratios to the non-VWP nations produces the numbers in Table B-13.

Table B-13: Percentage Increase Impact in Aliens Traveling to U.S. as a Result of Providing VWP Status to a Nation

Variable	Median	Lower 5% Limit	Upper 5% Limit
Percentage Increase in Aliens Due to Conversion of a Nation's Visa Classification to VWP	67.7%	49.4%	85.9%

Table B-14: Number of Travelers from Nations that may become VWP that are Expected to Travel to US for Purposes of Tourism

Country	Total Travelers in 2005	Estimated Travelers under VWP in 2005[108]	Estimated Increase in Travelers in 2008[109]		
			Median[110]	Lower 5%	Upper 5%
Argentina	206,229	345,762	388,935	346,650	431,221

[108] Estimated by applying 67.7% to total travelers in same year.

[109] Increase in travelers resulting from achieving VWP status over and above the base case, having only non-VWP status.

[110] Estimated by multiplying the Estimated Travelers under VWP in 2005 figure by 67.7% and then assuming a 4% growth rate in travelers for the three years through 2008.

Country	Total Travelers in 2005	Estimated Travelers under VWP in 2005[108]	Estimated Increase in Travelers in 2008[109]		
			Median[110]	Lower 5%	Upper 5%
Brazil	498,920	836,485	940,932	838,633	1,043,231
Cyprus	6,971	11,688	13,147	11,718	14,576
Czech Republic	36,568	61,310	68,965	61,467	76,463
Estonia	7,666	12,853	14,458	12,886	16,029
Greece	53,405	89,538	100,719	89,768	111,669
Israel	296,844	497,686	559,829	498,964	620,695
Malta	5,918	9,922	11,161	9,948	12,374
Slovakia	14,806	24,824	27,923	24,887	30,959
South Korea	705,153	1,182,254	1,329,875	1,185,290	1,474,460
Taiwan	279,566	468,718	527,244	469,922	584,567
Uruguay	33,384	55,971	62,960	56,115	69,805
TOTAL	**2,145,430**	**3,597,011**	**4,046,148**	**3,606,247**	**4,486,050**

Source: Data in Table B-11 and Department of Homeland Security, Office of Immigration Statistics, *2005 Yearbook of Immigration Statistics*;

With respect to the above countries, a number of further assumptions apply. They are:

- All countries, except Greece, assuming they are approved for VWP status, will be approved in 2011. If Greece is approved, it will be in 2009.
- There will be a ramp up to full VWP travel rates over a four year period. The ramp up will occur in a linear manner (i.e., the first year's ramp up will be 25%, the second year's another 25% (50% cumulative), in the third year another 25% (75% cumulative), etc.

Data Sources: Department of Homeland Security, Office of Immigration Statistics, 2000, 2003 and 2005 editions of the *Yearbook of Immigration Statistics*; U.S. Census Bureau, International Database, 2000 and 2003.

Hourly Compensation Rates of ICE Immigration Enforcement Officers

Variable Description: This is the "fully burdened" average wage rate of a typical ICE Immigration Enforcement Officer. It includes gross hourly wage as well as benefits. The benefits were estimated by applying a multiplier of 32.8% to the wages. This was done in congruence with the recommendation put forth in the Department of Homeland Security's 2006 *Cost-Benefit Analysis Guidebook*.[111]

An ICE Immigration Enforcement Officer earns a salary in the range of GS 11/12/13, the most likely being the role of a GS-12. In addition to the benefit burden rate, Investigators also receive a 25% annual bump for Law Enforcement Availability Pay (LEAP), which is an entitlement for GS 1811 federal law enforcement personnel in lieu of overtime for non-scheduled work throughout the year.

Data Sources: Office of Personal and Management, GS Salary Table 2007-GL (Law Enforcement Officer)

Table B-15: Annual and Hourly "Fully Burdened" Salaries of ICE Immigration Enforcement Officers

Variable	Median	Lower 5% Limit	Upper 5% Limit
Annual Salary	$85,467	$41,704	$95,534
Hourly Salary	$41.09	$20.05	$45.93

DIG Analyst Compensation Rate (Dollars per Hour)

Variable Description: This is the "fully burdened" hourly compensation rage of a typical DIG (Data Integrity Group) Analyst. The fully burdened compensation can be seen in the table below. It, along with the associated range, has been provided by a DIG SME.

Data Sources: Data Integrity Group Subject Matter Estimates, September 20, 2007.

Table B-16: DIG Analyst Compensation Rate (Dollars per Hour)

[111] Page 15.

Variable	Median	Lower 5% Limit	Upper 5% Limit
DIG Analyst Compensation Rate (Dollars per Hour)	$43.00	$38.70	$47.30

DIG Base Case Processing Time per Record (Minutes)

Variable Description: This is the time, in minutes, required by DIG (Data Integrity Group) to process a record in the base case. The median, with its associated range, can be seen in the table below. The numbers have been provided by DIG.

Data Sources: Data Integrity Group Subject Matter Expert Estimates, September 20, 2007.

Table B-17: DIG Base Case Processing Time per Record (Minutes)

Variable	Median	Lower 5% Limit	Upper 5% Limit
DIG Base Case Processing Time per Record (minutes)	30	20	40

Annual Baseline DIG Workload (Number of Cases)

Variable Description: This is the base DIG (Data Integrity Group) workload in number of cases. The baseline number of cases for 2006 was 371,093. Assuming that the caseload increases at 4% per annum between 2006 and 2008, the number becomes 401,374. If it is assumed that annual growth is instead 2% it becomes 386,085 and if it is 5%, it becomes 409,130. The 4%, 2% and 5% assumptions are traveler growth assumption and can be found discussed, in greater detail, in another section of this appendix.

This caseload is comprised primarily of: Priority UCO (unconfirmed overstay), Non-Priority[112] UCO, Watch List, CO,[113] and Other.[114]

[112] "Priority" means "from countries of interest" and "Non-priority" means "everyone else".

[113] Confirmed Overstay.

[114] Other includes VWP, ICE requests and quality control processing.

Data Sources: Data Integrity Group Subject Matter Expert Estimates, September 20, 2007

Table B-18: Annual Baseline DIG Workload (Number of Cases)

Variable	Median	Lower 5% Limit	Upper 5% Limit
DIG Cases	401,374	386,085	409,130

Spending by Foreign Tourists Entering the U.S. (Dollars per Tourist)

Variable Description: This is the average dollar figure that a foreign visitor spends in the U.S. while on a tourist oriented trip. According to a recent GAO report, this number in 2000 was $1,274.[115] Converting 2000 dollars into 2007 dollars yields an amount of $1,495.[116] Assuming that inflation between 2007 and 2008 increases at the same rate that it has between 1996 and 2006 (4.5%), a number of $1,562 is derived. As a significant degree of uncertainty surrounds that number, a wide range surrounds it.

Data Sources: Government Accounting Office, *Border Security: Implications of Eliminating the Visa Waiver Program*, GAO Report Number GAO-03038.

Table B-19: Spending by Foreign Tourists Entering the U.S. (2008 Dollars per Tourist)

Variable	Median	Lower 5% Limit	Upper 5% Limit
Spending by Foreign Tourists Entering the U.S. (Dollars per Tourist)	$1,562	$1,041	$2,083

Number of Hours ICE Spends on Average Overstay Case

Variable Description: This is the number of hours the typical ICE officer spends on working an "overstay" case until he or she stops. This number, according to a subject matter expert, was 35 hours.

Data Sources: ICE subject matter expert.

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[115] Government Accounting Office, *Border Security: Implications of Eliminating the Visa Waiver Program*, GAO Report Number GAO-03038.

[116] CPI for all urban consumers, 1982-4=100 (CPI series ID CUUR0000SA0). Since a CPI deflator was not available that covered all of 2007, as of the time this report was written, the CPI deflator that covered only the first half of 2007 was used (http://data.bls.gov/cgi-bin/surveymost).

ICE Base Case Caseload

Variable Description: This is the number of overstay ICE cases that ICE handles without the implementation of biometric exit. This number was estimated by using the following equation:

(Number of Arrests in FY 2005/Number of Referrals in FY 2005) * Number of Referrals in FY 2007 = Caseload

The number of arrests in FY 2005 was 1,700, the number of referrals in that same year 1,441 and the number of referrals in FY 2007 11,772. These numbers produce a total of 13,890 annual cases.

Data Sources: Hearing of the Senate Homeland Security and Governmental Affairs Committee, Subject: The nomination of Julie L. Myers to Continue as Assistant Secretary for Immigration and Customs Enforcement (ICE), Department of Homeland Security, Chaired by Senator Joseph Lieberman, Witness: Julie Myers, September 12, 2007; DHS statistics.

Fingerprint Matching Requirements for Alien Travelers

Variable Description: This is Exit's compliance requirement for processing alien traveler's fingerprints. This number is 99%, assuming 1% of alien travelers travel on airlines exempt from the rule.

Data Source: No data source, this number is a project requirement.

Percentage of Aliens Arriving in International Airports with a Counter Solution Deployed

Variable Description: This is the percentage of international travelers who arrive at airports with a counter solution deployed. This number is assumed to be 20%. This percentage is assumed to be constant through the life-span of Exit.

Data Source: This number was based on an assumption agreed to by the Integrated Project Team (IPT).

Percentage of Aliens Arriving in International Airports with a Gate Solution Deployed

Variable Description: This is the percentage of international travelers who arrive at airports with a gate solution deployed. This number is assumed to be 80%. This number is assumed to be constant through the life-span of exit.

Data Source: This number was based on an assumption agreed to by the Integrated Project Team (IPT).

Additional Delay to Aliens on International Flights with a Domestic Leg at Small and Medium Sized Airports (Minutes)

Variable Description: This is an additional delay that aliens on international flights with a domestic leg must face. It occurs only at small and medium sized airports and stems from the fact that at those airports, on connecting flights, aliens must go to airline counters before passing through TSA. At "large" airports this issue does not exist as it is assumed that, at the large airports, there will be counters behind TSA. Hence the aliens will not have to back to airline counter areas and lose that time going and coming back from them. The time required, at the small and medium sized airports, to go to and return from the airline counters is assumed to be 30 minutes. This time is assumed to remain constant throughout life of Exit.

Visa Overstayers Detected as Percentage of all Visa Overstayers (Percentage)

Variable Description: This is the percentage of Visa Overstayers who are detected as a percentage of Visa Overstayers exiting by air or sea. This number is assumed to be 100%.

