Impact of Regulatory Compliance Costs on Small Airports

DETAILS

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP REPORT 90

Impact of Regulatory Compliance Costs on Small Airports

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

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The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), Airlines for America (A4A), and the Airport Consultants Council (ACC) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

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FOREWORD

By Theresia H. Schatz
Staff Officer
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ACRP Report 90: Impact of Regulatory Compliance Costs on Small Airports identifies and quantifies the cumulative costs of complying with regulatory and other federal requirements at small hub and non-hub airports. The report is intended to provide airport operators and others with an understanding of the cumulative effects of federal requirements. The research analyzed aviation transportation, environmental, security, and occupational safety and health requirements from initial implementation through ongoing maintenance, and estimated its associated costs for the period 2000–2010. The report identifies funding sources (if any) associated with the federal requirements and reviews the actual uses of these sources by small hub and non-hub airports to cover the cost of regulatory compliance.

Over time, federal, state, and local governments have gradually increased regulatory requirements on U.S. airports. The costs associated with incorporating ongoing requirements in a wide array of subject areas have steadily added to airport capital and operating costs. This is a growing concern for small hub and non-hub airports that have limited staff and financial resources with which to fulfill their compliance responsibilities. For many small hub and non-hub airports, lower passenger enplanements limit their ability to raise revenue or cut costs significantly to make up for the costs of increased requirements. With budgets already stretched by operating costs and capital expenditures, many small hub and non-hub airports are struggling to absorb compliance costs associated with the cumulative requirements. While government agencies provide some funding for new regulatory initiatives, costs attributed to ongoing compliance remain unfunded.

This research was conducted under ACRP Project 03-25 by Unison Consulting in association with Gresham Smith and Partners, Charlotte Bryan Solutions, and Safex using multiple approaches including a review of regulatory documents, an extensive two-phase survey, and conduct of five case studies to obtain a detailed understanding of the cost impact of regulatory actions. Appendixes A through C—which provide summaries of federal actions and published cost data, Phase 1 and Phase 2 survey results, and case studies—are available as Volume 1 of *ACRP Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports* (www.trb.org/Main/Blurbs/168946.aspx). Technical Appendixes 1 through 6—which provide the research methodology; analysis of aviation transportation, environmental, security, and occupational safety and health requirements; and an estimate of industry costs—are available as Volume 2 of *ACRP Web-Only Document 15* (www.trb.org/Main/Blurbs/168947.aspx). A presentation that summarizes this research can be found on the ACRP Report 90 summary page (www.trb.org/Main/Blurbs/168945.aspx). The presentation can be used as a template by individual airports in discussion with federal agencies.

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Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at www.trb.org) retains the color versions.

SUMMARY

Impact of Regulatory Compliance Costs on Small Airports

Over time, federal, state, and local governments have gradually increased the compliance requirements for U.S. airports. The costs associated with incorporating ongoing regulations in a wide array of subject areas have steadily added to airport operating costs. These costs are a growing concern for small hub and non-hub airports that have limited staff and financial resources. For many small airports, low levels of passenger enplanements and/or operations limit their ability to raise revenue or cut costs significantly to make up for the financial requirements of increased regulation. With budgets already stretched by operating costs and capital expenditures, many small airports struggle to absorb compliance costs. While government agencies provide some funding for new regulatory initiatives, most compliance costs remain the responsibility of the airport.

The two objectives of this research study were (1) to identify the compliance requirements applicable to small hub and non-hub airports during the period from 2000 to 2010 (study period) and (2) to quantify the costs, including initial costs and recurring costs, of federal requirements on small airports. Additionally, the study identifies potential funding sources and investigates actual use of these sources by small airports to cover the costs of compliance.

For purposes of this study, a small airport means a small hub or non-hub primary airport as defined by the Federal Aviation Administration (FAA) under the Airport Improvement Program (AIP). The terms "action" or "requirement" are used interchangeably throughout this report, referring to the rules, regulations, orders, advisory circulars, mandates, and other compliance provisions issued during the study period. The term "regulatory compliance" refers not only to compliance with requirements imposed by rules or regulations, but also to compliance with the other actions listed above.

