

REGULATORY IMPACT ANALYSIS
ADVANCED ELECTRONIC FILING RULE

BUREAU OF CUSTOMS AND BORDER PROTECTION
DEPARTMENT OF HOMELAND SECURITY

November 13, 2003

TABLE OF CONTENTS

<u>EXECUTIVE SUMMARY</u>	1
<u>CHAPTER 1: INTRODUCTION</u>	1
<u>1.1 THE PROPOSAL</u>	1
<u>1.2 THE ALTERNATIVES</u>	2
<u>1.3 ANALYTICAL REQUIREMENTS</u>	3
<u>1.4 APPROACH TO THE ASSESSMENT</u>	3
<u>1.5 RIA CHAPTERS</u>	4
<u>CHAPTER 2: AIR</u>	5
<u>2.1 AIR FREIGHT: VALUE, QUANTITY, SOURCE, PORTS</u>	5
<u>2.2 AIR FREIGHT CARRIERS</u>	8
<u>2.2.1 Industry Characteristics</u>	8
<u>2.2.2 Current Operations</u>	11
<u>2.3 IMPACT OF THE RULE</u>	15
<u>2.3.1 AMS</u>	15
<u>2.3.2 Data Entry</u>	16
<u>2.3.3 Operations</u>	17
<u>2.4 ESTIMATED COSTS OF THE RULE</u>	20
<u>2.4.1 Options</u>	21
<u>2.4.2 Unit Costs – AMS</u>	21
<u>2.4.3 Unit Costs – Data Entry</u>	22
<u>2.4.4 Unit Costs – Operations</u>	22
<u>2.4.5 Total Costs</u>	25
<u>2.4.6 Costs Over Time</u>	29
<u>2.4.7 Average Annual Costs and Impact</u>	30
<u>CHAPTER 3: TRUCKING</u>	31
<u>3.1 IMPORTS FROM CANADA</u>	31
<u>3.1.1 Industry Description</u>	31
<u>3.1.2 Current Operations</u>	32
<u>3.1.3 BRASS and Selectivity Options</u>	34
<u>3.1.4 Cost and Savings Estimates</u>	35
<u>3.1.5 Unit Savings</u>	38
<u>3.1.6 Total Costs and Savings</u>	39
<u>3.2 EXPORTS TO MEXICO</u>	41
<u>3.2.1 Industry Description</u>	41
<u>3.2.2 Current Border Operations</u>	44
<u>3.2.3 Border Operations under Rule</u>	45
<u>3.2.4 Affected Sector</u>	47
<u>3.2.5 Estimation of Cost Impacts</u>	47
<u>3.2.6 Estimation of Savings</u>	49

3.2.7	<i>Net Savings</i>	49
3.3	<u>IMPORTS FROM MEXICO</u>	50
3.3.1	<i>Industry Description</i>	50
3.3.2	<i>Current Operations</i>	50
3.3.3	<i>Cost Estimate</i>	50
3.4	<u>SUMMARY OF COSTS AND SAVINGS FOR TRUCKING</u>	51
<u>CHAPTER 4 – OTHER MODES</u>		53
4.1	<u>RAIL</u>	53
4.2	<u>VESSELS</u>	53
<u>CHAPTER 5 – ESTIMATION OF BENEFITS</u>		55
5.1	<u>SECURITY IMPROVEMENTS</u>	55
5.2	<u>TIME SAVINGS BENEFITS</u>	55
5.3	<u>BENEFITS FROM REDUCTIONS IN AIR POLLUTION FROM REDUCED IDLING</u>	57
5.4	<u>IMPROVEMENTS IN DATA COLLECTION</u>	59
<u>CHAPTER 6: SMALL ENTITY AND UNFUNDED MANDATE ANALYSIS</u>		61
6.1	<u>INBOUND AIR</u>	61
6.1.1	<i>Inbound Air Costs</i>	62
6.1.2	<i>Impact of the Rule</i>	64
6.2	<u>SMALL MOTOR CARRIERS, INBOUND</u>	65
6.2.1	<i>Number of Carriers Crossing the Canadian Border</i>	65
6.2.2	<i>Estimation of Cost Impacts</i>	66
6.2.3	<i>Definition of Small Entities</i>	68
6.2.4	<i>Cost Impacts on Small Entities</i>	69
6.3	<u>SMALL EXPORTERS</u>	69
6.4	<u>SMALL IMPORTERS</u>	69
6.4.1	<i>Affected Industries</i>	70
6.4.2	<i>Definition of Small Firms</i>	70
6.4.3	<i>Size Distributions and Numbers of Firms</i>	70
6.4.4	<i>Impact of The Rule</i>	71
6.5	<u>UNFUNDED MANDATES REFORM ACT (UMRA)</u>	71
<u>CHAPTER 7: ECONOMIC IMPACTS</u>		73
7.1.	<u>TOTAL NET COSTS</u>	73
7.2.	<u>COST INCIDENCE</u>	74
7.3	<u>IMPACTS ON FIRMS</u>	75
7.4	<u>MACROECONOMIC IMPACTS</u>	75
<u>LIST OF ACRONYMS</u>		77
<u>BIBLIOGRAPHY</u>		79

LIST OF EXHIBITS

- [Exhibit ES-1: Summary of Impacts on Modes](#)
- [Exhibit ES-2: Annualized Net Costs Across Impacted Modes](#)
- [Exhibit 1-1: Proposed Timeframe for Electronic Submission by Mode](#)
- [Exhibit 2-1: International Air Freight](#)
- [Exhibit 2-2: Tons of International Freight for Top 20 U.S. Airports by Type of Air Carrier, 2001](#)
- [Exhibit 2-3: Total International Freight \(Tons\) by Foreign and Domestic Air Carriers in 2001 by Region](#)
- [Exhibit 2-4: Freight by Type of Carrier](#)
- [Exhibit 2-5: U.S. Import/Export 2002 Freight Carriage of Top U.S. Carriers](#)
- [Exhibit 2-6: U.S. Air Carriers by AMS Status](#)
- [Exhibit 2-7: Annual Air Bills by Carriers](#)
- [Exhibit 2-8: Short-Haul Inbound Cargo by U.S. Carriers 2002](#)
- [Exhibit 2-9: Short-haul Inbound Freight on U.S. Carriers by Length of Flight](#)
- [Exhibit 2-10: Express and Scheduled Cargo Short-haul Inbound Departures and Freight by Length of Flight](#)
- [Exhibit 2-11: Delay Costs](#)
- [Exhibit 2-12: Unit Service Degradation Costs by Delay Time](#)
- [Exhibit 2-13: Scenarios Used for Operational Changes and Data Entry](#)
- [Exhibit 2-14: Total Initial AMS Costs](#)
- [Exhibit 2-15: Estimated Revenue Loss for U.S. Passenger Operations](#)
- [Exhibit 2-16: Departures and Tons of Freight for Inbound Flights](#)
- [Exhibit 2-17: Total Costs of All Document Option](#)
- [Exhibit 2-18: Total Costs of the Large Document Option](#)
- [Exhibit 2-19: Total Costs of a Rule with No Documents Option](#)
- [Exhibit 2-20: Total Costs of the COAC Option](#)
- [Exhibit 2-21: Annualized Costs for Inbound Air](#)
- [Exhibit 3-1: Summary of Annual Costs for Truck Imports from Canada](#)
- [Exhibit 3-2: U.S. Exports to Mexico by Truck](#)
- [Exhibit 3-4: Necessary Processes in the Forwarder's Terminal](#)
- [Exhibit 3-5: AES*Direct* Costs](#)
- [Exhibit 3-6: Annual SEDs Cost Impacts](#)
- [Exhibit 3-7: Summary of Annualized Costs and Savings for Trucking](#)
- [Exhibit 5-1: Time Saving Benefits from Reduced Processing Time for Trucks Inbound From Canada](#)
- [Exhibit 5-2: Pollution Reduction Benefits from Reduced Truck Idling Inbound from Canada](#)
- [Exhibit 6-1: Small Air Carriers](#)
- [Exhibit 6-2: 2002 Inbound Operational Data for Scheduled Small Carriers](#)
- [Exhibit 6-3: Estimated Range of Costs for Small Scheduled Carriers](#)
- [Exhibit 6-4: Costs as a Percentage of Operating Expenses and Revenues](#)
- [Exhibit 6-5: Assumed Distribution of Carriers Crossing the Canadian Border by Length of Trip](#)
- [Exhibit 6-6: Hour and Cost Burden Data](#)

[Exhibit 6-7: Annual Costs per Carrier, by Carrier Type and Size](#)

[Exhibit 6-8: Small Business Administration's Size Standard for Small Businesses](#)

[Exhibit 6-9: Distribution of Firms by Size, in Year 2000](#)

[Exhibit 7-1: Annualized Costs and Benefits for Impacted Modes](#)

[Exhibit 7-3: Annual Net Costs Compared to the U.S. Economy](#)

EXECUTIVE SUMMARY

Section 343(a) of the Trade Act of 2002, as amended by the Maritime Transportation Security Act of 2002, mandates that the Secretary promulgate regulations that require electronic collection of cargo information by Bureau of Customs and Border Protection (CBP) prior to the cargo's arrival in or departure from the U.S. by any commercial mode of transportation (i.e., by air, truck, rail, or sea). This information must include that which is determined to be reasonably necessary to enable CBP to identify high-risk shipments, so as to ensure cargo safety and security under the laws that are enforced and administered by CBP.

The rule would impose different reporting requirements on the transport modes in terms of the time prior to arrival or departure that information would have to be filed, but all filing would be electronic. The impact on the carriers varies by mode based on current practice. Exhibit ES-1 presents the modes covered and indicates whether the mode would be affected by the rule. Where the exhibit indicates that there are no impacts it is generally because almost all carriers are already filing electronically and the timing of the filings is unlikely to cause problems for carriers. Exports to Canada are generally exempt from the regulations.

Exhibit ES-1: Summary of Impacts on Modes

Mode	Inbound	Outbound
Air – Western hemisphere north of the equator	Impacts	No impacts
Air – Other	Impacts	No impacts
Truck – Canada	Impacts	No impacts
Truck – Mexico	Impacts	Impacts
Rail	No impacts	No impacts
Vessels	No impacts	No impacts

The economic analysis focused on those sectors where shippers or carriers are likely to have to change current practices to come into compliance. For air, the rule would impose substantial new costs, mandating electronic data entry at a level of detail not currently required prior to arrival and causing operational changes to meet the filing requirements for flights into the U.S. from airports north of the equator in the western hemisphere. The analysis examined four options for air:

- A rule that requires filing at wheels up for flights into the U.S. from airports north of the equator in the western hemisphere and detailed information on documents that weigh a pound or more and all other cargo. (Large document option)

- The proposed rule, which would have required filing at wheels up for flights into the U.S. from airports north of the equator in the western hemisphere and detailed information on all cargo including documents. (All documents)
- A rule that requires filing at wheels up for flights into the U.S. from airports north of the equator in the western hemisphere and detailed information on all cargo except documents. (No documents)
- An option originally recommended by the Treasury Advisory Committee on the Commercial Operations of the U.S. Customs (COAC), but modified by CBP that would require no detailed information on documents and filing an hour before arrival for flights into the U.S. from airports north of the equator in the western hemisphere. (COAC)

CBP has elected option one above (large document option) as the means best capable of allowing for increased security through automated targeting, while reducing the costs of compliance for the air industry.

For trucking, the costs are offset by the time savings gained by faster clearance across the border. The faster movement across the border also provides benefits to other traffic at the border, which the analysis quantified. The principal benefit of the rule, improved security, was not quantified. Exhibit ES-2 summarizes the costs and benefits, annualized over five years. (In general, computer equipment and software have relatively short useful lives. Most software will be updated at least every two years. Extending the costs over 10 years would increase the speculative nature of the analysis.) Because of the considerable uncertainty that exists about operational changes and data entry for air carriers, costs for inbound aviation were estimated across a range of scenarios from low impact to high impact.

Exhibit ES-2: Annualized Net Costs Across Impacted Modes
(millions of dollars per year, 7 percent discount rate)

	Air			Truck	Total		
	Low	Medium	High		Low	Medium	High
Rule Familiarization					\$1.3	\$1.3	\$1.3
Costs				\$90.7			
Cost Savings				\$142.0	\$142.0	\$142.0	\$142.0
Monetized Benefits				\$27	\$27	\$27	\$27
Net Costs – All Documents	\$2,914	\$3,652	\$4,736	(\$78)	\$2,839	\$3,576	\$4,660
Net Costs – Large Documents	\$930	\$2,177	\$3,770	(\$78)	\$855	\$2,101	\$3,694
Net Costs – No Documents	\$422	\$1,160	\$2,244	(\$78)	\$346	\$1,084	\$2,168

	Air			Truck	Total		
Net Costs –COAC	\$345	\$994	\$1,889	(\$78)	\$269	\$918	\$1,813

The rule would not impose significant costs on small entities for the trucking mode. It may impose significant costs on small air carriers.

CHAPTER 1: INTRODUCTION

1.1 THE PROPOSAL

This document presents the Regulatory Impact Analysis (RIA) for the rule to require advance electronic presentation of cargo information crossing U.S. borders. The rule states that Bureau of Customs and Border Protection (CBP) must receive, through a CBP-approved electronic data interchange system, certain information pertaining to cargo before it is either brought into or sent from the United States by any mode of commercial transportation. The required cargo information is that which is reasonably necessary to enable CBP to identify high-risk shipments so as to ensure safety and security under the laws enforced and administered by CBP.

The proposed regulations are intended to implement the provisions of section 343(a) of the Trade Act of 2002, as amended by the Maritime Transportation Security Act of 2002. Section 343(a) as amended¹ requires the Secretary to promulgate final regulations that mandate electronic collection of cargo information by CBP prior to the cargo's arrival in or departure from the U.S. by any commercial mode of transportation (i.e., by air, truck, rail, or sea). This information must include that which is determined to be reasonably necessary to enable CBP to identify high-risk shipments, so as to ensure cargo safety and security under the laws that are enforced and administered by CBP.

Section 343(a), as amended, requires CBP, in developing the regulations, to take into account the party likely to have direct knowledge of the information to be collected, as well as the competitive relationships among the affected parties, their differing capabilities with respect to collecting and transmitting information electronically, and the need for interim requirements that reflect the technologies available at the time of promulgation. CBP is also required to consider the need to protect confidentiality of cargo information, to balance the need for security against likely impacts on the flow of commerce, to avoid redundant requirements, to allow for transition periods, and to consult with affected parties. In furtherance of these needs, CBP held a series of public meetings to assist in formulating the proposed regulations. In these meetings, held separately for each of the four modes of transportation from January 14 to January 23, 2003, members of the importing and exporting community offered many significant observations, insights, and suggestions regarding the proposed regulations. CBP also received numerous e-mails with additional valuable insights and recommendations. Moreover, numerous meetings were held with workgroups of the Treasury Advisory Committee on the Commercial Operations of the U.S. Customs (COAC), which greatly assisted CBP in its development of these proposed regulations. The proposed regulations reflect much of the input provided by the public and the advisory committee.

¹ Public Law 107-210, 116 Stat. 933, enacted August 6, 2002, as amended by section 108 of the Maritime Transportation Security Act of 2002 (Public Law 107-295, 116 Stat. 2064, enacted November 25 2002), and codified at 19 U.S.C. 2071 note.

The rule centers on three key features: (a) submission of cargo information in advance of arrival into or departure from the U.S., (b) submission of that information in electronic form, and (c) submission of cargo information at the house bill rather than master bill level. The requirements for advance submission vary by mode of transport, reflecting operational requirements and conditions for those modes. The required timeframes by mode for all cargo requiring reporting under current Census regulations, except for inbound water-borne containers covered by the Container Security Initiative and most exports to Canada, are summarized in Exhibit 1-1.

Exhibit 1-1: Proposed Timeframe for Electronic Submission by Mode

Mode	Inbound	Outbound
Vessel	24 hours prior to lading at foreign port of departure	24 hours prior to departure
Air	At departure (wheels up) for flights originating in the western hemisphere north of the equator, 4 hours prior to arrival for all others	1 hour prior to scheduled departure
Rail	2 hours prior to arrival at 1 st U.S. port	4 hours prior to attachment of the power source to the train
Truck	30 or 60 minutes prior to arrival at 1 st U.S. port	1 hour prior to scheduled border crossing

1.2 THE ALTERNATIVES

The rule is estimated to create net benefits for trucking firms. Because the rule is likely to impose significant costs on air carriers, RIA examines four alternatives for air:

- The proposed rule, which would have required filing at wheels up for flights into the U.S. from airports north of the equator in the western hemisphere and detailed information on all cargo including documents. (All documents option)
- A rule that requires filing at wheels up for flights into the U.S. from airports north of the equator in the western hemisphere and detailed information on documents that weigh a pound or more and all other cargo. (Large document option)
- A rule that requires filing at wheels up for flights into the U.S. from airports north of the equator in the western hemisphere and detailed information on all cargo except documents. (No documents option)
- An option originally recommended by the Treasury Advisory Committee on the Commercial Operations of the U.S. Customs (COAC), but modified by CBP that would require no detailed information on documents and filing an hour before arrival for flights into the U.S. from airports north of the equator in the western hemisphere. (COAC option)

1.3 ANALYTICAL REQUIREMENTS

Executive Order 12866 (EO 12866) “Regulatory Planning and Review” requires a cost/benefit analysis for all regulatory actions determined to be “significant.” The rules can be considered significant on the basis of their likely impact on the U.S. economy or on other factors; rules are considered economically significant if they impose annual economic impacts in excess of the \$100 million. The executive order requires a statement of the need for the proposed action, consideration of alternatives, and analyses of costs in comparison to benefits. EO 12866 also directs the consideration of the distributional and equity effects of the rule.²

The Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) (5 U.S.C. 601-612), requires agencies to consider the impact of their regulatory proposals on small entities, consider ways to cut impacts on small entities through effective alternatives, and provide for public comment on the analyses.³ These acts require the preparation of a Regulatory Flexibility Analysis (RFA) for rules that might have significant economic impacts on a substantial number of small entities. Because impacts of this magnitude cannot be ruled out for the rule, this document incorporates an RFA (as Chapter 6).

1.4 APPROACH TO THE ASSESSMENT

The general approach used in this analysis to estimate the impacts of the rule is to identify the least-cost changes that the affected parties will choose for compliance, add up the costs of those changes, and then assess the impacts of those costs. To implement this approach, the universe of transport modes and border crossings were reviewed to determine which ones would be affected, and then profiles of the transport sectors that appeared likely to bear more than de minimus costs were constructed. These profiles included descriptions of the types of firms that participate in cross-border shipping and customs procedures, the numbers of firms of each type (where available) and their characteristics, and their current operations vis-à-vis customs.⁴ By comparing the current operations of the firms to the requirements of the rules and the alternatives, the analysis identified the changes in procedures for data entry and transmittal and operational changes that will be required. Sets of alternative procedures that could be adopted by the affected firms for purposes of compliance were developed, and the costs of each relative to the status quo estimated. Under the assumption that the affected firms would choose the alternative that achieved compliance at the lowest cost, the analysis estimates the total cost of compliance with the rules.

² “Guidelines for Preparing Economic Analyses,” U.S. EPA, p. 5., September 2000.

³ “The Regulatory Flexibility Act: An Implementation Guide for Federal Agencies,” The Office of Advocacy, U.S. Small Business Administration, p. 1, November 2002.

⁴ Information on current operations was obtained from the affected industry and CBP staff. The industry sources were generally aware that the rule would impose new requirements and timeframes for filing cargo information.

For simplicity, given the difficulty of projecting changes in freight volumes and ongoing trends in customs procedures even in the absence of the rules, the analysis is essentially static. Numbers of border crossings and the distribution by type of customs procedure, for example, are held constant at the levels in recent years for which data are available. The air cargo segment is an exception to this approach, given the current depressed state of that industry, its expected growth, and the relative importance of the effects of the rules on that sector. Thus, the costs and cost savings associated with the rules and the alternative are calculated on an annual basis based largely on current conditions. In instances in which investments are involved in a low-cost compliance option, the investment is amortized over a five-year period at a seven percent annual real discount rate, as well as at a three percent rate for purposes of comparison. Summary results are presented only for the seven percent rate, which results in slightly lower estimates of compliance costs.

The examination of benefits is largely qualitative in nature because of the complexity and difficulty of assessing the rule's primary benefits: the improvement of national security. The adoption of the rules is expected to lead to reductions in truck drivers' border-crossing times. Additional benefits are related to reductions in congestion at border crossing posts, and rough estimates of the reduction in waiting times at the borders are included in the analysis. A quantitative assessment of the air pollution consequences of changes in truck idling time at border crossings is also included, but these changes in emissions could not be monetized within the scope of this assessment.

1.5 RIA CHAPTERS

The chapters of this RIA are ordered as follows:

- Chapter 2 – Air
- Chapter 3 – Trucking
- Chapter 4 – Other Modes (Rail, Vessels)
- Chapter 5 – Benefits
- Chapter 6 – Small Entity and Unfunded Mandate Analysis
- Chapter 7 – Economic Impacts, summary of economy-wide costs, cost savings, and impacts

CHAPTER 2: AIR

The rule would require air carriers to submit their cargo information for inbound cargo using the Air Automated Manifest System (AMS). For flights into the U.S. from other Western Hemisphere locations north of the equator, the cargo information would have to be filed at wheels up; for all other flights, the cargo information would have to be filed four hours before arrival at a U.S. airport. Although aviation carries a very small fraction of the weight of cargo moving to and from the U.S., it carries a substantial percentage in terms of the value of imports and exports. Aviation provides carriage for high-value per ton freight (e.g., computer chips), perishable freight, and packages that require rapid delivery. Air freight is moved on both U.S. and foreign air carriers through more than 150 U.S. airports. The air carriers conduct different kinds of operation (scheduled and charter, passenger-carrying and cargo) that will be affected differently by the rule.

