

---

# Regulatory Assessment

for the proposed rulemaking

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

RIN 1651-AA62

Office of Regulations and Rulings  
Bureau of Customs and Border Protection  
Department of Homeland Security

April 2006

---

## Acronyms

APIS	Advance Passenger Information System
AQQ	APIS Quick Query
CBP	US Customs and Border Protection
EO	Executive Order
FBI	Federal Bureau of Investigation
FR	Federal Register
IATA	International Air Transport Association
ICE	US Immigration and Customs Enforcement
OMB	Office of Management and Budget
PV	Present Value
TSA	Transportation Security Administration

# Contents

<b>Executive Summary</b> .....	<b>i</b>
<b>1. Introduction</b> .....	<b>1</b>
Purpose and Need .....	2
Comments to This Document .....	3
Organization of This Document .....	3
<b>2. Baseline and Cost Analysis</b> .....	<b>4</b>
Affected Population .....	4
The Pre-Boarding Requirement, AQQ, and Current Operations .....	5
Providing and Transmitting APIS Data .....	7
The 60-Minute Option—High Cost Scenario Assumptions and Costs .....	8
Large Carriers .....	10
Small Carriers .....	11
Total Costs for the 60-Minute Option .....	12
The AQQ Option—Low Cost Scenario Assumptions and Costs .....	12
Large Carriers .....	12
Small Carriers .....	14
Total Costs for the AQQ Option .....	15
Government Costs .....	16
Comments on the Cost Analysis .....	16
<b>3. Benefits Analysis</b> .....	<b>17</b>
Security Incidents and the 2005 APIS Rule .....	18
Quantified Benefits of the Proposed Rule .....	18
Interview Costs Avoided .....	19
Deportation Costs Avoided .....	20
Delay Costs Avoided .....	20
Diversion Costs Avoided .....	21
Total Quantified Benefits of the Proposed Rule .....	21
Comments on the Benefits Analysis .....	23

<b>4. Comparison of Costs and Benefits of Regulatory Alternatives.....</b>	<b>25</b>
The Pre-Departure APIS Rule .....	26
The Pre-Boarding APIS Rule at Elevated Alert .....	27
The Pre-Boarding APIS Rule (Chosen Alternative) .....	28
The 120-Minute APIS Rule .....	29
Comparison of Regulatory Alternatives .....	29
<b>5. Impacts to Small Entities .....</b>	<b>31</b>
Reason for Agency Action .....	31
Objectives of and Legal Basis for the Rule .....	32
Number and Types of Small Entities to which the Rule Will Apply .....	32
Reporting and Recordkeeping .....	32
Other Federal Rules .....	32
Regulatory Alternatives.....	32

**Appendices**

- A    Costs of the Pre-Boarding APIS Rule**
- B    Benefits of the Pre-Boarding APIS Rule**
- C    Costs of Regulatory Alternatives**
- D    Summary of Key Assumptions Used in the Analysis**
- E    Sensitivity Analysis of Costs with an 8-Hour Delay**

## Tables

Costs of the Pre-Boarding APIS Rule.....	ii
Table 1. Predicted Passenger Counts for Air Carriers over the 10-Year Period of Analysis .....	5
Table 2. PV Costs for Large Carriers and Passengers under the 60-Minute Option ...	10
Table 3. PV Costs for Small Carriers and Passengers under the 60-Minute Option ...	11
Table 4. Summary of Total Costs of the 60-Minute Option.....	12
Table 5. PV Costs for Large Carriers and Passengers under the AQQ Option.....	14
Table 6. Summary of Total Costs of the AQQ Option .....	15
Table 7. Comparison of Costs for the 60-Minute and AQQ Options .....	16
Table 8. Predicted Watchlist Hits for Air Carriers over the 10-Year Period of Analysis .....	19
Table 9. PV Benefits of the Pre-Boarding APIS Rule.....	22
Table 10. Comparison of Costs and Benefits of the Pre-Boarding APIS Rule and Regulatory Alternatives .....	30



## Executive Summary

The primary purpose of this proposed rule is to prevent passengers that have been identified as high-risk on government watchlists from boarding aircraft bound for or departing from the United States and to prevent passengers and crew so identified from departing on vessels leaving the United States. On April 7, 2005, the Bureau of Customs and Border Protection (CBP) published requirements for the transmission of passenger and crew manifests for aircraft and vessels arriving from foreign destinations or departing to foreign destinations (70 FR 17820). Implementation of the "2005 APIS Rule" (named for the Advance Passenger Information System, the CBP electronic system used to obtain electronic manifest information from carriers) required that information on passengers and crew to be transmitted: no later than 15 minutes after departure for arriving aircraft passengers; no later than 15 minutes prior to departure for departing aircraft passengers; at least 60 minutes prior to departure for arriving and departing aircraft crew; at least 24 hours and as much as 96 hours prior to a vessel's entry at a US port for arriving passengers and crew, depending on the length of the voyage; and 15 minutes prior to departure for departing vessel passengers and crew.

The recently enacted Intelligence Reform and Terrorism Prevention Act of 2004 (Public Law 108-458) requires that a notice of proposed rulemaking be issued to allow for pre-departure vetting for aircraft passengers and cruise vessel passengers and crew. Under this proposed rule, CBP intends to modify the requirements for arriving and departing aircraft passengers and passengers and crew on board departing vessels such that that information is transmitted at least *60 minutes prior to departure*. Alternatively, air carriers may adopt, in conjunction with CBP, *APIS Quick Query (AQQ)*—a system that allows the carriers to vet passengers individually during the check-in process. These changes will enhance the ability of CBP and other law enforcement agencies to plan and coordinate a more effective response to intercept high-risk individuals before boarding aircraft and before vessels depart.

We estimate that the proposed rule (referred to as the "Pre-Boarding APIS Rule" in this document) will affect only air carriers, and primarily large air carriers (those that employ over 1,500 employees). We expect certain connecting passengers will be adversely affected: those coming from a foreign airport, changing planes in the US, then continuing on to a foreign destination and those coming from one foreign airport, changing planes at another foreign airport, then continuing on to the US. We do not expect originating passengers to be adversely affected, with the possible exception of some Canadian flights. Costs are thus driven by the percentage of air travelers that are expected to miss connecting flights, require rerouting, and experience delay as a result. Additionally, if carriers adopt AQQ, they will incur implementation and transaction costs of AQQ.

We estimate a range of costs in this analysis. For the high end of the range, we assume that passengers will provide APIS data upon check-in for their flights and that all carriers will transmit that data, as an entire passenger and crew manifest, to CBP at least 60 minutes prior to departure of the aircraft. We estimate that this will result in 2 percent of passengers on large carriers and 0.25 percent of passengers on small carriers missing connecting flights and needing to be rerouted, with an average delay

of 4 hours. We also estimate that 15 percent of originating passengers will need to arrive 15 minutes earlier than usual in order to make their flights. For the low end of the range, we assume that all large air carriers will implement AQQ to transmit information on individual passengers as each checks in. We estimate that this will drive down the percentage of passengers requiring rerouting on large carriers, attributable to this rulemaking, to 0.5 percent. The percentage on small carriers remains 0.25 percent because we assume that small carriers will not implement AQQ; rather, they will continue to submit manifests at least 60 minutes prior to departure through eAPIS, CBP's web-based application for small carriers. Thus, costs for small air carriers are the same regardless of the regulatory option considered.

The endpoints of our range are presented below. As shown, the present value (PV) costs of the proposed rule are estimated to range from \$612 million to \$1.9 billion over the next 10 years (2006-2015, 2005 dollars, 7 percent discount rate).

	High Estimate (60-Minute Option)			Low Estimate (APIS Quick Query Option)		
	Large Carriers	Small Carriers	Total	Large Carriers	Small Carriers	Total
First-Year Costs (2006)	\$245	\$5	\$250	\$184	\$5	\$189
Average Recurring Costs	\$268	\$6	\$274	\$66	\$6	\$72
10-Year PV Costs (7%)	\$1,865	\$39	\$1,904	\$573	\$39	\$612
10-Year PV Costs (3%)	\$2,279	\$48	\$2,327	\$677	\$48	\$726

We estimate four categories of benefits, or costs that could be avoided, under the Pre-Boarding APIS Rule: costs for conducting interviews with identified high-risk individuals, costs for deporting a percentage of these individuals, costs of delaying a high-risk aircraft at an airport (either at the origination or destination airport), and costs of rerouting aircraft if high-risk individuals are identified after takeoff. Monetizing the benefits of avoiding an actual terrorist incident has proven difficult because the damages caused by terrorism are a function of where the attack takes place, the nature of the attack, the number of people affected, the casualty rates, the psychological impacts of the attack, and, perhaps most importantly, the "ripple effects" as damages permeate throughout our society and economy far beyond the initial target. One limited scenario is presented below.

The average recurring benefits of the proposed rule are an estimated \$15 million per year. This is in addition to the non-quantified security benefits, which are the primary

impetus for this rule. Over the 10-year period of analysis, PV benefits are an estimated \$103 million at a 7 percent discount rate (\$125 million at a 3 percent discount rate).

Given the quantified costs and benefits of the rule, we can determine how much non-quantified security benefits would have to be for this rule to be cost-beneficial. The 10-year costs range from \$612 million to \$1.9 billion, and the benefits are an estimated \$103 million (all at the 7 percent discount rate). Thus, the non-quantified security benefits would have to be \$509 million to \$1.8 billion over the 10-year period in order for this proposed rule to be cost-beneficial. In one hypothetical security scenario involving only one aircraft and the people aboard, estimated costs of an incident could exceed \$790 million. This rule may not prevent such an incident, but if it did, the value of preventing such a limited incident would outweigh the costs at the low end of the range.

We also consider the economic impacts of three regulatory alternatives: a pre-boarding requirement only during periods of heightened alert (less stringent), a pre-departure requirement (less stringent), and a requirement for data transmission 120 minutes prior to departure (more stringent). While the Pre-Boarding APIS Rule is not the least-cost alternative, it is the regulatory option that CBP believes provides the minimum and necessary time to prevent a high-risk individual from boarding an aircraft while providing the greatest flexibility and imposing the least burden on carriers.

In our analysis of impacts to small entities, we find that the rule will not have a significant economic impact on a substantial number of small entities.

The key assumptions that drive the cost and benefit analyses are found throughout this document and are summarized in Appendix D. 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.



## 1. Introduction

On April 7, 2005, the Bureau of Customs and Border Protection (CBP) published requirements for the transmission of passenger and crew manifests for aircraft and vessels arriving from foreign destinations or departing to foreign destinations (70 FR 17820). Implementation of the "2005 APIS Rule" (named for the Advance Passenger Information System, the CBP electronic system used to obtain electronic manifest information from carriers) required that information on passengers and crew to be transmitted: no later than 15 minutes after departure for arriving aircraft passengers; no later than 15 minutes prior to departure for departing aircraft passengers; at least 60 minutes prior to departure for arriving and departing aircraft crew; at least 24 hours and as much as 96 hours prior to a vessel's entry at a US port for arriving passengers and crew, depending on the length of the voyage; and 15 minutes prior to departure for departing vessel passengers and crew.<sup>1, 2</sup>

Under this proposed rule, CBP intends to modify these requirements for arriving and departing aircraft passengers and passengers and crew on board departing vessels so that information is transmitted at least *60 minutes prior to departure*. Under this requirement, passenger and crew manifests are transmitted to CBP in their entirety at least 60 minutes prior to departure. Alternatively, air carriers may develop *APIS Quick Query* in conjunction with CBP. AQQ allows carriers to vet individual passengers as they check in for their flights. Rather than transmitting an entire manifest at once, carriers using AQQ will transmit APIS data to CBP as each individual checks in for the flight. These changes will enhance the ability of CBP and other law enforcement agencies to plan and coordinate a more effective response to intercept high-risk individuals before boarding aircraft. This Regulatory Assessment examines the costs and benefits of these proposed requirements, three regulatory alternatives, and the economic impacts to small businesses that will be affected.

This proposed rulemaking is a significant regulatory action under Executive Order (EO) 12866 because it may impose costs of at least \$100 million in any one year. CBP is thus required to conduct an in-depth assessment that considers the costs and benefits of the proposed regulatory action as well as a host of alternatives. The Office of Management and Budget (OMB) has reviewed this analysis under this EO.

---

<sup>1</sup> Information for aircraft to be submitted includes: full name, date of birth, gender, citizenship, country of residence, status on board the aircraft, travel document type, passport information if passport is required (number, country of issuance, expiration date), alien registration number where applicable, address while in the United States (unless a US citizen, lawful permanent resident, or person in transit to a location outside the United States), Passenger Name Record locator if available, foreign code of foreign port/place where transportation to the United States began, code of port/place of first arrival, code of final foreign port/place of destination for in-transit passengers, airline carrier code, flight number, and date of aircraft arrival. Information for vessels is comparable, with requirements appropriate to vessels: vessel name, vessel country of registry/flag, vessel number, and voyage number (for multiple arrivals on the same calendar day).

<sup>2</sup> "Departure" for aircraft means the point at which the wheels are up on the aircraft and the aircraft is en route directly to its destination. This rule proposes to change this definition to mean "push-back" from the gate. "Departure" for vessels is the point at which the vessel departs the berth.

## Purpose and Need

These proposed changes would further enhance the government's capability to counter terrorist threats to the United States, the carrier industry, and the international traveling public by increasing that capability to a level necessary to meet more fully the protective purpose of the statutory requirements of section 115 of the Aviation Transportation Security Act, the Enhanced Border Security and Visa Entry Reform Act of 2002, and the Intelligence Reform and Terrorism Prevention Act of 2004. Further background on the purpose and need may be found in the preamble to this proposed rule.

The key outcome sought in proposing this rule is to place CBP in a better position to fully vet traveler information with sufficient time to effectively secure an aircraft or vessel, to effectively identify high-risk travelers and contact domestic and foreign carriers and government personnel to prevent such travelers from boarding aircraft bound for or departing from the US, and to effectively identify high-risk travelers and make appropriate contacts to prevent the departure of vessels from the United States with a high-risk traveler onboard.

CBP believes that for large air carriers the AQQ process provides the most security while imposing the least disruption to the traveling public—high-risk passengers are prevented from boarding an aircraft, baggage associated with those passengers are not laden on the aircraft, and other passengers are not delayed or inconvenienced. CBP recognizes, however, that not all international air carriers will find AQQ feasible at this time. For these carriers, CBP is establishing a "60-minute" regulatory option, where carriers submit their manifests, in their entirety, to CBP at least 60 minutes prior to departure. In effect, if carriers choose to exercise this option, they will submit their manifests just as they do now under the 2005 APIS Rule; they will now just submit the manifests earlier. Sixty minutes was determined to provide an adequate amount of time to prepare a law enforcement response prior to the beginning of the boarding process while minimizing the cost impacts to industry. Some passengers would be delayed from making their flights under the 60-minute option.

This analysis will also consider the potential impacts of a pre-boarding requirement only during periods of heightened alert, a pre-departure requirement, and a requirement for data transmission 120 minutes prior to departure. While the Pre-Boarding APIS Rule is not the least-cost alternative, it is the regulatory option that CBP believes provides the minimum and necessary time to prevent a high-risk individual from boarding an aircraft while providing the greatest amount of flexibility and imposing the least amount of burden on carriers.

Although this Regulatory Assessment 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 assessment, is binding.

## **Comments to This Document**

There is a dearth of data concerning many of the variables used in this analysis. We, therefore, had to make assumptions and calculate estimates in the face of uncertainty and variance in industry operations. Our assumptions are described in detail in the following chapters, and a summary of the key assumptions can be found in Appendix D. 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.

## **Organization of This Document**

Chapter 2 will present an industry profile and regulatory baseline as well as the cost analysis of the proposed rule. Chapter 3 will present the benefits analysis. Chapter 4 will compare the costs and benefits of the proposed rule plus three regulatory alternatives, and Chapter 5 will present an analysis of the impacts to small entities as required under the Regulatory Flexibility Act.

## 2. Baseline and Cost Analysis

This chapter details the regulatory baseline and current state of the affected industry, the assumptions used to estimate costs, and the low and high ends of the range of costs we expect industry and the traveling public to incur as a result of the proposed rulemaking, based on two scenarios. The period of analysis is 2005 to 2015, and we assume that costs will be incurred and benefits will be accrued beginning in 2006. Costs are discounted at 7 and 3 percent to their present value (PV) in 2005 dollars. The costs for other regulatory alternatives considered are presented in Chapter 4.

The baseline for the proposed rulemaking is the 2005 APIS Rule published April 7, 2005 (70 FR 17820). The 2005 APIS Rule affected aircraft and vessels arriving from or departing to foreign destinations. This proposed rulemaking covers the same population.