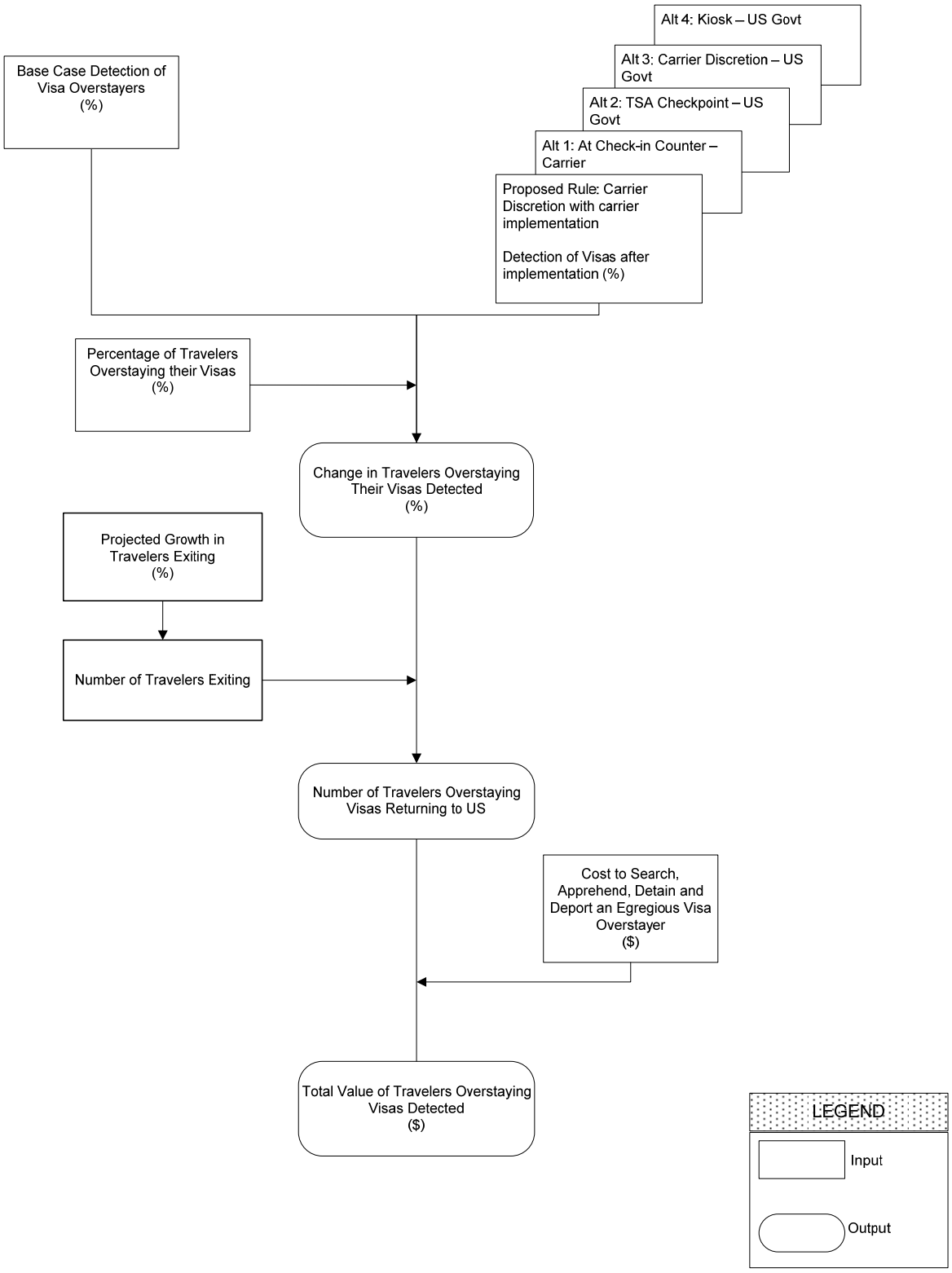
Appendix C Structure and Logic Diagrams

This section provides the detailed logic used to estimate the benefits and net social economic losses associated with implementation. The structure and logic diagrams presented describe the logic that connects the implementation to the outcome described. For those benefits that are quantified, the diagrams also indicate the major data points and calculation steps used. Readers should note that the logic associated with the benefit from expansion of the VWP is included here, but it is not rolled up into the PV of benefits presented in the Outcomes section.

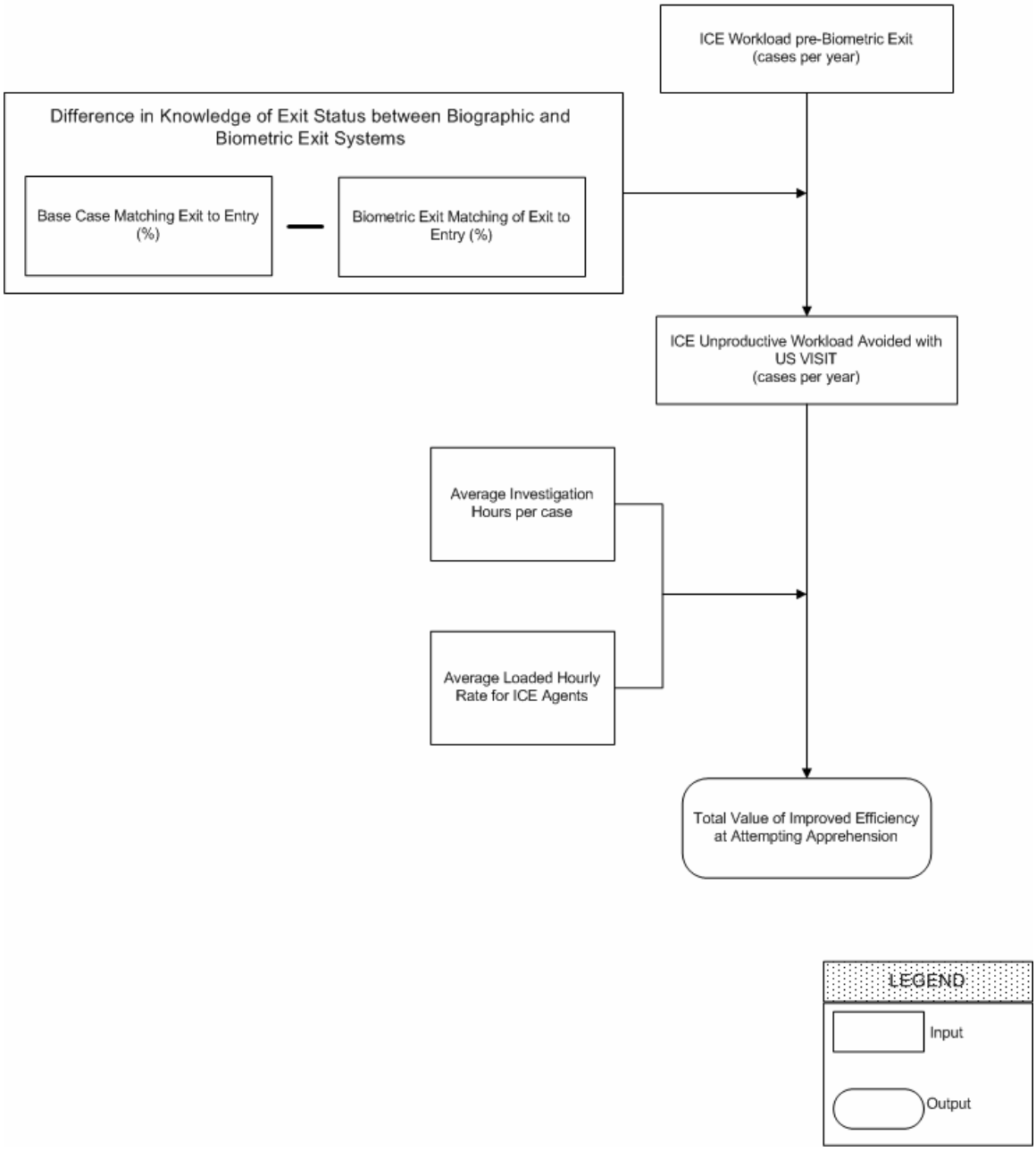
There is a lack of data concerning several of the variables used in this analysis. Therefore, we had to make assumptions and calculate estimates in an environment of uncertainty and variance in industry and government operations. The key assumptions that drive the cost and benefit analyses are described in detail in the RIA, and are summarized in Appendices A and B. We solicit any comments to improve the analysis to the greatest extent possible.

Benefits and Negative Economic Impacts Structure and Logic Diagrams	
	Chart Description
1	Improved Detection of Visa Overstays
2	Improved Efficiency Attempting Apprehension
3	Improved Exit Matching Due to Automated Matching of Biometric Entry to Biometric Exit
4	Increase in Economic Activity Created through the Expansion in the Number of Visa Waiver Program Eligible Countries
5	Increased Flight Delays
6	Increased Traveler Queue, Processing and Prep Time
7	Disruption Costs (Proposed Rule and Alternative 3), Post-Security at 6 Large Counter-Mounted Airports