This chapter describes the current operations of international air freight carriers and the impact of the rule. Section 2.1 presents general information on the current level of imports and exports, the sources of this freight, and the ports of entry for air freight. Section 2.2 describes the U.S. air carriers that are certificated to carry freight internationally and their current freight-handling operations. Section 2.3 discusses the potential impact of the rule on different types of operations. Section 2.4 presents estimates of the costs of compliance with four options and discusses the average cost of the rule to air carriers and the potential impact of those costs.

The data used in this chapter are drawn primarily from the U.S. Department of Transportation (DOT), which compiles data both from Census trade data and from filings of the air carriers. The data on the value of imports and exports and movement through airports presented in section 2.1 are from 2001, the last full year for which data are available. Freight, departure, and air carrier financial data in sections 2.2 through 2.4 are for 2002, drawn from data that the air carriers file with DOT on Form 41. Cargo revenue data for 2002 are based on filings with the Securities and Exchange Commission (SEC). The number of employees, needed to define small entities, is also based on DOT data, but the data have been updated with information from 2003 SEC filings for some carriers because significant layoffs continue to occur in the industry. Air way bill data are from CBP, based on data from December 2002.

The analysis includes costs to foreign air carriers. Data on their freight and departures are drawn from DOT databases; air way bill data are from CBP. No financial data are available for these carriers.

2.1. AIR FREIGHT: VALUE, QUANTITY, SOURCE, PORTS

As shown in Exhibit 2-1, air freight accounts for 0.6 percent of U.S. exports and 0.3 percent of imports by weight, but 34.4 percent of exports and 23.4 percent of imports by value. Air freight represents a much smaller share of freight moved between the U.S. and

Canada and Mexico because of the availability of lower cost and relatively high-speed rail and truck alternatives.

Exhibit 2-1: International Air Freight

	% of Total International Air Freight by Value	% of Total International Air Freight by Weight
All imports	23.4%	0.3%
All exports	34.4%	0.6%
NAFTA imports	4.3%	< 0.05%
NAFTA exports	8.2%	0.2%

Pocket Guide to Transportation Statistics, 2003, Bureau of Transportation Statistics, U.S. DOT. Air data from U.S. Department of Commerce, Census Bureau, Foreign Trade Division.

The main ports of entry for air freight are New York, Los Angeles, San Francisco, Chicago, New Orleans, Miami, and Anchorage, which accounted for 68 percent of the value of air exports and 71 percent of the value of air imports in 2001. New York is the largest single port of entry for all modes, based on value of imports and exports.

Although the majority of air freight entering the U.S. moves through the major airports, Air carriers moved imports and exports through 163 U.S. airports in 2002. U.S.-certificated carriers fly into and out of 250 foreign airports.⁵ Exhibit 2-2 presents the total tons of international freight that moved into or out of the 20 airports with the largest freight shipments in tons.⁶ Exhibit 2-3 presents the source and destination of freight tonnage moving to or from all U.S. airports. Both exhibits divide the freight by domestic and international air carriers. Regional totals are presented because the rule would impose different requirements for filing cargo information on cargo into the U.S. from the western hemisphere north of the equator as opposed to cargo flown from more distant regions.

Exhibit 2-2: Tons of International Freight for Top 20 U.S. Airports by Type of Air Carrier, 2001

Airport	Domestic	Foreign	Total
Anchorage	633,291	1,133,683	1,766,974
Miami	776,404	528,210	1,304,614
New York City	296,882	635,183	932,065
Los Angeles	120,698	470,891	591,589
Chicago	188,074	319,960	508,034
Newark	192,190	106,581	298,771

⁵ Airport numbers exclude airports in the U.S. Virgin Islands and U.S. Pacific Territories, which are outside of the U.S. Customs territories. Other DOT data on freight totals in section 2.1 include cargo shipped in and out of these islands.

⁶ DOT freight data represent all freight carried per month by a carrier between city pairs; the data do not distinguish between imports and exports.

Airport	Domestic	Foreign	Total
San Francisco	91,962	201,631	293,593
Memphis	230,901	7,816	238,717
Atlanta	126,977	99,435	226,412
Fairbanks	852	169,996	170,848
Philadelphia	119,685	21,872	141,557
Houston	57,134	76,447	133,581
Washington, D.C.	48,790	72,073	120,863
Dallas/Ft. Worth	63,945	54,241	118,186
Honolulu	44,631	67,384	112,015
Seattle	32,358	72,039	104,397
Boston	22,466	70,728	93,194
Huntsville/Decatur	63,129	13,805	76,934
San Juan, Puerto Rico	8,194	52,372	60,566
Cincinnati	55,767	2,337	58,104

Aviation Industry Data, Office of Aviation and International Affairs, U.S. DOT,
<http://ostpxweb.ost.dot.gov/aviation/international-series/monitoring.htm>.

Exhibit 2-3: Total International Freight (Tons) by Foreign and Domestic Air Carriers in 2001 by Region

	Domestic	Foreign	Total
Canada	194,624	95,950	290,574
Mexico	182,862	130,261	313,123
Caribbean	113,143	30,687	143,830
Central America	165,585	67,317	232,902
South America	595,543	412,077	1,007,620
East Asia	1,036,962	1,709,702	2,746,664
Europe	1,218,752	1,848,737	3,067,489
Africa	2,175	14,870	17,045
Middle East	7,730	14,236	21,966
South Asia	171	6	177
#N/A	609	50	659
Total	3,518,156	4,323,893	7,842,049

Aviation Industry Data, Office of Aviation and International Affairs, U.S. DOT,
<http://ostpxweb.ost.dot.gov/aviation/international-series/monitoring.htm>.

2.2 AIR FREIGHT CARRIERS

2.2.1 Industry Characteristics

An air carrier operating within the U.S. must be certificated by DOT and the Federal Aviation Administration. DOT certificates define the type of service that a carrier may conduct (passenger and cargo or cargo only, scheduled or charter, foreign or domestic). The U.S. air freight industry has four sectors that may be affected differently by the rule:

- Express consignment air carriers (operate as scheduled)
- Scheduled passenger airlines that handle cargo
- Scheduled cargo-only carriers
- Charter air cargo carriers⁷

Foreign air carriers are assumed to provide a similar range of services, but information is not readily available to divide foreign carriers into these categories.

2.2.1.1 *Distribution of Freight*

The types of cargo services the air carriers provide overlap. Scheduled passenger-carrying airlines generally carry freight as extra cargo on passenger flights. Many passenger airlines provide express service for cargo. The express carriers provide both express and standard freight carriage and conduct some charters. Express companies also use other air carriers for some shipments. Many scheduled carriers also provide charters. Exhibit 2-4 shows the distribution of freight tonnage on U.S. carriers by type of service.

There are three major express carriers (UPS, FedEx, and DHL).⁸ In 2002, the three carried 1.2 million tons of U.S. freight internationally, 12 percent of all international freight inbound to or outbound from the U.S. They carried 32 percent of the freight on U.S. certificated air carriers. The six largest U.S. passenger carriers carried 37 percent of international cargo on U.S. air carriers and 14 percent of all U.S. inbound and outbound international cargo. The scheduled cargo-only carriers moved 24 percent of international cargo on U.S. carriers and 9 percent of all U.S. bound cargo. Overall, U.S. certificated air carriers move about 39 percent of all cargo inbound or outbound from the U.S.

⁷ Charters are non-scheduled operations. For freight, charters may involve a shipper hiring an aircraft for a specific flight or a freight forwarder or other air carrier hiring aircraft for non-scheduled operations.

⁸ Airborne flies only in the U.S.; it ships its international packages on other air carriers; DHL recently acquired Airborne. Emery is now a freight forwarder.

Exhibit 2-4: Freight by Type of Carrier

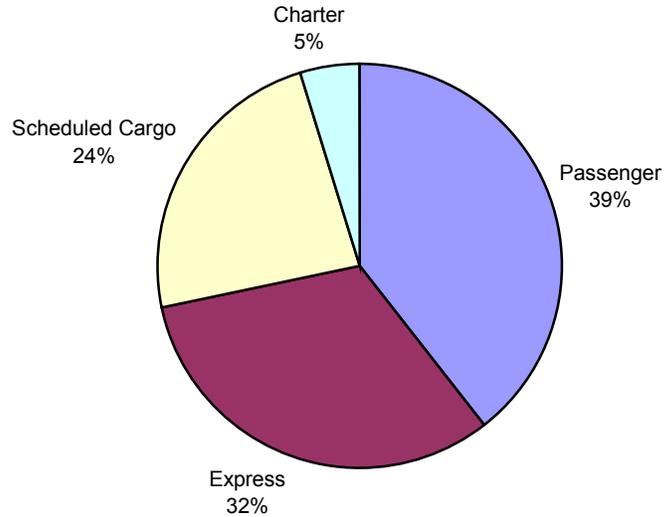


Exhibit 2-5 provides the total tons of cargo hauled in 2002 for the top U.S. certificated carriers.⁹ The cargo figures do not include mail. The revenue figures include revenue from all freight moved, including domestic freight.

Exhibit 2-5: U.S. Import/Export 2002 Freight Carriage of Top U.S. Carriers

Name	Freight (tons)	Freight Revenues (millions)	Carrier Type
Federal Express	659,508	\$4,218*	Express
United Parcel (UPS)	484,699	\$2,852	Express
American	358,838	\$561	Passenger
Atlas Air	333,776	\$292	Cargo only
Northwest	292,117	\$735	Passenger
United	281,430	\$673	Passenger
Delta	198,111	\$458	Passenger
Polar Air	188,941	\$527	Cargo only
Gemini	155,384	\$184	Cargo only
Continental	143,554	\$540	Passenger

⁹ Air carriers that operate only aircraft with 60 or fewer seats (or cargo-space equivalent) are not required to submit data to DOT; cargo moving on such aircraft, particularly to Canada and the Caribbean is likely to be underrepresented.

Name	Freight (tons)	Freight Revenues (millions)	Carrier Type
Arrow	132,234	\$166	Cargo only
USAIR	78,573	\$140	Passenger
Southern Air	63,525		Charter
Florida West Int'l¹⁰	51,132		Cargo only
Amerijet International	49,988		Cargo only
World Airways	38,345		Passenger
DHL¹¹	23,396	\$254	Express
Total	3,553,551		
Total U.S. Carriers	3,674,836		
Total U.S. and Foreign Carriers	9,407,720		

*International cargo only; includes revenue from cargo carried between other nations.

All but two of the carriers (Atlas and Gemini) listed in Exhibit 2-6 use the automated manifest system (AMS) at some or all of their inbound airports; Atlas is owned by the same company that owns Polar, which uses AMS. FedEx and UPS use AMS for their freight shipments; for express consignments, they allow CBP access to their proprietary data systems as necessary.

In addition to the carriers listed in Exhibit 2-5, 31 other U.S.-certificated carriers moved some international cargo in 2002.¹² Nine of these are either no longer certificated or no longer certificated to fly internationally. The 21 remaining carriers include major airlines, such as Alaska, as well as national and regional air carriers.¹³ Neither the size of the carrier nor the amount of cargo moved is necessarily related to the complexity of operations. Atlas, a national air carrier, flew to 35 U.S. airports from 64 foreign airports. Of the 21 other carriers, only three (Evergreen, Amerijet, and Florida West) use AMS.

2.2.1.2 Industry Financial Situation

After the rule is promulgated, the carriers not using AMS will have to implement AMS and file cargo information electronically. All U.S. carriers except Hawaiian, Aloha, Continental Micronesia, and Asia Pacific and more than 50 foreign carriers fly cargo into the U.S. from Canada or Latin America above the equator. Consequently, more than 80 air carriers also will be affected by the rule's requirement that cargo information be filed

¹⁰ Although certificated for scheduled service, in 2001 Florida West carried freight only on charters.

¹¹ Another DHL carrier, DHL Aero Expresso, carried 22,600 tons of freight into and out of the U.S., but is not certificated in the U.S.

¹² The exact number of U.S. air carriers operating and carrying freight internationally is difficult to determine. Some air carriers appear in DOT databases as carrying freight, but not in CBP air bill databases and vice versa. Others appear in both, but are not certificated for foreign operations.

¹³ DOT classifies air carriers as major (revenues above \$1 billion), national (revenues from \$100 million to \$1 billion), and regional (less than \$100 million in revenues).

at wheels up for flights into the U.S. from American airports north of the equator. In addition, the rule will require submission of information on all cargo except documents that weigh less than a pound. Currently carriers provide most information at the master bill rather than house bill level; documents are generally listed collectively as a single line.

With the exception of the express carriers, the U.S. air carrier industry is financially troubled. None of the major passenger carriers that serve international routes is profitable; several are either operating under Chapter 11 protection or close to seeking it. DOT reports that, for 2002, the net losses of the major passenger carriers totaled \$11.47 billion; their international operations lost \$2.2 billion. The total net operating losses of the 39 air carriers carrying international cargo were \$9.1 billion in 2002. Charter-only operations were more likely to be profitable; 9 of the 13 charter carriers were profitable in 2002, but the sector as a whole lost money.¹⁴ Four of the five scheduled cargo-only carriers operated at a loss in 2002; the only profitable scheduled cargo carrier, Polar, belongs to the same company as Atlas, whose operating losses were far greater than Polar's operating profits.

The economic recession plus the aftermath of 9/11 are generally responsible for the industry's losses. Air freight was in decline prior to 9/11 and dropped sharply after that event, but has recovered to a greater degree than passenger revenues or mail volume. Freight represents a relatively small percentage (less than 10 percent) of revenues for the major passenger-carrying operations, but the revenue from cargo reduces the passenger load factor needed to break even.

2.2.2 Current Operations

To understand how the current air cargo system works and how the rule may impact it, it is necessary to describe the complex and interconnected movement of commercial air traffic. Any air carrier operating out of a major airport is subject to certain constraints over which the carrier has limited control. Although airports control which air carriers have access to the gates or buildings, most airports do not specifically limit the number of take-offs and landings that an air carrier may have or restrict the air carrier's schedule; nonetheless, the physical realities of airports impose limits. Each airport has a maximum number of arrivals and departures per hour that its runways, gates, and buildings can accommodate. If air carriers schedule more departures or arrivals than can be conducted, flights will be delayed. Weather conditions can reduce the number of take-offs and landings per hour. The mix of small and large aircraft also affects the number of take-offs and landings that can occur.¹⁵ On the ground, the availability of gates (for passenger aircraft) and slots or apron positions (for cargo air craft) puts pressure on air carriers to meet their schedules. If an aircraft is held at the gate or position beyond its scheduled

¹⁴ Charter carriers are those certificated to provide only charter services. Some of the scheduled cargo carriers provide charter services; where all international cargo moved was on charters, the carrier is included in the charter group.

¹⁵ Small aircraft are more affected by the wake of large aircraft and, therefore, must wait a longer time after a large aircraft has taken off or landed before attempting to take-off or land.

departure time, the delay has a ripple effect as subsequent flights have to wait to gain access. Because most of the major carriers operate hub-and-spoke systems, where traffic is routed through a few hub airports, relatively minor delays at these airports can create major disruptions throughout the system.

Transoceanic flights generally are scheduled to have several hours between arrival and departure; in some cases, the aircraft may be on the ground overnight. Flights north of the equator in the western hemisphere (international or domestic) are scheduled for short turnarounds. These aircraft usually arrive, unload, load, and depart in less than an hour. In financial terms, the faster an air carrier can turn around an aircraft, the more money it can earn from the aircraft.

2.2.2.1 Express

Express air carriers run scheduled operations. The schedules make it possible to guarantee delivery (next day for Canada and Mexico, 2nd or 3rd day for other international cargo). Schedules are also necessary to accommodate the volume of traffic the express companies have. The express carriers use a hub-and-spoke system, where cargo is flown to a limited number of hub airports before being sent on to its ultimate destination. Express carriers fly from major airports to their hubs and are subject to airport capacity constraints. They usually operate at off-peak hours, however, which provides somewhat greater flexibility in that they may be able to delay departures without losing a departure slot. Their hubs are generally not major passenger airports; flights into and out of the hubs usually occur overnight.

Although express carriers have freight operations, most of their revenues come from their express package operations. For express consignments, either the customer enters most of the data that the carrier will file with CBP or the customer delivers the package to the carrier, which inputs the data. About 20 to 25 percent of packages are delivered to late drop-off centers, located next to airports, within an hour or two of departure; data on these packages are generally not entered into the system until that point. Regardless of when packages are received, a carrier does not complete cargo information until the aircraft is loaded because the exact contents of any load are determined by the combination of weight, size, and balance as well as considerations of promised delivery times at the ultimate destination. The weight that can be loaded onto any aircraft cannot be calculated with certainty until shortly before departure because weather conditions, particularly winds, affect fuel requirements, which are included in allowable weight determinations.

At present, express companies assemble the cargo information, sort by Customs status, and allow CBP access to their proprietary data systems after departure. Because virtually all express shipments are from the customer, rather than a freight forwarder, the express company provides the data to Customs. For express shipments, FedEx and UPS allow CBP access to their proprietary data systems rather than using AMS. FedEx and UPS have data on each package, including documents, in their proprietary systems. For freight shipments (larger, heavier shipments, usually arranged through freight

forwarders), however, FedEx and UPS use AMS to file cargo information. Because express companies operate hub-and-spoke operations, inbound shipments are cleared at a limited number of airports before being moved to their ultimate destination. For some inbound flights, the aircraft may stop at a U.S. airport to take on additional packages before reaching the hub where the inbound cargo will clear CBP.

For exports, a customer shipping with FedEx is expected to complete the shippers export declaration (SED) and receive the internal tracking number (ITN) before presenting the shipment to the carrier. A customer shipping with UPS can either file the SED before tendering the shipment to the carrier or use the UPS service, which prepares and files the SED for a charge of \$10. Cargo information is filed after departure for the same reason that inbound cargo declarations are filed after departure: the exact cargo cannot be determined until loading is complete.

2.2.2.2 Passenger-carrying Air Carriers

Most passenger-carrying air carriers move freight only on passenger-carrying aircraft as opposed to operating separate aircraft for freight. This practice provides a larger fleet of potential aircraft, but limits operating flexibility. The first priority of a flight is moving the passengers and passenger luggage on schedule. Cargo is carried to maximize the use of the aircraft, but cannot be completely loaded until the air carrier knows how many passengers and how much luggage a flight will be carrying. Mail load and weather conditions also affect the quantity of cargo that can be stowed. As discussed above, weather conditions, which affect fuel and weight calculations, cannot be determined until shortly before departure.

Generally, the air carrier will move cargo from its warehouse to the aircraft in time for loading; more cargo may be sent than the air carrier expects to be able to stow to be sure that, if passengers fail to appear or less fuel is needed, capacity is not wasted. Once the aircraft departs, any extra cargo is returned to the warehouse and the cargo information is generated. The speed with which this occurs depends on the staff available: if other aircraft must be loaded excess cargo may not be returned to the warehouse immediately and if clerks are still accepting cargo at the warehouse, the cargo information may be delayed. Depending on the size of a carrier's operation at an airport, the ramp and warehouse staff may be its employees or may be contractors who handle operations for a number of carriers.

Air carriers file cargo information from two hours after departure to an hour before arrival in the U.S.¹⁶ On flights that take less than 60 minutes, the cargo information is filed after arrival. Some flights, such as Nassau to Ft. Lauderdale, take less than 30 minutes. The larger air carriers use AMS, but have found that it is not a paperless system: shipments that must be cleared by other federal or state agencies may require paper and coordination. Smaller carriers often operate exclusively with paper cargo information. In some cases, where the cargo information cannot be carried on the aircraft, the cargo information is faxed to the destination.

¹⁶ Interviews with two major air carriers and the Air Transport Association.

Air carriers usually receive shipments from consolidators or freight forwarders. Consolidators do not tell the air carrier what they are shipping; they provide a master air bill, but not a house bill (which provides details on the shipper and the contents). They do not want to disclose the house bill to the air carrier because they want to keep their customer list confidential. Consequently, for outbound, if CBP tries to put a hold on a package based on information provided by the consolidator, the air carrier may not know where it is if the consolidator is shipping multiple containers or pallets. Once a container or pallet is loaded, there is no way to identify and remove a shipment without delaying the flight, which for passenger-carrying operations is not a good option. As a result, the air carriers need the shipments cleared by CBP before they are presented to the air carrier.

A final detail of the existing system affects the universe of regulated entities. Although this analysis focuses on U.S.-certificated air carriers, more than 100 foreign air carriers are subject to the rule. The costs that some of these foreign flag carriers incur will accrue to U.S. carriers because of code-sharing agreements. Many flights that are operated by foreign air carriers carry cargo for U.S.-certificated carriers. For example, a KLM flight from Amsterdam to Miami may carry cargo for as many as three U.S. carriers. The customer books the cargo with a U.S. carrier; the schedule shows the flight with a U.S. carrier code and flight number, but the actual aircraft is operated by a foreign carrier.¹⁷

2.2.2.3 Scheduled Cargo Operations

Express carriers, some passenger carriers, and certificated cargo-only carriers operate aircraft (freighters) that carry only cargo on fixed schedules. These operators receive cargo directly from shippers and from freight forwarders; they are usually handling cargo from multiple shippers and forwarders on an individual flight. As with any other air carrier handling multiple shipments, loads depend on a number of factors (weight, balance, size, weather) that can only be determined close to departure. They also have the same constraints as any other scheduled carrier. They mainly operate into and out of major, heavily trafficked U.S. airports, which limits their flexibility on schedules. Because these scheduled cargo operations do not usually involve express service and do not have the pressure of delivering passengers on time, they may have greater ability to adjust departure times.

2.2.2.4 Charters

A number of air carriers are certificated to provide only charter service or, regardless of their certificate, carry international cargo only on charters. Charter operators are generally small. A single customer may hire the aircraft for a specific trip; in many cases, the customer, which could be a consolidator, will file the required information with CBP. Charter carriers are more likely to be operating into and out of smaller airports, but some do run most of their flights into major U.S. hub airports.

¹⁷ Based on DOT data on code-sharing agreements, 16 of the 123 foreign carriers have code-sharing agreements with U.S. carriers, are not using AMS, and use the foreign carrier's aircraft for operations.