The research focused on requirements adopted during the study period in the following areas:

- FAA and U.S. Department of Transportation (DOT) requirements
- U.S. Environmental Protection Agency (EPA) and other federal environmental requirements
- FAA and Transportation Security Administration (TSA) security requirements
- Occupational safety and health requirements

To identify compliance requirements initiated during the study period, the research team relied primarily on federal agency resources, including agency websites, published regulatory documents, and agency staff. Many security requirements are considered to be security-sensitive information (SSI) and are not available for public disclosure. Therefore, the research team, in part, relied on the experience of individual researchers and industry experts.

Multiple approaches were used to determine compliance costs for the identified actions. Estimates of costs were obtained from agency documents (e.g., cost impact assessments,

economic evaluations) to the extent they were available. The research team also conducted an extensive two-phase survey. Phase 1 focused on determining whether airports were affected by particular compliance requirements. Phase 2 focused on identifying costs incurred by survey participants to meet the requirements. The survey was supplemented by telephone interviews with select respondents and case studies of five (three non-hub and two small hub) airports to obtain a detailed understanding of the cost impact of actions.

Findings

Scope of Compliance Requirements

There was substantial compliance activity during the study period. A total of 291 federal actions were adopted (see Table ES-1). Put another way, during the study period, the agencies initiated new requirements at a rate equivalent to one new compliance measure every 2 weeks. Most of the compliance activity was associated with the FAA/DOT requirements and with security requirements. FAA/DOT requirements account for more than one-half of the total and security requirements account for more than one-quarter of the total.

Many of these new requirements add continuing costs on airports by specifying periodic updates, inspections, monitoring, and controls.

FAA Requirements

FAA requirements take many forms in addition to regulations, which are directly binding on airports. Other compliance documents include advisory circulars (ACs), agency orders, certification alerts (CertAlerts), program guidance letters (PGLs), and passenger facility charge (PFC) updates, which become binding on airports through various indirect methods. For example, an FAA order includes direction to FAA staff on administering the program covered by the order. Airports become subject to the direction in the order through the FAA's administration of the program. PGLs and PFC updates function in a similar manner to FAA orders. Some ACs are incorporated by reference into AIP grant agreements and become binding when a grant agreement is executed. Other ACs are defined as one (and sometimes the only) means of complying with *Code of Federal Regulations* (CFR) Title 14 Part 139 regulations.

During the study period, the FAA adopted a total of 140 compliance actions/documents with the following breakdown by type:

- Regulations—6
- Orders—8
- ACs—86
- CertAlerts—20

Table ES-1. Number of compliance actions adopted, 2000 to 2010.

Compliance Area	Compliance Action Count
FAA/DOT	150
EPA and other environmental	39
Security (FAA and TSA)	81
Occupational safety and health	21
Total	**291**

- PGLs—10
- PFC updates—7
- Other—3

The requirements fall broadly into the following categories:

- Part 139 airport certification requirements
- Airport safety, standards, and design
- Airport operations
- AIP administration
- PFC administration
- Airport grant assurance compliance

Security requirements adopted by the FAA during the study period are discussed in the Security Requirements section below.

DOT Requirements

During the study period, the DOT adopted 10 requirements applicable to small airports. Nine were in the form of regulations or amendments to regulations. Generally, the DOT requirements apply to airports as recipients of federal grants. Some of the requirements apply to all DOT-administered financial assistance programs, and some apply government-wide. Three of the 10 requirements are unique to airports.

Environmental Requirements

There were a total of 39 regulatory and compliance actions that affect small airports. Of these actions, the EPA issued 28, the DOT issued three, the FAA issued seven, and the Office of the President issued one in the form of an Executive Order.

Most federal environmental requirements are located in CFR Title 40, administered under the authority of the EPA or delegated to state agencies. Environmental requirements were also identified under CFR Titles 10 (Energy), 14 (Aviation), and 49 (Transportation).