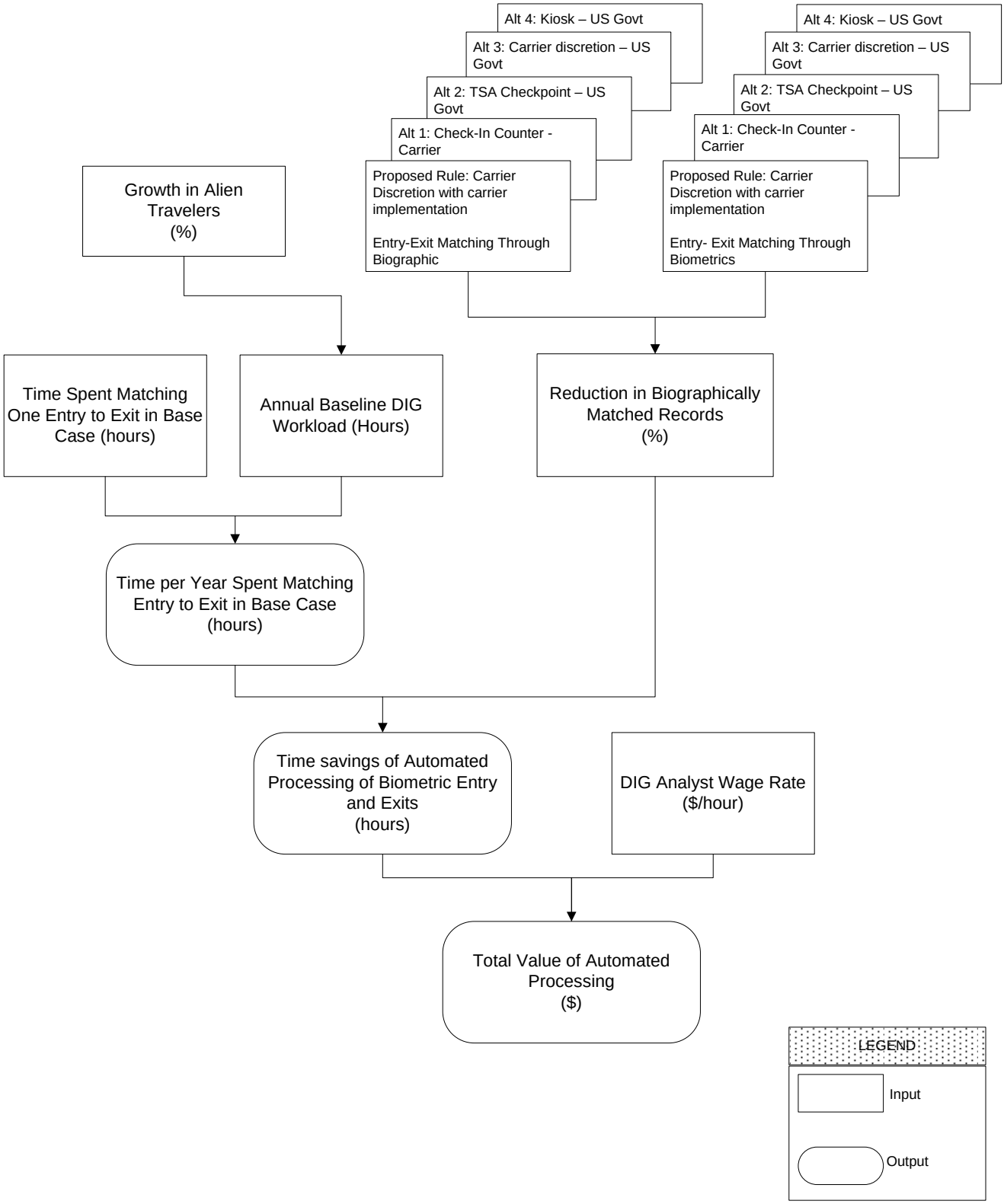
BENEFIT - IMPROVED DETECTION OF VISA OVERSTAYS

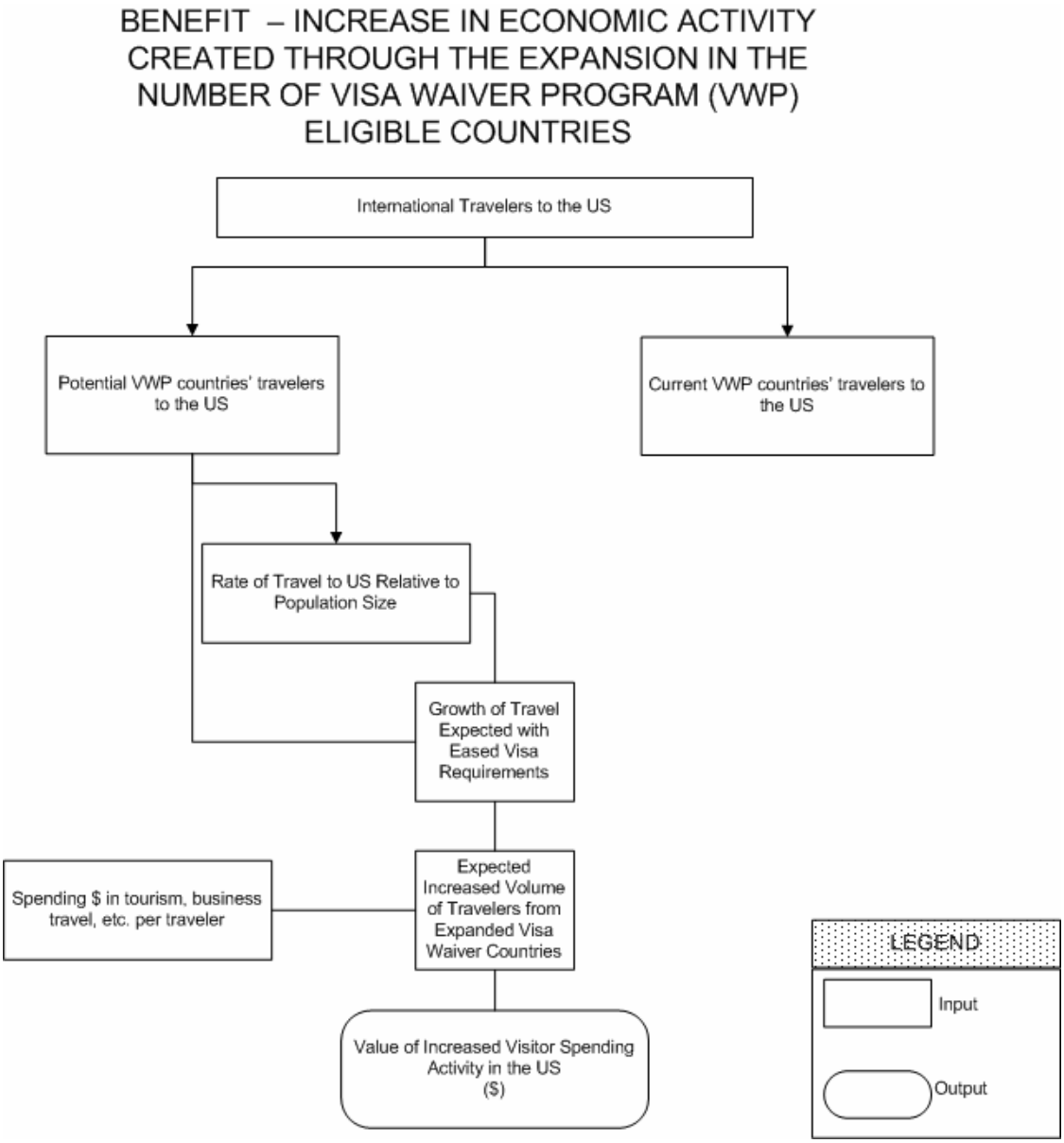


BENEFIT - IMPROVED EFFICIENCY ATTEMPTING APPREHENSION

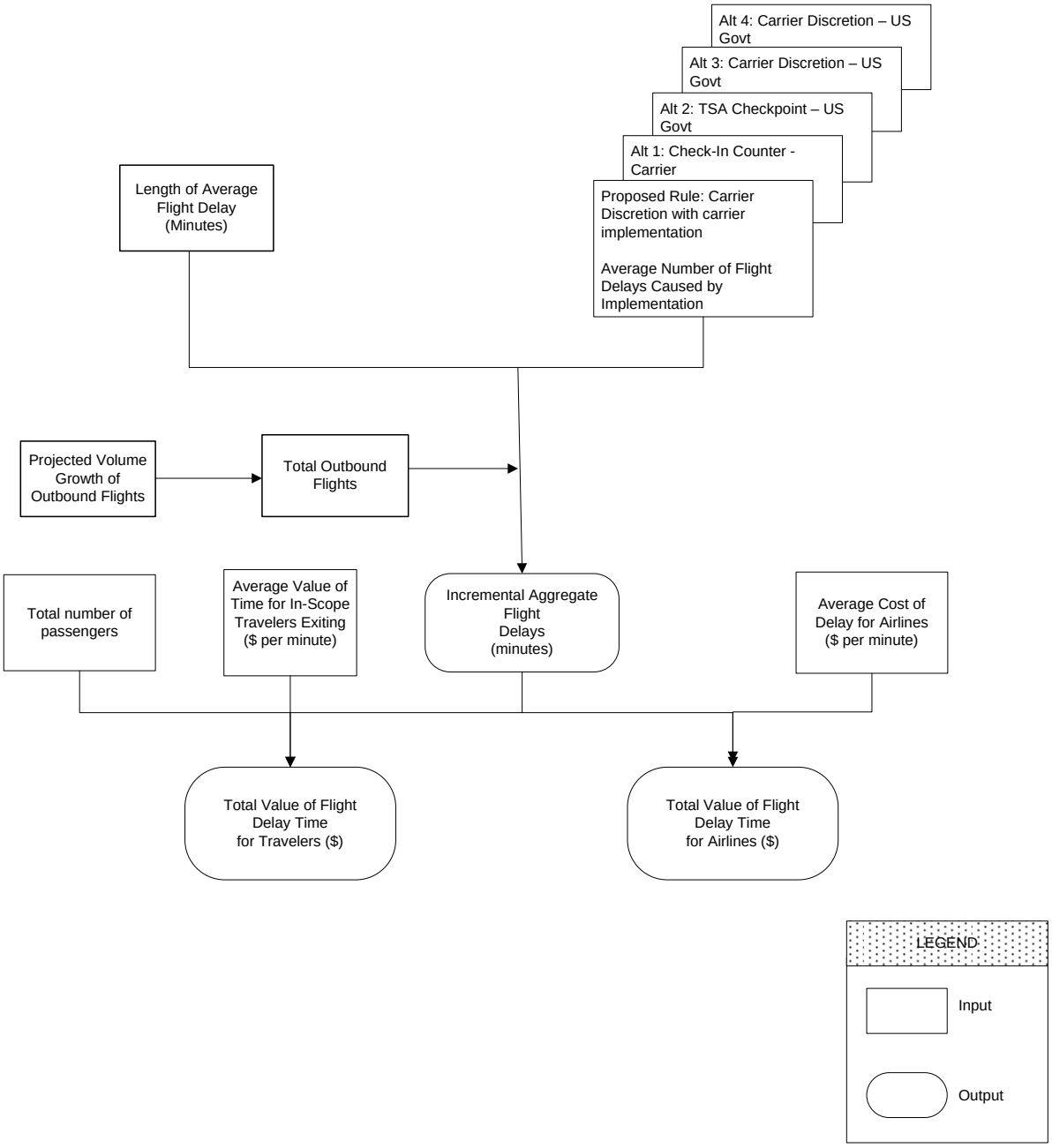


BENEFIT - IMPROVED EXIT PROCESSING DUE TO AUTOMATED MATCHING OF BIOMETRIC ENTRY TO BIOMETRIC EXIT

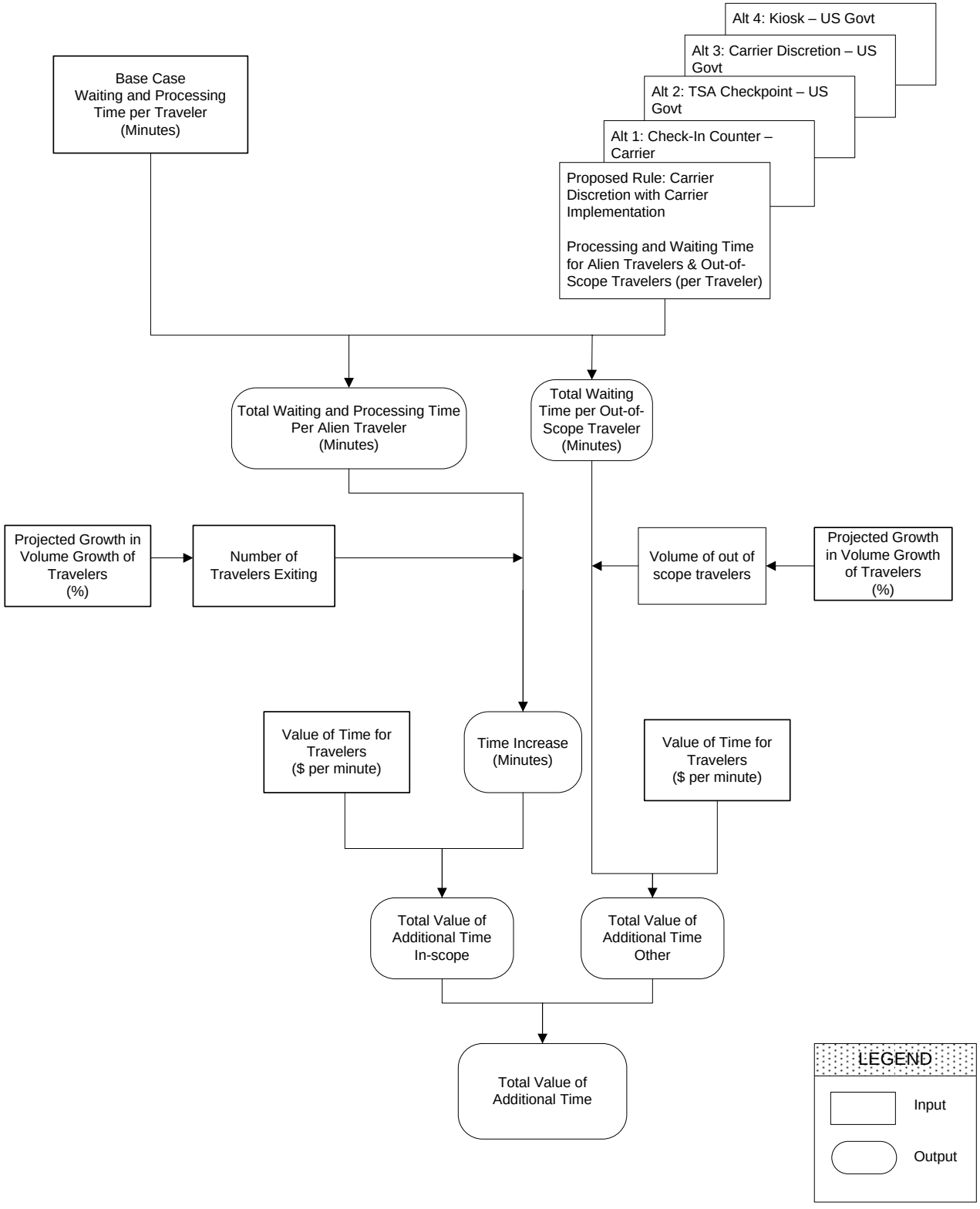



BENEFIT – INCREASE IN ECONOMIC ACTIVITY CREATED THROUGH THE EXPANSION IN THE NUMBER OF VISA WAIVER PROGRAM (VWP) ELIGIBLE COUNTRIES
International Travelers to the US
Potential VWP countries' travelers to the US
Current VWP countries' travelers to the US
Rate of Travel to US Relative to Population Size
Growth of Travel Expected with Eased Visa Requirements
Spending $ in tourism, business travel, etc. per traveler
Expected Increased Volume of Travelers from Expanded Visa Waiver Countries
Value of Increased Visitor Spending Activity in the US ($)
LEGEND
Input
Output