2.3 IMPACT OF THE RULE

The rule will affect the air carriers in three possible ways: they will have to implement AMS, they will need to provide cargo information not previously submitted, and they may have to adjust their operating practices to accommodate the new filing requirements. Because transoceanic flight times are usually more than six hours, the four-hour prior to arrival rule is not likely to have any impact on this cargo; it is also unlikely to have impacts on cargo being shipped from South America below the equator, although for some flights into Puerto Rico air carriers may need to file cargo information earlier than they now do.

2.3.1 AMS

The air carriers can be classified into two groups for AMS implementation: those that currently use AMS at some or all of their locations and those that do not use AMS. Any air carrier that is not currently using AMS will have to develop or purchase AMS software or hire a vendor to provide the service. Exhibit 2-6 categorizes the U.S. carriers into the two groups and provides the weight of inbound freight each moved in 2002.

Exhibit 2-6: U.S. Air Carriers by AMS Status

Carrier	Inbound Freight 2002 (tons)	AMS	Carrier	Inbound Freight 2002 (tons)	AMS
FedEx	346,680	Y	Ryan	6,717	N
UPS	294,536	Y	Continental Micronesia	5,564	N
American	243,624	Y	Centurion	4,761	N
Atlas Air	213,493	N	Alaska	4,473	N
Northwest	189,107	Y	Asia Pacific	3,638	N
United	182,692	Y	Tradewinds	2,376	N
Delta	130,614	Y	Comair*	1,226	N
Polar Air	125,217	Y	Omni	1,225	N
Continental	98,890	Y	Air Transport	1,061	N
Gemini	89,408	N	Miami Air	1,013	N
Arrow	74,512	Y	Ameristar	932	N
USAIR	47,780	Y	Aloha	182	N
Southern	43,647	N	America West	132	N
Florida West	30,531	Y	Zantop	110	N
World	24,128	N	Horizon	32	N
Amerijet	21,281	Y	Kitty Hawk	27	N
Evergreen	17,544	Y	Hawaiian	24	N

Carrier	Inbound Freight 2002 (tons)	AMS	Carrier	Inbound Freight 2002 (tons)	AMS
Kalitta	13,437	Y	American Eagle*	16	N
DHL	10,298	Y	American Trans Air	3	N
Capital Cargo	6,821	N			

* Owned by major carrier that uses AMS.

Of the foreign air carriers, 47 are currently using AMS at some or all of their ports of arrival. Another 90 foreign companies filed air way bills outside of AMS in December 2002. Not all of these companies are air carriers; some are consolidators, a few are shippers. In addition, even for the foreign air carriers, not all flew into the U.S. according to DOT data; these carriers may be accepting shipments and filing information, but using other airlines to carry the cargo. CBP has another 114 U.S. and foreign carriers and consolidators in its database who filed no air way bills in December 2002. The analysis excludes these carriers/forwarders.

2.3.2 Data Entry

Air carriers currently submit information manifests that generally cover shipments at the master air bill, rather than house bill level. Consolidated shipments may be entered as a single item. All documents are generally listed as a single item. Detailed information on cargo valued at more than \$200 is provided later to allow CBP to determine duties. The requirement under the rule that house bill information be submitted prior to arrival imposes new data entry burdens on air carriers or freight forwarders/consolidators. The extent of the new burden is unknown. Exhibit 2-7 presents estimated annual number of air bills by U.S. carrier in 2002-2003.¹⁸ Foreign air carriers are estimated to file about 13 million air bills annually. Industry comments have indicated house bills may be eight to ten times these numbers.

Exhibit 2-7: Annual Air Bills by Carriers

Carrier	Estimated Annual Air Bills	Carrier	Estimated Annual Air Bills
FedEx	28,000,000	Evergreen	55,000
UPS	14,000,000	Kalitta	48,000
DHL	4,900,000	Comair	40,000
Gemini	711,000	Ryan	32,000
American	655,000	Capital Cargo	30,000
United	526,000	Florida West	25,000

¹⁸ Annual estimates are based on December 2002 air bills and express air bills from October 2002 to June 2003. The ratio of the express bills annualized from 9-month data to express bills annualized from December data is used to adjust the extrapolations from 1-month data for other carriers.

Carrier	Estimated Annual Air Bills	Carrier	Estimated Annual Air Bills
Atlas Air	310,000	Centurion	14,000
Northwest	281,000	Omni	8,900
Polar Air	277,000	Air Transport	3,000
Continental	238,000	American Eagle	2,200
World	160,000	Hawaiian	2,000
Delta	154,000	America West	1,600
USAIR	130,000	Aloha	1,200
Tradewinds	106,000	Ameristar	880
Amerijet	91,000	Kitty Hawk	94
Arrow	76,000	American Trans Air	56
Alaska	68,000	Zantop	38
Southern	60,000		

2.3.3 Operations

Of the U.S. air carriers listed in Exhibit 2-6, only Hawaiian and Asia Pacific operate flights that are all more than 4 hours in length. Consequently, all of the other U.S. carriers and more than 50 foreign carriers could be affected to some degree by the requirement that cargo information be filed by wheels up for flights north of the equator in the western hemisphere. The 13 U.S. charter carriers are less likely to have to adjust their operating practices to accommodate the filing times because they may know the cargo at the time the charter is arranged and would be able to file the cargo information by departure; for many of their flights, the shipper or consolidator will file with CBP.¹⁹

Air carriers that provide express services are most likely to be affected by the new requirements because they usually accept shipments until shortly before scheduled departures and because being able to ensure delivery on time is critical to retaining business. Express carriers and to a lesser extent scheduled cargo operations are likely to have to change operating practices. The changes could include holding a plane on the ground after it is loaded to complete and file the cargo information, requiring shippers deliver packages and other freight earlier, and delaying promised delivery times.

Passenger-carrying operations will also be affected. Generally, these air carriers have less flexibility than all-cargo operations because the air carrier cannot determine until all passengers have arrived how much space will be available in the hold. In addition, passenger-carrying operations do not have the option of holding a plane on the ground

¹⁹ The foreign air carriers most affected are based in Mexico, Canada, and the Caribbean Islands. European and Asian carriers are generally only affected if they are transiting through the U.S. from Latin America. Some European and Asian carriers appear to stop in Canada prior to arrival at some U.S. airports; they may be able file information prior to their original departure if they do not take additional cargo on board in Canada.

after it is loaded because the carrier's primary goal is to meet the schedule for the passengers. It is likely that passenger-carrying operations will be able to meet the rule on short-haul flights only by limiting the cargo on each flight to the weight and volume that the carrier is certain can be stowed prior to final stowage of luggage and fuel considerations. This assumption means that these carriers will not be able to maximize cargo revenue to the extent they do currently.

Exhibit 2-8 presents the U.S. air carriers, the quantity of cargo they move into the U.S. from points north of the equator in the western hemisphere (short haul), the percentage of their total U.S. import cargo this represents, and the type of service provided. Foreign carriers moved about 250,000 tons of short haul cargo, which is less than 10 percent of the total freight they carried.

Exhibit 2-8: Short-Haul Inbound Cargo by U.S. Carriers 2002

Carrier	Canada (tons)	Latin America (tons)	Total International Imports (tons)	Short-haul % of Total Import	Service
Alaska	1,830	2,643	4,473	100%	P/C ²⁰
America West	10	123	133	100%	P/C
American Eagle	17	0	17	100%	P/C
American Trans Air	0	3	3	100%	P/C
Amerijet	0	21,281	21,281	100%	Cargo Scheduled
Capital Cargo	876	5,945	6,821	100%	Charter
Comair	1,166	59	1,226	100%	P/C
Horizon	32	0	32	100%	P/C
KittyHawk	27	0	27	100%	Charter
Ryan	5,101	1,616	6,717	100%	Charter
Tradewinds	1,502	875	2,376	100%	Charter
Ameristar	187	730	932	98%	Charter
Zantop	88	16	110	95%	Charter
Miami	20	933	1,013	94%	Charter
Arrow	175	66,124	74,512	89%	Cargo Scheduled
DHL	1,093	7,521	10,298	84%	Express
Florida West	0	25,600	30,531	84%	Charter
Centurion	0	3,657	4,761	77%	Charter
Southern	18	20,852	43,647	48%	Charter
UPS	23,998	99,253	294,536	42%	Express

²⁰ P/C indicates that the carrier is certificated to handle passengers and cargo.

Carrier	Canada (tons)	Latin America (tons)	Total International Imports (tons)	Short-haul % of Total Import	Service
Gemini	413	36,163	89,408	41%	Cargo Scheduled
Atlas	3,441	56,769	213,493	28%	Cargo Scheduled
FedEx	52,293	29,274	346,680	24%	Express
AA	613	52,128	243,624	22%	P/C
Air Transport	131	12	1,061	13%	P/C
Evergreen	2,265	9	17,544	13%	P/C
Continental	92	11,895	98,890	12%	P/C
Delta	51	5,918	130,614	5%	P/C
Kalitta	17	14	13,437	5%	Charter
Omni	41	0	1225	3%	Charter
Aloha	3	0	182	2%	P/C
UAL	72	2,108	182,692	1%	P/C
USAir	112	563	47,780	1%	P/C
World	102	173	24,128	1%	P/C
NW	194	205	189,107	0%	P/C
Polar	237	0	125,217	0%	Cargo Scheduled
Asia Pacific	0	0	3,638	0%	Charter
Continental Micronesia	0	0	5,564	0%	P/C
Hawaiian	0	0	24	0%	P/C

Exhibit 2-9 provides a breakdown of short-haul imports by flight time between foreign airports and U.S. airports. Exhibit 2-10 presents a breakdown of the number of express and scheduled cargo airline departures by flight time between foreign and U.S. airports. A similar breakdown of departures for passenger-carrying operations is not possible because not all passenger flights carry cargo; DOT data include numerous city pairs for passenger operations that are not included in the data for freight. Foreign air carriers had about 85,000 short-haul departures; approximately 34,000 of these were for flights of 90 minutes or less. About one tenth of the foreign short-haul freight was on flights of 90 minutes or less.

Exhibit 2-9: Short-haul Inbound Freight on U.S. Carriers by Length of Flight²¹

Flight Time	Tons of Freight	Percent of Total
More than 5 hours	6,626	1.2%
4 to 4:59 hours	69,463	12.6%
3:30 to 3:59 hours	176,350	32.1%
3-3:29 hours	44,569	8.1%
2:30-2:59 hours	111,717	20.3%
2-2:29 hours	77,902	14.2%
1:30-1:59 hours	25,866	4.7%
1:00-1:29 hours	30,818	5.6%
less than 1 hour	6,626	1.2%

Exhibit 2-10: Express and Scheduled Cargo Short-haul Inbound Departures and Freight by Length of Flight²²

Flight Time	Departures	Percent of Total	Tons	Percent of Total
More than 4 hours	21	0.1%	576	0.1%
3:30 to 3:59 hours	1,552	8.0%	58,598	14.7%
3-3:29 hours	2,899	15.0%	122,213	30.7%
2:30-2:59 hours	1,142	5.9%	31,254	7.9%
2-2:29 hours	2,948	15.2%	77,206	19.4%
1:30-1:59 hours	3,571	18.4%	60,779	15.3%
1:00-1:29 hours	3,320	17.1%	20,640	5.2%
less than 1 hour	3,917	20.2%	26,667	6.7%

2.4 ESTIMATED COSTS OF THE RULE

This section provides estimates of the cost of the rule on inbound air freight. Section 2.4.1 describes the options considered. Sections 2.4.2 and 2.4.4 discuss unit cost estimates. Section 2.4.5 discusses how total costs are estimated and presents total costs for both options. Section 2.4.6 provides the costs over five years and the annualized costs of the options over that period. Finally, Section 2.4.7 discusses the average cost per carrier and the potential impact of the rule.

²¹ Flight times for airport pairs are based on data from the Air Routing International time and distance calculator, which includes a 15-minute bias for takeoff. <http://www.ar-group.com/calc.htm>.

²² Some of the flights of less than 90 minutes are inbound flights where the first U.S. airport, which is the airport of record in DOT data, is not the airport where the cargo will clear Customs.

Because shippers must complete and file the shipper's export declaration (SED) and receive the internal tracking number (ITN) before presenting the shipment for export, the analysis assumes that there are no costs to carriers for outbound air cargo because the timeframe for filing is met.

2.4.1 Options

The analysis estimates costs for the following four options:

- A rule that requires house bill information on cargo except documents weighing less than one pound; all reporting at wheels up for shipments to the U.S. from points north of the equator in the western hemisphere. Information on all other inbound cargo filed at least 4 hours prior to arrival. (Large document)
- The proposed rule, which is the same as the large document option except that house bill information would be required for all documents. (All documents)
- A rule that requires house bill information on cargo except documents; all reporting at wheels up for shipments to the U.S. from points north of the equator in the western hemisphere. (No document)
- An option originally recommended by the Treasury Advisory Committee on the Commercial Operations of the U.S. Customs (COAC), but modified by CBP that would require no detailed information on documents and filing an hour before arrival for flights into the U.S. from airports north of the equator in the western hemisphere. (COAC)

Under each option, all carriers would have to file their cargo information electronically using AMS or an approved proprietary system. For the COAC option, the analysis assumes that air carriers could file cargo information an hour before arrival for flights that last at least 90 minutes (i.e., only flights of 90 minutes or less would have to be delayed or would have cargo held after arrival for clearance under this rule).

2.4.2 Unit Costs – AMS

At present, 15 U.S. air carriers participate in AMS; 4 other air carriers are owned by carriers that use AMS.²³ Forty seven foreign carriers participate in AMS. Air carriers that use AMS at some locations and those that belong to larger carriers that use AMS are assumed to be able to implement AMS at all locations at minimal costs. All AMS carriers are, however, assumed to spend time upgrading their programs to accommodate house bill data.

Six U.S. carriers and 15 foreign carriers who handle a high volume of airbills are assumed to develop in-house systems to interact with AMS. Three U.S. carriers with a lower volume of bills and six foreign carriers are assumed to purchase AMS software,

²³ American Eagle (AA), Continental Micronesia, Comair (Delta), and Atlas (same company as Polar).

develop the interface, and implement the system in-house. The 13 U.S. charter air carriers and 69 foreign carriers with low volumes of filings are assumed to use a provider, although in many cases, the shipper may file the information for the carrier.

For air carriers that opt to build an electronic system, the hour burden is estimated to be 4,000 hours of programming time to add data elements, build an interface with existing cargo data systems, and to test it to ensure that it extracts data properly and works with Air AMS. The total cost of programming is estimated to be \$247,000.²⁴ Based on comments from the Air Transport Association (ATA) on the level of oversight necessary for submitting information and responding to questions on AMS entries, the largest carriers are assumed to require four computer support personnel to provide coverage 16 hours a day, seven days a week at an annual cost of \$367,163/year. Because these carriers do not move large amounts of cargo, 24-hour coverage is unlikely to be needed.

For air carriers that purchase an off-the-shelf system, the average startup cost for an AMS interface system is \$7,000 for the licensing fee. In addition, vendors charge \$6,000 per year for maintaining the system.²⁵ Carriers are assumed to operate the system with their own staff and require an FTE of computer support (\$91,700/year).

The charter carriers are assumed to purchase a service from a provider at an initial cost of \$2,000. This estimate is conservative (i.e., it may overstate the costs) because some charter carriers may require the shipper file the data. Because air carriers already have computers and Internet connections, they are assumed to incur no capital costs to implement AMS.

2.4.3 Unit Costs – Data Entry

Data entry is estimated to cost \$8.50 per house bill, based on the fee Customs brokers charge truckers at the Canadian border. This cost may be conservative because about a quarter of inbound cargo is shipped from countries with far lower wages.

2.4.4 Unit Costs – Operations

Operational impacts could occur for short-haul flights because air carriers, other than charter operations, do not prepare cargo information prior to a flight's departure. The requirement that accurate cargo information be filed by wheels up means that air carriers will have to hold an aircraft after loading is complete to prepare the cargo information or load less cargo to ensure that every item sent to the ramp can be placed on a specific flight. No impacts are anticipated for transoceanic flights, which represent about 75 percent of the freight, by weight. For operational costs, three estimates are presented to

²⁴ Median wage rate for programmers in air transportation from BLS 2001 National Industry-Specific Occupational Employment and Wage Estimates (\$27.56) and computer support personnel (\$19.66), inflated to 2003 dollars based on BLS employment cost index for wages and salaries in transportation, loaded with fringe at 38 percent (average national fringe) and overhead at 59 percent of total compensation (\$61.86 and \$44.13).

²⁵ Phone calls with CBP-certified AMS software vendors during the week of June 30, 2003.

represent a range of possible costs based on the potential length of the delay, time-sensitivity of the cargo (logistics costs), and the potential loss of cargo revenue.

2.4.4.1 Loss of Cargo Revenue – Passenger-Carrying Operations

If an air carrier is to maximize the amount of cargo in the hold, the last items of cargo can only be loaded when the air carrier is certain that all of the passengers have arrived, their luggage has been weighed and loaded, and the fuel needed has been calculated. As discussed above, passenger-carrying operations do not have the flexibility to hold an aircraft after it is loaded to prepare cargo information. Consequently, to be able to prepare accurate cargo information by wheels up, the air carriers would have to limit the amount of cargo sent for a flight to the amount that the carrier was certain could be safely stowed assuming that all passengers arrive carrying their full complement of luggage. For many flights, this approach will reduce the amount of cargo carried and, therefore, reduce revenues.

Because CBP has no basis for estimating the percentage that air freight would be reduced, the analysis estimates a range of reduction of air freight revenue from 10 percent to 40 percent for short-haul freight. The total value of short-haul freight on passenger-carrying aircraft is not known. To estimate the value, the dollar value of each air carrier's cargo revenues was multiplied by 0.51 based on 2001 data that indicate that international cargo represents 51 percent of all cargo revenue.²⁶ The derived value was then multiplied by the percentage of international cargo represented by the individual carrier's short-haul imports. This method is likely to overstate the value of short-haul revenues because it is probable that air carriers earn more revenue per ton for long-haul cargo.

2.4.4.2 Delays

The wheels-up requirement for North American flights will necessitate a change in operating practices for express carriers and scheduled cargo operations. At present, these operations complete and file cargo information after departure to accommodate late-arriving cargo and the need to adjust loads for weight, balance, size, and delivery demands. To file the data on these packages before departure, carriers will need to keep the aircraft on the ground for longer than they currently do. It is assumed that each short-haul flight will need to be delayed by 30 minutes to 2 hours for express carriers to compile the cargo information and file the required data.

To estimate the cost of the extra time aircraft will need to spend on the ground, the analysis uses an estimate of gate delay costs developed by ATA. Gate delay is defined as time spent at the gate, slots, or apron positions beyond the aircraft's scheduled departure time. ATA estimates that the cost of gate time delay in 2000 was \$22.38 per minute.²⁷ In addition to delay costs, carriers will need to employ extra personnel to handle the data entry and delayed aircraft. ATA estimates that airlines spent \$900 million in 2000 for extra gates and personnel needed to handle delayed aircrafts, travelers, and cargo. Using

²⁶ Air Transport Association Annual Report.

²⁷ ATA Delay Report for 2000.

the ATA total ground costs estimate for 2000 and the Bureau of Transportation Statistics' record of aircraft departures in 2000, the average ground cost per delayed flight is \$100. This estimate may be low because the delay costs that were incurred applied only to the subset of departures that were delayed; if the delays are predictable, however, these costs could be minimized. Exhibit 2-11 presents delay costs.

Exhibit 2-11: Delay Costs

Delay Component	Cost	Minutes / Flight
Gate (per minute)	\$22.38	
Ground (total)	\$100	
Total	\$722-\$2,786	30 - 120

Source: ATA Delay Report for 2000 and Bureau of Transportation Statistics.

2.4.4.3 Degradation of Service

In addition to the direct costs of holding a flight on the ground, the service provided by express and scheduled cargo carriers will be degraded by the need to delay flights. This degradation would occur if the carriers required earlier delivery of packages to them or if they have to change promised delivery time (e.g., from first delivery to 10 am or 10 am to 3 pm). A total logistics cost (TLC or TLCM) model was developed by ICF and refined for this study. The model estimates the total logistics cost of shipping goods by air under different conditions. These costs include not only the direct charge for transportation, but also the monetized cost of inventory carrying rates for inventory held at the origin, in transit, and at the destination. Furthermore, the destination inventory will include both cycle inventory (based on the size and frequency of shipments) and safety stock inventory to account for unreliability in transport time and volatility in purchases. Finally, there are other possible charges and costs, such as extra warehousing cost, spoilage or damage to goods, and administrative costs.

There are two main groups of variables that determine the total logistics cost: the attributes of the commodity that is shipped, and the characteristics of the transport mode. Different commodities have different prices, weights, densities, shelf lives, and consumer demand patterns. Different modes have different freight rates, travel times, reliability, and frequency. Depending on these values, the transit time and reliability of a mode will lead to different costs in the form of inventory and safety stocks. The analysis used two commodities, laptops and cut flowers, to serve as proxies for the types of commodities shipped by air. A baseline scenario for shipping a container of each of these commodities by air was compared to a scenario that added a delay to these shipments. To determine freight rates, the analysis assumed that rates equal costs (given perfect competition; this assumption is necessary because freight rate data are nearly impossible to obtain).

Based on the model, the analysis estimates that the cost of delay for perishables ranges from \$46 per ton for a 30-minute delay to \$181.14 per ton for a two-hour delay; the cost of non-perishables is estimated to range from \$6.90 per ton to \$27.70 per ton. These

estimates assume a predictable delay; unpredictable delays have higher costs. Exhibit 2-12 presents the unit costs for service degradation for different lengths of delays.