The environmental actions generally fall under one of the following regulatory topics:

- Air quality
- Emergency planning and response
- Noise
- Planning and development
- Sensitive areas and wildlife
- Waste management
- Water resources

Of these topics, the following categories were reported as the most costly:

- Aboveground storage tank operations and spill prevention, control, and countermeasure (SPCC)-related costs
- Preparation of National Environmental Policy Act (NEPA) documents
- Land acquisition and noise
- Construction stormwater pollution prevention plans
- Drinking water supplier operations

Security Requirements

The nature, scope, and responsibility for airport security requirements were dramatically affected by the events in the United States on September 11, 2001 (9/11). Regulation of civil aviation security transferred from the FAA to the TSA. The TSA took over passenger and baggage screening operations from contractors employed by airlines. During the study period, federal agencies adopted a total of 81 security requirements. Twenty-one were adopted by the FAA; 58 were adopted by the TSA; one was adopted jointly by FAA and TSA; and one was adopted by Customs and Border Protection (CBP). Most of the FAA and TSA security requirements were adopted to improve aviation security in response to the events of 9/11.

Prior to the events of 9/11, airports were required to maintain airport security programs (ASPs). ASPs were subject to frequent mandatory amendments issued by the FAA, referred to as emergency amendments. After it assumed jurisdiction over aviation security, the TSA renamed these amendments security directives.

Two of the requirements were regulatory actions published in the *Federal Register;* 77 were emergency amendments or security directives; one was an amendment to airport security plan requirements; and the CBP document was a guidance document on airport technical design standards.

The emergency amendments, security directives, and airport security plan requirement contain SSI and public disclosure is prohibited. Therefore, this report cannot provide specific information on the contents of the emergency amendments, security directives, and airport security plan requirements. Rather, the findings related to TSA compliance requirements are discussed in the broad context of the overall cost effect on airports.

Occupational Safety and Health Requirements

The small hub and non-hub primary airports included in this study are publicly owned and therefore not subject to the direct jurisdiction of the Occupational Safety and Health Administration (OSHA). Depending on the approach to occupational safety and health regulation adopted by its state, an airport may be subject to state regulation or governed by a voluntary program. OSHA requirements adopted during the study period may be relevant, to the extent they are incorporated in state programs or airports' voluntary programs. In addition, private contractors and tenants would be subject to OSHA regulation, unless they are covered by a qualifying state plan.

Twenty-one OSHA regulatory or compliance actions with potential impacts on airports were adopted during the study period. Fourteen were regulatory; one was a compliance directive; two were revisions to voluntary programs; and the remaining actions were guidance documents.

Cost of Compliance

Compliance results in costs on individual airports, which can be substantial for the industry as a whole. The research investigated costs on individual airports and, based on the sample of survey respondents, estimated national costs for individual regulatory areas. Estimates of national costs consider that a regulatory compliance requirement creates a cost for an airport only if it applies to that airport. Otherwise, the airport does not incur the cost.

Estimates of compliance costs are based primarily on survey data. Published agency estimates of cost impact were limited and often deviated substantially from airports' reported experience. Most often, airports' reported costs exceeded published agency estimates.

Most Costly Requirements for the Small Airport Industry

Table ES-2 presents the 20 federal requirements with the highest initial industry costs for small airports. Table ES-3 presents the 20 federal requirements with the highest recurring industry costs. For each requirement, cost is calculated by multiplying the per-airport cost determined from the Phase 2 survey results by the number of affected airports. The number of affected airports is derived from the percentage of airports affected by the requirement determined from the Phase 1 results multiplied by the small airport population.

Table ES-3 may understate the overall impact of recurring costs. In particular, because recurring requirements are mostly operational and administrative, they are often satisfied using existing staff resources. Costs of this type could not be easily isolated and quantified. They can be substantial, such as TSA compliance costs, as the telephone interviews and case studies revealed.

For most requirements, the average cost per airport masks a wide range of reported results. The research included correlation analysis of reported costs with two measures of activity—enplanements and commercial operations. Quantitative analysis ruled out correlation with activity measures for all but a few requirements. For those few requirements that showed statistical correlation, qualitative evaluation ruled out correlation. Compliance costs do not vary with the level of activity. The level of enplanements or commercial operations cannot be used

Table ES-2. Federal requirements with the highest initial costs for the small airport industry.