### Affected Population

According to CBP databases, there are an estimated 1,280 foreign and domestic air carriers that will be affected by the proposed rule. Of these, 92 are large air carriers<sup>3</sup> (11 US carriers and 81 foreign) and 1,188 are small air carriers (773 US carriers and 415 foreign). According to US Coast Guard and CBP databases, there are 16 cruise-ship companies that own approximately 150 vessels. There are also 12,835 foreign and domestic cargo vessel carriers. An estimated 585 are US-flag vessels certified to operate internationally, while approximately 12,250 are foreign-flag vessels that make ports of call in the United States.

We believe that vessel carriers will not have to make major modifications to their operations because the proposed rulemaking is intended to prevent vessels with identified high-risk individuals from *departing*, not *boarding*. If all individuals aboard vessels had to be vetted prior to boarding, this could require substantial adjustments to cargo operations and boarding procedures, since boarding for vessels begins 3 to 6 hours prior to departure (unlike aircraft where boarding begins 30 to 45 minutes prior to departure). Also, the threat posed by a high-risk passenger or crewmember once onboard a vessel, although serious, is not the same as that posed by a high-risk passenger onboard an aircraft; a hijacked vessel's movements over the water and its range of available targets could be more readily contained. In short, we do not believe that vessel owners and operators will be affected by the rule and will not incur costs as a result of the provisions of this proposed rulemaking; thus, air carriers and their passengers are the affected population considered in this analysis.

Table 1 presents the number of passengers carried by the affected entities over the period 2005–2015. These estimates are CBP projections of international passengers (those coming from or departing to a foreign airport) based on historic passenger loads. CBP estimates that passenger loads will increase 2 percent annually based on historical trends. CBP also estimates that 95 percent of these passengers travel on large carriers. Of these 95 percent, 47 percent travel on US carriers and 53 percent

---

<sup>3</sup> Large carriers are defined as those that employ over 1,500 employees, per the Small Business Administration.

travel on foreign carriers. Of the 5 percent of passengers traveling on small carriers, 65 percent travel on US carriers and 35 percent travel on foreign carriers.

**Table 1.**  
**Predicted Passenger Counts for Air Carriers over the 10-Year Period of Analysis**

	Large US Carriers (11)	Large Foreign Carriers (81)	Small US Carriers (773)	Small Foreign Carriers (415)	Total Passengers
2005	32,726,014	36,903,803	2,382,073	1,282,655	73,294,544
2006	33,380,534	37,641,879	2,429,714	1,308,308	74,760,435
2007	34,048,145	38,394,716	2,478,308	1,334,474	76,255,643
2008	34,729,108	39,162,611	2,527,875	1,361,163	77,780,756
2009	35,423,690	39,945,863	2,578,432	1,388,387	79,336,371
2010	36,132,164	40,744,780	2,630,001	1,416,154	80,923,099
2011	36,854,807	41,559,676	2,682,601	1,444,477	82,541,561
2012	37,591,903	42,390,869	2,736,253	1,473,367	84,192,392
2013	38,343,741	43,238,687	2,790,978	1,502,834	85,876,240
2014	39,110,616	44,103,461	2,846,797	1,532,891	87,593,765
2015	39,892,828	44,985,530	2,903,733	1,563,549	89,345,640

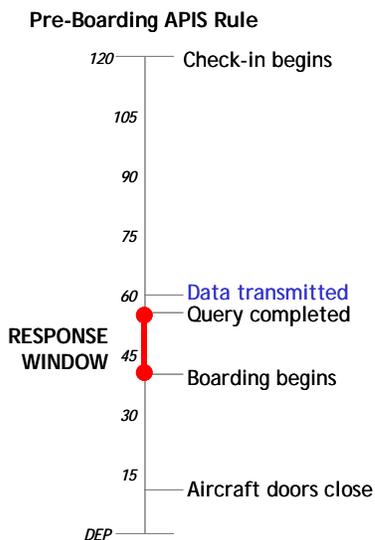
It is important to remember that US carriers carry non-US citizens and foreign carriers carry US citizens. We do not currently have the data to determine how many of each type of international passenger travels on domestic and foreign carriers, respectively. In this analysis, we consider the impacts to both domestic and foreign carriers because US citizens on both types of carriers could be affected by this rule. If we considered the impacts only to passengers on US carriers, we would be ignoring the US citizens that travel using foreign carriers, which violates the spirit of the type of analysis required under EO 12866.

### **The Pre-Boarding Requirement, AQQ, and Current Operations**

Under the 2005 APIS Rule, carriers are required to submit passenger manifests no later than 15 minutes after departure for flights en route to the US and no later than 15 minutes prior to departure for flights departing the US. Prior to the 2005 APIS Rule, carriers housed and administered the various watchlists used to identify high-risk individuals; that information is now housed at CBP. If an individual is identified, the carrier must coordinate a response with CBP to either divert the aircraft to another airport or meet the aircraft at the scheduled airport with a response team. CBP is unable, given the current time of data transmission, to intercept high-risk individuals prior to boarding an aircraft. For flights to the United States, individuals and their baggage are aboard the aircraft and have taken off by the time CBP is able to review the data. For flights departing the United States CBP cannot complete the vetting process before departure and a high-risk individual may board an aircraft.

CBP has determined that changing the transmission requirement either using APIS Quick Query (AQQ, where an individual’s data are submitted and vetted during check-in) or 60 minutes prior to departure<sup>4</sup> (where an entire manifest is submitted and vetted prior to boarding) would allow CBP and other law enforcement officials the opportunity and time necessary to intercept high-risk individuals before the boarding process begins. The AQQ option will prevent the issuance of a boarding pass and access to some secure areas. The 60-minute option will likely allow time for removal of the passenger prior to boarding.

From a security perspective, AQQ would be CBP’s preferred method for receiving a traveler’s information. Passengers would provide their APIS information during check-in, as they do now. The data would be transmitted to CBP and a response to allow boarding would be sent in a matter of seconds. The remainder of the check-in process would proceed during APIS transmission and vetting, and the passenger would not likely be aware of AQQ occurring. If CBP issued a “no board” notification for a passenger, that passenger would be denied a boarding pass, and his bags would not be put on the aircraft. The passenger would thus not go through security checkpoints or be on airport concourses. CBP and law enforcement do not need to be concerned about a “response window” between when the query is complete and boarding begins because the entire process takes place outside the “sterile area” of the airport (i.e., outside the security checkpoints), and a high-risk individual does not have access to the aircraft through the boarding process.



For carriers not able to implement AQQ, CBP is proposing an alternative regulatory option that would require carriers to transmit the entire passenger manifest at least 60 minutes prior to departure of the flight. Under this option, CBP requires time to prepare and coordinate a response to a high-risk passenger that has checked in, checked his bags, has likely gone through security checkpoints, and may now be on the airport concourse preparing to board. CBP has determined that 60 minutes is the minimum time possible to intercept a high-risk passenger prior to boarding.

Carriers typically close the gate doors and do not allow any more passengers to board 10 minutes prior to scheduled departure. Boarding typically begins 30 to 45 minutes prior to scheduled departure.<sup>5</sup> After the

APIS data are transmitted to CBP, the query can be completed and, if necessary, a “no board” notification can be sent to the carrier in usually less than 5 minutes. This means that a 10- to 20-minute “response window” remains for CBP to complete the vetting process for an identified passenger, plan a response, or coordinate with law

<sup>4</sup> Recall that “departure” is defined as “wheels up,” not scheduled departure. This rule proposes to change this definition to mean “push-back” from the gate.

<sup>5</sup> Large aircraft on international flights. Smaller aircraft may not need this amount of time to board.

enforcement to intercept the individual before the first boarding call is made. A delay of the aircraft may still occur if the individual has baggage that must be located and removed.

Large air carriers (those with over 1,500 employees) will incur the greatest percentage of the regulatory burden of the proposed rule due to the number of international travelers these entities carry, and their method of transmitting APIS data. We believe this rule could affect both originating and connecting passengers (those arriving from a foreign airport and continuing on to a foreign destination and those making a connecting foreign flight en route to the US). Passengers conducting foreign travel, either coming to or leaving the US, are instructed to check in for international flights well in advance, usually 2 to 3 hours, of departure. Some percentage of originating passengers does not, however, habitually arrive at the airport 60 minutes prior to departure and will now need to arrive earlier. Connecting passengers may not have a full 2 hours between flights. Partnering airlines may share APIS information for an entire trip, but non-partner airlines may not. We believe, therefore, that under a 60-minute option a number of originating passengers will have to arrive at the airport earlier than normal and a number of connecting passengers may not make their flights, will be delayed, and will have to be rerouted. If large carriers implement AQQ, there should be fewer delays to connecting travelers and originating passengers will not need to modify their arrival times at the airport, as data can be transmitted up to 15 minutes prior to departure. Carriers will, however, need to develop and implement their systems to support AQQ.

Under the proposed rule, small carriers may still use "eAPIS," a web-based application implemented for the 2005 APIS Rule and designed to electronically transmit manifests between small carriers and CBP. We do not believe that small carriers will develop and implement AQQ because they will not find it cost effective given their operations and their current utilization of eAPIS. Thus, we assume that small carriers will exercise the 60-minute option rather than implementing AQQ. While large carriers have connecting flights where affected passengers could face short layover times, small air carriers operate predominantly on charter schedules and make point-to-point trips without connecting flights. As originating passengers, we expect some of them to need to modify their behavior to arrive at their airport earlier than they customarily do. Occasionally, a passenger may not make a flight as a result of the rule, but the percentage is expected to be much lower than for passengers on large carriers.

### **Providing and Transmitting APIS Data**

Currently, passengers provide APIS data during the check-in process. The proposed rule does not change that process. Carriers will not be required to collect data in advance of check-in nor will they be required to accept any passenger data that is available prior to check-in. Conversely, this rule does not preclude the carriers from collecting as much data as possible during the reservation process.

We believe that collecting data in advance of check-in would likely speed up the process because carriers would be verifying data rather than initiating the data collection process. Some carriers may not believe, largely because of issues of liability, that they can accept data in advance from parties such as travel agents and

online reservation systems. Some international carriers are prohibited from collecting data in advance due to privacy regulations in other countries. Other carriers may believe that collecting APIS data in advance of check-in is worthwhile and could lead to efficiency gains and better customer service. For this analysis, we assume that carriers will continue to collect data during the check-in process.

We do not know which carriers will implement AQQ versus maintaining the current transmission method and altering the timing of the transmission.<sup>6</sup> There is also likely to be a period of time where carriers will need to comply with the 60-minute regulatory option while they coordinate with CBP to develop and implement AQQ. We thus present two endpoints of the likely range of costs. For our “high cost estimate,” we assume that all carriers will use their current transmission methods but will transmit the entire manifest at least 60 minutes prior to departure (rather than 15 minutes after departure as they do now) for the entire 10-year period of analysis. For our “low cost estimate,” we assume that all carriers will convert their transmissions to the AQQ system immediately and will use AQQ throughout the 10-year period of analysis.

The true cost of the rule will most likely lie between these two endpoints, as some carriers will implement AQQ immediately, some in the more distant future, and others not at all. We also assume that in both the high and low cost estimates, small carriers will continue to use eAPIS to transmit data and will comply with the 60-minute regulatory option. The system is relatively simple, is web-based, and does not require any further investments on the part of small carriers. As previously stated, we do not think small carriers will find developing AQQ cost-effective, but this rule does not preclude them from implementing AQQ if they so choose.

### **The 60-Minute Option—High Cost Scenario Assumptions and Costs**

In this scenario, we assume that carriers will continue to submit the manifest in its entirety using their existing computer systems but will now submit it at least 60 minutes prior to departure. As previously stated, we expect some originating passengers to be affected by a 60-minute requirement because most, but not all, passengers are checked in well in advance of 60 minutes prior to departure. Additionally, a small percentage of connecting passengers may be delayed and rerouted.

Associations representing the air carrier industry could not precisely estimate the percentage of passengers that could potentially be delayed as a result of this rulemaking. Per the International Air Transport Association (IATA), the vast majority of passengers traveling to the United States make connecting flights once arriving at their first US destination.<sup>7</sup> These passengers must have data transmitted for the

---

<sup>6</sup> CBP estimates that as many as 10 carriers could implement AQQ. For the purposes of estimating the potential low endpoint of the range of costs, we have assumed that all carriers implement AQQ. While CBP believes that 10 carriers converting to AQQ is a realistic expectation, for this analysis we cannot determine which carriers these are, how quickly they will implement AQQ, where they fly, or how many passengers they carry; thus, the endpoints of the range of likely costs are estimated.

<sup>7</sup> IATA response to CPB One-Hour Rule Questionnaire. August 2004.

inbound flight, but not for the connecting domestic flight. Only a small percentage of passengers arrives from a foreign airport, changes planes, and then continues on to a foreign destination. For example, it is unusual for a passenger to fly from London to Miami, then switch planes and fly to Mexico City; the passenger is more likely to take a direct flight from London to Mexico City. A larger percentage begins a journey in a foreign airport, travels to another foreign airport, then changes planes to connect to a carrier coming to the United States; for example, a passenger begins his journey from New Delhi, then changes planes in Rome to come to New York City. Flights to and from Canada may operate more like domestic US flights than international flights, and travelers may not be advised to arrive 2 hours prior to departure for Canadian flights and travelers may treat Canadian flights more like domestic ones. Thus, passengers to and from Canada may be occasionally delayed as a result of this rule if international carriers servicing Canada and the US do not implement AQQ. Finally, while passengers are advised to arrive 2 to 3 hours prior to their international departures, some passengers may need to arrive earlier than they customarily do to ensure they make their flights.

The total percentage most likely affected was not available from IATA, air carriers we contacted, or CBP data. IATA did provide an estimate that 80 to 90 percent of international passengers arrive more than 60 minutes prior to departure and that over 95 percent of international passengers arrive more than 30 minutes prior to departure.<sup>8</sup> No other associations representing the air carrier industry, however, could not provide an estimate the percentage of passengers that could potentially be delayed as a result of this rulemaking. We had to make assumptions, therefore, that did not understate the economic impacts of the rule on air travelers and were internally consistent throughout the regulatory alternatives (Chapter 4). For this scenario, we assume that 15 percent of passengers on both large and small carriers will arrive at their *originating* airport 15 minutes earlier than usual, and 2 percent of passengers traveling on large carriers and 0.25 percent of passengers traveling on small carriers will not make *connecting* flights.<sup>9</sup>

Costs of arriving early are accrued by the passenger. We estimate that 15 percent of originating passengers will arrive an average of 15 minutes earlier than customary. Each hour of traveler time is worth an estimated \$28.60.<sup>10</sup> Arriving 15 minutes early would thus cost \$7.15. Costs of missing connecting flights are imposed on both the traveler and the carrier that must reroute the traveler on another flight. We estimate that a missed flight will typically result in a 4-hour delay for the passenger and would

---

<sup>8</sup> IATA response to CPB One-Hour Rule Questionnaire. August 2004.

<sup>9</sup> We are specifically seeking comments on the assumptions on passengers arriving early or needing rerouting, as these assumptions are a primary cost driver of the proposed regulation.

<sup>10</sup> FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004. The estimate is the reported average of personal and business travel and is expressed in 2000 dollars. To be consistent with Department of Transportation policy, we are not modifying this estimate to account for inflation. Because this is based on American wage rates it may overvalue the value of time for foreign travelers who have lower wages. Because this value is weighted heavily by domestic air travelers, however, it may also understate the value of time of most international travelers, who tend to have higher wages both domestically and abroad. CBP believes this is a reasonable approximation of the average value of a traveler's time and requests comments on this estimate.

thus cost a traveler \$114.40.<sup>11</sup> The hourly wage for a ticket agent is \$14.07.<sup>12</sup> The “loaded” labor rate for this agent (which includes fringe benefits) is \$18.29 using a load factor of 1.3.<sup>13</sup> We estimate that it takes 15 minutes to reroute the passenger, for a cost of \$4.57. The total cost for one passenger being delayed and rerouted is thus \$118.97.

### *Large Carriers*

In 2006, the first year that costs will be incurred, there will be an estimated 71,022,413 international passengers traveling on large carriers (33,380,534 on US carriers; 37,641,879 on foreign carriers).<sup>14</sup> If 15 percent of these passengers must arrive at the originating airport early, this will result in an estimated cost of \$76 million (71,022,413 passengers × 15 percent × \$7.15 ≈ \$76 million). If 2 percent of these passengers are delayed and rerouted, this will result in an estimated cost of \$169 million (71,022,413 passengers × 2 percent × \$118.97 ≈ \$169 million). These costs are expected to increase over the period of analysis as passenger loads increase. Average recurring costs over the 10-year period of analysis are an estimated \$268 million per year.