Exhibit 2-12: Unit Service Degradation Costs by Delay Time

	30 min	1 hour	2 hour
Perishable	\$45.79	\$91.23	\$181
Non-critical	\$6.90	\$13.80	\$28

2.4.4.4 Other Costs Not Quantified

Comments on the proposed rule cited other changes that could result from the rule and impose costs: diversion of air cargo to trucks, diversion of in-transit cargo to other carriers who do not fly through the U.S., and targeting of shipments, delaying unloading of the aircraft. Because CBP has no basis for estimating the degree to which diversion or targeting may occur, the analysis has not quantified costs for these impacts. To the extent that targeting delays shipments, the unit costs should be similar to delay costs already estimated. Diversion to non-U.S. carriers for in-transit shipments and trucks for short-haul shipments would result in a loss of revenue to U.S. carriers. Diversion of in-transit shipments, however, may be limited by the availability of direct flights from Latin American and Caribbean countries to Europe or Asia and by the incentives for foreign carriers to transit the U.S. and add cargo and passengers.

2.4.5 Total Costs

This section presents the total cost estimates for inbound air. Because of the high degree of uncertainty associated with data entry and the operational changes that would be needed to meet the rule, the analysis presents a range of costs for these elements.

2.4.5.1 Scenarios Considered

For operational changes, costs are estimated across a range from low to high to bound the range of potential impacts. It is likely that the actual impacts will vary considerably from carrier to carrier and from flight to flight. To the extent that passenger-carrying air carriers currently have excess cargo space, there might be no loss of revenue. For data entry, two elements vary: the number of additional air bills that will need to be filed and the percentage of documents carried by express carriers other than FedEx and UPS that weigh less than one pound. Exhibit 2-13 presents the assumptions.

Exhibit 2-13: Scenarios Used for Operational Changes and Data Entry

	Low Impact	Medium Impact	High Impact
Passenger-carrying revenue loss	10%	20%	40%

	Low Impact	Medium Impact	High Impact
Delay costs	30 minutes	1 hour	2 hours
Service degradation (cargo composition)	10% perishable 90% non-critical	30% perishable 70% non-critical	50% perishable 50% non-critical
Data entry	2x current bills 20% documents >1b	5x current bills 40% documents >1b	8x current bills 60% documents >1b

2.4.5.2 Estimated Total Costs

AMS. Exhibit 2-14 presents the total cost estimates for AMS for both U.S. air carriers and foreign carriers.

Exhibit 2-14: Total Initial AMS Costs

	Hours	Wage Rate	Unit Cost	Air Carriers	Total Hours	Total Cost
U.S. Carriers						
Programming	4000	\$61.86	\$247,452	83	332,000	\$20,538,520
Operations – annual	8320	\$44.13	\$367,163	21	174,720	\$7,710,419
Operations – annual	2080	\$44.13	\$91,791	9	18,720	\$826,116
Licensing fee			\$7000	9		\$63,000
Annual maintenance			\$6000	9		\$54,000
Provider fee			\$2,000	82		\$164,000
Total AMS Cost						\$29,356,000

Revenue Loss. For passenger-carrying operations, the analysis assumes that air carriers will forgo some cargo revenue rather than delay flights. To estimate the revenue loss, the analysis uses reported cargo revenues for 2002 for 11 air carriers who reported these revenues separately (\$3.4 billion). Because international cargo revenue represents 51 percent of all cargo revenue, this figure is reduced to \$1.75 billion. For each carrier, the percentage of international cargo that is inbound from the western hemisphere north of the equator is then multiplied by the value of international cargo, to estimate \$99 million in short-haul import revenue.²⁸ This estimate may overstate revenues for two reasons: as noted above, short-haul cargo may produce less revenue per ton than long-haul cargo; in addition, two carriers, Evergreen and World, with estimated short-haul revenues of \$12 million, may operate mainly as charter carriers for cargo. Some of the revenue of these two carriers would be offset by the revenues of the four passenger operations for which cargo revenue data were not available.

²⁸ This estimate assumes that the value of cargo is proportional to its weight.

Revenues from very short-haul North American operations (flight times of 90 minutes or less) are estimated in the same way, using the tons of cargo moved on these shorter flights to estimate values. The revenues for very short operations are likely to be overstated because not all of the cargo is cleared by CBP at the first port of entry. For some of the very short flights, the imported cargo is not unloaded and cleared until the flight reaches a major airport; for example, flights from Canada or northern Mexico may stop at a smaller airport to pick up passengers before continuing to a hub. Therefore, less of the cargo is actually attributable to very short operations, assuming that under the COAC option CBP would require that the cargo information be filed an hour before arrival at the airport where the cargo would be unloaded and cleared. Exhibit 2-15 presents the estimated revenue loss based on the three document options and the COAC option, the only option that varies filing time and, therefore, the impacts of delays and service degradation. Foreign carriers are not included in this estimate because comparable data are not available to estimate revenues for freight operations to the U.S.

Exhibit 2-15: Estimated Revenue Loss for U.S. Passenger Operations

	10% Loss	20% Loss	40% Loss
Document options	\$9,933,227	\$19,866,453	\$39,732,907
COAC option	\$229,629	\$459,258	\$918,516

Delays and service degradation. Delay and service degradation costs accrue to the three express carriers and the five scheduled cargo carriers. In addition, because it is not possible to estimate revenue losses for foreign air carriers, their operational costs are based on delays and service degradation for their short-haul cargo. Delay costs occur per departure; service degradation costs occur per ton. Exhibit 2-16 shows the number of departures and number of tons for all inbound North American flights in 2002 for both options.

Exhibit 2-16: Departures and Tons of Freight for Inbound Flights

	Departures		Tons	
	All Short Haul	≤ 90 Minutes	All Short Haul	≤ 90 Minutes
Express	17,814	9,910	213,432	47,978
U.S. Scheduled Cargo	4,634	341	184,603	1,679
Foreign	85,000	33,900	250,000	24,600

Data entry. An estimated 3.3 million air bills were not entered electronically by non-express carriers in 2002. In addition, 4.4 million bills covering documents were not entered electronically by express carriers. All of these will need to be entered electronically under the rule. In addition, some multiple of the 17 million non-express air bills currently entered electronically will need to be entered for the first time to provide

house bill level data. Because large numbers of documents are often included on a single document bill, the analysis assumes 50 documents per current bill; this number is probably low for the option where documents of less than a pound would need to be reported individually. The analysis used multiples of two times to eight times the current air bills for non-documents. Some commenters stated that the number of house bills is in the range of eight to ten times the number of air bills currently filed. The analysis uses a lower range in part to balance the unit cost, which is likely to be high for cargo entering from Southeast Asia and Latin America.

Exhibits 2-17 through 2-20 present the estimates of total costs for the options based on the range of assumptions described above. Foreign air carriers account for between \$200 million and \$1.2 billion of the total costs.

Exhibit 2-17: Total Costs of All Document Option

	Low	Medium	High
Service degradation	\$6,991,650	\$23,996,088	\$67,667,815
Delay	\$77,512,987	\$155,025,974	\$310,051,949
PX	\$9,963,210	\$19,926,420	\$39,852,840
Data entry	\$2,046,494,000	\$2,492,846,000	\$3,087,982,000
AMS	\$29,356,000	\$29,356,000	\$29,356,000
Total	\$2,170,318,000	\$2,721,151,000	\$3,534,911,000

Exhibit 2-18: Total Costs of the Large Document Option

	Low	Medium	High
Service degradation	\$6,991,650	\$23,996,088	\$67,667,815
Delay	\$77,512,987	\$155,025,974	\$310,051,949
PX	\$9,963,210	\$19,926,420	\$39,852,840
Data entry	\$587,894,000	\$1,408,246,000	\$2,377,382,000
AMS	\$29,356,000	\$29,356,000	\$29,356,000
Total	\$711,718,000	\$1,216,923,000	\$2,824,311,000

Exhibit 2-19: Total Costs of a Rule with No Documents Option

	Low	Medium	High
Service degradation	\$6,991,650	\$23,996,088	\$67,667,815
Delay	\$77,512,987	\$155,025,974	\$310,051,949
PX	\$9,963,210	\$19,926,420	\$39,852,840

	Low	Medium	High
Data entry	\$213,894,000	\$660,246,000	\$1,255,382,000
AMS	\$29,356,000	\$29,356,000	\$29,356,000
Total	\$337,718,000	\$880,551,000	\$1,702,311,000

Exhibit 2-20: Total Costs of the COAC Option

	Low	Medium	High
Service degradation	\$801,159	\$2,749,662	\$7,753,916
Delay	\$31,850,531	\$63,701,063	\$127,402,126
PX	\$230,904	\$461,808	\$923,616
Data entry	\$213,894,000	\$660,246,000	\$1,255,382,000
AMS	\$29,356,000	\$29,356,000	\$29,356,000
Total	\$276,133,000	\$756,515,000	\$1,420,818,000

2.4.6 Costs Over Time

The analysis estimates costs over five years, with 2004 as year 1. FAA estimates of growth were used to account for expected increases in cargo carried. FAA projects that international revenue ton miles for passenger carriers will increase 5.2 percent a year from fiscal year 2002 to 2014; for cargo carriers the FAA projects a 6.3 percent annual growth rate. Because departures are unlikely to grow at the same rate as cargo, the analysis used the FAA's projected growth rate for cargo aircraft (3.4 percent annually over the period) for delay costs. Exhibit 2-21 presents the annualized costs of the options for the low, medium, and high scenarios using a 7 percent and 3 percent discount rate.

**Exhibit 2-21: Annualized Costs for Inbound Air
(millions)**

	Low	Medium	High
7%			
All Documents	\$2,915	\$3,652	\$4,736
Large Documents	\$931	\$2,177	\$3,770
No Documents	\$422	\$1,160	\$2,244
COAC Option	\$345	\$994	\$1,889
3%			
All Documents	\$2,818	\$3,531	\$4,579
Large Documents	\$900	\$2,105	\$3,644
No Documents	\$408	\$1,121	\$2,169

	Low	Medium	High
COAC Option	\$334	\$961	\$1,826

2.4.7 Average Annual Costs and Impact

Average annual costs to air carriers are likely to vary widely. Charter air carriers with very low volumes of international cargo (less than 500 air bills per month) will incur costs to purchase AMS or AMS services (\$6,000/year after the initial fee is paid). Costs for scheduled passenger air carriers are less than 0.5 percent of operating revenues, even for high cost options. Express carriers will incur the highest costs for operational changes, but these costs are still less than one percent of operating revenues for FedEx and UPS. DHL's costs for operational changes could exceed one percent of operating revenue. In addition, DHL could incur substantial costs for data entry.

Data entry is the major cost factor for the rule. These costs range from \$7,500 to \$60,000 for the carrier with the lowest number of air bills to be newly entered to \$6 million to \$48 million for a scheduled cargo company with the largest volume of bills. Many scheduled cargo carriers and charter companies could incur costs that exceed one percent of operating revenues. Details on the impacts on these small entities are discussed in Chapter 6.

CHAPTER 3: TRUCKING

This chapter describes the effects of the rules on truck carriage: imports from Canada; exports to Mexico; and imports from Mexico. Exports to Canada are not treated because they are largely exempt from the requirement for a shippers export declaration (SED) and will remain so. Accordingly, the chapter is divided into four sections: imports from Canada; exports to Mexico; imports from Mexico; and a brief summary of the costs and savings and net impact estimated in the three previous sections.

In each of the first three sections, the presentation is organized as follows:

- A brief description and discussion of the industry, i.e., the U.S. firms and entities that participate in the trade in question;
- A description of current operations on the border: the various procedures and systems now in use by CBP and characteristics whose change will be relevant to analysis of the new rule; and
- Cost estimates, including identification and analysis of changes required by the rule that will entail either costs or savings, estimation of unit costs or savings, and total costs or savings from each change.

3.1 IMPORTS FROM CANADA

3.1.1 Industry Description

Goods worth about \$118 billion came across the northern border by truck in 2001. Approximately 6 million southbound trucks were processed through CBP in the 12 months ending in April 2003. Participants in this traffic include shippers, importers, U.S. customs brokers, and carriers. Shippers may be Canadian firms or Canadian establishments of U.S. firms (e.g., General Motors and Ford). For this traffic, the shipper is frequently also the importer of record.

U.S. customs brokers file required information with CBP and otherwise deal with CBP to get shipments through and make sure that duties, taxes, and fees owed are properly calculated. Although no regulations require use of brokers, virtually all shipments are handled by brokers. Shippers and importers simply do not want to take on the tasks of preparing filings and otherwise dealing with CBP. A broker works for an importer. There are hundreds of customs brokerage firms in operation on the Canadian border.²⁹ With this many firms, it is reasonable to consider the industry as competitive and to assume that a substantial number of these firms are small, given that the volume of business could not support hundreds of large firms.

²⁹ Conversation with an executive of Affiliated Customs Brokers, Ltd., July 3, 2003.

Both U.S. and Canadian carriers run through to final destinations, carrying loads across the border in both directions; the trade is split about equally between U.S. and Canadian-based firms.³⁰ Without a detailed survey of the trucking firms crossing the border, it is not possible to describe precisely the characteristics of the carriers engaged in cross-border trade. Based on interviews with trucking firms in the trade, however, the size distribution of these firms is not the same as that for the U.S. trucking industry as a whole.³¹ The proportion of the business going to small, truly independent firms is smaller than it is in the domestic trade.³²

The cross-border trade is a more difficult environment for small firms largely because some specialized knowledge is required to deal with U.S. and Canadian customs and to remain current on changing procedures. It is not unusual for a U.S. firm to employ at least one full-time staff person to follow and keep up with requirements and practices of the two customs services. Available anecdotal evidence and business logic strongly suggest that little of this traffic is carried by really small truckers (with annual revenues less than one million dollars). Nonetheless, there could be large numbers of small firms, in the thousands, operating in this trade even though their share of the traffic is small.

3.1.2 Current Operations

As noted above, U.S. and Canadian carriers take loads through in both directions from origin in one country to destination in the other. Accordingly, much of the operation is the same as any domestic trucking operation, the only real difference being the border-crossing procedures. There are five major release processes now in use as follows:

- Border Release Advanced Screening and Selectivity (BRASS)
- Basic Selectivity
- Selectivity Pre-Arrival Processing System (PAPS)
- Free and Secure Trade (FAST) PAPS
- FAST National Customs Automation Program (NCAP)

Under the new rule, BRASS and basic Selectivity will disappear; neither requires electronic filing of shipment information prior to border crossing. Selectivity PAPS, FAST PAPS, and FAST NCAP will remain.

³⁰ Based on a comparison of total tonnage imported by truck from Canada, compared to Transport Canada's data on tonnage carried by Canadian carriers. Statistics Canada Special Tabulations PPA03 and U.S. Department of Transportation, Bureau of Transportation Statistics, Tables 9 and 10, available at <http://www.bts.gov/ntda/tbscd/read/data6.html>, as of July 2003.

³¹ Discussion with George Edwards, trucking industry expert, based on his interviews with U.S. trucking firms operating in the cross-border trade.

³² "Truly independent" here refers to a small firm or owner-operator that functions as an independent business in all respects, including finding its own customers. The majority of owner-operators are not independent in this respect. They work for larger trucking companies under leases that cover both driver and equipment, referred to as "permanent leases" in the trucking business. Owner-operators of this type are, for all practical purposes, part of the labor force of the larger carrier. A truly independent owner-operator does not work for a larger carrier, but finds its customers in other ways.

Most shipments are now handled under either BRASS or one of the Selectivity options. The implementation of FAST is just getting started. Currently, about one percent of trucks are crossing the border under a FAST procedure.³³ For purposes of estimating the cost of the new rule, the analysis concentrates on BRASS and the Selectivity options, which are discussed in detail below. Estimates of the number of releases and truck crossings under each of these three processes are included in the cost estimates at the end of this section.

The analysis assumes that those switching from BRASS or basic Selectivity will change to Selectivity PAPS. This assumption is based on the belief that those forced away from the simplest processes will not switch immediately to the most elaborate. Some importers now using BRASS might change to one of the FAST options. The FAST options require more initial effort, because importers and carriers must be pre-approved and drivers must be registered; the latter process requires screening of individual drivers. This effort is offset by faster and easier processing at the border. Further, Selectivity PAPS will be the only choice for small carriers that enter the cross-border trade only occasionally or do not want to go through the process required for pre-approval.

Analysis was conducted on the basis that Selectivity PAPS would continue to be available under the proposed rule. It was assumed that carriers and shippers would use the least elaborate of the available options which would be Selectivity PAPS. (If CPB were to switch all traffic to ACE, as part of its plans for improving cross-border efficiency, that would not seem to be a cost of this rule.)

Although the assumption that BRASS users will switch to Selectivity PAPS appears to be inconsistent with current CBP plans, this is not the case. CBP plans to phase in additional requirements to participate in the BRASS program, which will result in fewer BRASS participants in the near term and the eventual replacement of BRASS with Selectivity PAPS. These additional requirements include the following:

- **Effective December 12, 2003, food and food-related products covered by the Food and Drug Administration (FDA) Public Health Security and Bio-Terrorism Preparedness and Response Act of 2002 (BTA) may no longer be processed with BRASS. Instead, these items will require either Selectivity PAPS processing or Border Cargo Selectivity Processing.**
- **In the near future, CBP will begin requiring BRASS shipments to be transported by commercial drivers that have been issued a FAST (Free And Secure Trade) driver identification card. Subsequently, CBP will also require that all BRASS shipments be transported by C-TPAT (Customs Trade**

³³ Calculated from data sheets supplied by CBP at a meeting on July 2, 2003. These data showed FAST NCAP trucks at 4,785 for May 2003. Assuming the same shipment/truck ratio for FAST PAPS as for NCAP, there were 383 FAST PAPS trucks in June 2003 for monthly FAST trucks of 5,168. Total loaded truck crossings in April 2003 were 497,822.

Partnership Against Terrorism) carriers, and that they be destined for C-TPAT importers.

Over time, the implementation of these additional requirements will cause many BRASS users to switch to Selectivity PAPS, which will coincide with the deployment of ACE.

3.1.3 BRASS and Selectivity Options

Under this proposal, there are two general points about all the information filed with CBP. First, for all the processes, it is, and will continue to be, the case that the highly detailed filings on which CBP bases its duty, tax, and fee calculations are made within ten days *after* the crossing. What CBP will get prior to border crossing is sufficient for security screening and a determination that a shipment is what it purports to be and does not (or does) require inspection at the border.

Second, under all processes, CBP may always stop a truck for further inspection if its staff at the border find any reason to do so. Thus, the various procedures for clearance described below do not ensure that all loads go through without further inspection; that would be the norm, but there would be exceptions.

3.1.3.1 BRASS

BRASS is designed for high-volume, repetitive shipments of the same product with importers, shippers, and brokers with good compliance records. Importers, shippers, and brokers must be pre-approved, and the product or products moved by a given importer-shipper-broker group must be approved for that group.

When CBP approves such a group, it issues bar codes (C4 bar codes) that identify the pre-approved importer-shipper-broker group and the product. If more than one product is approved for that group, CBP issues more than one C4 code for that group.

At the border, the driver presents an invoice with the C4 bar code (or codes if more than one product is on the truck). The CBP officer scans the bar code and, if it matches with the data in the system for that importer-shipper-broker-product combination, the officer lets the truck through. No other information on the shipment is presented at the border at the time of crossing.

3.1.3.2 Basic Selectivity

Basic Selectivity, which requires no pre-approvals and no electronic pre-filing, is for the shipment that arrives at the border with no prior arrangements or filing. Under basic Selectivity, the driver shows the inspector his cargo information and invoice(s). The driver is directed to a secondary facility where he parks his vehicle and goes into a building where customs brokers' staff are on hand to assist with this type of shipment. The driver finds the representative of the importer's broker and gives the representative the documents. The broker's employee enters the information into a computer and

transmits it electronically to CBP. The broker's employee gives the driver an entry number or numbers that corresponds to what was entered. The driver reports to an inspector in a second inspection station for screening and shows a piece of paper with the entry number. The inspector checks the number in the computer; if the screening is negative and all release requirements are met, the driver may proceed.

3.1.3.3 Selectivity PAPS

Selectivity PAPS is a system with electronic pre-filing and code numbers that allow CBP inspectors at the border to link the shipment (or shipments) on a particular truck to the corresponding electronic filing from a broker. The system depends on bar codes that identify the carrier and the bill of lading (called a Pro-Bill) for the shipment.

The sequence of events is as follows. The truck driver picks up the load and prepares cargo information. The carrier has issued a Pro-Bill for each shipment, and the driver has with him the bar-code strips that contain the carrier's Standard Carrier Alpha Code (SCAC) number and the number of the Pro-bill. The driver affixes the bar-code strips to the cargo information and to the invoice(s).

On the way to the border, the driver stops at a truck stop (or his company's terminal if there is one nearby) and faxes the invoice with bar code to the customs broker. The customs broker enters the information into a computer and transmits it electronically to CBP. The broker must do this in time to make sure that the information will be in the CBP computer when the driver gets to the border. The customs broker will have told the trucking company how much time it needs to enter the information and make the transmission before the driver's arrival at the border. At the border, the driver shows the first inspector the cargo information with bar code (or codes for multiple shipments). The inspector scans the bar code into his computer. If the screening is negative and all release requirements are met, the driver may proceed.

The only change required for the rule would be to ensure that the customs broker receives the information in time to provide it to CBP at least one hour before the truck arrives at the border.

3.1.4 Cost and Savings Estimates

There are changes the new rule will bring about as shippers and carriers switch from BRASS or basic Selectivity to Selectivity PAPS. (By prior assumption, the analysis considers only changes to Selectivity PAPS.) There are also changes that will affect some or all shipments now crossing under BRASS or Selectivity (including PAPS), regardless of the procedure now being used.

3.1.4.1 Unit Costs - Changes for Some or All Brass and Selectivity Shipments

Faxing of Invoices to Customs Brokers. Current practice under Selectivity PAPS is that the driver faxes the invoice(s) with bar codes and associated numbers to the customs

broker. The question is whether this would continue to be the case under the new rule. The difference that matters is the time requirement: one hour before arrival at the border for Selectivity PAPS.