Rank	Requirement	Compliance Category	Industry Initial Costs
1	Runway Safety Area Requirements	FAA	$695,166,000
2	Any Other Equipment or Systems Related to Access Control	Security	$265,608,000
3	Security Fencing Requirements	FAA	$146,982,000
4	Wildlife Hazard Fencing Requirements	FAA	$138,296,000
5	Physical Access System	Security	$130,122,000
6	Part 139 Aircraft Rescue & Firefighting (ARFF) Requirements, Existing Certificate Holders	FAA	$106,026,000
7	Vehicle Operations in Aircraft Operations Area, Enforcement and Control	FAA	$101,835,000
8	Enhanced Checked Baggage Screening	Security	$68,028,000
9	Runway Protection Zone Requirements	FAA	$60,150,000
10	Enhanced Passenger Screening	Security	$54,101,000
11	Closed Circuit TV (CCTV) Monitoring System	Security	$51,639,000
12	Environmental Assessments (NEPA)	Environmental	$32,535,000
13	Consultant Selection Requirements for AIP-Funded Projects	FAA	$29,295,000
14	Requirements for Use of Geospatial Information System (GIS) Techniques	FAA	$28,371,000
15	Part 139 Fencing Requirements, Existing Certificate Holders	FAA	$26,608,000
16	Airport Industrial Waste Requirements	Environmental	$25,686,000
17	Airfield Sign Requirements	FAA	$22,042,000
18	Perimeter Security Systems or Equipment	Security	$16,781,000
19	Aboveground Storage Tank Requirements	Environmental	$15,810,000
20	Construction Notice of Intent Requirements	Environmental	$12,094,000

Table ES-3. Federal requirements with the highest recurring costs for the small airport industry.

Rank	Requirement	Compliance Category	Industry Recurring Costs
1	Vehicle Operations in Aircraft Operations Area, Enforcement and Control	FAA	$29,191,000
2	Vehicle Operations in Aircraft Operations Area, Emergency Operations	FAA	$12,229,000
3	Requirements for Use of Geospatial Information System (GIS) Techniques	FAA	$5,642,000
4	Part 139 Aircraft Rescue & Firefighting (ARFF) Requirements, Newly Certificated Airports	FAA	$3,278,000
5	Vehicle Operations in Aircraft Operations Area, Vehicle Access	FAA	$3,040,000
6	Vehicle Operations in Aircraft Operations Area, Vehicle Inspection and Marking	FAA	$3,013,000
7	Mobile Refueler, Material and Equipment Replacement	Environmental	$2,635,000
8	Part 139 ARFF Requirements, Existing Certificate Holders	FAA	$2,558,000
9	Requirements for Airfield Signs	FAA	$2,449,000
10	Aboveground Storage Tanks, Material and Equipment Replacement	Environmental	$2,108,000
11	Disadvantaged Business Enterprise (DBE) Requirements for AIP-Funded Projects	DOT	$1,773,000
12	Occupational Health & Safety Training	Occupational Safety and Health	$1,218,000
13	Wildlife Hazard Fencing Requirements	FAA	$1,166,000
14	Pesticide Applicators, Material and Equipment Replacement	Environmental	$1,116,000
15	Personal Protective Clothing, Annual Cost	Occupational Safety and Health	$971,000
16	Vehicle Operations in Aircraft Operations Area, Driver Training Curriculum	FAA	$867,000
17	Airport Industrial Waste Requirements	Environmental	$670,000
18	Perimeter Fencing for Part 139, Existing Certificate Holders	FAA	$516,000
19	Modified ARFF Training Requirements	FAA	$401,000
20	DBE Requirements for Airport Concessions	DOT	$396,000

to predict the cost of a particular requirement. The results in the two tables were therefore calculated using per-airport average costs, rather than unit costs based on activity levels.

Tables ES-2 and ES-3 show the total cost of compliance requirements, without subtracting non-airport funding (primarily federal). The Funding Compliance Costs section presents estimates of non-airport funding and net costs to the airport industry.