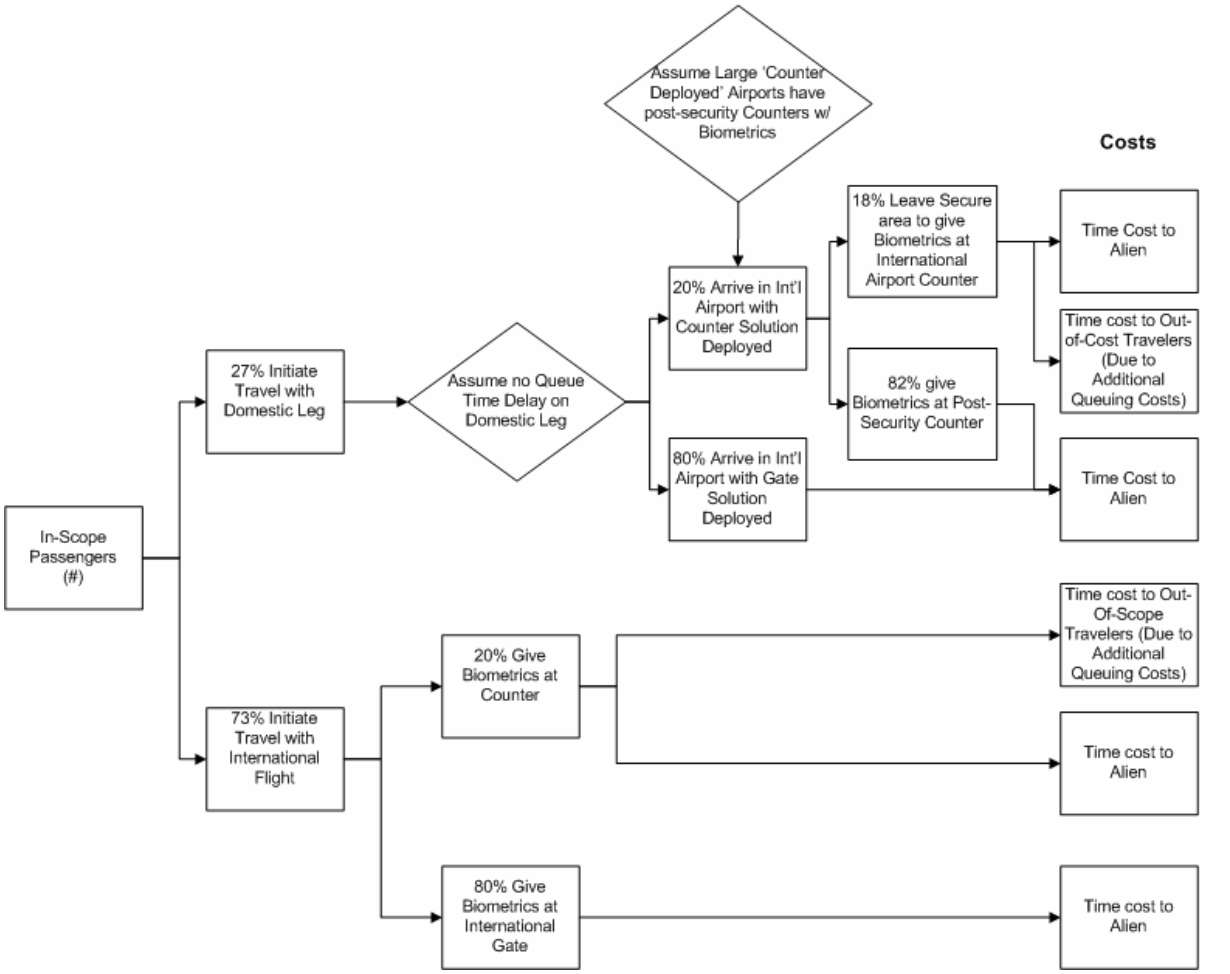
BENEFIT – INCREASED AIRLINE DELAYS



BENEFIT – INCREASED TRAVELER QUEUE AND PROCESS TIMES



Disruption Costs Structure and Logic Diagram, Proposed Rule and Alternative 3 with Post-Security Biometric-Enabled Counters at 6 Large Counter-Deployed Airports



Appendix D Performance Measures

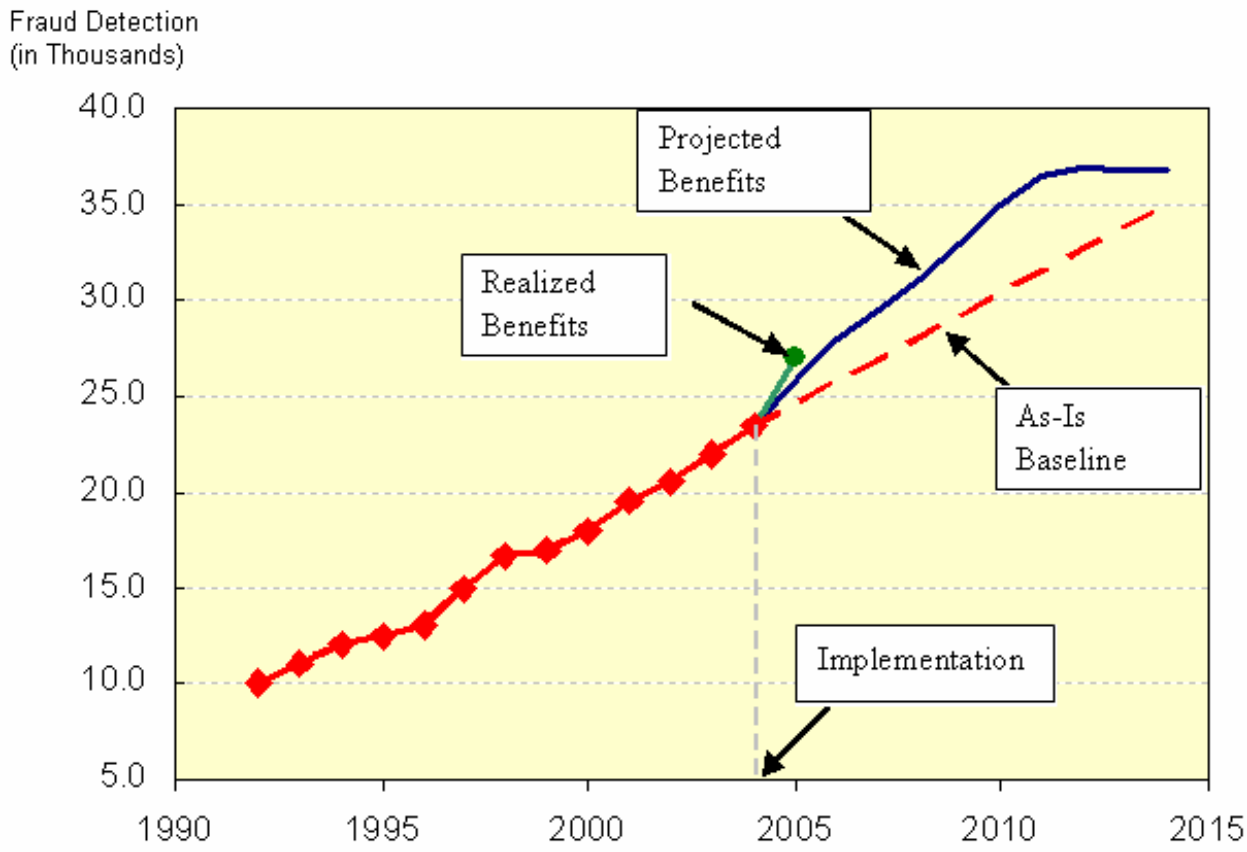
Performance measurement is one of the critical tools to measure the success of an implemented solution. The performance measurement allows the project team to assess whether the solution meets its intended objectives and therefore realizes the projected benefits set at the planning and design stages. The performance measurement may consist of operational, economic, social, financial, strategic, and other elements.

The benefit estimation under the cost benefit analysis task provides the project management with the economic elements that can be tracked over time to ensure that the specific solution or the program met its objective from the economic perspective. These elements are different from the conventional performance measures as they relate directly to the overall worthiness of the solution or the business case for the program rather than the specific operational aspect of the solution.

The performance measures identification follows four key steps:

- Step 1: Review all existing databases to ensure that all possible and useful indicators are identified;
- Step 2: Select key indicators that meet the agency/stakeholders' goals and objectives;
- Step 3: Refine the list of performance indicators and begin populating the benefits/process matrix; and
- Step 4: Build consensus among stakeholders for use of critical performance indicators.

Once identified within the cost benefit analysis, the metrics are projected over the life cycle of the investment. These metrics can then be tracked as part of the performance measurement of the solution to assess its realized worthiness. This table is an example of the performance measures tracking process.



Performance Tracking

In summary, while the cost benefit analysis assesses the worthiness of a solution or a program given its projected benefits in a specific time period, performance tracking assesses whether the realized benefits meet the projections and therefore serves as a decision-support mechanism to re-design and/or adjust the existing solution so that it meets its promised benefits.

This project will be assessed using the following critical success factors and performance measures and outcomes expected of the overall Comprehensive Exit project.

Table D-1: Performance Metrics

Critical Success Factors/ Key Performance Indicators	Performance Measures/Outcomes
Percentage of Exit Records Matched to Entry Records	A primary goal of the entry-exit system is to match an individual's entry and exit record to allow DHS to verify that the individual complied with the authorized period of stay in the United States. Biographic and biometric data is collected and matched to existing records at 95% in 2008, 97% in 2009 and 99% in 2010 for alien travelers.
Data Integrity Group Average Cost to Vet and Review Records in Determining a Recommended Lead	The DIG vetting process identifies overstay records and provides recommended leads to Immigration and Customs Enforcement (ICE) Compliance Enforcement Unit (CEU) for investigation. The primary function of the DIG is to assure the integrity of data shared with ICE. Therefore, the rate at which the DIG can supply these recommended leads to ICE-CEU, per information processing dollar expended, is a fundamental efficiency metric.
Average Cost Per In-Country-Overstays Processed	The average cost to send information to Federal agencies about foreign travelers who have apparently overstayed their authorized period of admission. These travelers are termed In-Country Overstays. This is an indicator of US-VISIT efficiency in producing in-country overstay leads for law enforcement.
Average Cost Per Out-of-Country-Overstays Processed	The average cost to send information to Federal agencies about foreign travelers who have apparently overstayed their authorized period of admission. These travelers are termed Out-of-Country Overstays. This is an indicator of US-VISIT efficiency in producing in-country overstay leads for law enforcement.
Number of VISA overstays detected as a proportion of the actual number of visa overstays	Measures the True Acceptance Rate of visa overstays - the probability that a traveler who is allegedly an overstay is marked as overstaying when, in fact, the traveler has overstayed their visa.
Percentage of Exit Records Matched to Entry Records	A primary goal of the entry-exit system is to match an individual's entry and exit record to allow DHS to verify that the individual complied with the authorized period of stay in the United States. Biographic and biometric data is collected and matched to existing records at 95% in 2008, 97% in 2009 and 99% in 2010 for alien travelers.

Appendix E Gap Analysis

The gap analysis identifies specific exit capabilities and discusses how well the current environment is able to meet those capabilities. The following table describes the gaps between the future state and the current state for the Biometric capture of Air/Sea Exits and relevant performance measures.

Table E-1: Air/Sea Biometric Exit Capture

Ability to determine whether in-scope traveler has left the country			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
Identification of exit status is accomplished through the following process: • the traveler manually fills out the departure portion of the Form I-94 • the carrier collects the I-94 and submits it to DHS • DHS ships all collected I-94 forms to a data entry facility • DHS's designated contractor enters the I-94 data into the entry-exit system	Biometric data (fingerprints) of an in-scope traveler will be collected as a condition of being able to board the aircraft or vessel. Air/Sea Biometric Exit will automatically record the exit on the traveler's entry-exit record.	In the current environment, because of the many manual steps and length of time to enter the I-94 data into the entry-exit system, the likelihood is high that not all departures of in-scope travelers are recorded. Furthermore, there is a lag in time between the departure of the traveler and the recordation of his or her exit from the country.	Percentage of Exit Records Matched to Entry Records Number of VISA overstays detected as a proportion of the actual number of visa overstays

Accurate and immediate recording of exit information			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
The process of collecting and recording the exit status of an in-scope traveler is manual and time-consuming.	Air/Sea Biometric Exit will automatically record the exit on the traveler's entry-exit record.	The time-consuming manual process of entering exit data for each traveler provides the opportunity for incomplete and delayed recording of the exit. Furthermore, if the traveler were to attempt to re-enter the U.S., the delay in recording the exit data might not allow the most recent exit status or notices for further screening to be displayed to the CBP officer.	Percentage of Exit Records Matched to Entry Records Number of VISA overstays detected as a proportion of the actual number of visa overstays Data Integrity Group Average Cost to Vet and Review Records in Determining a Recommended Lead Average Cost Per In-Country-Overstays Processed Average Cost Per Out-of-Country-Overstays Processed

Ability to determine which in-scope travelers have overstayed the terms of their admission			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
The entry-exit system relies on the manually collected and entered I-94 data to determine those persons who exited the U.S. who have overstayed the terms of their admittance.	The future entry-exit system will rely on the more accurate and timely exit biometric data to identify the departed travelers who overstayed the terms of their admittance.	In the current environment, because of the many manual steps and length of time to enter the I-94 data into the entry-exit system, the likelihood is high that not all departures of in-scope travelers are recorded. Because determination of overstays is dependent today on the process of collecting and recording departure data from I-94 forms, the likelihood is high that not all overstays are identified.	Percentage of Exit Records Matched to Entry Records Number of VISA overstays detected as a proportion of the actual number of visa overstays

Level of confidence in the identity of the exiting traveler			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
Confirmation of the identity of an in-scope traveler is determined solely on biographic data presented by the traveler. The entry-exit system attempts to match the exit record to the entry record bearing the same name.	The traveler will be identified using both biographic and biometric data. The entry-exit system will determine whether the traveler has been seen by US-VISIT before and whether the biometric data submitted at exit matches the biometric data submitted at entry for the	Reliance on biographic data, such as matching the name provided by the traveler to stored names, is fraught with risk. A simple misspelling of the name – which may occur, for example, during the visa issuance process – would mean the identity of the traveler	Percentage of Exit Records Matched to Entry Records Number of VISA overstays detected as a proportion of the actual number of visa overstays

	person possessing the same biographic data. If the traveler has not been seen by US-VISIT before, then the entry-exit system will search through its entire database of fingerprints to determine whether the traveler may have entered the country using different biographic data.	would not be confirmed.	