Much of the southbound traffic comes from points not far from the border. There is, for example, a substantial concentration of facilities of auto manufacturers in western Ontario; automotive vehicles and parts are at least 25 percent of the value of imports from Canada.³⁴ This is time-sensitive traffic with just-in-time delivery requirements, and shippers will want to ensure that the invoices are transmitted to brokers as soon as possible to avoid an unscheduled delay at the border. (Shippers and carriers cope with expected delays by building the time into their schedules; unexpected delays could easily cause late deliveries.)

The present arrangement is that the driver leaves the shipper's facility with the paper invoice and goes either to a truck stop or his company's terminal if one is in the vicinity. At one of these places the invoice is faxed to the broker. Given the time required to drive to a truck stop, park, walk inside to the fax machine, stand in a queue (if any), and possibly wait for an open fax line at the broker's office, it could easily be half an hour from the time the truck leaves the shipper's dock to the time when the broker gets the faxed invoice. Although the process might be faster at a carrier's terminal, the analysis assumes the same delay is possible. Given a relatively short drive to the border from the truck stop, that lost half hour could be critical in terms of meeting the one-hour requirement.

Currently, the shipper's only concern is that the shipment information reach the border ahead of the driver. Further, the shipper knows that the information will reach the broker while the driver still has some distance to go before arrival at the border. Under the new rule, the shipper will not have comparable certainty that the driver will get the information to the broker in time for filing one hour ahead of arrival. Market pressure should drive the data transmission to the point where it is certain and most efficient. The most efficient way for the shipper to deal with this problem is to transmit the invoice itself, by fax or e-mail, to the broker. The shipper's incremental cost of faxing may be estimated at \$0.75 per truck.³⁵ This cost would apply for all shipments now crossing under either BRASS or Selectivity (including PAPS).

3.1.4.2 Unit Costs - Effect of One-hour Pre-filing Requirement

For movements originating very close to the border, the one-hour time requirement for pre-filing may impose a cost. This would be the case for movements for which transit time from origin to the border is less than one hour. Even if the shipper transmits the invoice to the broker immediately after the truck is loaded, there will be some delay if the truck would otherwise have reached the border in less than one hour. It seems unlikely

³⁴<http://dataweb.usitc.gov/scripts/REPORT.asp>

³⁵ Unpublished economic analysis prepared by ICF Consulting for the Drug Enforcement Administration. Average labor time for a fax, including multi-page faxes, is 1.5 minutes. We use a fully loaded hourly cost of \$30 for administrative-support personnel; this yields \$0.75 per fax.

that the delay would exceed half an hour. The preponderance of the short moves will be from western Ontario going through Detroit or Port Huron. This is an area where trucks will usually have to travel on congested roads. Given that it takes a tractor-trailer at least a few minutes to get out of the shipper's loading area onto a street, it is reasonable to assume that total elapsed time from the moment the trailer's doors are closed until the truck arrives at the CBP station will not be less than a half hour.

To be conservative, the analysis assumes a half-hour delay for ten percent of truck crossings. The assumption of ten percent is arbitrary but conservative in that it is likely to lead to an overstatement of costs. Shippers that choose to use FAST will face only a half-hour pre-filing requirement and escape this cost altogether. Large, time-sensitive shippers, e.g., automobile companies, are the ones most likely to choose FAST options. This point reinforces the degree to which the estimate is likely to overstate this cost.

A common rule of thumb among U.S. truckload carriers is to assume around \$625 daily revenue for a tractor (500 miles x \$1.25 per mile).³⁶ This assumption is based on a day's run of ten hours, the maximum allowed for a driver under current hours-of-service (HOS) rules. The new HOS rule (recently published) will allow 11 hours of driving, but a reduction in total on-duty hours and a requirement that drivers' breaks be counted as on-duty time mean that drivers will usually be unable to use the extra hour of driving time due to time required for loading and unloading. The analysis adjusts the day's run to 525 miles, which probably overstates the potential for daily revenue. Thus, 525 miles x \$1.25 = \$656.25. Under the new hours-of-service rules for truck drivers, a tractor will be limited to 14 hours of service in a day.³⁷ This produces an hourly cost of about \$47 (656.25÷14) for truck and driver and a cost of \$23.50 per crossing for a half hour delay for ten percent of all truck crossings.

3.1.4.3 Unit Costs - Change from BRASS: Entry of Pre-filing Data

Under BRASS, neither the customs broker nor the carrier has to do anything for the border crossing. Once the firms involved have done the preliminary work to be accepted into BRASS and receive the appropriate numbers, it is only necessary for the driver to affix the appropriate bar code on the cargo information and invoices and show the invoice to the CBP inspector at the border.

Converting to Selectivity PAPS under the rule requires the broker to enter the pre-filing information into its computer and transmit it to CBP an hour or more before the truck gets to the border. The work of the customs broker in entering the information into a computer is equivalent to the work a broker does under basic Selectivity when a staff person enters shipment information from the paper invoice and cargo information carried by the driver. A typical charge for that work is \$8.50 per truck.³⁸ Because it is a

³⁶ Per-mile revenue of \$1.25 or so is typical for long-haul truckload carriers.

³⁷ This is true because each driver is assigned his own tractor by a trucking company. Because the new rule limits the driver to 14 hours on duty in 24, the same limit applies to the tractor.

³⁸ Conversation, July 2, 2003, with executive at Affiliated Customs Brokers Ltd. The fee is charged per shipment.

competitive industry, most or all of the charge would have to be passed on by the brokers to the importers. It would be a slight increase in importers' costs and, to some degree, would be passed on to importers' customers and suppliers, with some being absorbed by the importing firms themselves. The effect is both small and diffuse and cannot be traced past the importers.

The cost to the broker of the switch from BRASS to Selectivity PAPS, then, is the cost of the additional data-entry task, approximately \$8.50 per truck crossing for a truck with a single shipment. For a truck with multiple shipments, the cost would be \$8.50 per shipment. Lacking data on the average number of shipments on a less than truckload (LTL) truck, the analysis assumes that LTL trucks will pay \$85 per crossing. This is an overestimate of the cost as multiple-shipment loads under BRASS are comparatively rare.

3.1.4.4 Unit Costs - Change from BRASS and Basic Selectivity: Costs to Use Selectivity PAPS

There is no change in the cost for data entry under basic Selectivity; the customs broker has to do that both under the current rule and the new rule. The data-entry cost for former BRASS users has already been addressed.

Former users of BRASS and basic Selectivity will have to incur certain costs to use PAPS. They will have to apply, and pay, for a SCAC number. They will have to purchase barcode stickers and test them with CBP. They will have to develop a fax cover sheet and have some discussion with customs brokers they work with on procedures for faxing invoices to the brokers. They will have to explain procedures to their drivers. Total annual cost for all firms using PAPS is estimated at \$2.4 million. See Chapter 6 for details on calculation of this estimate and for the basis of the estimates of numbers of carriers and average per carrier cost.

3.1.5 Unit Savings

3.1.5.1 Change from Basic Selectivity: Elimination of Time in Secondary Facility

Carriers that were crossing under basic Selectivity save the time it takes their drivers to go to the secondary facility and get the customs broker to enter the information on the shipment. It is estimated that this takes an hour.³⁹ Using the truck-cost estimate set out above, this means a saving of \$47 for each truck crossing now made under basic Selectivity.

3.1.5.2 Selectivity PAPS: Time Saving from Shift of Invoice Faxing to Shippers

The invoice-transmission task will shift to the shipper because of the one-hour pre-filing requirement. This change eliminates the time now spent faxing the invoice from a truck

³⁹ Informal estimate from Customs official, July 16, 2003, corroborated by industry expert, George Edwards.

stop, which is estimated to take one-half hour.⁴⁰ The saving is \$23.50 for each truck stop avoided. In many cases, however, the time at the truck stop will not be wasted, because the driver would have planned a stop in any event. If a driver starts his working day by picking up a load near the border, he is not likely otherwise to plan a stop before the border. If he had already been driving for a few hours, a stop before the border could make sense anyway. Assuming that only half the truck stops for invoice faxing would not occur for other reasons, the expected cost for each crossing made is \$11.75 (one-half of \$23.50). If faxing at a truck stop costs \$2.00, the carrier's costs will be reduced by \$13.75 per truck crossing now made under Selectivity PAPS.

3.1.6 Total Costs and Savings

To estimate the total costs and savings, the analysis needs the numbers for total annual truck crossings on the northern border under BRASS, basic Selectivity, and Selectivity PAPS. The estimates are:

BRASS	3.1 million	Selectivity PAPS	0.44 million
Basic Selectivity	2.5 million		

The starting point for estimating these numbers is data provided by CBP on BRASS releases, Selectivity releases, and total inbound truck crossings for the year ended April 2003.⁴¹ These numbers are:

BRASS releases	4,478,826	Selectivity releases	4,301,009
----------------	-----------	----------------------	-----------

The estimate for loaded trucks is estimated by reducing total trucks (6,705,866) by ten percent.⁴² The result is 6,035,279 loaded trucks. BRASS and Selectivity trucks are estimated based on their share of total releases: BRASS 51.0 percent and Selectivity 49.0 percent. These percentages were applied to total loaded trucks and yielded 3.1 million and 3.0 million respectively.⁴³ About 12 percent of trucks are in LTL companies, so the BRASS numbers are divided into truckload and LTL trucks. This estimate is highly conservative because generally BRASS trucks are not LTL. The next step is to separate Selectivity into basic Selectivity and Selectivity PAPS. CBP data indicate that 15.0 percent of Selectivity releases are under PAPS and 85.0 percent are basic Selectivity.⁴⁴ Applying these percentages to all Selectivity trucks yields 440,000 trucks crossing under Selectivity PAPS and 2.5 million trucks crossing under basic Selectivity. The total costs and savings and net savings for Canadian imports are summarized in Exhibit 3-1.

⁴⁰Time required for truck-stop visit is based on knowledge of George Edwards, trucking-industry expert.

⁴¹ Data were on sheets given to ICF by John Considine (CBP) at a meeting on June 26, 2003.

⁴² Customs officials stated that they believe that ten percent of the southbound crossings are empty; meeting on July 1, 2003.

⁴³ FAST shipments were not included as they are such a small share of the total. Data supplied to ICF by CBP showed 4,785 FAST NCAP truck crossings for May 2003. Total loaded trucks for April 2003 were 497,822.

⁴⁴ Data supplied by Customs in e-mails and telephone conversations on July 18, 24, and 31, 2003.

Exhibit 3-1: Summary of Annual Costs for Truck Imports from Canada

	Unit Value	Number of Units (millions)	Total Value (millions of dollars)
Source of Cost (Imports from Canada)			
Change from BRASS: entering shipment data into computer	\$8.50 per truck	2.728	\$23.2
Change from BRASS: entering shipment data into computer	\$85 per LTL truck	0.372	\$31.6
Change for all BRASS and basic Selectivity: faxing data to broker	\$0.75 per truck	6	\$4.5
Change from BRASS and basic Selectivity: costs of using PAPS	\$106 per carrier	0.023	\$2.4
For 10.0 percent of all crossings: delay due to one-hour pre-filing	\$23.50 per truck	0.6	\$14.1
Total Cost			\$75.8
Source of Saving (Imports from Canada)			
Change from Basic Selectivity: Eliminating Delay for Secondary Facility	\$47 per truck	2.5	\$117.5
Change within Selectivity PAPS: Eliminating Stop for Faxing Data and Faxing Cost	\$13.75 per truck	0.44	\$6.1
Total Saving			\$123.6
Net Saving			\$47.8

This estimate is based on the best available data and reasonable assumptions; however, CBP acknowledges that these estimates are uncertain. CBP also acknowledges that the imposition of regulatory requirements normally do not lead to cost savings to industry. If the savings from moving from basic selectivity to selectivity PAPS are substantial, private companies under normal circumstances should have been able to come to an agreement to capture these savings through the voluntary adoption of selectivity PAPS.

PAPS is not yet operational at all ports. PAPS is used primarily in Buffalo, Detroit and Pt. Huron. Buffalo is the heaviest user, partly because of the existence of a truck center on the Canadian side of the Peace Bridge that offers a last opportunity to get shipment data into PAPS before the truck crosses. Private trade groups are looking at opening

similar facilities at other land crossing areas, but the use of PAPS does require CBP and the trade to come to an agreement to implement it at a particular port. CBP must install the PAPS software on their LANs to make it work smoothly, and the trade needs to ensure their entry filer has his software in place to send PAPS type selectivity information to CBP. This analysis does not estimate the cost to CBP of moving a port into PAPS capability, but CBP intends to rapidly initiate PAPS capability in conjunction with this rulemaking. In addition to PAPS, the targeting and shipment environment on the Canadian border is changing rapidly, even in the absence of this rulemaking. For example, the FAST program just became available to PAPS users on (date) and is not available at all locations. Even in the absence of this rulemaking, a reasonable prediction would be a continued rapid movement away from basic selectivity to more automated systems such as selectivity PAPS. This prediction both supports the assumption that PAPS may be more cost effective than the current basic selectivity, and lowers the estimated costs attributable to this rulemaking.

In addition, the uncertainty of the costs and cost savings may signal that the gains from moving off of basic selectivity to selectivity PAPS are so uncertain that many risk-averse companies on their own are not willing to make the investment, absent this rulemaking. For example, the conclusion that the truck requirements are overall cost savings may change if the informal, corroborated estimate of the time savings from basic selectivity to selectivity PAPS, one hour, were shorter. In addition, the conclusion may change if the transition costs of switching from basic selectivity to selectivity PAPS are underestimated, such as if the \$106 per firm were an underestimate of the application and training costs or if the true cost of the shipper faxing the data to the broker were greater than the faxing cost. All of these conditions are possible, given the uncertainty in this estimate.

3.2 EXPORTS TO MEXICO

3.2.1 Industry Description

In 2002, over \$70 billion worth of merchandise was exported from the U.S. to Mexico by truck. The major participants in trucking carriage of exports to Mexico are U.S. shippers, U.S. carriers, U.S. forwarders, Mexican customs brokers, and Mexican drayage firms.

3.2.1.1 Shippers

Table 3.2 shows the top10 commodities going to Mexico by truck. By value, over one-third of this movement is motor-vehicle parts and electronic machinery and parts, inputs for assembly and manufacturing plants (*maquiladora* plants) located near the border. As with all trade with Mexico, the growth of trade with these plants has accelerated since the adoption of the NAFTA. This trade includes both southbound parts and components and northbound movement of assembled products.

**Exhibit 3-2: U.S. Exports to Mexico by Truck
(billions \$)**

Commodity Code	Description	Value
	All commodities	\$71
85	Electrical Machinery and equipment and parts	\$19
84	Nuclear reactors, boilers, and machinery	\$12
87	Vehicles and parts and accessories	\$7
39	Plastics and articles	\$6
90	Optical, photographic, medical instruments	\$3
48	Paper and paperboard	\$2
73	Articles of iron or steel	\$2
2	Meat and edible meat offal	\$1
40	Rubber and articles	\$1
94	Furniture; illuminated signs, prefabricated buildings	\$1

* Source: Bureau of Transportation Statistics
http://www.bts.gov/ntda/tbscd/reports/annual02/tomex_val_wt_2002_trk.html

Many small firms are engaged in export to Mexico. In 2001, approximately 46,000 U.S. companies shipped goods to Mexico by all modes. The total value of these shipments was just over \$100 billion. Approximately 80 percent of this value was from firms with 500 or more employees. The remaining 20 percent was shipped by about 30,000 companies, each with fewer than 500 employees.⁴⁵ Because the small-business standard is 500 employees for most manufacturing industries, about 30,000 small U.S. companies are shipping to Mexico. It is a reasonable assumption that the overwhelming preponderance of these firms are using truck service because users of rail tend to be larger companies.

3.2.1.2 U.S. Carriers

According to the Commodity Flow Survey, 85 percent of the tonnage moved by truck to the Mexican border is moved by for-hire trucking firms.⁴⁶ There are no good data on the trucking companies in this business, but it is reasonable to suppose that the characteristics of U.S. trucking firms hauling goods to the Mexican border are not noticeably different from those of the U.S. for-hire industry as a whole. (This statement would not be true for less-than-truckload (LTL) firms, which would have to have either their own terminals in Mexico or a strong relationship with a Mexican LTL firm.) All of the paperwork, documentation, and other mechanics of getting shipments through the border is handled by U.S. shippers, U.S. forwarders, and Mexican brokers, so truckers do not need specialized knowledge or skills to engage in this business.

⁴⁵ U.S. Census Bureau, *A Profile of U.S. Exporting Companies, 2000-2001* February 2003, Table 5a.

⁴⁶ U.S. Department of Transportation, Bureau of Transportation Statistics, *1997 Commodity Flow Survey, U.S. Exports* <http://www.bts.gov/ntda/cfs/97cfexp.pdf>

In view of the above, it is reasonable to assume that many small carriers are active in this commerce. Of the more than 50,000 companies in truckload (TL) service in the U.S., more than 40,000 of them have revenues of less than one million dollars per year.⁴⁷

3.2.1.3 U.S. Forwarders

The U.S. forwarders at the Mexican border are highly specialized firms. They are not freight forwarders in the ordinary sense of the term; their business is not consolidation of small shipments into larger ones. They serve as intermediaries between U.S. shippers and the Mexican firms that will deal with Mexican customs and haul the freight over the border—the Mexican brokers and draymen.

Almost all shipments moved by U.S. carriers go through forwarders located on the U.S. side of the border. A key reason for this is that U.S. carriers do not want to assume certain liabilities they would bear if they pulled a trailer into Mexico. Use of the forwarder also frees the U.S. carrier from the need to deal with Mexican customs. A driver for a U.S. carrier drops a trailer at the forwarder's yard, which is the end of the U.S. carrier's involvement.

Forwarders' terminals are located within the commercial zones along the U.S. side of the border. A commercial zone includes a port-of-entry city and an area that extends a few miles outside the city limits. These zones may reach from three to 15 miles north of the border.⁴⁸ Mexican trucking firms are allowed to operate within these zones, but very few such firms are allowed to operate beyond the zones. Mexican customs brokers generally have staff permanently assigned to a forwarder's terminal; Mexican draymen move the trailers from the forwarder's yard to and across the border. Some forwarders will hold inventory. In this a case, the load is removed from the U.S. trailer when it comes in, and the goods are held until the receiver in Mexico requires them. This could be the case, for instance, with shipments to *maquiladora* plants that want just-in-time delivery.

It is difficult to establish the precise number of forwarders in operation on the Mexican border. As many as 400 firms are in business around Laredo.⁴⁹ Some of them are subsidiaries of large national or international logistics and freight forwarding firms. Some forwarders are owned by Mexican customs brokers, and forwarders often own Mexican drayage firms.

3.2.1.4 Mexican Brokers and Drayage Firms

Mexican customs brokers prepare the documentation and make the filings required to move goods through Mexican customs in both directions. As part of this service,

⁴⁷ ICF Consulting and Jack Faucett Associates, *Regulatory Impact Analysis for Hours-of-service Rule Options*, prepared for Federal Motor Carrier Safety Administration, 2002.

⁴⁸ Responsibilities of Governmental Agencies and Private Entities at the Texas-Mexico Border Crossings. January 2001, <http://www.window.state.tx.us/specialrpt/border/sfatb2.html>

⁴⁹ Conversation with executive of Maquilogistics, a U.S. customs broker working on the Mexican border.

Mexican brokers will also prepare shipper's export declarations (SEDs) for shippers that have not done it themselves or made other arrangements. (U.S. customs brokers may also play a role in SED filing as described below.)

Mexican drayage drivers pull trailers across the border in both directions. On the northern side, they go no farther than their own company's terminal or a U.S. carrier's terminal in a commercial zone. On the southern side, they usually take trailers to a terminal where Mexican carriers will pick up trailers and pull them to their final destinations. If the destination is near the border, however, the Mexican drayman will complete the move.

3.2.2 Current Border Operations

The sole concern of this analysis is with the handling of the SED. A U.S. carrier picks up a load from a shipper's factory or warehouse somewhere in the U.S. (or from an LTL terminal). Current rules require the shipper to file the SED electronically with Census or in paper with CBP at the border. If electronic, the shipper transmits the SED to Census. There will be an Automated Export System (AES) number for the SED, which will be entered on the shipper's invoice. Typically, the shipper faxes a copy of this invoice to its U.S. customs broker. That broker, in turn, faxes a copy to the forwarder who makes certain a copy is with the drayage driver when the load leaves its terminal for Mexico. (There does not appear to be any reason why the shipper could not fax the invoice directly to the forwarder, but that does not seem to be the common business practice.)

If filing by paper, the shipper gives the hard-copy original to the driver to be filed with CBP at the border; alternatively, the shipper may make arrangements with a Mexican customs broker to prepare the paper filing and make sure the driver has it when the load goes to the Mexican border. A shipper could also have some other third party prepare a paper SED filing.

The U.S. carrier hauls the trailer to the yard of a U.S. freight forwarder and drops it there. That is the end of the U.S. carrier's role. The Mexican broker at the forwarder's yard makes certain that all papers necessary for Mexican customs are with the drayage driver when he leaves and that any electronic filings are made with Mexican customs on a timely basis. When this work and any necessary inspection of the goods in the trailer are completed, the drayman's truck leaves for the border. All dealings with the broker and the drayman are handled by the forwarder. Any documentation the U.S. driver brings with him is handed over to the forwarder or the broker.

When the drayage driver arrives at the border, he passes through a CBP lane before he reaches Mexican customs. He is not required to stop in the CBP lane. If he has the paper original of the SED, he is supposed to leave it in a receptacle similar to a mailbox, but drivers do not always do that. CBP agents may stop any outbound truck at their discretion. If they do, they will ask for evidence of the SED filing. The driver is supposed to hand over the paper original at that point. There is not a consistent pattern

for electronic filing, but the CBP inspector would most likely look for the AES number on the invoice. Exhibit 3-3 illustrates this process.

3.2.3 Border Operations under Rule

The rule makes two changes: all SED filings will have to be electronic; and all SED filings will have to be made at least one hour before a truck arrives in the CBP lane at the border. Compliance with the time-frame rule will not be an issue. As the Exhibit 3-4 shows, the elapsed time from the arrival of the U.S. driver at the forwarder's gate to the departure of the Mexican driver must be an absolute minimum of one hour, and, after that, there is still the drive to the border and any waiting time in a queue. If the U.S. shipper files the SED at the time the U.S. carrier picks up the load, or soon thereafter, he will be in compliance.