The 10-year costs for large carriers are summarized in Table 2. Present value (PV) costs are presented at 7 and 3 percent discount rates.

**Table 2.**  
**PV Costs for Large Carriers and Passengers under the 60-Minute Option**

	US	Foreign	Total	PV at 7% Discount Rate	PV at 3% Discount Rate
2006	\$115,228,102	\$129,938,072	\$245,166,174	\$229,127,265	\$238,025,412
2007	117,532,664	132,536,834	250,069,497	218,420,384	235,714,485
2008	119,883,317	135,187,570	255,070,887	208,213,824	233,425,995
2009	122,280,983	137,891,322	260,172,305	198,484,206	231,159,723
2010	124,726,603	140,649,148	265,375,751	189,209,243	228,915,454
2011	127,221,135	143,462,131	270,683,266	180,367,690	226,692,974
2012	129,765,558	146,331,374	276,096,931	171,939,293	224,492,071
2013	132,360,869	149,258,001	281,618,870	163,904,746	222,312,537
2014	135,008,086	152,243,161	287,251,248	156,245,646	220,154,162
2015	137,708,248	155,288,024	292,996,272	148,944,448	218,016,743
<b>Total</b>				<b>\$1,864,856,744</b>	<b>\$2,278,909,557</b>

Complete detail of these costs can be found in Appendix A-1.

<sup>11</sup> A sensitivity analysis that presents the total costs for 8 hours of delay is presented in Appendix E.

<sup>12</sup> Bureau of Labor Statistics data for transportation ticket and reservation agents. Value is expressed in 2003 dollars and is not modified to account for inflation.

<sup>13</sup> FAA Office of Aviation Policy and Plans. “Economic Values for FAA Investment and Regulatory Decisions, a Guide.” May 28, 2004.

<sup>14</sup> See Table 1.

As shown, under the scenario where all large carriers transmit the entire manifest at least 60 minutes prior to departure, the PV 10-year costs are expected to reach approximately \$1.9 billion at a 7 percent discount rate. Approximately 2 percent will be incurred by the carriers; the remaining 98 percent will be incurred by the passengers that travel on the large carriers in the form of opportunity costs.

### *Small Carriers*

In 2006, the first year that costs will be incurred, there will be an estimated 3,738,022 international passengers traveling on small carriers (2,429,714 on US carriers; 1,308,308 on foreign carriers).<sup>15</sup> If 15 percent must arrive 15 minutes early at the airport, this will result in an estimated cost of \$4 million (3,738,022 passengers × 15 percent × \$7.15 ≈ \$4.0 million). If 0.25 percent of these passengers are delayed and rerouted on connecting flights, this will result in an estimated cost of \$1 million (3,738,022 passengers × 0.25 percent × \$118.97 ≈ \$1 million). Average recurring costs over the 10-year period of analysis are an estimated \$6 million per year.

The 10-year costs for small carriers are summarized in Table 3. PV costs are presented at 7 and 3 percent discount rates.

**Table 3.**  
**PV Costs for Small Carriers and Passengers under the 60-Minute Option**

	US	Foreign	Total	PV at 7% Discount Rate	PV at 3% Discount Rate
2006	\$3,328,543	\$1,792,292	\$5,120,835	\$4,785,827	\$4,971,685
2007	3,395,114	1,828,138	5,223,252	4,562,190	4,923,416
2008	3,463,016	1,864,701	5,327,717	4,349,004	4,875,616
2009	3,532,276	1,901,995	5,434,271	4,145,779	4,828,280
2010	3,602,922	1,940,035	5,542,957	3,952,051	4,781,403
2011	3,674,980	1,978,836	5,653,816	3,767,376	4,734,982
2012	3,748,480	2,018,412	5,766,892	3,591,331	4,689,011
2013	3,823,449	2,058,780	5,882,230	3,423,511	4,643,487
2014	3,899,918	2,099,956	5,999,875	3,263,534	4,598,404
2015	3,977,917	2,141,955	6,119,872	3,111,033	4,553,760
<b>Total</b>				<b>\$38,951,637</b>	<b>\$47,600,042</b>

Complete detail of these costs can be found in Appendix A-2.

As shown, the PV 10-year costs are expected to reach approximately \$39 million at a 7 percent discount rate. Approximately 2 percent will be incurred by the carriers; the remaining 98 percent will be incurred by the passengers that travel on the small carriers.

<sup>15</sup> See Table 1.

### ***Total Costs for the 60-Minute Option***

A summary of the total costs of the 60-minute regulatory option is presented in Table 4. Under this high cost scenario, 10-year PV costs are an estimated \$1.9 billion (7 percent discount rate).

**Table 4.**  
**Summary of Total Costs of the 60-Minute Option**

	Large Carriers*		Small Carriers*		Total
	US	Foreign	US	Foreign	
First-Year Costs (2006)	\$115,228,102	\$129,938,072	\$3,328,543	\$1,792,292	\$250,287,009
Average Recurring Costs	\$126,171,557	\$142,278,564	\$3,644,662	\$1,962,510	\$274,057,292
10-Year PV Costs (7%)	\$1,864,856,744		\$38,951,637		\$1,903,808,382
10-Year PV Costs (3%)	\$2,278,909,557		\$47,600,042		\$2,326,509,599
Average Cost per Passenger	\$3.45		\$1.37		

\* Including costs for passengers traveling on these air carriers.

### **The AQQ Option—Low Cost Scenario Assumptions and Costs**

In this scenario, we assume that large carriers will use AQQ to transmit APIS data for each passenger during check in. We assume that small carriers will comply with the 60-minute option and will not implement AQQ.

#### ***Large Carriers***

Large air carriers will transmit passenger data to CBP in real time, as individual passengers check in, up to 15 minutes prior to departure of the aircraft (CBP will not accept data transmitted within 15 minutes of departure). The carrier will be able to transmit data as soon as passengers begin checking in for their flight, as early as 2 hours prior to departure and in some instances earlier. CBP will send a “board” or “no board” instruction within minutes of the carrier’s transmission, and carriers will not issue a boarding pass to any passenger who has not been cleared for boarding. The carrier will confirm by electronic receipt a “no board” instruction. The carrier may then provide information to CBP about the questionable passenger to pursue clearance to board. CBP may resume the query and will reply to the carrier as soon as possible with either a confirmation or a correction. When there is not enough time for CBP to do so, however, the carrier will be bound by the “no board” instruction and may not issue a boarding pass for that passenger. The carrier may, at its discretion, delay the

flight until CBP can confirm the “no board” instruction or clear the passenger for boarding.

Unlike the 60-minute option where CBP requires a substantial response window, a carrier transmitting individual passenger information as late as 15 minutes prior to departure provides sufficient time for CBP to perform an effective vetting of the passengers. For international flights, most passengers check in hours before departure of the aircraft (with the possible exception of flights to and from Canada), leaving plenty of time for the vetting process. Late arrivals are likely to be few and we do not estimate that any passengers will need to arrive at their originating airports earlier than they customarily do. In addition, this procedure may prevent high-risk passengers from gaining access to the airport’s sterile areas because they will not be obtaining boarding passes. High-risk passengers’ baggage will not be laden on the aircraft and, therefore, will not have to be located and removed from the aircraft upon a “no board” instruction. Currently, CBP plans and is committed to have AQQ available to the carriers by the end of FY2006.

Under this option, we assume that only 0.5 percent of passengers will be delayed or rerouted because the information will be transmitted and processed while the passenger is completing other portions of the check-in process. There may be instances where APIS information is not transmitted from the originating flight and the information then must be transmitted prior to the connecting flight. Passengers will likely, but not always, have sufficient layovers to complete the transmissions. This rerouting may occur when carriers do not share APIS information with one another or with carriers that receive connecting passengers from other carriers that do not operate in the United States. Using our previous example, an Indian airline may not fly to New York City, but flies to Rome, where passengers then connect with their flights to the United States. The Indian carrier is unlikely to collect the APIS information because it is not required to do so and may not have the means to collect or store it. The APIS information must then be collected when a passenger makes his connection in Rome. We believe that the vast majority will be able to make their connections given the speed and reliability of AQQ, but there will be a small percentage that do not.

In addition to rerouting costs, there are costs for large carriers to develop, test, and implement AQQ in conjunction with CBP and transaction costs for transmitting data following implementation. Based on information gathered during AQQ pilot studies, CBP estimates that the large carriers will each spend \$2 million in the first year to develop and test a system that can conduct real-time queries as individual passengers check in for their flights. Performing individual queries following implementation will cost an estimated \$0.25 per passenger (\$0.10 to send to CBP, \$0.10 to send back to the carrier, plus \$0.05 for ticket agent time).<sup>16</sup>

---

<sup>16</sup> The \$0.10 charge is the transaction fee that is charged to carriers for accessing the SITA system, which is currently used by Australian carriers to obtain “electronic travel authority” for their passengers. When CBP launches AQQ, it may be able to query passengers for less than the \$0.10 charge; in order to not underestimate costs in this analysis, we use this figure to calculate the annual transaction costs for this alternative. The \$0.25 for ticket agent time is based on our estimate that it will require 10 seconds of time to submit the data multiplied by a ticket agent cost of \$18.29 per hour.

We assume that implementation costs for AQO will be incurred in 2006. Following the implementation phase, we assume that individual query and rerouting costs will be incurred the remainder of the period of analysis (2007-2015). Implementation costs are an estimated \$184 million if all 92 large carriers convert to AQO (92 carriers × \$2 million = \$184 million). In 2007, transaction costs are an estimated \$18 million (72,442,861 passengers × \$0.25 ≈ \$18 million). If 0.5 percent of these passengers are delayed and rerouted, this will result in an estimated cost of \$43 million (71,022,413 passengers × 0.5 percent × \$118.97 ≈ \$43 million) in 2007. Average recurring costs are an estimated \$66 million.

The 10-year costs for large carriers to convert to AQO are summarized in Table 5. PV costs are presented at 7 and 3 percent discount rates.

**Table 5.**  
**PV Costs for Large Carriers and Passengers under the AQO Option**

	US	Foreign	Total	PV at 7% Discount Rate	PV at 3% Discount Rate
2006	\$22,000,000	\$162,000,000	\$184,000,000	\$171,962,617	\$178,640,777
2007	28,793,566	32,469,340	61,262,905	53,509,394	57,746,164
2008	29,369,437	33,118,727	62,488,164	51,008,955	57,185,522
2009	29,956,826	33,781,101	63,737,927	48,625,359	56,630,322
2010	30,555,962	34,456,723	65,012,685	46,353,146	56,080,513
2011	31,167,081	35,145,858	66,312,939	44,187,111	55,536,042
2012	31,790,423	35,848,775	67,639,198	42,122,293	54,996,858
2013	32,426,231	36,565,750	68,991,982	40,153,962	54,462,908
2014	33,074,756	37,297,065	70,371,821	38,277,608	53,934,141
2015	33,736,251	38,043,007	71,779,258	36,488,935	53,410,509
<b>Total</b>				<b>\$572,689,381</b>	<b>\$678,623,757</b>

Complete detail of these costs can be found in Appendix A-3.

As shown, the PV 10-year costs are expected to reach approximately \$573 million at a 7 percent discount rate. Carriers will incur approximately 63 percent; the remaining 37 percent will be incurred by the passengers that travel on the large carriers in the form of opportunity costs.

### ***Small Carriers***

Small carriers will incur the same costs as under the 60-minute option because we assume small carriers will not convert to AQO and will continue using eAPIS. As previously estimated, the PV 10-year costs for small carriers are approximately \$39 million at the 7 percent discount rate.<sup>17</sup>

<sup>17</sup> See Table 3.

### *Total Costs for the AQQ Option*

A summary of the total costs of the AQQ regulatory option is presented in Table 6. Under this low cost scenario, 10-year PV costs are an estimated \$612 million (7 percent discount rate).

**Table 6.**  
**Summary of Total Costs of the AQQ Option**

	Large Carriers*		Small Carriers*		Total
	US	Foreign	US	Foreign	
First-Year Costs (2006)	\$22,000,000	\$162,000,000	\$3,328,543	\$1,792,292	\$189,120,835
Average Recurring Costs	\$31,207,837	\$35,191,816	\$3,644,662	\$1,962,510	\$72,006,825
10-Year PV Costs (7%)	\$1,022,469,517		\$38,951,637		\$611,641,018
10-Year PV Costs (3%)	\$1,239,810,163		\$47,600,042		\$726,223,798
Average Cost per Passenger	\$1.01		\$1.37		

\* Including costs for passengers traveling on air carriers.

Table 7 presents a side-by-side comparison of the high and low cost scenarios.

**Table 7.  
Comparison of Costs for the 60-Minute and AQQ Options\***

	High (60-Minute Option)			Low (AQQ Option)		
	Large Carriers	Small Carriers**	Total	Large Carriers	Small Carriers**	Total
First-Year Costs (2006)	\$245,166,174	\$5,120,835	\$250,287,009	\$184,000,000	\$5,120,835	\$189,120,835
Average Recurring Costs	\$268,450,120	\$5,607,172	\$274,057,292	\$66,399,653	\$5,607,172	\$72,006,825
10-Year PV Costs (7%)	\$1,864,856,744	\$38,951,637	\$1,903,808,382	\$572,689,381	\$38,951,637	\$611,641,018
10-Year PV Costs (3%)	\$2,278,909,557	\$47,600,042	\$2,326,509,599	\$678,623,757	\$47,600,042	\$726,223,798
Average Cost per Passenger	\$3.45	\$1.37		\$1.01	\$1.37	

\* Including costs for passengers traveling on air carriers.

\*\* In both scenarios, small carriers are assumed to continue using eAPIS for manifest submission, not AQQ. For small carriers the manifest will be transmitted in its entirety at least 60 minutes prior to departure under both cost scenarios.

## Government Costs

CBP does not anticipate incurring new operational or administrative costs for the 60-minute regulatory option. The AQQ portion of the proposed rule is anticipated to cost CBP an estimated \$12 million initially to work with air carriers and to modify its existing capabilities and infrastructure.<sup>18</sup> This estimate is for the purposes of this Regulatory Assessment only.

## Comments on the Cost Analysis

The primary drivers behind these costs are the estimated percentages of passengers that are delayed and must be rerouted, the length of the delay, and the costs to carriers to implement AQQ. The assumptions are summarized in Appendix D. 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. All input received during the public comment period will be considered.

<sup>18</sup> CBP bases this estimate on only 10 large carriers implementing AQQ, not the entire 92 carriers.

### 3. Benefits Analysis

The primary benefits of the proposed rule are to enhance security and prevent dangerous individuals with nefarious intentions from successfully carrying out attacks against the United States. Monetizing these benefits has proven difficult because the damages caused by terrorism are a function of where the attack takes place, the nature of the attack, the number of people affected, the casualty rates, the psychological impacts of the attack, and, perhaps most importantly, the “ripple effects” as damages permeate throughout our society and economy far beyond the initial target.

We are able, through assessments of previous natural disasters, economic shocks, and terrorist attacks, to glean an understanding of the consequences of disaster. While variance and uncertainty abound, we can estimate monetary damages within an order of magnitude and with large margins of error. The psychological impacts are less apparent but are still tractable. We are currently unable, however, to measure risk and commensurate risk reduction with any degree of clarity or certainty. Through intelligence gathering we can get a sense of what terrorists are thinking and planning, but we rarely have information that can accurately ascertain the probability that an attack will take place at a particular time, at a particular location, using a particular means, requiring a particular response.

In the face of this uncertainty, government agencies must still act to ensure continuity and shield the citizens they are committed to protect. It is important to acknowledge the risk trade-offs involved in determining the proper level of regulation to impose. Government agencies are constantly assessing and addressing and re-examining the effects of security measures they impose, the willingness and financial ability of industry to bear the associated costs, and the willingness of the public to pay higher costs.

CBP believes that the Pre-Boarding APIS Rule reduces risk while imposing acceptable costs to the private sector and without causing economic harm to industry or the traveling public. The proposed rule is a profound improvement upon the status quo, the 2005 APIS Rule. While the 2005 APIS Rule yielded improvements, such as removing the uneven administration of watchlists from the carriers, high-risk individuals are still able to board international aircraft. At a minimum, CBP and other law enforcement officials must detain and interview these people upon arrival into this country, and some will face deportation. Planes have been held on runways, flights have been delayed and cancelled, and aircraft have been diverted—all at great inconvenience and expense to travelers, air carriers, airports, and response agencies.

These detentions, delays, and diversions can be monetized with some degree of confidence and should be an important segment of the benefits “picture” assessed by decision makers and the public. Thus, this analysis attempts to quantify an unknown portion of the benefits while the benefits of enhanced security, risk reduction, and damages avoided remain difficult to quantify but are nevertheless quite valuable.