Ability to obtain an accurate history of the traveler's entry to and exit from the U.S.			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
The CBP officer at the entry POE uses several tools to determine whether the traveler should be admitted into the U.S. The traveler's entry-exit record is one of them. Furthermore, correct determination of overstays is dependent on accurate recording of entry and exit information. Today the exit information is obtained from the manually collected Form I-94 and entered I-94 data.	The entry-exit record will still be a tool for the CBP officer. However, in the future, the traveler's exit from the U.S. will be automatically and immediately recorded. The exit data will be compared to the traveler's entry data, so that an overstay can be determined.	Without accurate and immediate recording of an in-scope traveler's exit, the traveler's entry-exit record is not complete. A risk exists that the traveler will be admitted into the U.S. without sufficient understanding of his or her entry-exit history.	Percentage of Exit Records Matched to Entry Records Number of VISA overstays detected as a proportion of the actual number of visa overstays

Ability to expedite entrance of in-scope travelers			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
When a traveler enters the U.S., the CBP Officer enters biographic information from the traveler's travel document into the CBP system. In most cases at air and sea POEs, manifest data are available, and watch list queries and analyses are performed by the US-VISIT system prior to traveler arrival. The results of queries and analyses are pre-positioned for the CBP Officer (manifest data matches and biographic lookout hits). Depending on the information presented, the CBP Officer may interview the traveler. The CBP Officer then makes an "admit" or "refer to secondary" decision. Reasons for secondary inspection can be immigration violations, suspicion of terrorist activity, or suspicion of criminal activity.	The process followed by the CBP Officer will not change. However, with Air/Sea Biometric Exit, the information about the traveler's entry and exit history will be more accurate and current. After the traveler provides biometric data at exit, Air/Sea Biometric Exit will search biometric watch lists and verify the identity of the traveler. If any of the checks turns up suspicious information, analyses will be conducted and the traveler's record will be noted. If the traveler attempts to enter the country again, the appropriate flags will be displayed before the CBP Officer.	When the entry-exit, identity, or watch list information on a traveler is not current or accurate, or if the CBP Officer does not trust the data, the CBP Officer may request the traveler be sent for secondary inspection more often than would otherwise be the case. This delays the entrance of the specific traveler and potentially the admission of other travelers.	**TBD** – US-VISIT must collaborate with FAA to identify and measure the potential impacts

Ability to support evaluation of admittance of a country to the Visa Waiver Program (VWP)			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
A country that desires to be granted VWP status must meet a number of conditions, including a 97% rate of compliance in its visiting citizens leaving the U.S. within the required time frame. The U.S. does not have an accurate way of determining which in-scope travelers have left the country because the manual process of collecting I-94 forms and recording the I-94 data provide many opportunities for traveler data to be lost or erroneous recorded.	The in-scope traveler will be required to provide biometric data on exit from the U.S. Air/Sea Biometric Exit will ensure that the traveler's exit data are automatically and immediately recorded.	The database of entry-exit records of in-scope travelers risks being incomplete. Thus, calculation of exit compliance is not accurate.	Percentage of Exit Records Matched to Entry Records Number of VISA overstays detected as a proportion of the actual number of visa overstays

Support resource allocation decisions for law enforcement			
Current Environment	**Future Environment**	**Gaps/Issues**	**Performance Measures**
A law enforcement agency may wish to talk with an in-scope traveler about such activities as	The law enforcement agency still will rely on the entry-exit record to make determine	Confidence in the entry-exit record of the in-scope traveler would be increased if the	Percentage of Exit Records Matched to Entry Records

visa violations. To do so, the law enforcement agency determines the likelihood of the in-scope traveler still being in the country, before it expends the resources to locate and interview the in-scope traveler. The law enforcement agency relies on the entry-exit record of the in-scope traveler in question. These records may be incomplete because of the manual collection and manual entry of the traveler exit data via the I-94.	whether to expend resources to seek out the alien of interest. However, confidence that the record is more complete is higher because the in-scope traveler is required to provide biometric data at exit, and the exit data are automatically recorded.	collection of exit data and recording of exit data were automated, and the identity of the in-scope traveler could be assured.	Number of VISA overstays detected as a proportion of the actual number of visa overstays

Appendix F Air/Sea Biometric Exit Alternative Selection Process

This RIA evaluates four alternatives for building a Biometric Exit Verification capability. The selected alternatives stem from a series of options related to the business process, location of collection, and funding approach for the program. This section describes the process used to assess the alternatives for feasibility.

It should be noted that this document describes a process used to assess a range of alternatives and select down to a set of feasible alternatives. As such, some of the assumptions in this section maybe superseded by the RIA assumptions presented elsewhere in this document. Assumptions in this section do not necessarily apply to the RIA as a whole.

Introduction

The United States Visitor and Immigrant Status Indicator Technology (US-VISIT) Program records the arrival and departure of covered international travelers; conducts certain terrorist, criminal, and immigration violation checks on covered individuals; and compares biometric identifiers to those collected on previous encounters to verify identity. US-VISIT has been implemented in phases beginning with an entry and a pilot exit program and expanding to additional capabilities, locations of implementation, or subject populations.

US-VISIT integrates the immigration information collected into a combined picture of an individual. As a result, more complete and timely information is available to appropriate decision-makers, such as consular officers overseas, Customs and Border Protection officers at the ports of entry, U.S. Citizenship and Immigration Service adjudicators, Immigration and Customs Enforcement agents in the interior of the United States, and U.S. Coast Guard officers offshore.

The next significant deployment to further the US-VISIT Program is the capability to collect finger scans of alien travelers departing the U.S. by air and sea. With such information, DHS can be more certain that an individual did, in fact, depart the U.S., and will be better able to match the record of their exit to their entry record. This will ensure that future decisions determining eligibility for visa renewals, subsequent applications for admission to the U.S., and adjudications of immigration benefit applications are fully informed. Also, this will allow interior immigration enforcement activities to more appropriately allocate resources.

This document describes the alternatives considered for US-VISIT's Biometric Exit project for the air and sea environments, and describes the process for conducting a high level assessment of each alternative.

Background

US-VISIT is a major priority in DHS's mission of ensuring the security of U.S. citizens and visitors. US-VISIT has developed systems and processes to reliably identify alien travelers[117] when they apply for entry to the U.S. and as they enter the U.S. The US-VISIT Entry solution includes the collection of the visitor's biometric and biographic data. Biometric and biographic data is stored in databases maintained by the U.S. Government in accordance with U.S. information technology security and privacy laws and regulations. This data is checked against watch lists to improve DHS decisions on visitor admissibility. The data also aids law enforcement officials in investigations of suspected terrorists or criminals. The US-VISIT Entry solution has been deployed at 119 airports, 19 seaport locations, and 155 land ports that manage the entry of travelers from international countries.

While biometric entry capabilities have been in operation, DHS still lacks the biometric capability to determine when an alien traveler has exited the U.S. From January 2005 to May 2007, US-VISIT designed and deployed a temporary prototype biometric exit system at 12 airports and two seaports. The pilot program demonstrated that a key factor in any successful biometric exit is integration of the biometric exit process into the traveler's departure flow. The Air/Sea Biometric Exit Project will include the collection of biometric data from each alien traveler during the traveler's departure process.

Scope

Development of biometric exit for airports and seaports will follow a more accelerated path than for land ports. This is due to the fact that there is more existing infrastructure to work with in air and sea ports than in the land environment. Additionally, the vast majority of the sub-populations of alien travelers that DHS is concerned about, namely the Visa Waiver Program (VWP) and "Countries of Interest" travelers, travel in and out of the U.S. by air. Since DHS is beginning with biometric exit at air and sea ports, this alternative analysis will only deal with those environments.

The same classes of aliens that are presently in-scope for US-VISIT Biometric Entry will also be in-scope for Biometric Exit. Biometric Exit will impact an estimated 52 million aliens annually. When published, the "additional aliens rule" will expand the classes of aliens that are in-scope to include Lawful Permanent Residents, among others.

Additionally, Air/Sea biometric exit will also impact a number of ports and carriers. Specifically:

- 450 Total Airports, of which 122 are international airports
- 274 Airlines serving the U.S., of which 138 have direct international departing flights

[117] An alien traveler is a visitor who is subject to the requirements of US-VISIT.

- 33 Total Seaports
- 9 Sea carriers

Strategic Alignment

The 9/11 Commission Report recommended completion of an entry-exit system and noted that funding and completing a biometrics-based entry-exit system is an essential investment in our national security.

> "The Department of Homeland Security, properly supported by Congress, should complete, as quickly as possible, a biometric entry-exit screening system, including a single system for speeding qualified travelers. It should be integrated with the system that provides benefits to foreigners seeking to stay in the United States. Linking biometric passports to good data systems and decision-making is a fundamental goal. No one can hide his or her debt by acquiring a credit card with a slightly different name. Yet today, a terrorist can defeat the link to electronic records by tossing away an old passport and slightly altering the name in the new one."
>
> "Completion of the entry-exit system is a major and expensive challenge. Biometrics has been introduced into an antiquated computer environment. Replacement of these systems and improved biometric systems will be required. Nonetheless, funding and completing a biometrics-based entry-exit system is an essential investment in our national security." (p. 387)

Congress has recognized the importance of improving entry and exit control and addressed the issue in a series of statutes directing DHS to build an automated, biometric entry-exit system.

Likewise, Biometric Exit would support the priorities of "Control Our Borders" and "Protect lawful trade and travel by strengthening screening of travelers and workers" as directed by the DHS Integrated Planning Guidance. This priority is articulated in the Secretary's goal of "DHS will modify and test US-VISIT Exit operational plans at airports to expand the collection of biometric exit information on targeted populations including VWP travelers" (Near-term Goal 1.5.6). Therefore, US-VISIT efforts to plan, develop, and deploy biometric exit capabilities are directly aligned with the Department's core mission and goals.

Since starting on January 5, 2004, the US-VISIT Program has operated using four strategic performance goals considered critical to achieving success. These performance goals are:

- Enhance the security of United States (U.S.) citizens and visitors to the U.S.
- Facilitate legitimate travel and trade
- Ensure the integrity of the U.S. immigration system
- Protect the privacy of U.S. visitors

Air/Sea biometric exit supports US-VISIT's goals of enhancing the security of the U.S. and ensures the integrity of the U.S. immigration system. If DHS has a better idea of who has

complied with the terms of their admission, then future decisions to determine the eligibility for visa renewals, subsequent applications for admission to the U.S., and adjudications of immigration benefit applications can be more fully informed. Additionally, interior immigration enforcement activities can more appropriately allocate resources.