The shipper will be given an internal transaction number (ITN) when the shipper files the SED. CBP will have its own electronic record of when the SED was filed. The Mexican drayage driver will have to be provided with a piece of paper, probably a printout of the filing, with the ITN on it in some form (such as a bar code). When CBP stops an outbound truck, the driver will have to produce this piece of paper with the ITN that links the load to the SED and the time the SED was filed.

Exhibit 3-3: Trucking, U.S. to Mexico

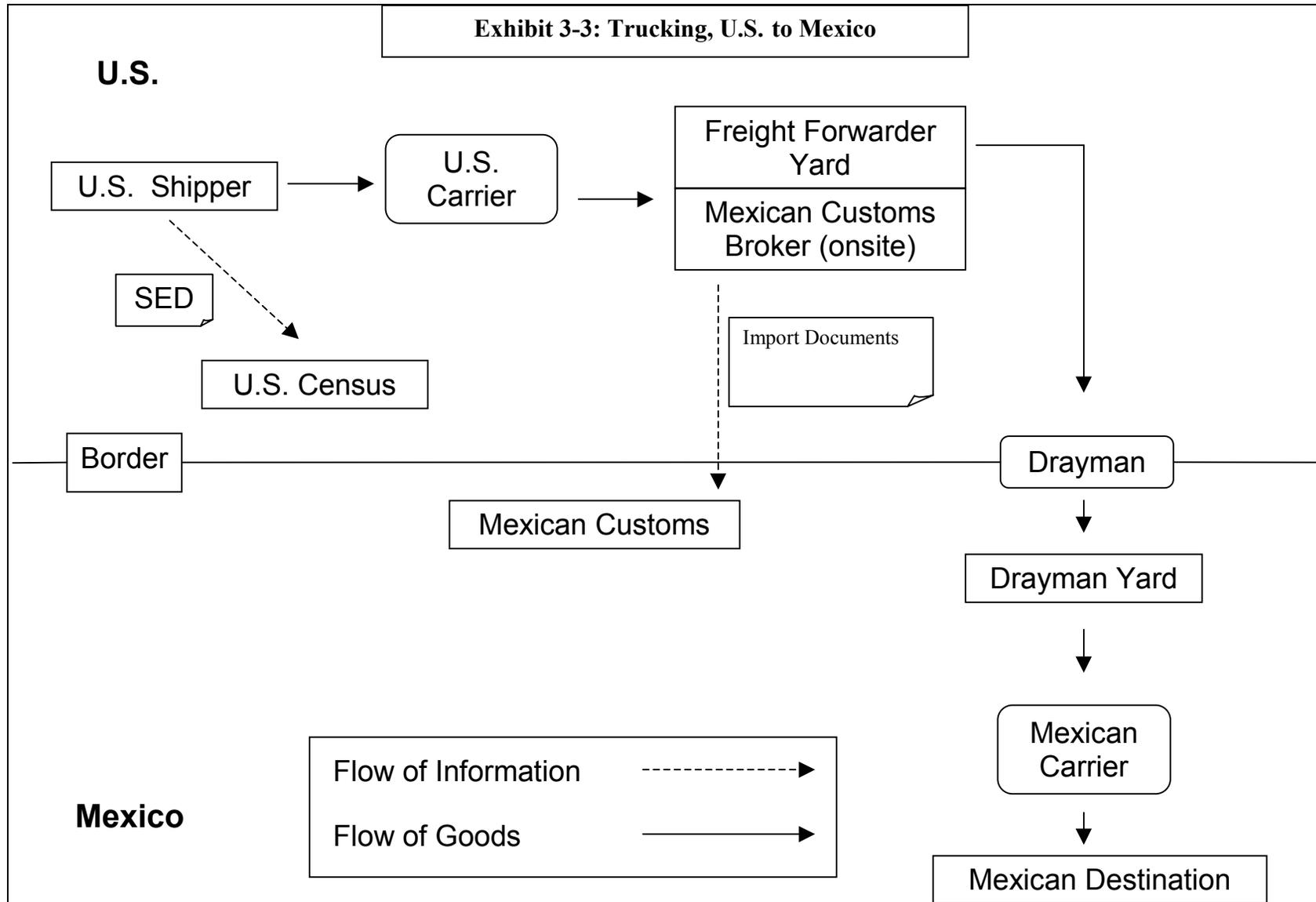


Exhibit 3-4: Necessary Processes in the Forwarder’s Terminal

Process	Estimated Time
U.S. carrier driver checks in at gate	5 – 10 minutes
U.S. carrier driver drops off trailer at assigned space	15 minutes
Mexican broker inspects trailer and completes paper or electronic filing work	0.5 – 2 hours, often longer
Mexican drayage driver connects trailer to his tractor	15 minutes
TOTAL	1 – 3 hours, often longer

Some shipments are repacked, and this would take away some of the time buffer in the system. The time required for the Mexican broker’s person to inspect the newly packed trailer and prepare paperwork for Mexican customs and for the drayman’s driver to hook up the trailer would still require at least 45 minutes before the load could leave the forwarder’s yard, usually more. This should leave enough time to meet the one-hour requirement.

3.2.4 Affected Sector

Of all the participants in the outbound trucking movement at the Mexican border, the shippers now filing by paper are the only ones who have to make a noticeable change in the conduct of their business. Shippers now filing electronically might have to make some adjustment in the timing of their filing, but they will have all the necessary information as soon as the truck is loaded. Presumably, they could fax the document needed for the border crossing to their customs broker or directly to the forwarder and so not hold the driver up while the electronic filing is being entered. Paper SEDs are filed for approximately 17 percent of all truck shipments to Mexico.⁵⁰

3.2.5 Estimation of Cost Impacts

To comply with the proposed regulation, exporting companies can do one of the following: (1) purchase a software package; (2) use the Census Bureau’s free Internet service; or (3) use the services of an authorized third party service provider. The analysis assumes that firms will choose the least-cost way to comply with the regulation. Costs and savings estimates associated with each option are presented below.

As noted earlier, about 30,000 small firms are exporting to Mexico by truck. Because small companies are more likely to file with paper, the analysis assumes that all of these firms are now filing with paper and will have to convert to electronic filing. Given the size of these firms and the cost of purchasing software, it is assumed that no firm will find it cost-effective to invest in a software package.

⁵⁰ Calculated from data supplied by CBP.

AESDirect is the Census Bureau's free Internet service through which exporters may file SED data electronically with Census. AESDirect was made available in October 1999 and was designed for small and mid-sized companies. To be authorized to file SEDs through AESDirect a firm must first register with the Census Bureau to receive a user name and password, and then complete the AES Certification Quiz. To prepare for the Quiz, prospective AESDirect users can use a free tutorial available on the Census Internet site. Alternatively, they may take a 3.5-hour workshop offered by Census in selected cities. The workshop includes an overview of the AES and hands-on training in filing SEDs through AESDirect. The workshop concludes with the Certification Quiz; if its staff member passes the quiz, a company has full certification to participate in AES.

The analysis assumes that exporting firms choosing to attend a workshop are located, on average, within 100 miles from one of the workshop sites. The calculation of the travel costs is based on the assumption that the distance can be traveled in 2 hours (4 hours round trip) and that the travel costs are \$0.36/mile (which is the driving cost assumed by the IRS). Further, the analysis assumes that one employee per firm will be attending the workshop. It is likely that some firms will not attend the workshop, but instead use the free Internet tutorial. The analysis assumes that taking the tutorial is comparable in costs to attending the workshop. Firms whose employees do not attend the workshop will save the travel costs and workshop fee, but the employees will need to spend more time to prepare for the AES Certification Quiz. Further, the analysis assumes that companies that choose to use AESDirect already have, or are planning to purchase, a personal computer and Internet access as part of their normal business practices. Exhibit 3-5 presents the costs. The total annual cost amortized over 5 years at 7 percent is \$2.4 million, or \$80 per company.

Exhibit 3-5: AESDirect Costs

	Unit Time	Unit Cost⁵¹	Activities	Total Cost
Registration	3 minutes	\$1.49	30,000	\$44,700
Workshop fee		\$30	30,000	\$900,000
Workshop time	3.5 hours	\$104.30	30,000	\$3,129,000
Travel cost		\$0.36 /mile	6,094,800	2,194,128
Travel time	4 hours	\$59.60	30,000	\$3,576,000
Total				\$9,873,000

Alternatively, export companies may use the services of an authorized third-party service provider. Authorized third-party service providers are estimated to charge, on average, \$10 per SED.⁵² Currently, the Census Bureau receives 58,643 paper SEDs per month

⁵¹ Wage rate of \$29.80, based on total compensation for administrative and clerical staff (BLS Employer Costs for Employee Compensation, March 18, 2003), with overhead (59% of compensation).

⁵² <http://www.abfs.com/rteguide/puerto/sedinstructions.asp?bhcp=1>
<http://www.overnite.com/products&services/general/sed.aspx>

from companies exporting to Mexico. The analysis assumes that all of these companies are small. Therefore, on average, a small exporting company files 23 SEDs per year. The average small exporting company using the services of an authorized third-party service provider would spend \$230 annually to comply with the rule.

The results show that companies will use the services of the authorized third-party service provider only if they are filing no more than eight SEDs annually (i.e., the third-party charges would be lower than the cost of learning to file internally (\$80/year) only if a firm filed fewer than eight SEDs a year). Given the number of SEDs filed annually by the average exporting company, only a small percentage of companies are likely to use the authorized third-party service providers.

3.2.6 Estimation of Savings

Cost savings are calculated on the basis of the time saved per SED filled electronically. CPB has estimated the burden for completing a paper SED at slightly more than 11 minutes per response and approximately three minutes per response for Automated Export System, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.⁵³ Therefore, exporting companies will save eight minutes per SED, on average, under the rule.

As shown above, a typical small exporting company files 23 SEDs annually. Assuming that the exporting company saves eight minutes per SED filed electronically, the average exporting company will save approximately 3.1 hours annually. To estimate cost savings, the time saved annually is multiplied by the average total compensation for administrative work as reported by the Bureau of Labor Statistics ($3.1 * \$29.80 = \92). Total annual cost savings for all small exporting companies that will transition to electronic filing is estimated at \$2.8 million ($\$92 * 30,000$).

3.2.7 Net Savings

As shown in Exhibit 3-6, small exporting companies will have \$400,000 in net savings annually by transitioning to electronic filing.

Exhibit 3-6: Annual SEDs Cost Impacts

	Industry	Company
Costs	\$2.4 million	\$80
Savings	\$2.8 million	\$92
Net Savings	\$400,000	\$12

⁵³ U.S. Census Bureau *Correct Way to Complete Shipper's Export Declaration Form 7525-V*, 2001, page 8.

3.3 IMPORTS FROM MEXICO

3.3.1 Industry Description

Approximately 23.3 million tons of goods were imported from Mexico in 2002 by truck with a value of \$90.6 billion. The U.S. participants in this trade are the customs brokers and importers. U.S. carriers generally do not participate, because Mexican trucking firms bring the loads up to the border and Mexican draymen move them across. The draymen typically drop the trailers at their own terminals or terminals of U.S. carriers, from which point U.S. firms move them to final destination in the U.S.

3.3.2 Current Operations

The following is the procedure for imports from Mexico not coming in under BRASS, i.e., the procedure for about 87 percent of the releases.

At or before the time at which the northbound truck arrives at the Mexican customs broker's office, the Mexican broker, the shipper, or the importer transmits by fax or electronically the information the U.S. broker requires for a Selectivity filing. The U.S. broker prepares the filing and transmits it electronically to CBP. In that process, the broker generates the entry number. The entry number is conveyed, by runner or fax or some other means, to the Mexican broker who sees that it is entered on the cargo information carried by the Mexican driver, either handwritten or with a bar code.

When the Mexican driver leaves the Mexican broker's office, he must first be processed through Mexican customs. When cleared by Mexican customs, he then proceeds to CBP where he presents the cargo information with the entry number. The customs inspector checks to see if the entry number matches with an appropriate filing. If so, and if there are no other problems, the shipment is released. The procedure is much the same as Selectivity PAPS except for use of the entry number instead of a bill number and the not-universal use of bar codes.

Because the Mexican truck must go through Mexican customs before reaching CBP, it is reasonable to assume that at least one hour will pass from the time the U.S. broker files to the time the Mexican driver gets to CBP. CBP's actual experience on the Mexican border is the basis for this statement. U.S. brokers make electronic filings on all non-brass shipments.

3.3.3 Cost Estimate

Aside from the shipments coming through under BRASS, the procedures at the Mexican border already comply with the new rule. The filing is electronic and is made at least an hour before a truck arrives at CBP.

For BRASS shipments, the cost will be the work required by the U.S. customs broker to prepare the pre-entry filing. In the case of the Canadian border, this cost is estimated to

be \$8.50 per shipment. In the 12 months ending April 30, 2003, there were 338,000 BRASS releases on the Mexican border. Multiplying \$8.50 per shipment by 338,000 shipments per year yields an annual cost of \$2.9 million.

3.4 SUMMARY OF COSTS AND SAVINGS FOR TRUCKING

Exhibit 3-7 summarizes all the cost and savings estimates in this chapter. The savings are primarily due to changes on the Canadian border: the elimination of the delay for basic Selectivity shipments and eliminating delays incurred when drivers make a stop for no other purpose than to fax invoices to a customs broker.

Exhibit 3-7: Summary of Annualized Costs and Savings for Trucking

	Unit Value	Number Of Units (Millions)	Total Value (Millions Of Dollars)
Source of Cost (imports from Canada)			
Change from BRASS: entering shipment data into computer	\$8.50/\$85 per truck	2.73/0.37	\$61.6
Change for BRASS and basic Selectivity: faxing data to broker	\$0.75 per truck	6.1	\$5.1
Change from BRASS and basic Selectivity: costs of using PAPS	\$106 per carrier	0.023	\$2.4
For 10.0 percent of all crossings: delay due to one-hour pre-filing	\$23.50 per truck	0.6	\$15.9
Source Of Cost (Imports From Mexico)			
Change From Brass To Electronic Pre-Filing	\$8.50 per truck	0.34	\$3.3
Source Of Cost (Exports To Mexico)			
Change From Paper To Electronic SED Filing	\$80 per firm	0.03	\$2.4
Total Costs			\$90.7
Source Of Saving (Imports From Canada)			
Change From Basic Selectivity: Eliminating Delay For Secondary Facility	\$47 per truck	2.5	\$132.3
Change Within Selectivity PAPS: Eliminating Stop For Faxing Data And Faxing Cost	\$13.75 per truck	0.44	\$6.9
Source Of Saving (Exports To Mexico)			
Change From Paper To Electronic SED Filing	\$92 per firm	0.03	\$2.8
Total Saving			\$142.0

	Unit Value	Number Of Units (Millions)	Total Value (Millions Of Dollars)
Net Saving			\$51.3

Note: "Truck" means loaded truck crossing. All costs are annualized, by applying a capital recovery factor (five years) to the present value of a five-year stream starting in 2004. Truck traffic is projected to grow at 3.1 percent p.a.; this is the growth rate for 1995-2002 for tonnage of truckborne imports from Canada.

CHAPTER 4 – OTHER MODES

This chapter discusses the potential impacts of the rule on the railroads and vessels.

4.1 RAIL

The impact of the rule on railroads has not been analyzed in depth. Except for a few relatively low-volume ports (eight on the northern border, two on the southern border) all rail exports and imports are already processed through AMS. Further, CBP is in the process of converting the low-volume ports to AMS and thinks it likely that all will be in AMS within a year or two, without regard to the rule.⁵⁴

There are three American railroads not now in AMS that would have to become AMS capable. These are CSX Transportation; Guilford; and the Montreal, Maine, and Atlantic. CSX is a large business. Guilford and the MM&A are privately held, and there is no public information on their revenue or employment. Both are regional networks, Guilford's covering all of New England with a line running into New York. The small-business size standard for line-haul railroads is 1,500 employees. Guilford has fewer employees than this,⁵⁵ and it is a certainty that the MM&A is smaller than Guilford.⁵⁶

The minimum annual cost to an airline to obtain AMS capability from a vendor is \$6,000.⁵⁷ Assuming that the cost will be similar for railroads, if the rule was the cause of all three of these railroads adopting AMS, the annual cost would be at least \$18,000.

MM&A operates 745 miles of road,⁵⁸ and Guilford is a larger operation. Revenues for the smallest railroads on which public information can be obtained exceed \$100,000 per mile of road operated.⁵⁹ On this basis, the revenues of MM&A exceed \$75 million and those of Guilford are greater than that. The cost of adopting AMS could not be a significant impact on either one of them.

4.2 VESSELS

Maritime shipping involves vessel operators, freight forwarders, and non-vessel operating common carriers. Shipping includes vessels arriving through Great Lakes ports as well as ocean-going vessels arriving through ports on the east, west and Gulf coasts, Puerto Rico, and the U.S. Virgin Islands. Under the rule, inbound vessels would have to file cargo information electronically 24 hours before lading. The rule would not change the

⁵⁴ Conversation with Juan Cancio-Bello of CBP, June 3, 2003

⁵⁵ Conversation with Federal Railroad Administration official, July 22, 2003.

⁵⁶ Railroad industry knowledge of Eric Beshers, contractor to ICF Consulting.

⁵⁷ Conversations with vendors, June 2003.

⁵⁸ Announcement from Eureka Growth Capital, January 2003,
<http://www.eurekagrowth.com/article.asp?id=83>

⁵⁹ Figures for 2001 for Grand Trunk Western, Illinois Central, and Kansas City Southern,
<http://www.aar.org/AboutTheIndustry/RailroadProfiles.asp>.

existing requirement that cargo information be filed 24 hours before lading; it would simply mandate that the filing be electronic. More than 700 NVOCCs and 147 shipping lines are currently filing electronically. According to CBP, virtually all carriers that are owned by U.S. citizens or are U.S. flagged are currently filing cargo information electronically. CBP has been able to identify only about 100 foreign carriers that move cargo into U.S. ports that do not use AMS. Because these are not major carriers, CBP expects that these companies will use the services available to them through ports and brokers or contract with vendors. If all 100 purchased vendor services at \$2000 plus a minimum of \$6000 a year for entries, the total cost for vessels would be \$800,000. The actual cost is likely to be less because the shippers may file for these smaller companies.

CHAPTER 5 – ESTIMATION OF BENEFITS

This chapter discusses the benefits of the rule. Examination of the benefits is largely qualitative because the most significant benefits are essentially unquantifiable. The most important benefit of this rule would be the improvement in national security, an issue that is difficult to measure in monetary terms. However, there are some additional benefits expected from this rule that have been quantified below. Most of the incremental quantifiable benefits are expected from changes taking place at the northern border crossings for inbound truck traffic. The rule is expected to streamline the process for checking inbound trucks at the Canadian border crossings, leading to benefits from time savings due to reduced congestion that are in addition to the time savings realized by trucks that change their border-crossing procedures under the rules. Additionally, reduced congestion would lead to less truck idling (or moving at very slow speeds) and consequent reductions in air pollution and fuel costs. Because of the lack of data on how congestion reductions for commercial traffic can affect non-commercial traffic at the border (e.g., cars), this benefit is not quantified. Finally, trucks leaving the country through the Mexican border are expected to provide some qualitative benefits through improvements in data collection.

The discussion of benefits is divided into four sections. Section 5.1 provides a qualitative discussion of the improvements in national security expected from the enhancements in cargo security as a result of this rule. Sections 5.2 and 5.3 provide discussions of the two benefits that have been quantified, namely value of time and fuel savings from reduced congestion and reduced pollution from less truck idling, both at the northern border crossings. The chapter concludes with a qualitative discussion of the improvements in data collection that is expected from this rule, primarily for exporters to Mexico.

5.1 SECURITY IMPROVEMENTS

The rule's primary benefit would be to improve national security through an overall increase in cargo security. Electronic pre-notification will give CBP a chance to analyze the cargo information and more time to decide whether an inspection is warranted. Once implemented, this rule will give CBP more time to analyze cargo data thereby enabling it to target its attention on those types or sources of cargo that it considers high-risk. In addition to improving the effectiveness of the inspections that are performed, improved targeting should work as a deterrent to those high-risk cargo categories that are usually checked under the basic Selectivity process from trucks coming across the northern border.

5.2 TIME SAVINGS BENEFITS

One significant benefit of this rule that can be quantified would come from streamlining the process by which trucks are checked by CBP at the border. Electronic pre-notification is expected to lead to a more efficient checking process, leading to a

reduction in queues and waiting time for trucks. These time savings will accrue to all trucks that must wait to cross the border, not only to those changing their method for clearing customs. For this reason, these time savings have been grouped with the benefits of the rule instead of being treated as an offset to the costs of the rule to the affected carriers. Separating these two sources of time savings avoids double counting of the reductions in cost attributable to the rule. Although it is not possible to quantify this benefit exactly, this analysis provides an approximate measure for the lower bound of time savings from reduced queues.

The total annual value of queuing time savings is calculated by multiplying the value of times savings per hour by the total number of truck crossings per year, and then by the total reduction in waiting time per truck. As described in Section 3.1.4.2, each hour saved by a truck is worth about \$47. The total number of loaded truck crossings per year is about 6 million, as presented in section 3.1.6.⁶⁰

The reduction in processing time provided by the rules are estimated by CBP to be at least 15 seconds per truck.⁶¹ The per-truck reduction in waiting at the border crossing is greater than this reduction in processing time, however, because that reduction in the processing time is saved by all of the trucks behind it in line as well as by the truck being processed. For this reason, the total savings in waiting time per truck is estimated by multiplying the 15-second reduction in processing time by the number of trucks that are typically in line at any given time. To estimate the typical number of trucks in line, the average waiting time at the border was divided by the total time currently needed to process each truck, including the time required for each truck to pull away from the CBP booth and be replaced by another. CBP estimates that it takes about 45 to 60 seconds to process each truck under current rules, and then another 30 to 60 seconds for that truck to pull ahead of the checking booth and for the next truck to pull in.⁶² Using the midpoint of these two ranges yields a typical time per truck of $(45+60)/2 + (30+60)/2$ or 97.5 seconds.