As stated in Chapter 2, we do not believe that vessel carriers will be affected by the proposed rule due to the nature of their operations. Thus, vessel carriers will not experience increased benefits and reduced risk as a result of the proposed rule.

## **Security Incidents and the 2005 APIS Rule**

While there are numerous security incidents throughout the air transportation system on an annual basis, the overwhelming majority of travelers and crew pose no threat to air safety and security. According to CBP and the Transportation Security Administration (TSA) there were approximately 22,000 “hits” on the security watchlists in 2004. If this is compared to the estimated number of international passengers in 2004, less than one-tenth of 1 percent of these passengers are considered high-risk individuals.

Nevertheless, these individuals require lengthy processing once they reach this country, and some must be deported. Based on CBP data, an estimated 11,000 individuals boarded aircraft and were subsequently found to be on watchlists from May to November 2004. If this figure were extrapolated to the entire year, that would result in an estimated 22,000 selectees. In this analysis, we estimate that this number will increase 1 percent annually over the period of analysis as both passenger counts increase and more individuals are added to government watchlists. By 2015, an estimated 24,550 hits would occur.

Under the 2005 APIS Rule, high-risk individuals may still board aircraft in foreign airports and fly to the United States because the information required to intercept these passengers is transmitted 15 minutes after departure. These passengers are then intercepted and interviewed upon arriving in the US. CBP estimates that each interview requires 2 hours of time for their agents to conduct. Some of the entry issues may be resolved, and the individuals may be sent on their way. Based on data for 2004, CBP estimates that 25 percent must be deported back to their countries of origination.

## **Quantified Benefits of the Proposed Rule**

Under the Pre-Boarding APIS Rule, fewer high-risk individuals would board planes and come to the United States because they would be identified and intercepted prior to the boarding process. Even under the best circumstances, however, not every individual will be intercepted prior to boarding. We assume an “effectiveness factor” of the proposed rule of 0.9, or 90 percent of the identified high-risk passengers will be prevented from boarding the aircraft and leaving the foreign airport. The remaining 10 percent are “unaffected” by this rule either because the 2005 APIS Rule may have caught them and because it is nearly impossible to implement a regulation that captures 100 percent of the high-risk individuals that fly.<sup>19</sup> Table 8 presents the

---

<sup>19</sup> The analysis for the 2005 APIS Rule did not estimate an effectiveness factor for the 15-minutes after departure requirement. Because this rule did not prevent high-risk individuals from boarding planes, we assume that this rule did not greatly reduce the risk of these individuals entering this country. The actual risk reduction is unknowable, but we estimate it is probably between 0 to 10 percent effective, as reflected in the 90 percent effectiveness factor for this proposed rule.

estimated number of annual hits over the period of analysis and the individuals prevented from boarding aircraft assuming a 90 percent effectiveness factor.

**Table 8.**  
**Predicted Watchlist Hits for Air Carriers over the 10-Year Period of Analysis**

	Annual Hits	Individuals Prevented from Boarding Aircraft	Residual Individuals Entering US
2005	22,220	19,998	2,222
2006	22,442	20,198	2,244
2007	22,667	20,400	2,267
2008	22,893	20,604	2,289
2009	23,122	20,810	2,312
2010	23,353	21,018	2,335
2011	23,587	21,228	2,359
2012	23,823	21,441	2,382
2013	24,061	21,655	2,406
2014	24,302	21,872	2,430
2015	24,545	22,090	2,454

We estimate four categories of costs that could be avoided under the Pre-Boarding APIS Rule: costs for conducting interviews with identified individuals, costs for deporting a percentage of these individuals, costs of delaying a high-risk aircraft at an airport (either at the origination or destination airport), and costs of rerouting aircraft if high-risk individuals are identified after takeoff. The costs avoided of an actual terrorist attack are not estimated because the risk of this type of incident happening, the frequency with which it may occur, and the scope of likely impacts are unknown.

These benefits are the same under both the high and low cost scenarios presented in Chapter 2 as both the 60-minute option and the APIS Quick Query (AQQ) option primarily prevent the boarding of high-risk individuals. AQQ yields slightly higher benefits than the 60-minute option because under AQQ, a high-risk individual is not permitted to enter the “sterile area” of the airport and his bags have not been checked. The additional benefits of AQQ are not quantified.

### *Interview Costs Avoided*

CBP estimates that an interview requires 2 hours of time and requires 1 government official (or a combination of officials that equal one person’s time) to conduct the interview. The hourly cost of a government agent is \$29.71 per hour, and the cost per interview would then be \$60 (1 agent × \$29.71 per hour × 2 hours ≈ \$60).<sup>20</sup> Under the

<sup>20</sup> We assume that CBP, ICE, and FBI officials conducting interviews are GS-11/1 employees with an annual base salary of \$44,136. We apply a load factor of 1.4 to account for fringe benefits and locality pay and divide this by 2,080 hours to calculate the hourly cost of these officials.

proposed rule, we estimate that in 2006 approximately 20,200 individuals would be prevented from entering the United States and would thus not need to be interviewed.<sup>21</sup> The costs avoided would be an estimated \$1.2 million per year (\$60 per interview × 20,200 interviews avoided ≈ \$1.2 million).

### *Deportation Costs Avoided*

As previously mentioned, of the 22,000 high-risk individuals entering this country in 2004, an estimated 25 percent were deported due to improper documentation and further information gathered during interviews. Deportation imposes costs to the government to process the paperwork and make necessary arrangements as well as to the air carriers who must pay to fly deportees back to their country of origin and provide accommodations prior to deportation. CBP estimates that their processing cost to deport a high-risk individual is \$1,507. The estimated cost to the air carrier of the flight and a hotel stay is an estimated \$1,000, for a total cost of \$2,507 per deportation.

Under the proposed rule, we estimate that in 2006, 20,200 individuals would be prevented from entering the United States, and 5,050 of these individuals would not need to subsequently be deported. The costs avoided would be an estimated \$13 million per year (\$2,507 per deportation × 4,040 deportations ≈ \$13 million).

### *Delay Costs Avoided*

On New Year's Eve 2003, a flight from London to Washington, DC, was delayed for hours on the Dulles tarmac when passenger manifest queries produced numerous hits on terrorist watchlists. Passengers and crew were forced to sit on the runway for more than 2 hours while law enforcement officials organized a response and interviewed passengers and crew. This incident prompted a flurry of additional cancellations for inbound planes from London, Paris, and Mexico City over the next several weeks as specific intelligence continued to reveal an elevated threat.

Costs for the 2003 holiday incident are not available. We estimate one scenario here: if a plane were held on the tarmac for 4 hours, this would cost the carrier an estimated \$3,372 for each hour delayed, for a total cost of \$13,488.<sup>22</sup> A large aircraft making international flights holds an estimated average of 250 passengers.<sup>23</sup> If the value of one hour of passenger time is \$28.60, then the cost to the passengers of the delay would be \$28,600 (250 passengers × \$28.60 per hour × 4 hours = \$28,600). Finally, officials must organize and coordinate a response to the security incident. The

---

<sup>21</sup> See Table 9.

<sup>22</sup> Massachusetts Institute of Technology, Lincoln Laboratory. "Delay Causality and Reduction at the New York City Airports Using Terminal Weather Information Systems." Project Report ATC-291, by S.S. Allan, S.G. Gaddy, and J.E. Evans, February 16, 2001.

<sup>23</sup> The FAA report used elsewhere in this analysis ("Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004) estimates that large aircraft hold an average of 157 passengers. This average is weighted heavily by domestic aircraft; generally international aircraft are larger, holding between 200 and 300 people. We use 250 passengers in this analysis.

estimated hourly cost of government agents is \$29.70 and, per CBP, 12 officials would likely be involved in the response. The government cost would be \$1,180 (12 agents × \$29.70 per hour × 4 hours ≈ \$1,425). The total cost would be an estimated \$43,500 (\$13,488 + \$28,600 + \$1,425 ≈ \$43,500). For this analysis, we assume one such security incident would occur annually that could be avoided with the proposed rule.

### ***Diversion Costs Avoided***

In September 2004, a high-risk individual was identified en route from London to Washington, DC, after the plane had departed Heathrow. This aircraft was diverted to Bangor, Maine, where Federal officials met the plane and questioned this individual extensively. The passengers were held aboard the plane during the interrogation and then continued on to Dulles without incident. The delay was nearly 7 hours.

In November 2004, a high-risk individual and his traveling companion were identified en route from Paris to Washington, DC. This aircraft was also diverted to Bangor. After the two suspects were detained, the flight continued on to Dulles, arriving more than 2 hours late.

In early May 2005, an individual with the same name as someone on the government's "no-fly" list boarded a plane in Paris bound for Boston. The flight was diverted to Bangor and was later allowed to continue to Boston without incident. A week later, an individual on the "no-fly" list boarded a plane in Milan bound for Boston. The plane was diverted to Bangor. The man and his baggage were removed from the plane, and the plane was allowed to continue on to Boston. Also in May 2005, a father and son on the "no-fly" list were identified en route from Seoul to San Francisco. The plane was diverted to Japan. The plane was delayed while the two were questioned. The son was later allowed to re-board the aircraft as it continued on to San Francisco.

Again, costs for these diversions are not available.<sup>24</sup> We estimate one scenario here: if a plane were diverted, causing delay for 8 hours, this would cost the carrier an estimated \$26,976 (\$3,372 per hour × 8 hours). The cost to the passengers of the delay would be \$57,200 (250 passengers × \$28.60 per hour × 8 hours = \$57,200). The estimated hourly cost of a CBP agent is \$27.90 and 12 officials would likely be involved in the response. The cost for government response would be \$2,850 (12 agents × \$27.90 per hour × 8 hours ≈ \$2,850). The total cost would be an estimated \$87,000 (\$26,976 + \$57,200 + \$2,850 ≈ \$87,000). For this analysis, we assume two such security incidents occur annually that could be avoided with the proposed rule.

### ***Total Quantified Benefits of the Proposed Rule***

Table 9 presents the total quantified benefits (costs avoided) of the proposed rule over the period of analysis. As shown, the 10-year PV benefits are an estimated \$103 million at a 7 percent discount rate.

---

<sup>24</sup> The air carriers involved indicated that these security incidents were very expensive, on the order of millions of dollars. When CBP asked for further detail and justification for these estimates, we were told those details were not available. These estimates may understate the costs of these types of incidents, but absent more complete information, we have used estimates derived from published sources.

**Table 9.**  
**PV Benefits of the Pre-Boarding APIS Rule**

	Interview Costs Avoided	Deportation Costs Avoided	Delay Costs Avoided	Diversion Costs Avoided	Total	PV at 7% Discount Rate	PV at 3% Discount Rate
2006	\$1,200,040	\$12,659,084	\$43,514	\$174,056	\$14,076,693	\$13,155,788	\$13,666,693
2007	1,212,040	12,785,675	43,514	174,056	14,215,285	12,416,180	13,399,269
2008	1,224,160	12,913,532	43,514	174,056	14,355,262	11,718,170	13,137,098
2009	1,236,402	13,042,667	43,514	174,056	14,496,639	11,059,416	12,880,076
2010	1,248,766	13,173,094	43,514	174,056	14,639,429	10,437,711	12,628,100
2011	1,261,254	13,304,824	43,514	174,056	14,783,648	9,850,969	12,381,072
2012	1,273,866	13,437,873	43,514	174,056	14,929,309	9,297,223	12,138,894
2013	1,286,605	13,572,251	43,514	174,056	15,076,426	8,774,617	11,901,470
2014	1,299,471	13,707,974	43,514	174,056	15,225,015	8,281,399	11,668,706
2015	1,312,466	13,845,054	43,514	174,056	15,375,089	7,815,916	11,440,510
<b>Total</b>						<b>\$102,807,389</b>	<b>\$125,241,888</b>

Complete detail of these costs avoided can be found in Appendix B-1.

When compared to the PV costs (7 percent discount rate) of the proposed rule, we find that quantified benefits, \$103 million, are 5 to 17 percent of the costs (\$612 million in the low cost estimate and \$1.9 billion in the high cost estimate). This means that in order for benefits to equal costs over the next 10 years, the non-quantified security benefits would have to range from \$509 million to \$1.8 billion. Because we do not have an estimate of the baseline risk of security-related incidents that would be mitigated by the proposed rule, we cannot conduct a formal break-even analysis here; however, it is not difficult to imagine a relatively limited incident in the next 10 years that would be at least this costly.

Consider, for example, an incident that involves passengers, crew, and the aircraft exclusively. The incident involves total loss of life of those aboard the plane, but on the ground no one and nothing is involved. We estimate that society's willingness to pay to avoid a fatality aboard this aircraft is \$3 million, the aircraft is worth \$11.5 million, and the cost of a post-incident investigation is \$0.4 million.<sup>25</sup> If 260 people were aboard the plane (250 passengers plus 10 crew), this would result in direct economic losses of \$792 million ( $\$3 \text{ million} \times 260 \text{ people} + \$11.5 \text{ million} + \$0.4 \text{ million} \approx \$792 \text{ million}$ ). The indirect costs could be much higher.

This proposed rule may not prevent such an incident, and it is part of a host of measures currently taken to prevent security incidents aboard aircraft (passenger screening, reinforced cockpit doors, improved access control to the sterile areas of airports, etc.). However, the direct costs of such an incident could outweigh the costs of this proposed rule. As we saw from the events of 9/11, the indirect costs of a

<sup>25</sup> FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004. The value of a fatality avoided is in 2001 dollars, the value of an aircraft loss is in 2002 dollars, and the cost of the investigation is in 2002 dollars. To be consistent with Department of Transportation policy, we are not modifying these estimates to account for inflation.

terrorist incident—such as a large-scale disruption to the air transport industry—are likely to far outweigh the direct costs.

### **Comments on the Benefits Analysis**

The primary drivers behind these estimates are the costs associated with diverted aircraft and subsequent passenger delays. The assumptions are summarized in Appendix D. 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. All input received during the public comment period will be considered.



## 4. Comparison of Costs and Benefits of Regulatory Alternatives

Under EO 12866, CBP is required to consider and analyze a host of alternatives to the proposed rule to ensure that the most cost-effective rule that still meets agency objectives and legal mandates is promulgated. This chapter considers the following possible regulatory actions, in order of stringency relative to the No Action alternative—

1) Do not promulgate any further manifest transmission requirements (No Action)—the baseline case where carriers would continue to submit APIS manifests 15 minutes after departure. There are no additional costs or benefits associated with this alternative. High-risk passengers would continue to board aircraft. Because this alternative is the status quo and is used as the regulatory baseline, it has no additional costs or benefits.

2) A pre-departure transmission requirement (Pre-Departure APIS Rule)—this rule would require carriers to submit manifests prior to departure but not necessarily prior to boarding. The costs would be lower than under the Pre-Boarding APIS Rule because connecting passengers would most likely make their flights. High-risk passengers would not be prevented from boarding aircraft. CBP would be unable to plan a response to a hit on the watchlists before the boarding process began.

4) A pre-boarding transmission requirement only during periods of heightened alert (Pre-Boarding APIS Rule at Elevated Alert)—this rule would require carriers to submit manifest data at least 60 minutes prior to departure only during periods of heightened risk (Code Orange and Code Red). The costs would be higher than under the proposed rule because carriers would be unable to plan for disruptions and delay or adjust their operations to dynamic threat conditions. More passengers would thus be delayed. High-risk passengers would continue to board aircraft.

5) A pre-boarding transmission requirement and option for APIS Quick Query (Pre-Boarding APIS Rule)—this is the proposed rule, discussed in previous chapters, which requires carriers to submit manifests 60 minutes prior to departure or allows them to implement APIS Quick Query (AQQ). If flying on a carrier using AQQ, individuals would be queried while they checked in and would be prevented from continuing to check in or having their bags checked. High-risk individuals would thus not enter passenger screening or the departure gate area.

7) A 120-minute transmission requirement (120-Minute APIS Rule)—this rule would require carriers to submit manifests 120 minutes prior to departure. The costs would be higher than under the Pre-Boarding APIS Rule because originating passengers, not just connecting passengers, would now be affected. High-risk passengers would be prevented from boarding aircraft. CBP would be able to easily coordinate and plan a response to a hit on the watchlists well before the boarding process began.

For each of these alternatives, we base our estimates of cost largely on the methods described in Chapter 2. Key assumptions that we alter to account for the unique characteristics of each alternative are: the percent of passengers that do not make their flights and the length of the delay. In all but the Chosen Alternative, we assume

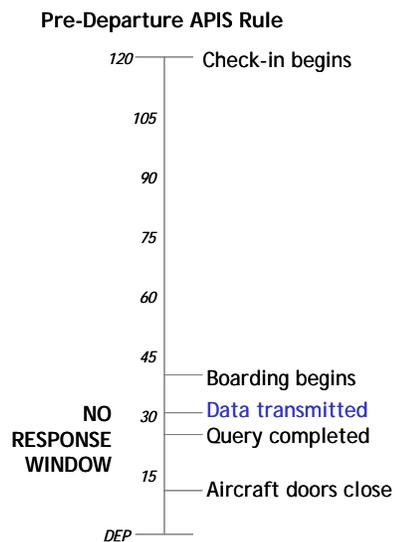
carriers will not implement AQQ. Complete details of the computations for the regulatory alternatives are presented in Appendix C.