Total Industry Cost of Federal Requirements

The cost of a particular requirement on the small airport industry as a whole depends on the number of affected airports. The Phase 1 survey provided data on the percentage of airports affected by particular requirements. The Phase 1 data, combined with per-airport cost data from Phase 2, permitted an order-of-magnitude estimation of industry costs for small airports. Table ES-4 presents total compliance costs for the four compliance categories. Total costs are almost $2.2 billion. Costs presented in the table are total costs without adjustment

Table ES-4. Summary of compliance costs for the small airport industry.

Compliance Category	Total Cost ($ Millions)[1]
FAA/DOT	$1,459.5
Security	$610.8
Environmental	$90.2
Occupational Safety and Health	$11.7
Total Compliance Costs	**$2,172.2**

[1] Includes initial and recurring costs where applicable

for non-airport contributions. Non-airport contributions refer to federal and state grants and other third-party funding. PFC revenue is considered to be a form of airport funding.

Most Costly Requirements per Airport

Tables ES-5 and ES-6 summarize the 20 federal requirements identified through the research with the highest initial compliance costs per airport and highest recurring costs

Table ES-5. Federal requirements with highest initial per-airport costs.

Rank	Requirement	Compliance Category	Interquartile Mean of Initial Costs[1]
1	Runway Safety Area Requirements	FAA	$3,676,184
2	Runway Protection Zone Requirements	FAA	$1,492,556
3	Part 139 Aircraft Rescue & Firefighting (ARFF) Requirements, Newly Certificated Airports	FAA	$1,462,733
4	Any Other Equipment or Systems Related to Access Control[2]	Security	$1,260,000
5	Part 139 ARFF Requirements, Existing Certificate Holders	FAA	$998,360
6	Perimeter Fencing for Part 139, Newly Certificated Airports	FAA	$784,390
7	Wildlife Hazard Fencing Requirements	FAA	$782,660
8	Security Fencing Requirements	FAA	$777,269
9	Checked Baggage Screening	Security	$768,055
10	Passenger Screening	Security	$637,377
11	Physical Access Systems	Security	$538,137
12	Vehicle Operations in Aircraft Operations Area, Enforcement & Control	FAA	$450,000
13	Customs & Border Protection Facilities	Security	$375,000
14	Airport Industrial Waste Requirements	Environmental	$306,881
15	Perimeter Fencing for Part 139, Existing Certificate Holders	FAA	$257,706
16	Geospatial Information System Requirements	FAA	$176,000
17	Consultant Selection for AIP-Funded Projects	FAA	$157,500
18	Environmental Assessment	Environmental	$152,102
19	Payments to workers compensation insurance carriers for OSHA support[3]	Occupational Safety and Health	$125,000
20	Mobile Refueler Operations[3]	Environmental	$108,000

[1] Unless otherwise noted.
[2] Interquartile mean cannot be determined for items with less than three responses. Arithmetic mean value is used.
[3] Single airport response. Value of response used.

Table ES-6. Federal requirements with the highest recurring per-airport costs.

Rank	Requirement	Compliance Category	Interquartile Mean of Recurring Costs[1]
1	Part 139 Aircraft Rescue & Firefighting (ARFF) Requirements, Newly Certificated Airports[2]	FAA	$575,000
2	Vehicle Operations in Aircraft Operations Area, Enforcement and Control	FAA	$128,992
3	Vehicle Operations in Aircraft Operations Area, Emergency Operations	FAA	$51,230
4	Mobile Refueler, Material/Equipment Replacement[3]	Environmental	$50,000
5	Geospatial Information System Requirements	FAA	$35,000
6	Part 139 ARFF Requirements, Existing Certificate Holders	FAA	$24,083
7	DBE Requirements for Federally Funded Projects	DOT	$11,000
8	Aboveground Storage Tanks, Material/Equipment Replacement	Environmental	$10,000
9	Pesticide Applicator Permit, Material/Equipment Replacement[3]	Environmental	$10,000
10	Perimeter Fencing for Part 139, Newly Certificated Airports[3]	FAA	$10,000
11	Requirements for Airfield Signs	FAA	$10,000
12	Occupational Health & Safety Training	Occupational Safety and Health	$9,138
13	Airport Industrial Waste Requirements[2]	Environmental	$8,000
14	Wildlife Hazard Fencing Requirements	FAA	$6,600
15	Personal Protective Clothing, Annual Cost	Occupational Safety and Health	$6,267
16	Perimeter Fencing for Part 139, Existing Certificate Holders	FAA	$5,000
17	Vehicle Operations in Aircraft Operations Area, Driver Training Curriculum	FAA	$3,040
18	Disadvantaged Business Enterprise Requirements for Airport Concessions	DOT	$2,900
19	Universal Waste Generator, Material/Equipment Replacement[2]	Environmental	$2,750
20	Drinking Water Supplier, Material/Equipment Replacement[3]	Environmental	$2,000