A recent study by the Federal Highway Administration's (FHWA) Office of Freight Management and Operations on "travel delay per truck trip" found that the average delay on the four busiest northern border crossings for inbound trucks was 24.1 minutes.⁶³ Dividing 24.1 minutes by 97.5 seconds yields an estimate of about 15 trucks in the queue on average.

If each 15 seconds of processing time is gained by each of 15 trucks, then each loaded truck crossing leads to $15 * 15$ or 225 seconds of savings, or 3.75 minutes. Savings of 3.75 minutes for each of 6 million truck crossings yields of total savings of 22.5 million

⁶⁰ Only loaded trucks are counted because the rule will not provide processing savings for the empty trucks.

⁶¹ Conversation with John Considine on July 18, 2003.

⁶² Conversation with John Considine on July 18, 2003.

⁶³ *Commercial Vehicle Travel Time and Delay at U.S. Border Crossings*, Freight News published by the Office of Freight Management and Operations, June 2002. This study defines "travel delay per truck trip" as the "time taken by the individual commercial vehicle from initial queuing point in the exporting country, through the exporting country's final checkpoint, and up to and through the first inspection point in the importing country".

minutes, or 375,000 hours per year. Multiplying these hours by \$47 per hour leads to an estimate of almost \$18 million per year in total time savings. These calculations are summarized in Exhibit 5-1.

Exhibit 5-1: Time Saving Benefits from Reduced Processing Time for Trucks Inbound From Canada

	Units	
Value of Time Savings	\$ /hour	\$47
Total Number of Affected Trucks	Million of trucks	6
Time Savings from each truck processing	Seconds	15
Time required to process each truck	Seconds	97.5
Total Wait time	Minutes	24.1
Typical number of trucks in queue	Trucks	15
Total Time Savings per truck processed, for all trucks in queue	Minutes	3.75
Total Time Savings for All Trucks	Hours	375,000
Total Savings	\$ Million	18

Note that an important simplifying assumption in this analysis is that trucks have their dedicated lanes and do not interfere with other private traffic that is also trying to clear Customs. This simplification is needed because of the lack of data on the interactions of truck wait times and its impact on private traffic wait times. This simplification is another reason why the estimate understates the total benefits from time savings. There is anecdotal evidence that long queues for trucks can and do sometimes affect other traffic, at least at some of the busiest border crossings. In the absence of data in this regard, no attempt was made to quantify the time savings for cars.

5.3 BENEFITS FROM REDUCTIONS IN AIR POLLUTION FROM REDUCED IDLING

A related benefit of this increased efficiency in truck processing would be through the reduction in idling time for trucks. Given the discussion in Chapter 3, the analysis assumes that most of the reduced idling for trucks would occur at the northern border crossings.

Reductions in idling take place for three reasons, the first two of which are discussed in Section 3.1 and the last is discussed above:

- Change from Basic Selectivity: eliminating delay for secondary facility – 60 minutes
- Change within Selectivity PAPS: eliminating stop for faxing data – an expected 15 minutes

- Reduced processing time for each truck at the Customs booth – about 4 minutes.

Exhibit 5.2 below shows estimated reductions in pollution due to reduced idling. Note that the exhibit excludes the value of fuel savings that will be another benefit from reductions in idling time. The exhibit deals exclusively with the pollution reduction benefits; a brief discussion of the monetary benefits from fuel savings is also provided below.

Exhibit 5-2: Pollution Reduction Benefits from Reduced Truck Idling Inbound from Canada

	Emission Factor¹	BS to PAPS	Within PAPS	Reduced Processing Time	Total	On-Road Total Emissions²
Idling Time Saved (minutes)		60	15	3.75		
Affected Trucks (million)		2.5	0.44	6		
Total Idling Time Saved (millions of minutes)		150	6	24	180	
Units	Grams/minute	Tons saved	Tons saved	Tons saved	Tons	Million Tons
NOx	1.16	192	8	29	230	8.3
VOC	0.1	17	1	2	19	4.9
CO	0.89	148	6	22	176	74.8
PM2.5	0.02	3	0	0	4	0.2
PM10	0.03	5	0	1	6	0.2
CO2	180	29,835	1,313	4,475	35,623	1,470

¹ Truck Idling Emission EPA 2000 - Compilation of Air Emission Factors. EPA Publication AP-42, Volume II (pending 5th edition).

² EPA's Average Annual Emissions: All Criteria Pollutants, 2001 (Numbers for On-road Vehicles only) and U.S. Climate Action Report, May 2002, U.S. Department of State, chapter 3 (for CO2).

To estimate the total tons of each pollutant reduced, it is assumed that the 60 minutes of idling time saved per truck would affect 2.5 million trucks that currently fall under the basic selectivity process and another 0.44 million trucks would save 15 minutes of idling time within PAPS (for details see Section 3.1). Moreover, all 6 million trucks coming in through Canada would be saving an additional 3.75 minutes each due to a more streamlined processing and reduced waiting.

Given the emission factors for the major pollutants in truck exhaust in grams per minute of truck idling, the total reductions in emissions of these pollutants are calculated. The rule is expected to save at least 230 tons of NOx, another 176 tons of CO, more than 35

thousand tons of CO₂, and small amounts of VOC and particulates. The last column of the table, which provides the U.S. emissions from all on-road vehicles in millions of tons, puts these numbers in perspective.

In addition to the estimated benefits from time savings and emission reductions, another benefit of the rule would be through fuel savings from the reductions in truck idling at the borders. Given that the anticipated CO₂ emission reductions from this rule is 35,623 tons, and the estimated amount of CO₂ per gallon of diesel fuel is 22.4 lbs/gallon,⁶⁴ we can calculate the fuel savings by dividing the pounds of CO₂ saved by this rule by the pounds of CO₂ in a gallon of diesel fuel. Thus, the number of gallons of fuel savings from this rule would be a little over 3 million gallons ($(35,623 \times 2000) / 22.4 = 3.18$ million gallons). According to Energy Information Administration, the national average price of diesel fuel, as of July 28, 2003, was \$1.438 per gallon.⁶⁵ This means that the 3 million gallons saved would translate to about \$4.6 million in benefits from the fuel savings. Adding this to the almost \$18 million monetized benefit from time savings, the total monetized benefit from this rule is estimated at a little over \$22 million.

5.4 IMPROVEMENTS IN DATA COLLECTION

It is expected that the data collection benefits from this rule will be via two channels. First, exporters to Mexico that currently use paper Shipper's Export Declaration (SED) will have to use the automated system called AES to submit the cargo details. This will streamline data collection efforts at CBP and help the Census Bureau in collecting trade data. The streamlined collection will be a significant benefit for Census' Foreign Trade Division (FTD) as collecting, compiling, and publishing US merchandise trade data is a vital role for FTD.⁶⁶ Because most of the exporters through Canada are already filing electronic export data through AES, the incremental benefit of this rule is expected to come primarily through small exporters that export to Mexico.

Second, one of the benefits of the CBP's Automated Commercial Environment (ACE) initiative, when fully implemented, is expected to be a more streamlined process to track cargo information.⁶⁷ The rule for electronic pre-notification analyzed in this RIA should complement this benefit and help CBP's efforts in having a data collection process that is state-of-the-art and the most efficient. It is, however, beyond the scope of this study to quantify this incremental benefit in the overall automation process undertaken by CBP.

⁶⁴ See EIA's "Fuel and Energy Source Codes and Emission Coefficients", URL <http://www.eia.doe.gov/oiaf/1605/factors.html>. Accessed on July 31, 2003.

⁶⁵ See EIA's "Gasoline and Diesel Fuel Update, US Gasoline and Diesel Fuel Prices, 07/28/03. URL: <http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>. Accessed on July 31, 2003.

⁶⁶ See Charles Woods, *AESDirect* – Internet Data Collection of U.S. Export Information, U.S. Census Bureau, Foreign Trade Division, 2001.

⁶⁷ See ACE/ITDS Cost Benefit Analysis, Final Report, Volume 1 Version 3.0, October 11, 2002.

CHAPTER 6: SMALL ENTITY AND UNFUNDED MANDATE ANALYSIS

The Regulatory Flexibility Act of 1980, as amended by the Small Business Regulatory Enforcement Act, (5 U.S.C. 601-612) requires federal agencies to determine whether proposed regulations will have a significant economic impact on a substantial number of small U.S. entities and, if so, to examine effective alternatives that could reduce the impacts. This chapter discusses the number of small entities potentially affected by the proposed electronic filing rule and the potential impacts.

This chapter first examines the impacts of the rule and the COAC alternative on small air carriers, which is the only sector where significant impacts are anticipated. Following this discussion, the chapter covers the small motor carriers and small importers and exporters. Because there are not a substantial number of small U.S. railroads affected and their costs would be insignificant, the analysis does not address rail. CBP also believes that virtually all of the vessels that are not currently automated are foreign and consequently are not subject to the requirements of the Regulatory Flexibility Act. It is likely that the costs for these foreign vessels will be insignificant.

Finally, this chapter discusses the requirements of the Unfunded Mandates Reform Act (UMRA) (2 U.S.C. Chapters 17A, 25).

6.1 INBOUND AIR

The Small Business Administration considers an air carrier small if it has fewer than 1,500 employees. By that standard, 19 of the 39 air carriers that are certificated for foreign service and that carried international cargo in 2002 are small entities. Continental Micronesia is excluded because it is owned by Continental; Atlas and Polar each have fewer than 1,500 employees, but belong to the same parent company, which is above the threshold. DHL is excluded because, although DHL air has less than 1,000 employees, DHL as a whole is a large entity. Exhibit 6-1 presents the small U.S. certificated air carriers by number of employees, with 2002 data on their short-haul imports, total international freight, total operating revenues and expenses, and net operating profit or loss. Those air carriers that currently participate in the automated manifest system (AMS) are shaded. Kalitta is included under AMS although the air bill data used for the analysis indicated that none of its air bills had been filed through automated ports.

Exhibit 6-1: Small Air Carriers

Carrier	Number of Employees	Short-haul Imports (tons)	Total International Freight (tons)	Air Bills (000)	Operating Expenses (000)	Operating Revenues (000)	Operating Profit/Loss (000)
World Airways	1,103	275	38,345	160	\$375,417	\$384,488	\$9,071
Arrow	1,030	66,299	132,234	76	\$191,673	\$165,957	\$(25,716)
Ryan	840	6,717	14,407	32	\$156,741	\$160,045	\$3,305
Air Transport	586	143	1,817	3	\$218,483	\$243,743	\$25,260
Gemini	471	36,576	155,384	711	\$237,305	\$183,526	\$(53,779)
Miami Air	460	953	1,726		\$91,764	\$94,544	\$2,780
Evergreen	456	2,274	23,180	55	\$309,126	\$377,566	\$68,440
Omni	443	41	1,785	89	\$83,441	\$86,925	\$3,484
Amerijet	403	21,281	49,988	91	\$69,530	\$69,482	\$(48)
Kitty Hawk	271	27	188	0.094	\$3,535	\$4,351	\$816
Kalitta	258	731	15,101	48	\$72,812	\$89,877	\$17,065
Capital Cargo	181	6,821	15,699	30	\$37,953	\$45,340	\$7,387
Tradewinds	155	2,377	4,836	106	\$64,938	\$69,600	\$4,663
Southern Air	130	20870	65,525	60	\$10,951	\$13,290	\$2,339
Florida West	63	25,600	51,132	25	\$40,122	\$38,504	\$(1,618)
Centurion	60	3,657	7,503	14	\$30,483	\$15,126	\$(15,357)
Zantop	53	104	202	0.038	\$4,950	\$4,516	\$(434)
Asia Pacific	41	0	4,945		\$35,433	\$19,642	\$(15,791)
Ameristar	22	917	1,234	0.9	\$10,951	\$13,290	\$2,339

6.1.1 Inbound Air Costs

As discussed in Chapter 2, charter carriers are not expected to incur any operational costs because they are likely to be able to complete and file their cargo information before the airplane's departure. Data entry and AMS costs, however, could be substantial.

For scheduled cargo carriers, costs include AMS (for Gemini), data entry, and operational changes for flights (delay per departure and service degradation per ton) for short-haul flights (i.e., flights into the U.S. from countries north of the equator in the western hemisphere). Exhibit 6-2 presents the number of flights and tons of freight each of these carriers moved in 2002 into the U.S. on short-haul flights.

Exhibit 6-2: 2002 Inbound Operational Data for Scheduled Small Carriers

	Short-haul Departures	<90 minutes	Short-haul Freight (tons)	Freight <90 minutes (tons)
Arrow	1,818	6	66,282	78
Gemini	579	2	36,574	44.25
Amerijet	1,544	332	21,274	1,548

Exhibit 6-3 presents the range of data entry and operational costs for each of the carriers for the large document option and the COAC option. The variations on document coverage are not included because these air carriers are unlikely to be responsible for entering data on documents. If they carry documents at all, it is likely to be for one of the express carriers or a consolidator that would enter the information for them. Consequently, the main difference in these options is operational changes.

Exhibit 6-3: Estimated Range of Costs for Small Scheduled Carriers

	Large Document Option		COAC Option	
	Low	High	Low	High
Air Transport	\$8,000	\$8,000	\$8,000	\$8,000
Amerijet	\$1,690,404	\$9,753,816	\$1,018,065	\$6,721,169
Ameristar	\$9,605	\$ 76,840	\$9,605	\$76,840
Arrow	\$1,910,227	\$11,520,518	\$650,754	\$5,180,754
Asia Pacific	\$ 8,000	\$8,000	\$8,000	\$8,000
Capital Cargo	\$359,791	\$2,144,791	\$359,791	\$2,144,791
Centurion Air Cargo	\$223,791	\$1,056,791	\$223,791	\$1,056,791
Evergreen	\$714,952	\$3,987,452	\$714,952	\$3,987,452
Florida West	\$459,952	\$1,947,452	\$459,952	\$1,947,452
Gemini	\$7,066,109	\$51,718,900	\$6,045,184	\$48,353,210
Kalitta	\$1,022,615	\$3,878,615	\$1,022,615	\$3,878,615
Kitty Hawk Air Cargo	\$8,000	\$8,000	\$8,000	\$8,000
Miami Air	\$8,000	\$8,000	\$8,000	\$8,000
Omni	\$179,591	\$ 703,191	\$179,591	\$703,191
Ryan	\$376,791	\$2,280,791	\$376,791	\$2,280,791
Southern Air	\$1,107,615	\$4,558,615	\$1,107,615	\$4,558,615
Tradewinds	\$1,515,615	\$7,822,615	\$1,515,615	\$7,822,615
World Airways	\$1,974,615	\$11,494,615	\$1,362,720	\$10,889,686

	Large Document Option		COAC Option	
	Low	High	Low	High
Zantop	\$8,000	\$8,000	\$8,000	\$8,000

6.1.2 Impact of the Rule

The five carriers who have only vendor costs for entering information are not likely to be impacted by the rule. The impact on the other 14 carriers depends mainly on the number of air bills they have to enter. Exhibit 6-4 presents the low and high range cost estimates of the rule as a percentage of operating revenues for the 14 carriers.

Exhibit 6-4: Costs as a Percentage of Operating Expenses and Revenues

	Documents > 1 Lb		COAC Alternative	
	Low	High	Low	High
Amerijet	2.4%	14.0%	1.5%	9.7%
Ameristar	0.1%	0.6%	0.1%	0.6%
Arrow	1.2%	6.9%	0.4%	3.1%
Capital Cargo	0.8%	4.7%	0.8%	4.7%
Centurion Air Cargo	1.5%	7.0%	1.5%	7.0%
Evergreen	0.2%	1.1%	0.2%	1.1%
Florida West	1.2%	5.1%	1.2%	5.1%
Gemini	3.9%	28.2%	3.3%	26.3%
Kalitta	1.1%	4.3%	1.1%	4.3%
Omni	0.2%	0.8%	0.2%	0.8%
Ryan	0.2%	1.4%	0.2%	1.4%
Southern Air	8.3%	34.3%	8.3%	34.3%
Tradewinds	2.2%	11.2%	2.2%	11.2%
World Airways	0.5%	3.0%	0.4%	2.8%

As can be seen from Exhibit 6-1, seven of the small carriers operated at a loss in 2002. Exhibit 6-4 indicates that even the low cost options would impose costs in excess of one percent of operating revenues for 7 of the 19 small carriers. The high cost options would impose significant costs on 12 of the 19 small carriers; four of the carriers could have costs in excess of 10 percent of their operating revenues. Despite the uncertainty that exists in estimating costs, it is likely that the rule would create a significant economic impact on small air carriers. Because most of these costs are driven by the cost of

electronic data entry, which is mandated by statute, mitigating the impacts is difficult. Many of the small entities may address this issue by having the shipper or consolidator submit the information to CBP.

6.2 SMALL MOTOR CARRIERS, INBOUND

This section examines the potential cost impacts on the U.S. carriers required to participate in the Pre-Arrival Processing System (PAPS). PAPS is a CBP cargo release mechanism that uses barcode technology to expedite the release of the U.S. bound commercial shipments on the Canadian border.

To estimate the costs associated with PAPS participation, the analysis first estimates the universe of carriers that haul the goods across the Canadian border. That information is then used to estimate the cost impacts for different size categories of carriers. Finally, the potential cost impacts on the small carriers are evaluated in terms of their total revenues. The cost impacts are discussed below.

6.2.1 Number of Carriers Crossing the Canadian Border

There are approximately 55,000 carriers, including truckload (TL) and less-than-truckload (LTL), in the U.S.⁶⁸ Though it is highly unlikely that they all cross the Canadian border, it is difficult to estimate how many actually do. To make a rough estimate of the number of carriers that haul the goods across the Canadian border, the analysis examines the average trip length and the location of these carriers. Based on their trip length, carriers are classified into four categories: (1) under 150 miles; (2) 150-300 miles; (3) 300-700 miles; and (4) more than 700 miles. It is reasonable to assume that carriers with longer ranges are more likely to cross the border, and that carriers with short ranges are likely to do so only if they are based close to Canada. Following this logic, the analysis assumes that essentially none of the shortest-range carriers, and all of the longest-range carriers, cross the Canadian border. Of those with moderate ranges, the analysis assumes that only that fraction based in states close to Canada would cross the border. For the carriers with a range of 150 to 300 miles, the analysis assumes that 14 percent would cross the border because that is the percentage of all carriers in states that share a border with Canada. For carriers with a range of 300 to 700 miles, the analysis assumed 50 percent, based on the percentage of carriers in the northern border states plus the states adjacent to the border states.

Based on the two parameters explained above, there could be approximately 23,000 carriers that will need to participate in PAPS. Exhibit 6-5 shows the distribution of these carriers by the average length of haul.

⁶⁸ Regulatory Impact Analysis and Regulatory Flexibility Act Analysis For Hours of Service Options, ICF Consulting and Jack Faucett Associates, 2003, p. A-2.

Exhibit 6-5: Assumed Distribution of Carriers Crossing the Canadian Border by Length of Trip

Average length of trip (miles)	Total number of carriers	Percent assumed to cross the border	Number of carriers assumed to cross the border
Under 150	18,195	0%	0
150 to 300	6,864	14%	927
300 to 700	11,492	50%	5,746
Over 700	16,362	100%	16,362
Total	52,913		23,035

Source: County Business Patterns, HOS RIA, ICF analysis.

Though there is substantial uncertainty in these estimates, they are likely to overstate the total number of carriers in the cross-border trade. In the analysis presented above, the analysis assumes implicitly that carriers of different sizes with the same average length of haul are equally likely to cross the border. In fact, smaller carriers are probably less likely to do so. For reasons presented in Chapter 3, the proportion of the business going to small, truly independent firms will be much smaller than it is in the domestic trade. Nonetheless, the total number of small trucking firms in the U.S. is so large that several thousand, at the least, must participate in traffic across the Canadian border.

6.2.2 Estimation of Cost Impacts

To participate in PAPS, a carrier must first apply for a Standard Carrier Alpha Code (SCAC) issued by the National Motor Freight Traffic Association (NMFTA). The initial fee for the code assignment and publication in the Directory of Standard Carrier Alpha Codes is \$30. The application process consists of filling out a one-page application form and faxing it to NMFTA. On the application form, the applicant is required to supply basic carrier information such as name, address, and type of business. The analysis estimates that the process of completing and faxing the application will take between five and ten minutes. Once a SCAC has been assigned to the carrier, the carrier will incur an annual cost of \$28 to maintain it.

In addition to acquiring a SCAC, each carrier will need to develop its PAPS barcode. CBP requires that companies use a unique barcode on each line and place the same barcode on each invoice. CBP has established specifications regarding label design and barcode structures. Carriers can either purchase a barcode printer and design their own barcodes, or purchase barcodes from a commercial printing service. Because there is no information on how many carriers are likely to buy a printer, the cost estimates are based on the assumption that all companies will purchase barcodes. As a result of this assumption, the costs may be overestimated. A low-end printer can be purchased for

approximately \$106 (including the printing tape), while a set of 2,000 barcodes (i.e., 1,000 unique barcodes) can be purchased, on average, for \$115.75.⁶⁹

To insure barcode compatibility with CBP technology, importing companies are expected to test their PAPS barcodes with CBP before they can start participating in AMS. The testing entails placing the barcode on a blank manifest and delivering it to a local CBP office. It is assumed that most companies will mail the manifest form with a test barcode to CBP, rather than deliver it in person.

The importing carrier will also need to inform its customs broker of its intent to participate in PAPS and identify the broker. Further, a procedure for transmitting the required automated broker interface (ABI) entry information via fax will need to be established. The analysis estimates that the average carrier can accomplish this activity in 10 minutes. A carrier will also need to develop a fax cover sheet, which drivers or the shipper's employees will use to send the shipment information to the broker. The burden for this activity is estimated at 20 minutes. In addition, each carrier will need to instruct its drivers on what shipment information is to be sent to the broker using the new procedures required by the rule. It is estimated that a manager will need to spend five minutes per driver.