Additionally, we provide a qualitative description of whether the benefits estimate is likely to be higher or lower than the No Action alternative and the proposed Pre-Boarding APIS Rule as well as the monetized benefits (where applicable) as calculated in Chapter 3).

### The Pre-Departure APIS Rule

Under this scenario, we assume that 1 percent of passengers on large carriers will be delayed and 0 percent of passengers on small carriers will be delayed. We assume that 5 percent of passengers will need to arrive at the airport 15 minutes earlier than customary. For illustrative purposes only, we assume that data would be transmitted approximately 30 minutes prior to departure, very close to the beginning of the boarding process.

Transmission of manifest data in this timeframe will not provide enough of a window for CBP to respond to a hit on the watchlists, regardless of the boarding time. Benefits of this alternative may be small when compared to the proposed rule because the ability to intercept a high-risk individual before the boarding process begins is virtually non-existent. Because the high-risk passenger is likely to board in this alternative, the individual and his bags will have to be removed from the plane, all remaining passengers and bags may have to be removed and re-screened, and the aircraft will have to be “re-sterilized” prior to re-boarding. As described in Chapter 3, this type of incident will cost approximately \$43,500. We assume this will occur once a year. This additional cost is included in the summary below.




---

#### Pre-Departure APIS Rule

Percent of passengers arriving early	5% on all carriers, 15 minutes
Percent of passengers delayed	1% on large carriers, 0% on small carriers
Length of delay	4 hours
First-year costs	\$111 million
Average recurring costs	\$122 million
10-year PV costs (7%)	\$845 million
10-year PV costs (3%)	\$1.0 billion

Benefits may be higher than the No Action alternative because an aircraft will not be permitted to take off with a high-risk individual on board. Benefits are potentially lower than under the Pre-Boarding APIS Rule because the high-risk passenger may still board the aircraft.

---

## The Pre-Boarding APIS Rule at Elevated Alert

Under this alternative we assume a 60-minute regulatory option only because carriers would be unlikely to convert to AQQ to facilitate data transmission requirements for only short, and relatively infrequent, periods of time. For this analysis, we assume that the threat level would be elevated twice a year for 3 weeks. Because foreign travelers coming to the United States may not be aware of the threat level prior to entering the country, we assume that the impacts of the alert would extend beyond the return to the lower threat level. We thus assume that the effects will last a total of 2 months a year (or 1/6 of a year). We expect this alternative would cause a great deal of disruption as both passengers and carriers would be jarred by the unanticipated need to provide information earlier. Additionally, the threat of terrorism is continuous and specific threat information on flights may not ever emerge. Thus, the risks are not likely diminished sufficiently to justify the costs. Finally, a two-tiered system of manifest transmission timing would likely affect carrier performance, with performance ratings suffering during the infrequent, non-routine elevations in threat level.

---

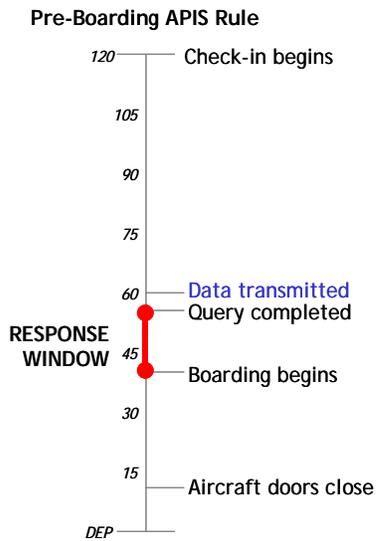
### Pre-Boarding APIS Rule at Elevated Alert

Percent of passengers arriving early	15% on all carriers, 15 minutes
Percent of passengers delayed	10% on large carriers, 2.5% on small carriers
Length of delay	6 hours
First-year costs	\$225 million
Average recurring costs	\$246 million
10-year PV costs (7%)	\$1.7 billion
10-year PV costs (3%)	\$2.1 billion

Benefits are potentially the same as the No Action alternative because a high-risk individual will be identified prior to take-off only if the threat level is elevated. Benefits are potentially lower than under the Pre-Boarding APIS Rule because a high-risk passenger may still board the aircraft.

---

## The Pre-Boarding APIS Rule (Chosen Alternative)



Under the proposed rule, carriers would submit their manifests in their entirety at least 60 minutes prior to departure. We assume that 2 percent of passengers on large carriers and 0.25 percent of passengers on small carriers will be delayed an average of 4 hours and will need to be rerouted. We also assume that 15 percent of passengers would need to arrive at their originating airport an average of 15 minutes earlier than normal to make their flights. Alternatively, large carriers could use AQQ to submit passenger information on an individual basis (small carriers would not likely opt for AQQ). This would result in only 0.5 percent of passengers on large carriers requiring rerouting, but carriers would invest in implementing AQQ. Passengers would not need to arrive any earlier at the airport than they do now. We present the two cost endpoints in this analysis—all carriers opt for the 60-minute option and all carriers implement AQQ—to

capture the likely range of costs. Benefits will include interview costs avoided, deportation costs avoided, delay costs avoided, and diversion costs avoided, as well as the non-quantified security benefits that are the impetus for this rule.

---

### Pre-Boarding APIS Rule

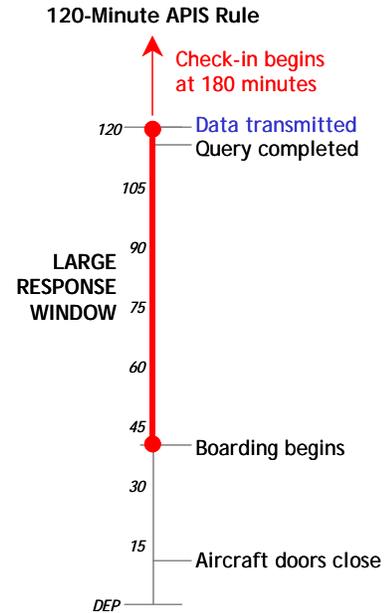
Percent of passengers arriving early	15% on all carriers (60-minute option), 15 minutes or 0% if implementing AQQ
Percent of passengers delayed	2% on large carriers, 0.25% on small carriers or 0.5% on large carriers if implementing AQQ
Length of delay	4 hours
First-year costs	\$189-\$250 million
Average recurring costs	\$72-\$274 million
Government cost	\$12 million during initial implementation of AQQ
10-year PV costs (7%)	\$612 million-\$1.9 billion
10-year PV costs (3%)	\$726 million-\$2.3 billion

Under either regulatory option (60-minute requirement or AQQ), benefits are higher than the No Action alternative because the high-risk individual will be identified prior to boarding. In addition to this security benefit, there is an estimated \$15 million in costs avoided annually. The AQQ regulatory option may yield higher benefits than the 60-minute option because a high-risk passenger's baggage may not reach the aircraft and the passenger may not enter the sterile area of the airport.

---

## The 120-Minute APIS Rule

Under this alternative, carriers would submit their manifests in their entirety at least 120 minutes prior to departure. This alternative would be quite disruptive because even though passengers and carriers would have the predictability of a pre-determined transmission time, passenger check-in at the original departure airport would be affected. Instead of passengers checking in 2 hours prior to departure, carriers would have to advise passengers to arrive even earlier to assure timely manifest transmission. We assume that 20 percent of passengers on large carriers and 5 percent of passengers on small carriers will be delayed an average of 6 hours and will need to be rerouted. We also assume that 30 percent of passengers would need to arrive at the originating airport an average of 1 hour earlier than normal to make their flights. Benefits would be essentially the same as those under the Pre-Boarding APIS Rule.




---

### 120-Minute APIS Rule

Percent of passengers arriving early	30% on all carriers, 1 hour
Percent of passengers delayed	20% on large carriers, 5% on small carriers
Length of delay	6 hours
First-year costs	\$3.2 billion
Average recurring costs	\$3.5 billion
10-year PV costs (7%)	\$24.2 billion
10-year PV costs (3%)	\$29.5 billion

Benefits are higher than the No Action alternative because a high-risk individual will be identified prior to boarding. Benefits are likely the same as under the Pre-Boarding APIS Rule because the ability to intercept high-risk passengers does not change appreciably given the extra time.

---

## Comparison of Regulatory Alternatives

Table 10 presents a comparison of the costs and benefits of the proposed rule and the regulatory alternatives.

**Table 10.  
Comparison of Costs and Benefits of the Pre-Boarding APIS Rule and Regulatory Alternatives**

	Pre-Departure APIS	Pre-Boarding APIS at Elevated Alert	Pre-Boarding APIS		120-Minute APIS
			60-Minute Option	AQQ Option	
First-year costs	\$111 million	\$225 million	\$250 million	\$189 million	\$3.2 billion
Average recurring costs	\$122 million	\$246 million	\$274 million	\$72 million	\$3.5 billion
10-year PV costs (7%)	\$845 million	\$1.7 billion	\$1.9 billion	\$612 million	\$24.2 billion
10-year PV costs (3%)	\$1.0 billion	\$2.1 billion	\$2.3 billion	\$726 million	\$29.5 billion
Average cost per passenger	\$0.36-\$1.55	\$0.91-\$3.11	\$1.37-\$3.45	\$1.01-\$1.37	\$17.39-\$43.81
Benefits comparison to No Action	Slightly higher (risk identified prior to take-off)	Comparable (risk may be identified prior to boarding and take-off if under elevated alert)	Higher (risk identified prior to boarding)	Higher (risk identified prior to boarding)	Higher (risk identified prior to boarding)
Benefits comparison to Pre-Boarding APIS Rule	Lower (high-risk passenger may still board aircraft); CBP cannot coordinate or plan response	Lower (high-risk passenger may still board aircraft)	Security benefits + \$15 million in costs avoided annually	Risk identified prior to full check-in (higher benefits than 60-minute option)	Comparable (security benefits + \$15 million in costs avoided annually)

## 5. Impacts to Small Entities

We have prepared this chapter to examine the impacts of the final rule on small entities as required by the Regulatory Flexibility Act. 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. CBP estimates that there are 773 small US air carriers that may be affected by the proposed rule. There are no small vessel carriers that are anticipated to be affected by the proposed rule.

This chapter addresses the following.

- ◆ 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

CBP would be in a better position to screen passengers and crewmembers against law enforcement databases and terrorist watch lists and to take necessary and effective action prior to an identified risk becoming a threat to the passengers, the aircraft, or the vessel. The primary purpose of this rule is to prevent a known or potential terrorist from boarding an aircraft before departure and from departing on a vessel, thus minimizing disruption to other passengers and limiting delays, costly diversions, or emergency response that could have been prevented if the passenger or crewmember had not been allowed to board. More information on the purpose and need for this regulation can be found in the preamble to this proposed rule.

## Objectives of and Legal Basis for the Rule

These proposed changes would further enhance the Government's capability under the regulations to counter the terrorist threat to the United States, the carrier industry, and the international traveling public by increasing that capability to a level necessary to meet more fully the statutory requirements of section 115 of the Aviation Transportation Security Act, the Enhanced Border Security and Visa Entry Reform Act of 2002, and the Intelligence Reform and Terrorism Prevention Act of 2004. More information on the objectives of and legal basis for this regulation can be found in the preamble to this proposed rule.

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

CBP has identified 773 US-based small air passenger and cargo carriers. For this analysis, we compared the estimated annual cost of the rule to annual revenue data for the small businesses affected. To determine annual company revenue data, we used the *Reference USA* database available online.<sup>26</sup>

We do not expect these carriers to experience great economic impacts as a result of the proposed rule. Small carriers do not need to modify their reservation systems, their transmission methods, nor do they have many connecting passengers that may miss their flights and require rerouting. We estimate that at most 15 percent of passengers on small carriers will be affected by this rule annually. In the 2005 APIS Rule, we estimated that small carriers transport an average of 300 passengers annually. As calculated in Chapter 2, the total cost of delay per passenger is \$118.97, and only \$4.57 of this is incurred by the air carrier. The costs of arriving earlier than customary are incurred only by the passenger. The aggregate costs of this rule would not exceed \$3,500 per carrier annually for each of the 773 small US-based carriers.

We conclude, therefore, that this rule will not have a significant impact on a substantial number of small entities.

## Reporting and Recordkeeping

This proposed rule imposes no new reporting or recordkeeping requirements from the 2005 APIS Rule; it simply changes the time that manifest information is reported. Small carriers may continue to use eAPIS to submit their manifests.

## Other Federal Rules

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

## Regulatory Alternatives

As discussed previously, we examined three regulatory alternatives to the proposed rule. Complete details are provided in Chapter 4. The alternatives were ultimately rejected because they do not yield the desired level of security or impose an unacceptable burden on air carriers and the traveling public.

---

<sup>26</sup> [www.referenceusa.com](http://www.referenceusa.com). Accessed September 2004.

We are 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.

## Appendix A

---

### Costs of the Pre-Boarding APIS Rule

**Appendix A-1**  
**Cost Calculations**  
**60-Minute Option, Large Carriers**

No modifications to transmission methods (high cost scenario)

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 4-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 76,171,538	\$ 6,495,355	\$ 162,499,281	\$ 245,166,174	\$ 229,127,265	\$ 238,025,412	\$ 115,228,102	\$ 129,938,072
2007	2	-	77,694,969	6,625,262	165,749,267	250,069,497	218,420,384	235,714,485	117,532,664	132,536,834
2008	3	-	79,248,868	6,757,767	169,064,252	255,070,887	208,213,824	233,425,995	119,883,317	135,187,570
2009	4	-	80,833,846	6,892,922	172,445,537	260,172,305	198,484,206	231,159,723	122,280,983	137,891,322
2010	5	-	82,450,522	7,030,781	175,894,448	265,375,751	189,209,243	228,915,454	124,726,603	140,649,148
2011	6	-	84,099,533	7,171,397	179,412,337	270,683,266	180,367,690	226,692,974	127,221,135	143,462,131
2012	7	-	85,781,524	7,314,824	183,000,584	276,096,931	171,939,293	224,492,071	129,765,558	146,331,374
2013	8	-	87,497,154	7,461,121	186,660,595	281,618,870	163,904,746	222,312,537	132,360,869	149,258,001
2014	9	-	89,247,097	7,610,343	190,393,807	287,251,248	156,245,646	220,154,162	135,008,086	152,243,161
2015	10	-	91,032,039	7,762,550	194,201,683	292,996,272	148,944,448	218,016,743	137,708,248	155,288,024
							<b>\$ 1,864,856,744</b>	<b>\$ 2,278,909,557</b>		

Annual recurring cost \$ 268,450,120

\$ 126,171,557 \$ 142,278,564

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[m] \$ **3.45** Average cost per passenger

[a] No programming and transaction costs in high-cost scenario

[b] [i] \* 15% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes

[c] [i] \* 2% passengers delayed \* \$4.57 cost of carrier ticket agent

[d] [i] \* 2% passengers delayed \* \$28.60/hour passenger time \* 4 hours delay

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 2% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[i] [k] \* 2% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[j] Estimated annual passengers on large US carriers, 2% annual growth rate

[k] Estimated annual passengers on large foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix A-2  
Cost Calculations  
60-Minute Option, Small Carriers**

*No modifications of transmission methods (high and low cost scenarios)*

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 4-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 4,009,028	\$ 42,733	\$ 1,069,074	\$ 5,120,835	\$ 4,785,827	\$ 4,971,685	\$ 3,328,543	\$ 1,792,292
2007	2	-	4,089,209	43,587	1,090,456	5,223,252	4,562,190	4,923,416	3,395,114	1,828,138
2008	3	-	4,170,993	44,459	1,112,265	5,327,717	4,349,004	4,875,616	3,463,016	1,864,701
2009	4	-	4,254,413	45,348	1,134,510	5,434,271	4,145,779	4,828,280	3,532,276	1,901,995
2010	5	-	4,339,501	46,255	1,157,200	5,542,957	3,952,051	4,781,403	3,602,922	1,940,035
2011	6	-	4,426,291	47,180	1,180,344	5,653,816	3,767,376	4,734,982	3,674,980	1,978,836
2012	7	-	4,514,817	48,124	1,203,951	5,766,892	3,591,331	4,689,011	3,748,480	2,018,412
2013	8	-	4,605,113	49,086	1,228,030	5,882,230	3,423,511	4,643,487	3,823,449	2,058,780
2014	9	-	4,697,216	50,068	1,252,591	5,999,875	3,263,534	4,598,404	3,899,918	2,099,956
2015	10	-	4,791,160	51,069	1,277,643	6,119,872	3,111,033	4,553,760	3,977,917	2,141,955
							<b>\$ 38,951,637</b>	<b>\$ 47,600,042</b>		
						Annual recurring cost \$	5,607,172		\$ 3,644,662	\$ 1,962,510