Analysis Methodology and Approach

The methodology for assessing alternatives for the Air/Sea Biometric Exit solution was as follows:

1. Identify the need for and objectives of the Air/Sea Biometric Exit project.
2. Identify constraints and assumptions about the Air/Sea Biometric Exit.
3. Identify possible alternatives that could be employed to meet the Air/Sea Biometric Exit objectives.
4. Develop criteria associated with the Air/Sea Biometric Exit objectives that would be used to assess each alternative.
5. Conduct the assessment.

US-VISIT selected an initial preferred alternative after the assessment was completed. This initial preferred alternative, along with the other, possible alternatives were further analyzed in a regulatory evaluation, cost-benefit analysis, and environmental analysis in an effort to further define and refine the analysis. During these further evaluations, US-VISIT re-evaluated the constraints and re-selected a preferred alternative due to the need for the biometric solution to integrate with other DHS air and sea traveler initiatives. Subsequently, the possible alternatives were down selected to three alternatives in order to present the most viable alternatives in the NPRM, along with a focused and thorough evaluation of the associated costs and benefits.

Air/Sea Biometric Exit Need

Today, DHS has limited ability to identify which alien travelers who have entered the country remain in the country in violation of their admission period, and who has departed within that period. Accurate recording of their departure will provide timely and much needed information for decision makers within the immigration and boarder management enterprise.

Under the initial phases of the implementation of the Air/Sea Biometric Exit Project, biometric data will be used for the following purposes:

- Overstay information will be analyzed by US-VISIT and forwarded to ICE for further follow-up and interior enforcement.

- Exit information will be used on an individual basis during subsequent applications for admission to the United States, visa issuance and renewal, and other immigration benefits.
- Exit information will be analyzed in the aggregate to identify weak areas in our immigration and border management system where overstay is prevalent. This will require the development of new analytic capabilities within DHS and DOS.

While biographic information is presently being used to address these goals, biographic data tends to be less accurate then biometric, and may not be automated, thus requiring more time and resources. Additionally, the biometric data collected, along with the new exit procedures, will provide DHS with a higher level of confidence that an individual was present in the airport and actually left the country, as opposed to collecting only biographic (name) information.

An automated biometric exit system will also better inform DHS so that those that have overstayed may be identified as such and apprehended. US-VISIT tracks and records entry and exit records to determine those who have overstayed their authorized period of admission. Individuals who have overstayed the terms of their admission, or who are wanted or otherwise encountered by law enforcement, may be apprehended.

Air/Sea Biometric Exit Objectives

Through a variety of statutes, Congress has directed DHS to address the need to better record the departure of nonimmigrant aliens. To meet Congressional mandates, DHS will collect data during exit to:

- Match available data on an alien's entry and exit.
- Assist in identifying nonimmigrant aliens who have overstayed their period of admission.
- Allow for calculation of VWP departure compliance rates.
- Produce reports on entry and exit of aliens.

Air/Sea Biometric Exit supports the overall US-VISIT mission goals (see Section F.1.3.). Specifically, Air/Sea Biometric Exit is expected to achieve the following objectives:

- Record an alien's departure from the U.S. and match to their entry record.
- Ensure the integrity of the U.S. immigration system through the sharing of entry and exit records with appropriate government partners in the immigration and border management enterprise.
- Protect the privacy of alien visitors to the U.S.

Constraints and Assumptions

Constraints are known restrictions placed on a project's implementation, development, or interfaces – both by forces external and internal. Examples of external constraints are Congressional mandates, oversight organizations, such as the General Accounting Office (GAO) or the Office of Management and Budget (OMB), and restrictions placed by interfacing organizations or systems. Examples of internal constraints are technology maturity, people resources, and funding resources. Assumptions are presumed restrictions, or hypotheses about the operational environment or other critical factors. Constraints and assumptions are considered in an alternatives assessment to refine the choice of alternatives being assessed and inform the assessment process.

Constraints

Five constraints were identified and applied in the alternatives assessment process:

- Air/Sea biometric exit must align with the Pre-Departure APIS Final Rule requirements.

  DHS has a goal to align the many programs and requirements of its components. U.S. Customs and Border Protection (CBP) has proposed a rule to enable CBP to collect passenger and crew information for flights and cruises bound for the U.S. prior to the carriers' departure from foreign ports, as well as departure from the U.S. This system is known as the Advance Passenger Information System (APIS). APIS data include such biographic data as full name, gender, and country of passport issuance. Additionally, if there is intersection with the Transportation Security Agency's (TSA) "Secure Flight" initiative, then Air/Sea biometric exit will also need to align with that program. Secure Flight is a program designed to conduct a threat assessment on individual air travelers based on available biographic information.

- US-VISIT must ensure that personally identifiable information (PII)[118] collected on behalf of the U.S. Government is protected in accordance with applicable legislation, regulation, treaty and policy, including US-VISIT Policy and Privacy Principles. Accordingly, a non-U.S. Government entity cannot use or store any PII collected on behalf of US-VISIT for their purposes. Such PII includes, but may not be limited to, fingerprints and biographic information not currently collected by the non-government entity to support the entity's existing business processes. If a non-government entity collects PII on behalf of the U.S. Government to support Air/Sea Biometric Exit that entity must securely transmit the PII to the U.S.

[118] Personally Identifiable Information is any information about an individual maintained by an agency, including, but not limited to, education, financial transactions, medical history, and criminal or employment history and information which can be used to distinguish or trace an individual's identity, such as their name, social security number, date and place of birth, mother's maiden name, biometric records (for example, fingerprints and photographs), phone number, email address, physical address, signature, passport number, and Radio Frequency Identification (RFID) tags, including any other personal information which is linked or linkable to an individual (Adapted from OMB M-06-19).

Government and then purge the PII after the U.S. Government confirms receipt of the PII.

- Biometric data collection must be associated with issuance of boarding pass. The evaluation of the prototype exit system suggests that any biometric exit solution should be integrated with the traveler's departure process. This constraint suggests that a boarding pass may not be issued to an alien traveler until the traveler provides the required biometric data.
- Law enforcement action during the departure process is not a required result of providing biometric data for Air/Sea Biometric Exit. The purpose of the Air/Sea Biometric Exit Project is to collect biometric data of alien travelers on exit from the U.S. and to validate the data against stored entry data. The *Comprehensive Exit Charter* states that Air/Sea Biometric Exit is not designed around law enforcement at the time of alien traveler exit.
- Air/Sea Biometric Exit will be implemented by December 2008 at all U.S. ports from which commercial flights and cruises to international destinations depart. By December 2008, the initial capabilities of the Air/Sea Biometric Exit will be deployed at each of the designated airports and seaports.

In addition to the five constraints listed above, there is the potential that enactment of the recent 9/11 Implementation Bill could have an impact on planning for Air/Sea biometric exit. Final interpretation from DHS Policy and Planning Office of General Counsel will be given to US-VISIT regarding the statute's impact on Air/Sea Biometric Exit.

Assumptions Used in Conducting the Assessment

The following assumptions were made and applied in conducting the alternatives assessment:

- The assessment of the alternatives does not consider specific technical solutions.
- The entity (whether U.S. Government or other) that collects the biometric data purchases, owns, deploys, certifies, and maintains all the biometric collection equipment and software.
- All alternatives will allow for auditing capabilities to ensure that business, security and privacy requirements are met.
- All alternatives will allow for the same quality of print collection and identity verification.
- Currently, collection will be primarily used to verify identity and confirm exit. However, in the future, enforcement action during exit may be taken in extreme situations.
- There will be no coordination problems with TSA and CBP.
- Sufficient outreach and education will be provided.
- Benefits to enhancing the security and integrity of our immigration system are primarily away from the airport, in terms of identifying overstays for interior enforcement, and adjudicating re-entry or visa renewal.

- All PII will be collected, used, disclosed, and retained in accordance with applicable statute, regulation, treaty, department and component policy.
- Per recommendations of the pilot evaluation, biometric exit will be incorporated into one of the steps intrinsic to departure: airline check-in areas, TSA checkpoints, or boarding gates.
- Exit will not be utilized at "general aviation" airports, only at airports that have regularly scheduled international departures.

Air/Sea Biometric Exit Alternatives

The biometric exit project involves collection of the alien traveler's biometric data as part of the departure process as well as validation of the biometric data. The validation process involves matching the traveler's exit record with their entry record.

Basis for Alternatives Selection

The selection of alternatives was focused on the collection of biometric data. Validation of collected records and matching to entry records will occur at DHS data processing centers away from the ports, and will be the same regardless of the deployment alternative chosen. Therefore, the following variables were considered in the alternatives analysis:

- Location for collection of biometric data
- Entity or position responsible for collecting the biometric data

For the airport or seaport departure environment, this analysis considered biometric data collection to occur at the check-in counter, the security checkpoint, or the departure gate. The entity or position responsible for collecting the biometric data could be either a U.S. Government representative or a representative of the airline or cruise line. The five basic alternatives to be considered are the following:

- At carrier check-in counter - Airline/cruise line responsibility
- At carrier check-in counter - U.S. Government responsibility
- At TSA security checkpoint - U.S. Government responsibility
- At departure gate - Airline/cruise line responsibility
- At departure gate - U.S. Government responsibility

Description of Alternatives

The alternatives assessment considered each of the five basic options plus three additional alternatives. These additional alternatives are variations of the basic alternatives, to include verification of the biometric data at the departure gate, by a U.S. Government

representative. Verification is conducted at the departure gate to determine whether the person who is providing the biometric data at the gate is the same as the person who originally provided the biometric data (for example, at the check-in counter or security checkpoint). At least for the early deployments of the Air/Sea Biometric Exit Project, verification may be done randomly, in order to measure compliance with the Exit process.

The eight Alternatives assessed in this analysis are the following (Alternatives F, G, and H are variations of Alternatives A, B, C, respectively):

Alternative A: At the Check-in Counter – Airline/Cruise line collection. An airline/cruise line representative collects biometric data of the alien traveler at the airline or cruise line check-in counter.

Alternative B: At the Check-in Counter – U.S. Government collection. A U.S. Government representative collects biometric data of the alien traveler at the airline or cruise line check-in counter.

Alternative C: At Security Check-Point – U.S. Government collection. A U.S. Government representative collects biometric data of the alien traveler at the security checkpoint.

Alternative D: At Gate– Airlines/Cruise lines collection. An airline/cruise line representative collects biometric data of alien traveler at the departure gate.

Alternative E: At Gate – U.S. Government collection. A U.S. Government representative collects biometric data of the alien traveler at the departure gate.

Alternative F: At Check-in Counter – Airline collection with verification at gate. An airline/cruise line representative collects biometric data of the alien traveler at the airline or cruise line check-in counter, and a U.S. Government representative randomly verifies the data at the departure gate.

Alternative G: At Check-in Counter – U.S. Government collection with verification at gate. A U.S. Government representative collects biometric data of the alien traveler at the airline or cruise line check-in counter, and a U.S. Government representative randomly verifies the data at the departure gate.

Alternative H: At Security Checkpoint – U.S. Government collection with verification at gate. A U.S. Government representative collects biometric data of the alien traveler at the security checkpoint, and a U.S. Government representative randomly verifies the data at the departure gate.

Assessment Criteria

The Air/Sea Biometric Exit Project supports the Department of Homeland Security and US-VISIT's mission goals. These goals form the basis of the Project's objectives. The Air/Sea Biometric Exit objectives were further defined by identifying the key components of each.

It is against these Air/Sea Biometric Exit objectives that the Alternatives will be assessed. It is understood that these assessment criteria are expressed at a high level and only are intended to identify the relative ability of the alternatives to meet the objectives.