The analysis assumes that the PAPS application process and broker consultations will be handled by a manager whose position can be classified as either a general and operations manager or a transportation, storage, and distribution manager. The average loaded hourly rates for the two managerial positions are \$63.10 and \$57.62, respectively.⁷⁰ In calculating the cost burden of the rule, the average of the two wage rates is used.

Exhibit 6-6: Hour and Cost Burden Data

Activities	Burden
Complete and fax application	7.5 minutes
Application costs	\$ 30
Annual renewal fee	\$ 28
Purchase PAPS barcodes	\$115.75 (plus \$ 0.12 per barcode for more than 1,000)
Test PAPS barcode	3 minutes plus \$ 0.37

⁶⁹ The price quoted is for a DYMO LabelPOINT 300 handheld label maker, available at http://www.calcentron.com/Pages/Dymo_Labelmakers_Home/Dymo_Handheld_Labelmakers_Page.htm, as of July 2003. The price quoted is for a set of 1,000 barcodes available from BarcodeDiscounters.com at <http://www.barcodediscounters.com/barcodelabels.html>, as of July 2003.

⁷⁰ Occupational Employment Statistics, Specific Occupational Employment and Wage Estimates, Trucking and Courier Services, except Air. The 2001 wages are inflated to 2003 dollars using the Bureau of Labor Statistics employment cost index. Hourly rates are loaded with fringe (38%) and overhead (59% of wage plus fringe).

Activities	Burden
Contact US Customs broker	10 minutes
Develop a fax cover sheet	20 minutes
Give instructions to drivers	5 minutes per driver

As an example of the calculations, using the unit costs presented in Exhibit 6-6, the total 5-year cost burden for a carrier with 12 tractors is estimated as follows:

$$(7.5+3+10+20 +12*5)/60*\$60.36 + \$30 + 4*\$28 + \$115.75 + \$0.37 = \$359.22.$$

The carrier's total annual costs amortized over 5 years at 7 percent (and accounting for the fact that the renewal fees are paid over time, rather than up front, so that \$28 per year is not amortized) are about \$81 per carrier. The cost burden for other size categories is calculated in a similar way. Exhibit 6-7 shows the annual costs per carrier presented by carrier type and tractor size class.

Exhibit 6-7: Annual Costs per Carrier, by Carrier Type and Size

Carrier Type	Tractor Size Class	Number of Carriers	Total Annual Costs	Annual Costs per Carrier
LTL	1-24	85	\$6,576	\$78
	25-99	40	\$7,112	\$177
	100-499	21	\$14,071	\$677
	500+	21	\$36,934	\$1,786
TL	1-5	16,946	\$1,172,487	\$69
	6-24	3,329	\$271,017	\$81
	25-99	1,894	\$335,596	\$177
	100-499	586	\$396,478	\$677
	500+	114	\$203,086	\$1,786
Total, Average		23,036	\$2,443,357	\$106

6.2.3 Definition of Small Entities

The Small Business Administration defines a carrier as small if its annual revenues are less than \$21.5 million. Using an estimate of revenues of \$125,000 per tractor, a carrier is considered small if it has 175 or fewer tractors.⁷¹ However, because of data

⁷¹ Regulatory Impact Analysis and Regulatory Flexibility Act Analysis For Hours of Service Options, ICF Consulting and Jack Faucett Associates, 2003, p. A-8.

limitations, the analysis sets the cut-off at 100 tractors. It is estimated that approximately 22,000 carriers fall in the category of small entities.

6.2.4 Cost Impacts on Small Entities

As shown in Exhibit 6-7, the total annual cost impacts on the small carriers are \$2.4 million. The annual impact per small carrier is, on average, \$80. The impact appears even smaller when calculated as a percentage of the total revenues. The cost impacts, as a share of revenues, are well below a tenth of one percent (0.002-0.03 percent, depending on carrier size). Therefore, the rule is not expected to have any significant impact on the small carriers moving goods from Canada.

6.3 SMALL EXPORTERS

As noted in Chapter 3, there are approximately 30,000 small firms exporting to Mexico that will have to convert to electronic filing. These firms are expected to have savings of, on average, \$15 per year, which is clearly not a significant impact. Furthermore, CBP is already providing free software and training programs to ensure that small entities are not adversely affected.

It should be noted that savings will not necessarily accrue to all small exporters. However, the highest cost increase per small firm would not be more than \$80 per year. An increase in costs of \$80 is unlikely to constitute a significant impact cost compared to revenues. Further, even the very small importers will incur costs of not more than \$10 per \$2,500 in value of goods shipped, which is only 0.4 percent. For any shipment valued less than \$2,500, small exporters will not incur any costs, because they will not be required to file a SED.

6.4 SMALL IMPORTERS

This section examines the number of small importing entities potentially affected by the rule and the potential impacts. To determine how imports from Canada are distributed among U.S. industries, two methods are examined. First, the total value of imported commodities by industry, from all sources, is considered. Second, the types of commodities that are being imported from Canada are examined. Both of these methods are discussed below. Once it is determined which industries are likely to be affected by the rule, the size distribution and number of firms in those industries is examined.

It is estimated that the effects, on the whole, will be insignificant for small entities. It should be noted that cost savings in truck shipments from Canada are also expected to accrue to the exporters. These will in many cases be Canadian firms, which are outside the purview of this analysis. However, in some cases these exporters will be part of U.S. firms.

6.4.1 Affected Industries

To determine which industries might be the most affected by changes in costs of importing by truck, industries are identified with high total imports, high imports relative to output, high total exports from Canada, and high exports from Canada relative to output. All of the industries that fall into the top five by any of these measures are considered likely to be affected by changes in costs of importing by truck from Canada, with the exception of petroleum and natural gas, which are primarily transported through pipelines system and by ship and are left out of the analysis. The potentially affected industries are presented in Exhibit 6-8.

6.4.2 Definition of Small Firms

The Small Business Administration (SBA) defines size standards for small entities for each industry. The SBA's size thresholds are presented in Exhibit 6-8.

Exhibit 6-8: Small Business Administration's Size Standard for Small Businesses

Industry	NAICS	Size Standard in Millions of Dollars	Size Standard in Number of Employees
Lumber & Wood Products Exc. Furniture	321		500
Paper & Allied Products	322		500 - 750
Leather & Leather Products	316		500 - 1,000
Primary Metal Industries	331		500 - 1,000
Industrial & Commercial Machinery & Computer Equip	333/334		500 - 1,000
Electric Equip. & Components Exc. Computer Equip.	335		500 - 1,000
Transportation Equipment	336		500 - 1,500
Other Services	81	\$4.0 - \$12	

Source : Small Business Size Standards Matched to NAICS Codes Effective through May 5, 2003

6.4.3 Size Distributions and Numbers of Firms

Exhibit 6-9 shows the breakdown of firms in the industries in terms of employment. The analysis shows that there are substantial numbers of small entities in all of the industries. On the order of a million firms fall into the category of small entities.

Exhibit 6-9: Distribution of Firms by Size, in Year 2000

Industry	Number of Firms			Approximate Number of
	Employment Less than 20	Employment 20-499	Employment 500+	

				Small Firms
Other Services	615,919	44,558	1,232	660,477
Leather & Leather Products	8,114	2,589	145	10,703
Electric Equipment & Components Excluding Computer Equipment	13,993	7,201	1,731	21,194
Industrial & Commercial Machinery & Computer Equipment	45,481	15,789	2,365	61,270
Transportation Equipment	24,374	5,336	1,271	29,710
Lumber and Wood Products Except Furniture	20,829	6,934	607	27,763
Paper & Allied Products	1,796	2,152	505	3,948
Primary Metals Industries	6,313	3,651	840	9,964

Source: Statistics of U.S. Businesses (SUSB), developed by U.S. Census Bureau for SBA, retrieved from SBA website.

6.4.4 Impact of The Rule

Though large numbers of small entities could be affected to some degree, the effects, on the whole, will be insignificant for small entities importing from Canada. Based on the analysis, the change in cost is expected to be beneficial, and small: about \$76 million out of a total value of trucked imports of \$118 billion. This represents savings of far less than a tenth of one percent of the imports. Further, the costs will be spread over a large number of industries and firms. Consequently, the cost burden per firm is expected to be insignificant.

6.5 UNFUNDED MANDATES REFORM ACT (UMRA)

Title II of the Unfunded Mandates Reform Act (UMRA; 2 U.S.C. 1501 *et seq.*) requires Federal agencies to analyze the impacts of any rule that requires expenditures that exceed \$100 million (currently \$113 million, when adjusted for inflation) for either governmental entities or the private sector. As detailed in this document, the Advanced Electronic Filing Rule will impose costs that exceed the UMRA trigger. Consequently, this regulatory impact analysis addresses the requirements of both E.O. 12866 and UMRA.

The other requirements under UMRA include assessing the rule's effects on:

- Future costs
- Particular regions, communities, or industrial sectors
- National productivity
- Economic growth
- Full employment
- Job creation
- Exports

When a rule would result in expenditures greater than \$113 million, UMRA requires outreach to the regulated community and discussion of proposals. As noted in Chapter 1, CBP conducted extensive discussions with the regulated community prior to the development of the rule. CBP held separate hearings with each of the modes to solicit information and comments. CBP also accepted comments from members of the regulated community as it developed its proposed rule and held numerous meetings with the COAC committees, which submitted recommendations. Finally, CBP received more than 100 comments on the proposed rule, which were considered in the development of the final rule.

CHAPTER 7: ECONOMIC IMPACTS

This chapter brings together the cost, cost savings, and monetized benefit estimates for all of the modes found to be affected by the rules, and discusses their potential economic impacts.

7.1. TOTAL NET COSTS

This section presents the net costs for the rule. Note that these costs cover those borne initially by U.S. firms and excludes costs to firms based in other countries. Though some of the costs borne by foreign firms may be passed on to firms or consumers in this country, the opposite is also true: some of the costs borne initially by domestic firms may be passed on to foreign entities. CBP also estimated the cost of rule familiarization for Customs brokers, forwarders, exporters, and air carrier employees. The initial cost is about \$2 million; over five years, assuming turnover rates of 35 percent for exporters and 45 percent for others, the annualized cost of rule familiarization is \$1.3 million.⁷²

Exhibit 7-1 summarizes the estimated costs of the rule across all of the affected modes, and combines them with the cost savings and monetized benefits for the trucking sectors. A range of costs is shown for air, due the uncertainty of the impacts and the importance of the analysis of impacts on that sector. As discussed in Chapters 2 and 3, these costs and benefits are computed over five years and annualized using a discount rate. The discount rate used for the figures in Exhibit 7-1 is seven percent; calculations performed using three percent are only slightly higher.

Offsetting these costs are cost savings in the truck sector to the specific carriers and shippers whose operations will be changing, and time savings accruing to the trucking sector in general that have been included as monetized benefits. (Exhibit 7-1 excludes non-quantified benefits related to improved security and data collection, as well as some unmonitized reductions in air pollution.) These cost savings bring the annual net cost of the rules down to between \$279 million (for the low impact scenario of the COAC option) and \$4.7 billion (for the high impact scenario of the all documents option).

⁷² The turnover rate for exporters to Mexico is the average of the annual turnover rates in manufacturing industry in 2001 and 2002 (annual rates represent the sum of monthly rates). The turnover rate for air carrier employees, brokers, and forwarders is the average of annual turnover rates in trade, transportation, and utilities industries in 2001 and 2002 (annual rates represent the sum of monthly rates).

Exhibit 7-1: Annualized Costs and Benefits for Impacted Modes
(millions of dollars per year, 7 percent discount rate)

	Air			Truck	Total		
	Low	Medium	High		Low	Medium	High
Rule Familiarization Costs				\$90.7	\$1.3	\$1.3	\$1.3
Cost Savings				\$142.0	\$142.0	\$142.0	\$142.0
Monetized Benefits				\$27	\$27	\$27	\$27
Net Costs – All Documents	\$2,914	\$3,652	\$4,736	(\$78)	\$2,839	\$3,576	\$4,660
Net Costs – Large Documents	\$930	\$2,177	\$3,770	(\$78)	\$855	\$2,101	\$3,694
Net Costs – No Documents	\$422	\$1,160	\$2,244	(\$78)	\$346	\$1,084	\$2,168
Net Costs –COAC	\$345	\$994	\$1,889	(\$78)	\$269	\$918	\$1,813

7.2. COST INCIDENCE

The cost, savings, and benefits presented in the exhibits above include all of the measured costs of the rule and the alternatives, not only the costs falling on the U.S. economy. The impacts on the U.S. economy are likely to be smaller, but to an extent that would be very difficult to estimate. It might be possible to calculate costs and savings that affect U.S. firms (and residents) directly (e.g., expenses incurred by U.S. firms directly in response to the requirements of the rules). This approach would be misleading in a number of ways, however. It would exclude the effects of degraded service provided by U.S. air carriers, which in all likelihood would oblige those carriers to reduce their rates. It would also leave out the costs to shippers in Canada that were not affiliates of U.S. firms, despite the fact that shipping costs are often charged to the recipients in the first instance. In general, whenever there is a change in the costs of providing a good or service, the buyers and sellers will end up sharing that cost in a way that depends on their relative sensitivities to changes in price. The least sensitive parties to the transaction will generally bear most of the cost or reap most of the gains, and the main determining factor in the degree of price sensitivity is usually the availability of substitutes for the goods or services being sold.

In some cases, it might be possible to project which market participants will bear the costs. For example, because of the availability of very large numbers of motor carriers all experiencing very similar changes in their costs, it is likely that any cost savings accruing to them will be passed on to their customers as a result of competitive market forces. Because of the very large number of types of goods and services being affected by the rules, however, it is not practical to determine the incidence of costs between the

U.S. and its trading partners. Instead, the analysis assumes that the U.S. bears all of the costs and cost savings, with the knowledge that this assumption provides a likely upper bound on the impact to the U.S.

7.3 IMPACTS ON FIRMS

The potential for impacts on individual firms varies sharply across affected sectors. As described in the preceding chapters, the impacts of the rules on air carriers could be significant in a number of cases, a concern that is intensified by the current financial state of that industry. Eliminating detailed reporting requirements for documents and changing filing times for cargo imported from north of the equator in the western hemisphere would reduce but not eliminate these impacts. Impacts on exporters, on the other hand, are shown to be very small for individual firms, in part because the total costs are small and in part because they are so diffuse, with tens of thousands of affected companies. Similarly, importing companies may be affected either positively or negatively (depending on the incidence of the cost savings to carriers, and the distribution of shippers using BRASS or Selectivity PAPS as opposed to basic Selectivity), but any cost changes will be spread over hundreds of thousands of firms.⁷³

7.4 MACROECONOMIC IMPACTS

Regulatory cost changes that are large enough can have macroeconomic impacts in the form of effects on inflation, unemployment, economic growth, and government revenues. These effects, due to their complexity and the interaction of multiple sectors of the economy, can be analyzed fully only through the use of macroeconomic models. In the case of the rules, (and, *a fortiori*, the COAC option) the net cost impacts are too small to register on a macroeconomic scale.

This fact is illustrated in Exhibit 7-3, which expresses the total annual net costs of the rules and the COAC alternative as a fraction of U.S. GDP. The exhibit also shows the cost impacts on a per capita basis.

⁷³ It may be possible to identify a few individual firms that have a particularly large stake in the rules' effects on the costs of trucking. Specifically, the major automobile manufacturers, which send large volumes of parts across the borders, may be more affected by short shipping delays due to the need for data to be received by Customs an hour of advance of each shipment reaching the border. These firms might also gain relatively less in terms of reduced processing delays at the border, if they are currently heavy users of BRASS, which is not subject to the delays under basic Selectivity. They are, however, among the firms best able to spread any fixed costs of adjusting to a new system, and most able to develop automated systems to cope with the changes.

Exhibit 7-3: Annual Net Costs Compared to the U.S. Economy

	Large Document Option			COAC Option		
	Low	Medium	High	Low	Medium	High
Net Costs, millions	\$855	\$2,101	\$3,694	\$269	\$918	\$1,813
Percentage of GDP	0.009%	0.021%	0.037%	0.003%	0.009%	0.018%
Annual Cost Per Capita	\$3.06	\$7.53	\$13.24	\$0.96	\$3.29	\$6.50

Source: Exhibits 7-1 and 7-2, U.S. Census Bureau, USA STATISTICS IN BRIEF (<http://www.census.gov/statab/www/part3.html#income>, /#population)

As shown in Exhibit 7-3, compared to the U.S. GDP of over \$10 trillion, the costs of the rules are generally less than a two hundredth of one percent, and the costs of the less expensive alternative are smaller than that.

LIST OF ACRONYMS

ABI	Automated Broker Interface
AES	Automated Export System
AMS	Automated Manifest System
ATA	Air Transport Association
BRASS	Border Release Advanced Screening and Selectivity
COAC	Air Workgroup of the Advisory Committee on Commercial Operation of the CBP Service
DOT	U.S. Department of Transportation
FAST	Free and Secure Trade
HOS	Hours-Of-Service
IO	Input-Output Coefficients
ITN	Internal Tracking Number
LTL	Less-Than-Truckload
NAICS	North American Industry Classification System
NCAP	National Customs Automation Program
NMFTA	National Motor Freight Traffic Association
PAPS	Pre-Arrival Processing System
SBA	Small Business Administration
SCAC	Standard Carrier Alpha Code
SEC	Securities and Exchange Commission
SED	Shipper's Export Declaration
TL	Truckload
TLC or TLCM	Total Logistics Cost Model
UPS	United Parcel Service

BIBLIOGRAPHY

1. Affiliated Customs Brokers Ltd. (2 July 2003). Phone interview.
2. Air Routing International. "Time and Distance Calculator." <http://www.air-group.com/calc.htm>
3. Air Transport Association. (2003) ATA Annual Report..
4. Air Transport Association. (2000). ATA Delay Report.
5. BarcodeDiscounters.com. "Preprinted Barcode Labels." <http://www.barcodediscounters.com/barcodelabels.html>.
6. Basurto, R. (30 June 2003). Phone interview with president of RB Systems.
7. Bustard, B. (30 June 2003). Phone interview with representative from Customs Brokers Computing Company.
8. Cal-Centron Wholesale Co. "DYMO Electronic Labelmakers." http://www.calcentron.com/Pages/Dymo_Labelmakers_Home/Dymo_Handheld_Labelmakers_Page.htm.
9. Closon, C. (26 June 2003). Phone interview with representative of DCS Transport & Logistics.
10. Crystal Pavel, C. (1 July 2003). Phone interview with representative of C.H. Robinson International, Inc.
11. Drug Enforcement Agency. (2003). *Initial Economic Impact Analysis of the Proposed Electronic Orders Rule*.
12. Dubinsky, J. (1 July 2003). Phone interview with representative of American Shipping Co. Inc.
13. Edwards, G. Phone interviews with trucking industry expert.
14. Fernandez, J. (1 July 2003). Phone interview with representative of BDP Interamerica LLC.
15. Ginnie, M. (24 and 26 June 2003). Phone interview with representative of Smart Border.

16. ICF Consulting and Jack Faucett Associates. (2002). *Regulatory Impact Analysis for Hours-of-service Rule Options*, prepared for Federal Motor Carrier Safety Administration.
17. *Draft Economic Impact Analysis of the Proposed Electronic Prescription Rule*, ICF Consulting prepared for Drug Enforcement Administration.
18. Maquilogistics. Phone interview.
19. Texas Comptroller of Public Accounts. (January 2001). *State Functions at the Texas-Mexico Border and Cross-Border Transportation*, Chapter II. Responsibilities of Governmental Agencies and Private Entities at the Texas-Mexico Border Crossings.
<http://www.window.state.tx.us/specialrpt/border/sfatb2.html>
20. U.S. Customs and Border Protection. (2002). *ACE/ITDS Cost Benefit Analysis*.
21. U.S. Department of Commerce, Census Bureau. (February 2003). *A Profile of U.S. Exporting Companies, 2000-2001*, Table 5a.
22. U.S. Department of Commerce, Census Bureau. (1997). *Economic Census*.
23. U.S. Department of Commerce, Census Bureau. (2001). *Annual Survey of Manufacturers*.
24. U.S. Department of Commerce, Census Bureau, Foreign Trade Division.
25. U.S. Department of Commerce, Census Bureau. (2001). *Correct Way to Complete Shipper's Export Declaration Form 7525-V*, page 8.
26. U.S. Department of Commerce, Census Bureau in cooperation with the Small Business Administration. *Statistics of U.S. Businesses (SUSB)*.
<http://www.census.gov/csd/susb/susb.htm>.
27. U.S. Department of Labor, Bureau of Labor Statistics. (March 18, 2003). *Employer Costs for Employee Compensation* December 2002.
28. U.S. Department of Labor, Bureau of Labor Statistics. (2001). *National Industry-Specific Occupational Employment and Wage Estimates*.
29. U.S. Department of Transportation, Bureau of Transportation Statistics. (2003). *Pocket Guide to Transportation Statistics*.
30. U.S. Department of Transportation, Bureau of Transportation Statistics. (2003). Report No. BTS03-02. *U.S. International Trade and Freight Transportation Trends* Table 18: Top 25 U.S. Air Gateways for U.S. International Merchandise

Trade by Value: 2001

http://www.bts.gov/publications/us_international_trade_and_freight_transportation_trends/2003/html/table_18.html.

31. U.S. Department of Transportation, Bureau of Transportation Statistics. (2002). U.S. Exports to Mexico by Truck and All Commodities, 2002
http://www.bts.gov/ntda/tbscd/reports/annual02/tomex_val_wt_2002_trk.html.
32. U.S. Department of Transportation, Office of Aviation and International Affairs. Aviation Industry Data. <http://ostpxweb.ost.dot.gov/aviation/international-series/monitoring.htm>.
33. U.S. International Trade Commission. <http://dataweb.usitc.gov/scripts>.