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	2,382,073	1,282,655	3,664,727
2006	2,429,714	1,308,308	3,738,022
2007	2,478,308	1,334,474	3,812,782
2008	2,527,875	1,361,163	3,889,038
2009	2,578,432	1,388,387	3,966,819
2010	2,630,001	1,416,154	4,046,155
2011	2,682,601	1,444,477	4,127,078
2012	2,736,253	1,473,367	4,209,620
2013	2,790,978	1,502,834	4,293,812
2014	2,846,797	1,532,891	4,379,688
2015	2,903,733	1,563,549	4,467,282

[m] \$ **1.37** Average cost per passenger

[a] No programming and transaction costs

[b] [j] \* 15% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes

[c] [l] \* 0.25% passengers delayed \* \$4.57 cost of carrier ticket agent

[d] [l] \* 0.25% passengers delayed \* \$28.60/hour passenger time \* 4 hours delay

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 0.25% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[i] [k] \* 0.25% passengers delayed \* \$118.97 cost of passenger delayed + [k] \* 15% passengers arriving early \* \$7.15 cost of passenger

[j] Estimated annual passengers on small US carriers, 2% annual growth rate

[k] Estimated annual passengers on small foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix A-3**  
**Cost Calculations**  
**AQQ, Large Carriers**

*Modifications to transmission methods (low cost scenario)*

		<b>Programming and transaction costs (carriers)</b>	<b>Costs for arriving earlier (passengers)</b>	<b>Rerouting costs (carriers)</b>	<b>Rerouting costs, 4-hour delay (passengers)</b>	<b>Total</b>	<b>Total discounted (7%)</b>	<b>Total discounted (3%)</b>	<b>US total</b>	<b>Foreign total</b>
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ 184,000,000	\$ -	\$ -	\$ -	\$ 184,000,000	\$ 171,962,617	\$ 178,640,777	\$ 22,000,000	\$ 162,000,000
2007	2	18,169,273	-	1,656,315	41,437,317	61,262,905	53,509,394	57,746,164	28,793,566	32,469,340
2008	3	18,532,659	-	1,689,442	42,266,063	62,488,164	51,008,955	57,185,522	29,369,437	33,118,727
2009	4	18,903,312	-	1,723,231	43,111,384	63,737,927	48,625,359	56,630,322	29,956,826	33,781,101
2010	5	19,281,378	-	1,757,695	43,973,612	65,012,685	46,353,146	56,080,513	30,555,962	34,456,723
2011	6	19,667,006	-	1,792,849	44,853,084	66,312,939	44,187,111	55,536,042	31,167,081	35,145,858
2012	7	20,060,346	-	1,828,706	45,750,146	67,639,198	42,122,293	54,996,858	31,790,423	35,848,775
2013	8	20,461,553	-	1,865,280	46,665,149	68,991,982	40,153,962	54,462,908	32,426,231	36,565,750
2014	9	20,870,784	-	1,902,586	47,598,452	70,371,821	38,277,608	53,934,141	33,074,756	37,297,065
2015	10	21,288,200	-	1,940,638	48,550,421	71,779,258	36,488,935	53,410,509	33,736,251	38,043,007
							<b>\$ 572,689,381</b>	<b>\$ 678,623,757</b>		
						<i>Annual recurring cost</i>	\$ 66,399,653		\$ 31,207,837	\$ 35,191,816

**Passenger counts**

	<b>US</b>	<b>Foreign</b>	<b>Total</b>
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[m] \$ **1.01** Average cost per passenger

- [a] \$2 million \* 92 large carriers in 2006; \$0.25 \* [l] in subsequent years
- [b] No costs for arriving at the originating airport earlier
- [c] [l] \* 0.5% passengers delayed \* \$4.57 cost of carrier ticket agent
- [d] [l] \* 0.5% passengers delayed \* \$28.60/hour passenger time \* 4 hours delay
- [e] [a] + [b] + [c] + [d]
- [f] [e] discounted at 7%
- [g] [e] discounted at 3%
- [h] [j] \* 0.5% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* \$0.25
- [i] [k] \* 0.5% passengers delayed \* \$118.97 cost of passenger delayed + [k] \* \$0.25
- [j] Estimated annual passengers on large US carriers, 2% annual growth rate
- [k] Estimated annual passengers on large foreign carriers, 2% annual growth rate
- [l] [j] + [k]
- [m] Sum of [e] / sum of [l] (sum of 2007-2015 estimates only)

## **Appendix B**

---

### **Benefits of the Pre-Boarding APIS Rule**

**Appendix B-1**  
**Benefits Calculations**  
**Pre-Boarding APIS Rule**  
*High and low cost scenarios*

		Interview costs avoided (CBP and law enforcement)	Deportation costs avoided (CBP and carriers)	Delay costs avoided (passengers, carriers, CBP)	Diversion costs avoided (passengers, carriers, CBP)	Grand total	Total discounted (7%)	Total discounted (3%)
		[a]	[b]	[c]	[d]	[e]	[f]	[g]
2006	1	\$ 1,200,040	\$ 12,659,084	\$ 43,514	\$ 174,056	\$ 14,076,693	\$ 13,155,788	\$ 13,666,693
2007	2	1,212,040	12,785,675	43,514	174,056	14,215,285	12,416,180	13,399,269
2008	3	1,224,160	12,913,532	43,514	174,056	14,355,262	11,718,170	13,137,098
2009	4	1,236,402	13,042,667	43,514	174,056	14,496,639	11,059,416	12,880,076
2010	5	1,248,766	13,173,094	43,514	174,056	14,639,429	10,437,711	12,628,100
2011	6	1,261,254	13,304,824	43,514	174,056	14,783,648	9,850,969	12,381,072
2012	7	1,273,866	13,437,873	43,514	174,056	14,929,309	9,297,223	12,138,894
2013	8	1,286,605	13,572,251	43,514	174,056	15,076,426	8,774,617	11,901,470
2014	9	1,299,471	13,707,974	43,514	174,056	15,225,015	8,281,399	11,668,706
2015	10	1,312,466	13,845,054	43,514	174,056	15,375,089	7,815,916	11,440,510
							<b>\$ 102,807,389</b>	<b>\$ 125,241,888</b>

Average recurring benefit \$ 14,717,279  
[h]

**Improper boardings**

	Annual hits	Hits prevented from boarding	Residual
	[i]	[j]	[k]
2004	22,000		
2005	22,220	19,998	2,222
2006	22,442	20,198	2,244
2007	22,667	20,400	2,267
2008	22,893	20,604	2,289
2009	23,122	20,810	2,312
2010	23,353	21,018	2,335
2011	23,587	21,228	2,359
2012	23,823	21,441	2,382
2013	24,061	21,655	2,406
2014	24,302	21,872	2,430
2015	24,545	22,090	2,454

[a] [j] \* \$29.70/hour cost per agent \* 2 hour interview

[b] [j] \* 25% of hits deported \* (\$1,507 CBP processing costs + \$1,000 carrier costs)

[c] [(\$3,372/hour carrier cost \* 4 hours) + (\$28.60/hour passenger time \* 250 passengers \* 4 hours) + (\$500/passenger compensation \* 250 passengers) + (29.70/hour per agent \* 12 agents \* 4 hours)] \* 1 delay annually

[d] [(\$3,372/hour carrier cost \* 8 hours) + (\$28.60/hour passenger time \* 250 passengers \* 8 hours) + (\$500/passenger compensation \* 250 passengers) + (29.70/hour per agent \* 12 agents \* 8 hours)] \* 2 diversions annually

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] Average of [e] (2006-2015 only)

[i] Estimated annual hits, 1% annual growth rate

[j] [i] \* 0.9 effectiveness factor

[k] [i] - [j]

## Appendix C

---

### Costs of Regulatory Alternatives

**Appendix C-1**  
**Cost Calculations**  
**Pre-Departure APIS Rule, Large Carriers**  
*No modification to transmission methods*

		<b>Programming and transaction costs (carriers)</b>	<b>Costs for arriving earlier (passengers)</b>	<b>Rerouting costs (carriers)</b>	<b>Rerouting costs, 4-hour delay (passengers)</b>	<b>Total</b>	<b>Total discounted (7%)</b>	<b>Total discounted (3%)</b>	<b>US total</b>	<b>Foreign total</b>	
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]	
2006	1	\$ -	\$ 25,390,513	\$ 3,247,677	\$ 81,249,641	\$ 109,887,831	\$ 102,698,907	\$ 106,687,214	\$ 51,647,280	\$ 58,240,550	
2007	2	-	25,898,323	3,312,631	82,874,633	112,085,587	97,899,893	105,651,416	52,680,226	59,405,361	
2008	3	-	26,416,289	3,378,884	84,532,126	114,327,299	93,325,131	104,625,674	53,733,831	60,593,468	
2009	4	-	26,944,615	3,446,461	86,222,769	116,613,845	88,964,144	103,609,891	54,808,507	61,805,338	
2010	5	-	27,483,507	3,515,390	87,947,224	118,946,122	84,806,941	102,603,970	55,904,677	63,041,445	
2011	6	-	28,033,178	3,585,698	89,706,168	121,325,044	80,844,000	101,607,815	57,022,771	64,302,273	
2012	7	-	28,593,841	3,657,412	91,500,292	123,751,545	77,066,243	100,621,331	58,163,226	65,588,319	
2013	8	-	29,165,718	3,730,560	93,330,298	126,226,576	73,465,017	99,644,425	59,326,491	66,900,085	
2014	9	-	29,749,032	3,805,172	95,196,904	128,751,108	70,032,072	98,677,003	60,513,021	68,238,087	
2015	10	-	30,344,013	3,881,275	97,100,842	131,326,130	66,759,545	97,718,974	61,723,281	69,602,849	
							<b>\$ 835,861,892</b>	<b>\$ 1,021,447,712</b>			
<i>Annual recurring cost</i>									\$ 120,324,109	\$ 56,552,331	\$ 63,771,778

**Passenger counts**

	<b>US</b>	<b>Foreign</b>	<b>Total</b>
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[l] \$ **1.55** Average cost per passenger

[a] No programming and transaction costs

[b] [i] \* 5% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes

[c] [i] \* 1% passengers delayed \* \$4.57 cost of carrier ticket agent

[d] [i] \* 1% passengers delayed \* \$28.60/hour passenger time \* 4 hours delay

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 1% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 5% passengers arriving early \* \$7.15 cost of passenger

[i] [k] \* 1% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 5% passengers arriving early \* \$7.15 cost of passenger

[j] Estimated annual passengers on large US carriers, 2% annual growth rate

[k] Estimated annual passengers on large foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix C-2  
Cost Calculations  
Pre-Departure APIS Rule, Small Carriers**

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 4-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 1,336,343	\$ -	\$ -	\$ 1,336,343	\$ -	\$ -	\$ 868,623	\$ 467,720
2007	2	-	1,363,070	-	-	1,363,070	1,190,558	1,284,824	885,995	477,074
2008	3	-	1,390,331	-	-	1,390,331	1,134,924	1,272,350	903,715	486,616
2009	4	-	1,418,138	-	-	1,418,138	1,081,890	1,259,997	921,789	496,348
2010	5	-	1,446,500	-	-	1,446,500	1,031,335	1,247,764	940,225	506,275
2011	6	-	1,475,430	-	-	1,475,430	983,142	1,235,650	959,030	516,401
2012	7	-	1,504,939	-	-	1,504,939	937,200	1,223,653	978,210	526,729
2013	8	-	1,535,038	-	-	1,535,038	893,406	1,211,773	997,775	537,263
2014	9	-	1,565,739	-	-	1,565,739	851,658	1,200,008	1,017,730	548,008
2015	10	-	1,597,053	-	-	1,597,053	811,861	1,188,358	1,038,085	558,969
							<b>\$ 8,915,974</b>	<b>\$ 11,124,376</b>		
						<i>Annual recurring cost</i>	\$ 1,463,258		\$ 951,118	\$ 512,140

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	2,382,073	1,282,655	3,664,727
2006	2,429,714	1,308,308	3,738,022
2007	2,478,308	1,334,474	3,812,782
2008	2,527,875	1,361,163	3,889,038
2009	2,578,432	1,388,387	3,966,819
2010	2,630,001	1,416,154	4,046,155
2011	2,682,601	1,444,477	4,127,078
2012	2,736,253	1,473,367	4,209,620
2013	2,790,978	1,502,834	4,293,812
2014	2,846,797	1,532,891	4,379,688
2015	2,903,733	1,563,549	4,467,282

[m] \$ **0.36** Average cost per passenger

[a] No programming and transaction costs

[b] [i] \* 5% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes

[c] No passengers delayed

[d] No passengers delayed

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] No passengers delayed but [j] \* 5% passengers arriving earlier \* \$7.15

[i] No passengers delayed but [k] \* 5% passengers arriving earlier \* \$7.15

[j] Estimated annual passengers on small US carriers, 2% annual growth rate

[k] Estimated annual passengers on small foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix C-3  
Cost Calculations**

**Pre-Boarding APIS Rule at Elevated Alert, Large Carriers**

No modifications to transmission methods, assume 2 months of the year at elevated alert

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 6-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 12,695,256	\$ 5,412,796	\$ 203,124,101	\$ 221,232,153	\$ 206,759,022	\$ 214,788,498	\$ 103,979,112	\$ 117,253,041
2007	2	-	12,949,161	5,521,052	207,186,583	225,656,796	197,097,385	212,703,173	106,058,694	119,598,102
2008	3	-	13,208,145	5,631,473	211,330,315	230,169,932	187,887,227	210,638,094	108,179,868	121,990,064
2009	4	-	13,472,308	5,744,102	215,556,921	234,773,331	179,107,450	208,593,064	110,343,466	124,429,865
2010	5	-	13,741,754	5,858,984	219,868,060	239,468,798	170,737,943	206,567,888	112,550,335	126,918,463
2011	6	-	14,016,589	5,976,164	224,265,421	244,258,174	162,759,535	204,562,375	114,801,342	129,456,832
2012	7	-	14,296,921	6,095,687	228,750,729	249,143,337	155,153,949	202,576,332	117,097,368	132,045,969
2013	8	-	14,582,859	6,217,601	233,325,744	254,126,204	147,903,764	200,609,572	119,439,316	134,686,888
2014	9	-	14,874,516	6,341,953	237,992,259	259,208,728	140,992,373	198,661,906	121,828,102	137,380,626
2015	10	-	15,172,007	6,468,792	242,752,104	264,392,902	134,403,945	196,733,150	124,264,664	140,128,238
							<b>\$ 1,682,802,593</b>	<b>\$ 2,056,434,053</b>		
Annual recurring cost						\$ 242,243,036			\$ 113,854,227	\$ 128,388,809

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[m] \$ **3.11** Average cost per passenger

[a] No programming and transaction costs

[b] [l] \* 15% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes \* 1/6 of year

[c] [l] \* 10% passengers delayed \* \$4.57 cost of carrier ticket agent \* 1/6 of year

[d] [l] \* 10% passengers delayed \* \$28.60/hour passenger time \* 6 hours delay \* 1/6 of year

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 10% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger \* 1/6 of year

[i] [k] \* 10% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger \* 1/6 of year

[j] Estimated annual passengers on large US carriers, 2% annual growth rate

[k] Estimated annual passengers on large foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix C-4**  
**Cost Calculations**  
**Pre-Boarding APIS Rule at Elevated Alert, Small Carriers**  
*Assume 2 months of the year at elevated alert*