- **Confidence of departure:** The degree with which the U.S. Government is confident that an alien traveler submitting biometric data during the departure process has exited the U.S.
- **Percentage of population captured:** The percentage of alien travelers whose biometric data is collected using this alternative.
- **Operational impact to the traveler:** The additional amount of time or increase in processes required of the traveler during the departure process as a result of deploying this alternative.
- **Operational impact to the airlines/cruise lines:** The additional amount of time or increase in processes required of the airline/cruise line during the departure process as a result of deploying this alternative.
- **Operational impact to the U.S. Government:** The additional amount of time or increase in processes required of the U.S. Government during the departure process as a result of deploying this alternative.
- **Implementation cost to airlines/cruise lines:** The cost (in dollars) to the airlines/cruise lines to develop, deliver, train for, and implement the solution.
- **Implementation cost to U.S. Government:** The cost (in dollars) to the U.S. Government to develop, deliver, train for, and implement the solution.
- **Network/connectivity:** This factor considers how much new or additional computer network/connectivity would be needed for a given alternative. This factor considers the connection to the DHS-supplied local and wide area data communications infrastructure to be located at an air or sea port and between a port and the IDENT system that securely transports a biometric query, including the traveler's biometric data, from a DHS scanning device at an airline/cruise line check-in counter to the DHS biometric matching system, IDENT. This includes the return path and infrastructure, which may not be the same as the incoming path, that provides a "yes" or "no" response back to the airline/cruise line so that the airline/cruise line may properly print or deny printing of a document that authorizes each individual traveler to board the carrier.
- **Privacy:** This factor considers the potential of the PII collected for this effort being used for non-governmental purposes. US-VISIT aims to protect the privacy of the covered individuals by limiting the collection of PII and securing the PII against unauthorized access, use, disclosure, or retention.
- **Information Technology (IT) security:** This factor considers how strong IT security could be for a given alternative. IT security aims to maintain the confidentiality, integrity, and availability of data and infrastructure. It is established by considering threats and vulnerabilities and developing mitigating factors proportional to the resulting risks and the value placed on the data or assets.

- **Impacts to European Passenger Name Record (PRN) Agreements:** The potential that the alternative could negatively impact existing data sharing agreements with the European Union.
- **Number of Collection Points:** The number of locations requiring deployment, with the assumption that a lower number was better. Alternatives involving all 450 airports would impact 274 airlines. Alternatives involving only the 82 airports with departing direct international flights would impact only 138 airlines.
- **Training Cost to Airlines/Government:** Costs associated with startup of new systems.

Assessment of Alternatives

The alternatives were assessed against the objectives relative to one another on their ability to satisfy the given criteria.

Interpretation of Ratings

For each criterion-alternative pair, a rating of 1 to 5 was assigned. A lower number means the alternative is less favorable in terms of satisfying that particular criteria than another alternative. While those with high scores were deemed to more favorably accomplish the goal of that particular criteria. The meanings of the ratings for each criterion are described in Table G-1.

Table G-1. Interpretation of Ratings for Assessment Criteria

Criterion	Meaning of Ratings
Confidence of departure	1 = low confidence
	3 = neutral
	5 = high confidence
Percentage of population captured	1 = low population captured (< 30%)
	3 = moderate proportion captured (30-70%)
	5 = 99%+ of population captured
Operational impact to the traveler	1 = significant increases time or processes
	3 = status quo or no additional time

	5 = decreases time or processes
Operational impact to the airlines/cruise lines	1 = significant increases time or processes
	3 = status quo or no additional time
	5 = decreases time or processes
Operational impact to the U.S. Government	1 = significant increases time or processes
	3 = status quo or no additional time
	5 = decreases time or processes
Implementation cost to airlines/cruise lines	1 = high cost
	3 = neutral cost
	5 = low cost
Implementation cost to U.S. Government	1 = high cost
	3 = neutral cost
	5 = low cost
Network/connectivity	1 = no infrastructure exists or the entire infrastructure would need to be constructed to implement this alternative
	3 = existing infrastructure is sufficient
	5 = no infrastructure is needed
IT security	1 = decreased confidence in security
	3 = security confidence is status quo
	5 = high or improved confidence in security
Privacy	1 = high likelihood of non-U.S. Government use of PII
	3 = neutral

5 = no likelihood of non-U.S. Government use of PII

Assessing the Alternatives

The assessment of the alternatives in their relative ability to satisfy each criterion is shown in Table G-2.

Table G-2. Alternatives Analysis Matrix

Analysis Criteria	A) Check-in Counter: carriers collect	B) Check-in Counter: Government collects	C) Security Checkpoint: Government collects	D) Departure Gate: carriers collect	E) Departure Gate: Government collects	F) Counter - Carrier collection with gate verification	G) Counter - Government collection with gate verification	H) Checkpoint - with gate verification
Confidence of Departure	1	1	3	5	5	4	4	4
Percent of population captured	4	4	4	5	5	4	4	4
Operational impact to the traveler	3	2	2	2	2	1	1	1
Operational impact to the airlines	1	2	4	2	3	1	1	2
Operational impact to the government	3	1	1	3	1	1	1	1
Implementation Cost to Airline	2	5	5	2	5	1	4	4
Implementation Cost to Government	5	1	1	5	2	3	1	1
Network/Connectivity needed	2	1	1	2	1	1	1	1
Privacy	1	4	4	2	4	2	5	5
IT security complexity	2	4	4	2	4	2	5	5
Impacts to European PNR Agreements	1	3	3	1	3	1	3	3
# of Collection Points	1	2	4	3	2	1	1	1

Analysis Criteria	A) Check-in Counter: carriers collect	B) Check-in Counter: Government collects	C) Security Checkpoint: Government collects	D) Departure Gate: carriers collect	E) Departure Gate: Government collects	F) Counter - Carrier collection with gate verification	G) Counter - Government collection with gate verification	H) Checkpoint - with gate verification
Training Cost to Airlines	1	4	4	1	4	1	3	3
Training Cost to Government	4	1	1	4	1	3	1	1
Totals	**31**	**35**	**41**	**39**	**42**	**26**	**35**	**36**

Alternative Analysis for the Notice of Proposed Rule Making (NPRM)

Based on the analysis conducted above, the following describes the analysis of the alternatives.

Alternatives Considered.

DHS identified several operational alternative solutions to meet the need of biometric data collection at air and sea locations. These alternatives only concentrated on the location of collection and the collecting entity. Specific technological solutions were not taken into account. The alternatives considered were:

(A) Carrier collection of biometrics at the departure check-in counter;

(B) DHS collection of biometrics at or near the departure check-in counter;

(C) DHS collection of biometrics at the security checkpoint;

(D) Carrier collection of biometrics at the international departure gate; or

(E) DHS collection of biometrics at or near the international departure gate.

Additionally, use of random verification at the international departure gate to increase confidence of departure prior to manifest comparison was considered for the check-in counter and security checkpoint locations, but these solutions were not further analyzed as they built upon existing alternatives and did not stand alone as discrete solutions. Other possible solutions were considered, such as biometric collection at off-port privately-owned locations (e.g. hotels, storefronts, travel agencies), but not included into the

alternatives analysis due to security and logistical concerns on number of locations and ability to standardize processes. For all alternatives, DHS assumed that the collecting entity would purchase, own, deploy, certify, and maintain all the biometric collection equipment and software.

DHS compared the possible alternatives using identified criteria to determine a relative ranking of the alternatives. The criteria included: confidence of departure; percentage of population captured; operational impacts to aliens, the carriers, and to DHS; conceptual financial burden to the carriers and DHS; need for additional network/connectivity; information technology (IT) security concerns; and privacy, and cost.

a. Confidence of Departure.

Confidence of departure measures the perceived ability to provide a level of confidence that the alien subject to US-VISIT processing who was submitting biometric information did, in fact, depart the United States. The departure gate alternatives provided a higher level of confidence of departure regardless of the collecting entity. If biometric collection occurs at the departure point, the ability for an alien to exit the port after submitting biometrics is very low and provides for a high confidence of departure. Collection of biometrics at the check-in counter provides the lowest confidence of departure as the ability of an alien to depart the port, after submitting biometric data but prior to actual departure from, the United States is high. The TSA security screening checkpoint was in between the other two locations considered. In addition, random verification of aliens processed at the check-in counter provided a high level of confidence of departure.

b. Percentage of Population Captured.

Each alternative was measured for its ability to capture the biometric information from all aliens. Where the alternative was located at a mandatory location for the alien, the percentage of population collected increases. Since all aliens are processed at the departure gate or the security checkpoint, the alternatives located at the departure gates were most favorable regardless of collecting entity. Since not every alien currently checks in at the check-in counter, these alternatives were slightly less favorable.

c. Operational Impacts to the Alien, Carrier, and DHS.

The alternatives were compared based on the expected additional time and/or additional process that the alien, carrier, or United States Government may experience for each implemented solution. The rankings for operational impacts varied not only with location, but with the collecting entity as well. Overall, the alternatives where existing processes

occur and an existing entity resides were more favorable than locations where no current process occurs or entity resides.

Most aliens currently interface with the carrier at the check-in counter. Therefore, operational impacts to the alien were most favorable for biometric collection by the carrier at the check-in counter. In most cases, the alien is already providing identification and other information at the check-in counter. A biometric collection can be taken in conjunction with these already existing processes at the counter without the alien experiencing additional processing time. The remaining alternatives were less favorable to the alien due to the possible addition of time for that collection. For example, although aliens already proceed through the security checkpoint and are processed by carriers at the departure gate, biometric collection at these locations would be an entirely separate process and could result in additional time. Likewise, DHS collection at the check-in counter or departure gate adds a process where one currently does not exist and at a location through which the alien does not currently proceed.

Currently, carriers process aliens at check-in counters and at the departure gate. However, adding biometric collection at these locations will add a process for the carrier. Therefore, the carrier collection alternatives rank lower than DHS collection. If DHS collects the biometric information, the carrier will experience a much less significant change in their current operations.

DHS has a presence at air and sea ports at the TSA security screening checkpoint, and, at international arrival airports, at the secure federal inspection service. However, adding biometric collection at the security screening checkpoint was determined as unfavorable as the processes at the security screening checkpoint do not deal with identity management, but the screening of persons and luggage. Biometric collection at the security screening checkpoint could not append an existing process but, rather, would add time as a new process altogether for aliens subject to US-VISIT. Furthermore, DHS biometric collection at the check-in counter or departure gate would also add a process (and time) where none currently exists. All DHS alternatives were deemed unfavorable to DHS due to the additional DHS processes while carrier alternatives were deemed favorable.

d. Conceptual Financial Burden to the Carriers and DHS.

The alternatives analysis assumed that the collecting entity would be responsible for the purchase, deployment, and maintenance of all biometric collection equipment and software needed. Therefore, each alternative was compared based on the conceptual financial burden for the collecting entity to develop, deliver, and implement the solution. Accordingly, financial burden on the carriers was most favorable when DHS collected the biometrics and financial burden on DHS was most favorable when the carriers collected biometrics.

e. Need for Additional Network or Connectivity.

Each alternative was analyzed for its potential need for the DHS-supplied local and wide area data communications infrastructure between the port and the IDENT system that is used to securely transport biometric information. The carrier alternatives were moderately more favorable than the other alternatives since those locations have existing network and connectivity infrastructure, although biometric collection would have to be integrated into that process.

f. IT security complexity.

The alternatives were compared for the possibility that: (a) there would be unauthorized use or misuse of the equipment, data, or network; (b) equipment may be open to intentional or accidental compromise; (c) United States Government standards may not be implemented as specified; and/or (d) there would be intentional compromise of equipment, data, software, or communications infrastructure that would endanger the integrity of the biometric data collected. The alternatives where carriers collected the biometric information were less favorable than the alternatives where DHS collected the biometric information, regardless of location. Information in the sole custody of one entity has less possibility of being breached than information passed from one entity's network to another's. The carrier collection alternatives require biometric information to pass between the carrier's network and DHS's network. Comparatively, DHS is in sole custody of the biometric information at all times for the DHS collection alternatives.

g. Privacy.