		<b>Programming and transaction costs (carriers)</b>	<b>Costs for arriving earlier (passengers)</b>	<b>Rerouting costs (carriers)</b>	<b>Rerouting costs, 6-hour delay (passengers)</b>	<b>Total</b>	<b>Total discounted (7%)</b>	<b>Total discounted (3%)</b>	<b>US total</b>	<b>Foreign total</b>
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 668,171	\$ 71,221	\$ 2,672,686	\$ 3,412,078	\$ 3,188,858	\$ 3,312,697	\$ 2,217,851	\$ 1,194,227
2007	2	-	681,535	72,645	2,726,139	3,480,319	3,039,846	3,280,535	2,262,208	1,218,112
2008	3	-	695,166	74,098	2,780,662	3,549,926	2,897,797	3,248,685	2,307,452	1,242,474
2009	4	-	709,069	75,580	2,836,275	3,620,924	2,762,386	3,217,144	2,353,601	1,267,324
2010	5	-	723,250	77,092	2,893,001	3,693,343	2,633,302	3,185,910	2,400,673	1,292,670
2011	6	-	737,715	78,634	2,950,861	3,767,210	2,510,251	3,154,979	2,448,686	1,318,523
2012	7	-	752,470	80,206	3,009,878	3,842,554	2,392,949	3,124,348	2,497,660	1,344,894
2013	8	-	767,519	81,811	3,070,076	3,919,405	2,281,129	3,094,015	2,547,613	1,371,792
2014	9	-	782,869	83,447	3,131,477	3,997,793	2,174,535	3,063,976	2,598,566	1,399,228
2015	10	-	798,527	85,116	3,194,107	4,077,749	2,072,921	3,034,228	2,650,537	1,427,212
							<b>\$ 25,953,974</b>	<b>\$ 31,716,516</b>		

Annual recurring cost \$ 3,736,130 \$ 2,428,485 \$ 1,307,646

**Passenger counts**

	<b>US</b>	<b>Foreign</b>	<b>Total</b>
	[j]	[k]	[l]
2005	2,382,073	1,282,655	3,664,727
2006	2,429,714	1,308,308	3,738,022
2007	2,478,308	1,334,474	3,812,782
2008	2,527,875	1,361,163	3,889,038
2009	2,578,432	1,388,387	3,966,819
2010	2,630,001	1,416,154	4,046,155
2011	2,682,601	1,444,477	4,127,078
2012	2,736,253	1,473,367	4,209,620
2013	2,790,978	1,502,834	4,293,812
2014	2,846,797	1,532,891	4,379,688
2015	2,903,733	1,563,549	4,467,282

[m] \$ **0.91** Average cost per passenger

[a] No programming and transaction costs

[b] [i] \* 15% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes \* 1/6 of year

[c] [i] \* 2.5% passengers delayed \* \$4.57 cost of carrier ticket agent \* 1/6 of year

[d] [i] \* 2.5% passengers delayed \* \$28.60/hour passenger time \* 6 hours delay \* 1/6 of year

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 2.5% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger \* 1/6 of year

[i] [k] \* 2.5% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger \* 1/6 of year

[j] Estimated annual passengers on small US carriers, 2% annual growth rate

[k] Estimated annual passengers on small foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

Appendix C-5  
 Cost Calculations  
 120-Minute APIS Rule, Large Carriers

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 6-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 609,372,304	\$ 64,953,548	\$ 2,437,489,216	\$ 3,111,815,068	\$ 2,908,238,381	\$ 3,021,179,678	\$ 1,462,553,082	\$ 1,649,261,986
2007	2	-	621,559,750	66,252,619	2,486,239,000	3,174,051,369	2,772,339,392	2,991,847,836	1,491,804,144	1,682,247,226
2008	3	-	633,990,945	67,577,671	2,535,963,781	3,237,532,397	2,642,790,822	2,962,800,770	1,521,640,227	1,715,892,170
2009	4	-	646,670,764	68,929,225	2,586,683,056	3,302,283,045	2,519,295,924	2,934,035,714	1,552,073,031	1,750,210,014
2010	5	-	659,604,179	70,307,809	2,638,416,717	3,368,328,706	2,401,571,815	2,905,549,930	1,583,114,492	1,785,214,214
2011	6	-	672,796,263	71,713,965	2,691,185,052	3,435,695,280	2,289,348,833	2,877,340,708	1,614,776,781	1,820,918,498
2012	7	-	686,252,188	73,148,245	2,745,008,753	3,504,409,185	2,182,369,916	2,849,405,361	1,647,072,317	1,857,336,868
2013	8	-	699,977,232	74,611,209	2,799,908,928	3,574,497,369	2,080,390,013	2,821,741,231	1,680,013,763	1,894,483,606
2014	9	-	713,976,777	76,103,434	2,855,907,106	3,645,987,316	1,983,175,526	2,794,345,685	1,713,614,039	1,932,373,278
2015	10	-	728,256,312	77,625,502	2,913,025,248	3,718,907,063	1,890,503,773	2,767,216,115	1,747,886,320	1,971,020,743
							<b>\$23,670,024,395</b>	<b>\$28,925,463,028</b>		
Annual recurring cost						\$ 3,407,350,680			\$ 1,601,454,820	\$ 1,805,895,860

Passenger counts

	US	Foreign	Total
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[m] \$ **43.81** Average cost per passenger

- [a] No programming and transaction costs
- [b] [i] \* 30% passengers arriving earlier \* \$28.60/hour passenger time \* 1 hour
- [c] [i] \* 20% passengers delayed \* \$4.57 cost of carrier ticket agent
- [d] [i] \* 20% passengers delayed \* \$28.60/hour passenger time \* 6 hours delay
- [e] [a] + [b] + [c] + [d]
- [f] [e] discounted at 7%
- [g] [e] discounted at 3%
- [h] [j] \* 20% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 30% passengers arriving early \* \$28.60 cost of passenger
- [i] [k] \* 20% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 30% passengers arriving early \* \$28.60 cost of passenger
- [j] Estimated annual passengers on large US carriers, 2% annual growth rate
- [k] Estimated annual passengers on large foreign carriers, 2% annual growth rate
- [l] [j] + [k]
- [m] Sum of [e] / sum of [l]

**Appendix C-6  
Cost Calculations  
120-Minute APIS Rule, Small Carriers**

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 6-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 32,072,227	\$ 854,652	\$ 32,072,227	\$ 64,999,105	\$ 60,746,827	\$ 63,105,927	\$ 42,249,418	\$ 22,749,687
2007	2	-	32,713,671	871,745	32,713,671	66,299,087	57,908,190	62,493,248	43,094,407	23,204,680
2008	3	-	33,367,944	889,180	33,367,944	67,625,069	55,202,200	61,886,518	43,956,295	23,668,774
2009	4	-	34,035,303	906,963	34,035,303	68,977,570	52,622,658	61,285,678	44,835,421	24,142,150
2010	5	-	34,716,009	925,103	34,716,009	70,357,122	50,163,655	60,690,671	45,732,129	24,624,993
2011	6	-	35,410,330	943,605	35,410,330	71,764,264	47,819,559	60,101,441	46,646,772	25,117,492
2012	7	-	36,118,536	962,477	36,118,536	73,199,549	45,585,000	59,517,932	47,579,707	25,619,842
2013	8	-	36,840,907	981,726	36,840,907	74,663,540	43,454,860	58,940,088	48,531,301	26,132,239
2014	9	-	37,577,725	1,001,361	37,577,725	76,156,811	41,424,259	58,367,854	49,501,927	26,654,884
2015	10	-	38,329,280	1,021,388	38,329,280	77,679,947	39,488,546	57,801,176	50,491,966	27,187,982
							<b>\$ 494,415,757</b>	<b>\$ 604,190,534</b>		
<i>Annual recurring cost</i>						\$ 71,172,207			\$ 46,261,934	\$ 24,910,272

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	2,382,073	1,282,655	3,664,727
2006	2,429,714	1,308,308	3,738,022
2007	2,478,308	1,334,474	3,812,782
2008	2,527,875	1,361,163	3,889,038
2009	2,578,432	1,388,387	3,966,819
2010	2,630,001	1,416,154	4,046,155
2011	2,682,601	1,444,477	4,127,078
2012	2,736,253	1,473,367	4,209,620
2013	2,790,978	1,502,834	4,293,812
2014	2,846,797	1,532,891	4,379,688
2015	2,903,733	1,563,549	4,467,282

[m] \$ **17.39** Average cost per passenger

[a] No programming and transaction costs

[b] [i] \* 30% passengers arriving earlier \* \$28.60/hour passenger time \* 1 hour

[c] [i] \* 5% passengers delayed \* \$4.57 cost of carrier ticket agent

[d] [i] \* 5% passengers delayed \* \$28.60/hour passenger time \* 6 hours delay

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 5% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 30% passengers arriving early \* \$28.60 cost of passenger

[i] [k] \* 5% passengers delayed \* \$118.97 cost of passenger delayed + [j] \* 30% passengers arriving early \* \$28.60 cost of passenger

[j] Estimated annual passengers on small US carriers, 2% annual growth rate

[k] Estimated annual passengers on small foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix C-7**  
**Summary of Costs for Regulatory Alternatives**

	<b>Chosen Alternative: Pre-Boarding APIS</b>				
	<b>Pre-departure APIS*</b>	<b>Pre-boarding APIS at elevated alert</b>	<b>60-minute option</b>	<b>AQQ option**</b>	<b>120-minute requirement</b>
Large US carrier year 1 cost	\$ 51,647,280	\$ 103,979,112	\$ 115,228,102	\$ 22,000,000	\$ 1,462,553,082
Small US carrier year 1 cost	868,623	2,217,851	3,328,543	3,328,543	42,249,418
Total	\$ 52,515,903	\$ 106,196,963	\$ 118,556,645	\$ 25,328,543	\$ 1,504,802,500
Large foreign carrier year 1 cost	\$ 58,240,550	\$ 117,253,041	\$ 129,938,072	\$ 162,000,000	\$ 1,649,261,986
Small foreign carrier year 1 cost	467,720	1,194,227	1,792,292	1,792,292	22,749,687
Total	\$ 58,708,270	\$ 118,447,269	\$ 131,730,364	\$ 163,792,292	\$ 1,672,011,673
Large carrier year 1 cost	\$ 109,887,831	\$ 221,232,153	\$ 245,166,174	\$ 184,000,000	\$ 3,111,815,068
Small carrier year 1 cost	1,336,343	3,412,078	5,120,835	5,120,835	64,999,105
Total	\$ 111,224,173	\$ 224,644,231	\$ 250,287,009	\$ 189,120,835	\$ 3,176,814,173
Large US carrier average recurring cost	\$ 56,552,331	\$ 113,854,227	\$ 126,171,557	\$ 31,207,837	\$ 1,601,454,820
Small US carrier average recurring cost	951,118	2,428,485	3,644,662	3,644,662	46,261,934
Total	\$ 57,503,449	\$ 116,282,711	\$ 129,816,218	\$ 34,852,499	\$ 1,647,716,754
Large foreign carrier average recurring cost	\$ 63,771,778	\$ 128,388,809	\$ 142,278,564	\$ 35,191,816	\$ 1,805,895,860
Small foreign carrier average recurring cost	512,140	1,307,646	1,962,510	1,962,510	24,910,272
Total	\$ 64,283,918	\$ 129,696,454	\$ 144,241,074	\$ 37,154,326	\$ 1,830,806,133
Large carrier average recurring cost	\$ 120,324,109	\$ 242,243,036	\$ 268,450,120	\$ 66,399,653	\$ 3,407,350,680
Small carrier average recurring cost	1,463,258	3,736,130	5,607,172	5,607,172	71,172,207
Total	\$ 121,787,367	\$ 245,979,166	\$ 274,057,292	\$ 72,006,825	\$ 3,478,522,886
Large carrier 10-year cost (7%)	\$ 835,861,892	\$ 1,682,802,593	\$ 1,864,856,744	\$ 572,689,381	\$23,670,024,395
Small carrier 10-year cost (7%)	8,915,974	25,953,974	38,951,637	38,951,637	494,415,757
Total	\$ 844,777,866	\$ 1,708,756,567	\$ 1,903,808,382	\$ 611,641,018	\$24,164,440,151
Large carrier 10-year cost (3%)	\$ 1,021,447,712	\$ 2,056,434,053	\$ 2,278,909,557	\$ 678,623,757	\$28,925,463,028
Small carrier 10-year cost (3%)	11,124,376	31,716,516	47,600,042	47,600,042	604,190,534
Total	\$ 1,032,572,088	\$ 2,088,150,569	\$ 2,326,509,599	\$ 726,223,798	\$29,529,653,562

\* Costs do not include the cost of a security incident where a high-risk passenger boards but the aircraft is not permitted to take off. See Appendix C-8 and C-9.

\*\* Costs for small carriers are the same as those for the 60-minute option.

<b>Appendix C-8</b>		
<i>Passenger is allowed to board, but aircraft is not permitted to take off (Pre-Departure APIS Rule)</i>		
<b>Variable</b>	<b>Estimate</b>	<b>Source</b>
<b>Number of incidents a year</b>	2	CBP, two diversions in 2004 to Bangor, Maine, following watchlist hits
<b>Value of passenger and carrier time</b>		
Average value (\$/hour) of passenger time (all passengers, value in 2000)	\$ 28.60	FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
Cost to carrier for hour of delay	\$ 3,372	Massachusetts Institute of Technology, Lincoln Laboratory. "Delay Causality and Reduction at the New York City Airports Using Terminal Weather Information Systems." Project Report ATC-291, by S.S. Allan, S.G. Gaddy, and J.E. Evans, February 16, 2001.
Annual salary of CBP/other law enforcement agent	\$ 44,136	US Office of Personnel Management. GS-11/1 Salary, 2004, no locality pay
Loaded labor rate for CBP/law enforcement agent	\$ 61,790	Above multiplied by 1.4 labor load rate to account for fringe benefits and locality pay
Average value (\$/hour) of CBP/law enforcement agent time	\$ 29.71	Above divided by 2080, the number of hours in a full-time equivalent
<b>Times for various scenarios</b>		
Length of time for delayed aircraft (in hours)	4	Estimate based on CBP incident reports
<b>Misc information</b>		
Number of passengers onboard international aircraft	250	The FAA report ("Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004) estimates that large aircraft hold an average of 157 passengers. This average is weighted heavily by domestic aircraft; generally international aircraft are larger, holding between 200 and 300 people. We use 250 passengers in this analysis.
Number of CBP/law enforcement agents required during security incident response	12	CBP
<b>Cost of a post-boarding/pre-departure incident</b>		
Cost of passenger delay (borne by passengers)	\$ 28,600	250 passengers * \$28.60/cost per passenger hour * 4 hours
Cost to carrier of delay (borne by carrier)	\$ 13,488	\$3,372 * 4 hours
Cost of law enforcement response (borne by agency)	\$ 1,426	12 law enforcement agents * \$29.71 * 4 hours
Incident total	\$ 43,514	
<b>Annual total</b>	<b>\$ 87,028</b>	Above * 2 delay incidents

**Appendix C-9  
10-Year PV Incident Costs  
Pre-Departure APIS Rule**

		<b>Annual cost of delay incidents</b>	<b>Total discounted (7%)</b>	<b>Total discounted (3%)</b>
2005	0	\$ -	\$ -	\$ -
2006	1	87,028	81,334	84,493
2007	2	87,028	76,014	82,032
2008	3	87,028	71,041	79,643
2009	4	87,028	66,393	77,323
2010	5	87,028	62,050	75,071
2011	6	87,028	57,990	72,884
2012	7	87,028	54,197	70,762
2013	8	87,028	50,651	68,701
2014	9	87,028	47,337	66,700
2015	10	87,028	44,241	64,757
<b>Totals</b>			<b>\$ 611,247</b>	<b>\$ 742,365</b>

## Appendix D

---

### Summary of Key Assumptions Used in the Analysis

<b>Appendix D-1</b>		
<b>Key Assumptions for the Cost Analysis and Alternatives</b>		
<b>Variable</b>	<b>Estimate</b>	<b>Source</b>
<b>Number of carriers</b>		
Number of large US carriers	11	CBP
Number of small US carriers	773	CBP
Number of large foreign carriers	81	CBP
Number of small foreign carriers	415	CBP
<b>Percentages of passengers on carriers</b>		
Percent of passengers on large carriers	95%	Estimate from CBP data
Percent of passengers on US carriers	47%	Estimate from CBP data
Percent of passengers on foreign carriers	53%	Estimate from CBP data
Percent of passengers on small carriers	5%	Estimate from CBP data
Percent of passengers on US carriers	65%	Estimate from CBP data
Percent of passengers on foreign carriers	35%	Estimate from CBP data
<b>Modifications to implement AQQ (low cost scenario)</b>		
Air carrier cost of developing system that will conduct individual passenger queries	\$ 2,000,000	Estimate
Communications cost per transaction	\$ 0.20	Estimate based on cost of Australians using SITA
Time per transaction (seconds)	10	Estimate from CBP
Ticket agent cost per transaction	\$ 0.05	Above multiplied by loaded labor rate for ticket agent
Total AQQ cost per transaction	\$ 0.25	Communications cost plus ticket agent cost
<b>Value of passenger time</b>		
Average value (\$/hour) of passenger time (all passengers, value in 2000)	\$ 28.60	FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
Average value (\$/minute) of passenger time (all passengers, value in 2000)	\$ 0.48	Above value of passenger time divided by 60 minutes
Average value (\$/hour) of ticket agent time (value in 2003)	\$ 14.07	Bureau of Labor Statistics data for transportation ticket and reservation agents
Loaded labor rate for ticket agent	\$ 18.29	Above multiplied by 1.3. Labor load rate per FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
Average value (\$/minute) of ticket agent time (value in 2003)	\$ 0.30	Above value of agent time divided by 60 minutes