The Privacy criteria looked at the likelihood of satisfying US-VISIT responsibility for compliance with the Privacy Act, the Homeland Security Act, the E-Government Act and applicable DHS and US-VISIT policies. Successful compliance requires limiting the collection of PII, and securing the PII against unauthorized access, use, disclosure, or retention, such as the use of the PII collected on behalf of the government for non-government purposes. Like the IT security complexity analysis, the carrier collection alternatives were less favorable than the DHS collection alternatives, regardless of location. When DHS does not maintain custody of PII throughout its lifecycle, there is a lower degree of confidence that its privacy principles will be followed than when DHS does maintain full custody over the PII.

h. Cost.[119]

In examining each of the five alternatives listed, DHS developed a cost estimate for each. These cost estimates are more fully explained in relation to the Executive Order 12866 and Regulatory Flexibility Analysis, infra. Alternatives C and E are expected to add additional significant labor costs relative to the other three alternatives, and thus would have these additional costs recurring beyond the first year:

Alternative A: Carrier biometric collection at check-in Counters:	$949,000,000
Alternative B: DHS collection at check-in counters:	$357,000,000
Alternative C: DHS collection at TSA checkpoint:	$304,000,000
Alternative D: Carrier collection at aircraft gate:	$449,000,000
Alternative E: Government collection at aircraft gate:	$360,000,000

After comparing the alternatives based on the identified criteria, DHS further screened the alternatives against five constraints. These constraints were identified as important based on DHS goals and the evaluations of the US-VISIT biometric exit program pilot.

The biometric exit solution must align with the Pre-Departure APIS Final Rule requirements. DHS is working to align the many programs and requirements of its components. DHS's proposed APIS rule would enable it to collect passenger and crew information for flights and cruises bound for the U.S. prior to the carriers' departure from foreign ports. By aligning biometric collection requirements with the departure APIS data collection, DHS can streamline its requirements, thus promoting efficiency.

Biometric data collection for aliens subject to US-VISIT must be associated with the issuance of a boarding pass. The issuance of a boarding pass only after an alien has provided the required biometric data is a means of ensuring alien compliance. As identified in the US-VISIT biometric exit pilot evaluations, by integrating biometric requirements into an existing process, compliance will increase. Placement of collection points outside of the existing departure process was a contributing factor towards low compliance during the biometric exit pilots, as it was easy for departing aliens to miss or bypass the collection point.

[119] These were preliminary cost estimates generated during the development of the Analysis of Alternatives and have been superseded, as scope and alternative refinement occurred, by later estimates in the body of the regulatory evaluation

Alien submission of biometric data will not generate a law enforcement action at the time of departure. Biometric collection at exit will be used to validate the data against stored entry data; it will not result in a "no fly" decision. APIS will continue to be used to address "no fly" issues. However, biometric information may be used subsequent to exit for enforcement of immigration laws.

The solution must be implemented in 2008 at United States commercial air and sea ports in order to meet legislative deadlines. DHS is committed to meeting congressional mandates and preserving the Secretary's authority granted by Congress in the Secure Transportation and Counterterrorism Partnership Act of 2007.

Of the alternatives, the only one to satisfy the constraints was carrier collection of biometrics for aliens at the departure check-in counter. The first and second constraints are critical to understanding the decision to move forward with biometric collection placement at the carrier check-in counter. The constraint that the exit solution be aligned with APIS collection provides a number of advantages: it allows the finger scan to more easily be associated with the relevant biographic (e.g.,. name) information; it provides the carriers with a single point of information collection during the departure process; and carriers can use the same data infrastructure for transmitting biometric exit data as they do for departure APIS biographic data. In addition, as recommended from the US-VISIT biometric exit pilot evaluations, integrating biometrics into an existing process, like boarding pass issuance, improves compliance and provides consistency and integration that will ensure that each alien will have a record collected prior to departure. The non-selected alternatives failed to account for this notion of an integrated system in order to facilitate travel.

In the case of travel by air, the majority of aliens proceed to the check-in counters to provide identification, have travel documents checked, check baggage, and/or have a boarding pass issued prior to departure. The check-in counter is the most appropriate location to collect the biometric data as the issuance of a boarding pass is predicated on the collection of biometric data first and a traveler can not pass through the TSA screening checkpoint without a boarding pass. Thus, DHS selected the departure check-in counters to be the preferred alternative for air exit requirements.

Likewise, the check-in counters are the most appropriate location to collect the biometric data in the case of a cruise ship traveler. All cruise ship passengers have their reservations validated, travel documents checked, and collected by some carriers, APIS data collected and transmitted, and on-board identification issued. Thus, DHS selected the departure check-in counters to be the preferred alternative for sea exit requirements.

Initial Down Selection to a Preferred Alternative

Of the eight alternatives considered in this assessment, only two appear to satisfy the Of the eight alternatives considered in this assessment, only two appear to satisfy the

biometric collection constraints, as well as satisfy the remaining constraints. These two alternatives are the following:

- Alternative A: At the Check-in Counter – Airline/Cruise line collection
- Alternative F: At Check-in Counter – Airline collection with verification at gate

A more seamless departure process would be achieved if the in-scope traveler were to provide the biometric data at the check-in counter, where the boarding pass is issued, and to the same persons who issue boarding passes.

A deployment strategy for the Air/Sea Biometric Exit solution could consider Alternative A in the initial deployment, with "verification at the departure gate" as a capability that could be included later.

However, if any aspect of the constraints were modified, such as a different interpretation of the biometric collection constraint, then the assessment results described in Section 6 would suggest alternatives more favorable to the new set of constraints.

Further Evaluation and Selection of New Preferred Alternative

Upon further reflection of the technical details of the APIS pre-departure system and TSA's Secure Flight system, US-VISIT has further analyzed the modified its considered alternatives.

APIS pre-departure and Secure Flight are biographic based programs designed to vet travelers against security criteria, with the possibility of subsequent denial of boarding privileges or law enforcement action. However, only direct departing international flights have the ability to transmit APIS manifest information. Thus, for DHS to integrate Air/Sea Biometric Exit into existing APIS program parameters, the scope of exit must be scaled back to impact only those carriers and ports with direct departing flights. This would reduce the number of air carriers from approximately 247 to 138, and airports from 450 to 122.

By collecting biometrics at the carrier check-in counter, collection can be tied to the boarding pass issuance process. However, approximately 23 percent of all international departing aliens leave through connecting flights. This presents problems with biometric collection for that subpopulation, because the domestic airports (and possibly carriers) where they originally embark would not be equipped with the necessary biometric scanners and APIS transmission capabilities. The efficiency of running this subpopulation through the carrier check-in counters at the final U.S. airport of departure will vary from port to port. To address this issue, carriers will be allowed to choose the method that best suits their operations at the final port of departure to collect biometrics from aliens using connecting flights, so long as the biometrics are collected before boarding the final departure flight. While this does remove biometrics from the boarding passes for that subpopulation, it will still be integrated within the boarding process.

These modifications will allow the Air/Sea Biometric Exit capability to integrate with APIS pre-departure and Secure Flight.

This newly considered alternative became the preferred alternative based on the need to integrate a biometric exit solution with APIS pre-departure and Secure Flight: Alternative (I) Location at the carrier's discretion, carriers collect, shown in Table G-3. It is assumed that since APIS transmission currently occurs either at the check-in counter or the departure gate, at a high-level analysis, Alternative (I) is merely a hybrid of Alternatives A, D, and F. Therefore, the average scores for Alternatives A, D, and F were taken for Alternative I.

Table G-3. Alternatives Matrix, Location at the Carrier's Discretion, Carriers Collect

Analysis Criteria	I) Location at the carrier's discretion: carriers collect	A) Check-in Counter: carriers collect	B) Check-in Counter: Government collects	C) Security Checkpoint: Government collects	D) Departure Gate: carriers collect	E) Departure Gate: Government collects	F) Counter - Carrier collection with gate verification	G) Counter - Government collection with gate verification	H) Checkpoint - with gate verification
Confidence of Departure	3	1	1	3	5	5	4	4	4
Percent of population captured	4	4	4	4	5	5	4	4	4
Operational impact to the traveler	2	3	2	2	2	2	1	1	1
Operational impact to the airlines	1	1	2	4	2	3	1	1	2
Operational impact to the government	2	3	1	1	3	1	1	1	1
Implementation Cost to Airline	2	2	5	5	2	5	1	4	4
Implementation Cost to Government	4	5	1	1	5	2	3	1	1
Network/Connectivity needed	2	2	1	1	2	1	1	1	1
Privacy	2	1	4	4	2	4	2	5	5
IT security complexity	2	2	4	4	2	4	2	5	5
Impacts to European PNR Agreements	1	1	3	3	1	3	1	3	3
# of Collection Points	2	1	2	4	3	2	1	1	1
Training Cost to Airlines	1	1	4	4	1	4	1	3	3
Training Cost to Government	4	4	1	1	4	1	3	1	1

Totals	**32**	**31**	**35**	**41**	**39**	**42**	**26**	**35**	**36**

US-VISIT further chose to examine an associated alternative: Alternative (J) Location at the carrier's discretion, government collects, shown in Table G-4. Since the exit alternatives deal with the collection location and collecting entity, adding Alternative J, allows US-VISIT to see a mirrored alternative to Alternative I. Again, at the high-level, Alternative J is merely a hybrid of Alternatives B, E, and G.

Table G-4. Alternatives Matrix, Location at the Carrier's Discretion, Government Collects

Analysis Criteria	I) Location at the carrier's discretion: carriers collect	A) Check-in Counter: carriers collect	B) Check-in Counter: Government collects	C) Security Checkpoint: Government collects	D) Departure Gate: carriers collect	E) Departure Gate: Government collects	F) Counter - Carrier collection with gate verification	G) Counter - Government collection with gate verification	H) Checkpoint - with gate verification	J) Location at the carrier's discretion: government collects
Confidence of Departure	3	1	1	3	5	5	4	4	4	3
Percent of population captured	4	4	4	4	5	5	4	4	4	4
Operational impact to the traveler	2	3	2	2	2	2	1	1	1	2
Operational impact to the airlines	1	1	2	4	2	3	1	1	2	2
Operational impact to the government	2	3	1	1	3	1	1	1	1	1
Implementation Cost to Airline	2	2	5	5	2	5	1	4	4	5
Implementation Cost to Government	4	5	1	1	5	2	3	1	1	1
Network/Connectivity needed	2	2	1	1	2	1	1	1	1	1
Privacy	2	1	4	4	2	4	2	5	5	4
IT security complexity	2	2	4	4	2	4	2	5	5	4
Impacts to European PNR Agreements	1	1	3	3	1	3	1	3	3	3

# of Collection Points	2	1	2	4	3	2	1	1	1	2
Training Cost to Airlines	1	1	4	4	1	4	1	3	3	4
Training Cost to Government	4	4	1	1	4	1	3	1	1	1
Totals	**32**	**31**	**35**	**41**	**39**	**42**	**26**	**35**	**36**	**37**

Final Alternatives Down-Selection for the Notice of Proposed Rulemaking (NPRM)

In an effort to present a focused assessment of the most viable alternatives in the air/sea biometric exit NPRM, US-VISIT down-selected the seven high-level alternatives to three

- Alternative I: Location at the carrier's discretion, carrier collection (Preferred Alternative)
- Alternative C: Security checkpoint, government collection
- Alternative J: Location at the carrier's discretion, government collection

These three alternatives represent an assessment of all seven alternatives. Alternative C is a discrete alternative. It is assumed that the carrier's discretion locations will be either the check-in counter and/or the departure gate. Therefore, Alternatives I and J encompass Alternatives A, D, and F and Alternatives B, E, and G, respectively. These three alternatives best represent viable air/sea biometric exit solutions and allow US-VISIT to present a more focused and detailed assessment within the NPRM.

Revised Alternatives for the NPRM

US-VISIT recognizes that its original, preferred alternative was Alternative A: Check-in counter, carriers collect. This alternative was included in early stakeholder discussion and was discussed at length publicly. US-VISIT decided to reevaluate the initial down selection due to the technical details of APIS and Secure Flight in addition to the fact that Alternative A proved to be an extremely expensive alternative to implement. Thusly, US-VISIT declined to carry Alternative A forward to the NPRM. Upon further reflection, US-VISIT has decided it will add Alternative A for further consideration in the NPRM. Alternative A was the initial preferred alternative and was originally viewed as the most viable of all alternatives due to the current traveler process and current airport/sea port infrastructure. Therefore, US-VISIT is adding Alternative A into its NPRM for further comment in the rulemaking process.

In addition, US-VISIT recognizes that it piloted an approach to biometric collection at exit based on a kiosk solution. This alternative has been publicized and tested and is considered a valid alternative to the proposed rule. Therefore, US-VISIT is adding a Kiosk alternative into its NPRM for further comment in the rulemaking process.