Variable	Estimate	Source
Cost to passenger of arriving 15 minutes early (all alternatives but 120-Minute APIS Rule)	\$ 7.15	Above value of passenger time multiplied by 0.25 hours
Cost to passenger of arriving 1 hour early (120-Minute APIS Rule)	\$ 28.60	Above value of passenger time multiplied by 1 hour
Cost to passenger of 4-hour delay	\$ 114.40	Above value of passenger time multiplied by 4 hours
Cost to passenger of 6-hour delay	\$ 171.60	Above value of passenger time multiplied by 6 hours
Cost to passenger of 8-hour delay	\$ 228.80	Above value of passenger time multiplied by 8 hours
Cost to carrier of rerouting one passenger	\$ 4.57	Reservation agent value multiplied by 15 minutes to reroute passenger
<b>Percentage of passengers delayed and rerouted</b>		
<b>Pre-Boarding APIS Rule</b>		
<b>60-minute regulatory option (high cost scenario)</b>		
Percent of passengers on large carriers delayed	2.00%	Estimate
Percent of passengers on small carriers delayed	0.25%	Estimate
Percent of passengers on large carriers who need to arrive at originating airport earlier	15.00%	Estimate
Percent of passengers on small carriers who need to arrive at originating airport earlier	15.00%	Estimate
<b>AQQ regulatory option (low cost scenario)</b>		
Percent of passengers on large carriers delayed	0.50%	Estimate
Percent of passengers on small carriers delayed (no AQQ)	0.25%	Estimate
<b>Pre-Departure APIS Rule, assume a 30-minute requirement</b>		
Percent of passengers on large carriers delayed	1.00%	Estimate
Percent of passengers on small carriers delayed	0.00%	Estimate
Percent of passengers on large carriers who need to arrive at originating airport earlier	5.00%	Estimate
Percent of passengers on small carriers who need to arrive at originating airport earlier	5.00%	Estimate
<b>Pre-Boarding APIS Rule at Elevated Alert, assume a 60-minute requirement</b>		
Percent of passengers on large carriers delayed	10.00%	Estimate
Percent of passengers on small carriers delayed	2.50%	Estimate
Percent of passengers on large carriers who need to arrive at originating airport earlier	15.00%	Estimate
Percent of passengers on small carriers who need to arrive at originating airport earlier	15.00%	Estimate

Variable	Estimate	Source
<b>120-Minute APIS Rule</b>		
Percent of passengers on large carriers delayed	20.00%	Estimate
Percent of passengers on small carriers delayed	5.00%	Estimate
Percent of passengers on large carriers who need to arrive at originating airport earlier	30.00%	Estimate
Percent of passengers on small carriers who need to arrive at originating airport earlier	30.00%	Estimate

<b>Appendix D-2</b>		
<b>Key Assumptions for the Benefits Analysis</b>		
<b>Variable</b>	<b>Estimate</b>	<b>Source</b>
<b>Watchlist hits</b>		
Hits over 6-month period in 2004	11,000	CBP, TSA
Estimated hits over 1 year	22,000	Above multiplied by 2
Annual increase in hits	1.00%	Estimate
Percent effectiveness of 60-Minute APIS Rule	0.9	Estimate
<b>Value of passenger and carrier time</b>		
Average value (\$/hour) of passenger time (all passengers, value in 2000)	\$ 28.60	FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
Cost to carrier for hour of delay	\$ 3,372.00	Massachusetts Institute of Technology, Lincoln Laboratory. "Delay Causality and Reduction at the New York City Airports Using Terminal Weather Information Systems." Project Report ATC-291, by S.S. Allan, S.G. Gaddy, and J.E. Evans, February 16, 2001.
Annual salary of CBP/other law enforcement agent	\$ 44,136	US Office of Personnel Management. GS-11/1 Salary, 2004, no locality pay
Loaded labor rate for CBP/law enforcement agent	\$ 61,790	Above multiplied by 1.4 labor load rate to account for fringe benefits and locality pay
Average value (\$/hour) of CBP/law enforcement agent time	\$ 29.71	Above divided by 2080, the number of hours in a full-time equivalent
<b>Times for various scenarios</b>		
Length of time (in hours) for CBP/law enforcement interview	2	CBP
Length of time for delayed aircraft (in hours)	4	Estimate based on CBP incident reports
Length of time for diverted aircraft (in hours)	8	Estimate based on CBP incident reports

Variable	Estimate	Source
<b>Misc information</b>		
Number of passengers onboard international aircraft	250	The FAA report ("Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004) estimates that large aircraft hold an average of 157 passengers. This average is weighted heavily by domestic aircraft; generally international aircraft are larger, holding between 200 and 300 people. We use 250 passengers in this analysis.
Number of CBP/law enforcement agents required during security incident response	12	CBP
Percent of watchlist hits deported	25%	CBP
<b>Response costs</b>		
Cost of CBP/law enforcement interview	\$ 59.41	Average value of CBP/law enforcement agent time multiplied by 2 hours
Cost to CBP to process passenger deported	\$ 1,507.00	CBP
Cost to air carrier to transport and accommodate passenger deported	\$ 1,000.00	Estimate
<b>Total cost of 4 hour delay</b>		
		Assumes 250 passengers onboard international aircraft and 12 CBP agents responding to incident
Passenger time costs	\$ 28,600.00	Average value passenger time multiplied by 4 hours multiplied by 250 passengers
Carrier operational costs	\$ 13,488.00	Cost of hour of delay for air carrier multiplied by 4 hours
Law enforcement costs	\$ 1,425.93	Average value of CBP/law enforcement agent time multiplied by 12 agents multiplied by 4 hours
<i>Total</i>	\$ 43,513.93	
<b>Total cost of 8 hour delay</b>		
		Assumes 250 passengers onboard international aircraft and 12 CBP agents responding to incident
Passenger time costs	\$ 57,200.00	Average value passenger time multiplied by 4 hours multiplied by 250 passengers
Carrier operational costs	\$ 26,976.00	Cost of hour of delay for air carrier multiplied by 4 hours
Law enforcement costs	\$ 2,851.86	Average value of CBP/law enforcement agent time multiplied by 12 agents multiplied by 4 hours
<i>Total</i>	\$ 87,027.86	
<b>Value of incident avoided</b>		
Value of a fatality avoided	\$ 3,000,000	FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
Value of fatalities in one incident	\$ 780,000,000	Above multiplied by 260 individuals (250 passengers, 10 crew)
Value of an aircraft loss avoided	\$ 11,460,000	FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
Value of an investigation avoided	\$ 449,000	FAA Office of Aviation Policy and Plans. "Economic Values for FAA Investment and Regulatory Decisions, a Guide." May 28, 2004.
<b>Total cost of incident avoided</b>	<b>\$ 791,909,000</b>	

## Appendix E

---

### Sensitivity Analysis of Costs with an 8-Hour Delay

**Appendix E-1  
Cost Calculations**

**60-Minute Option, Large Carriers, 8 hour delay**

*No modifications to transmission methods (high cost scenario)*

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 8-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 76,171,538	\$ 6,495,355	\$ 324,998,562	\$ 407,665,455	\$ 380,995,752	\$ 395,791,704	\$ 191,602,764	\$ 216,062,691
2007	2	-	77,694,969	6,625,262	331,498,533	415,818,764	363,192,212	391,949,066	195,434,819	220,383,945
2008	3	-	79,248,868	6,757,767	338,128,504	424,135,139	346,220,614	388,143,735	199,343,515	224,791,624
2009	4	-	80,833,846	6,892,922	344,891,074	432,617,842	330,042,080	384,375,349	203,330,386	229,287,456
2010	5	-	82,450,522	7,030,781	351,788,896	441,270,199	314,619,553	380,643,550	207,396,994	233,873,205
2011	6	-	84,099,533	7,171,397	358,824,674	450,095,603	299,917,705	376,947,981	211,544,933	238,550,670
2012	7	-	85,781,524	7,314,824	366,001,167	459,097,515	285,902,859	373,288,292	215,775,832	243,321,683
2013	8	-	87,497,154	7,461,121	373,321,190	468,279,465	272,542,912	369,664,134	220,091,349	248,188,117
2014	9	-	89,247,097	7,610,343	380,787,614	477,645,055	259,807,262	366,075,162	224,493,176	253,151,879
2015	10	-	91,032,039	7,762,550	388,403,366	487,197,956	247,666,736	362,521,034	228,983,039	258,214,917
							<b>\$ 3,100,907,686</b>	<b>\$ 3,789,400,008</b>		

Annual recurring cost \$ 446,382,299

\$ 209,799,681 \$ 236,582,619

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[m] \$ **5.74** Average cost per passenger

[a] No programming and transaction costs

[b] [i] \* 15% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes

[c] [i] \* 2% passengers delayed \* \$4.57 cost of carrier ticket agent

[d] [i] \* 2% passengers delayed \* \$28.60/hour passenger time \* 8 hours delay

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 2% passengers delayed \* \$233.37 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[i] [k] \* 2% passengers delayed \* \$233.37 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[j] Estimated annual passengers on large US carriers, 2% annual growth rate

[k] Estimated annual passengers on large foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix E-2  
Cost Calculations**

**60-Minute Option, Small Carriers, 8 hour delay**

*No modifications of transmission methods (high and low cost scenarios)*

		Programming and transaction costs (carriers)	Costs for arriving earlier (passengers)	Rerouting costs (carriers)	Rerouting costs, 8-hour delay (passengers)	Total	Total discounted (7%)	Total discounted (3%)	US total	Foreign total
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ -	\$ 4,009,028	\$ 42,733	\$ 2,138,148	\$ 6,189,909	\$ 5,784,962	\$ 6,009,621	\$ 4,023,441	\$ 2,166,468
2007	2	-	4,089,209	43,587	2,180,911	6,313,708	5,514,637	5,951,275	4,103,910	2,209,798
2008	3	-	4,170,993	44,459	2,224,530	6,439,982	5,256,943	5,893,496	4,185,988	2,253,994
2009	4	-	4,254,413	45,348	2,269,020	6,568,781	5,011,292	5,836,277	4,269,708	2,299,073
2010	5	-	4,339,501	46,255	2,314,401	6,700,157	4,777,119	5,779,614	4,355,102	2,345,055
2011	6	-	4,426,291	47,180	2,360,689	6,834,160	4,553,889	5,723,501	4,442,204	2,391,956
2012	7	-	4,514,817	48,124	2,407,902	6,970,843	4,341,091	5,667,934	4,531,048	2,439,795
2013	8	-	4,605,113	49,086	2,456,060	7,110,260	4,138,236	5,612,905	4,621,669	2,488,591
2014	9	-	4,697,216	50,068	2,505,182	7,252,465	3,944,861	5,558,411	4,714,102	2,538,363
2015	10	-	4,791,160	51,069	2,555,285	7,397,515	3,760,521	5,504,446	4,808,385	2,589,130
							<b>\$ 47,083,552</b>	<b>\$ 57,537,479</b>		

Annual recurring cost \$ 6,777,778 \$ 4,405,556 \$ 2,372,222

**Passenger counts**

	US	Foreign	Total
	[j]	[k]	[l]
2005	2,382,073	1,282,655	3,664,727
2006	2,429,714	1,308,308	3,738,022
2007	2,478,308	1,334,474	3,812,782
2008	2,527,875	1,361,163	3,889,038
2009	2,578,432	1,388,387	3,966,819
2010	2,630,001	1,416,154	4,046,155
2011	2,682,601	1,444,477	4,127,078
2012	2,736,253	1,473,367	4,209,620
2013	2,790,978	1,502,834	4,293,812
2014	2,846,797	1,532,891	4,379,688
2015	2,903,733	1,563,549	4,467,282

[m] \$ 1.66 Average cost per passenger

[a] No programming and transaction costs

[b] [l] \* 15% passengers arriving earlier \* \$28.60/hour passenger time \* 15 minutes

[c] [l] \* 0.25% passengers delayed \* \$4.57 cost of carrier ticket agent

[d] [l] \* 0.25% passengers delayed \* \$28.60/hour passenger time \* 8 hours delay

[e] [a] + [b] + [c] + [d]

[f] [e] discounted at 7%

[g] [e] discounted at 3%

[h] [j] \* 0.25% passengers delayed \* \$233.37 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[i] [k] \* 0.25% passengers delayed \* \$233.37 cost of passenger delayed + [j] \* 15% passengers arriving early \* \$7.15 cost of passenger

[j] Estimated annual passengers on small US carriers, 2% annual growth rate

[k] Estimated annual passengers on small foreign carriers, 2% annual growth rate

[l] [j] + [k]

[m] Sum of [e] / sum of [l]

**Appendix E-3  
Cost Calculations  
AQQ, Large Carriers**

*Modifications to transmission methods (low cost scenario)*

		<b>Programming and transaction costs (carriers)</b>	<b>Costs for arriving earlier (passengers)</b>	<b>Rerouting costs (carriers)</b>	<b>Rerouting costs, 8-hour delay (passengers)</b>	<b>Total</b>	<b>Total discounted (7%)</b>	<b>Total discounted (3%)</b>	<b>US total</b>	<b>Foreign total</b>
		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]
2006	1	\$ 184,000,000	\$ -	\$ -	\$ -	\$ 184,000,000	\$ 171,962,617	\$ 178,640,777	\$ 22,000,000	\$ 162,000,000
2007	2	86,931,434	-	1,656,315	82,874,633	171,462,382	149,761,885	161,619,740	61,111,781	68,913,285
2008	3	88,670,062	-	1,689,442	84,532,126	174,891,630	142,763,666	160,050,617	62,334,017	70,291,551
2009	4	90,443,464	-	1,723,231	86,222,769	178,389,463	136,092,467	158,496,727	63,580,697	71,697,382
2010	5	92,252,333	-	1,757,695	87,947,224	181,957,252	129,733,006	156,957,924	64,852,311	73,131,329
2011	6	94,097,379	-	1,792,849	89,706,168	185,596,397	123,670,716	155,434,061	66,149,357	74,593,956
2012	7	95,979,327	-	1,828,706	91,500,292	189,308,325	117,891,710	153,924,992	67,472,344	76,085,835
2013	8	97,898,914	-	1,865,280	93,330,298	193,094,491	112,382,752	152,430,575	68,821,791	77,607,552
2014	9	99,856,892	-	1,902,586	95,196,904	196,956,381	107,131,222	150,950,666	70,198,227	79,159,703
2015	10	101,854,030	-	1,940,638	97,100,842	200,895,509	102,125,090	149,485,126	71,602,191	80,742,897
							<b>\$ 1,293,515,131</b>	<b>\$ 1,577,991,203</b>		

*Annual recurring cost* \$ 185,839,092

\$ 66,235,857 \$ 74,691,499

**Passenger counts**

	<b>US</b>	<b>Foreign</b>	<b>Total</b>
	[j]	[k]	[l]
2005	32,726,014	36,903,803	69,629,817
2006	33,380,534	37,641,879	71,022,413
2007	34,048,145	38,394,716	72,442,861
2008	34,729,108	39,162,611	73,891,719
2009	35,423,690	39,945,863	75,369,553
2010	36,132,164	40,744,780	76,876,944
2011	36,854,807	41,559,676	78,414,483
2012	37,591,903	42,390,869	79,982,773
2013	38,343,741	43,238,687	81,582,428
2014	39,110,616	44,103,461	83,214,077
2015	39,892,828	44,985,530	84,878,358

[m] \$ **2.39** Average cost per passenger

- [a] \$2 million \* 92 large carriers in 2006; \$0.25 \* [k] in subsequent years
- [b] No costs for arriving at the originating airport earlier
- [c] [l] \* 0.5% passengers delayed \* \$4.57 cost of carrier ticket agent
- [d] [l] \* 0.5% passengers delayed \* \$28.60/hour passenger time \* 8 hours delay
- [e] [a] + [b] + [c] = [d]
- [f] [e] discounted at 7%
- [g] [e] discounted at 3%
- [h] [j] \* 0.5% passengers delayed \* \$233.37 cost of passenger delayed + [j] \* \$0.25
- [i] [k] \* 0.5% passengers delayed \* \$233.37 cost of passenger delayed + [k] \* \$0.25
- [j] Estimated annual passengers on large US carriers, 2% annual growth rate
- [k] Estimated annual passengers on large foreign carriers, 2% annual growth rate
- [l] [j] + [k]
- [m] Sum of [e] / sum of [l] (sum of 2007-2015 estimates only)