[1] Unless otherwise noted.
[2] Interquartile mean cannot be determined for items with less than three responses. Arithmetic mean value is used.
[3] Single airport response. Value of response used.

per airport, respectively. In some cases, the cost is the total reported cost of complying with an existing requirement, not the incremental cost of a new requirement adopted during the study period. The rankings are based on interquartile mean costs—the average of the survey data that range from the 25th percentile to the 75th percentile. The interquartile mean is used to avoid bias from extremely high or low reported costs. For some requirements, the survey did not distinguish between initial and recurring costs. Unless the cost item is obviously a continuing one, it is treated as an initial cost.

Table ES-6 summarizes the 20 federal requirements with the highest recurring costs per airport. As noted previously, the survey results may understate the actual recurring costs on small airports because they do not capture costs associated with compliance tasks performed by airport staff. Eighteen out of the top 20 requirements have recurring costs that were lower than even the 20th ranked requirement for initial costs as summarized in Table ES-5.

Funding Compliance Costs

Airports pay for compliance costs from FAA grants, PFCs, other airport funds, and other sources—sources that would otherwise be available for airport development. The case studies show that compliance with many of the new requirements added to operating expenses that were absorbed fully by airports, and other requirements were met by using existing staff time—taking time away from day-to-day duties in operating an airport.

In general, airports reported that requirements triggering capital expenditures often qualify for financial assistance. The main form of assistance is AIP grants, which have local matching requirements. Small airports generally have limited funds available for capital development. Therefore, every AIP dollar spent to comply with a regulatory requirement is a dollar less that is available to spend on a capital project itself. Furthermore, the funds an airport spends on the local match for a regulatory compliance project are not available for other capital projects that might enhance revenue or improve airport services and facilities. In addition, since 2007, the overall level of AIP funding has been stagnant, and funding is scheduled to decrease under the FAA Modernization and Reform Act, Pub. L 112-95 (February 14, 2012). This legislation also increases the local matching requirement for small airports from 5 to 10 percent.

Preparation of plans or documents and modification of procedures, generally as a result of regulatory changes, are operating expenses that must be absorbed fully by the airports. Often airports are unable to generate supplemental revenue to pay additional staff or contractors to comply with these requirements. As a result, the requirements must be accomplished by existing staff, making it difficult for airports to estimate a cost. Nevertheless, the time required to comply with the requirements is ultimately taken away from accomplishing other operational or administrative tasks. Therefore, staff time to address regulatory changes represents an opportunity cost to small airports.

Tables ES-7 and ES-8 present estimates of non-airport funding (primarily federal) actually used by airports for the requirements with the 20 highest initial and recurring costs for the industry as a whole, based on the Phase 2 survey results. The estimates are derived by calculating the percentage of non-airport funding reported for the total sample of airports responding to the survey and applying that percentage to the industry costs shown in Tables ES-2 and ES-3, respectively. For these estimates, PFCs are treated as airport funds.

For some compliance requirements, the survey questions covered specific funding sources (e.g., the FAA or TSA). For other requirements, the survey requested the amount of third-party funding without specifying the funding source. There was wide variation in the percentage of non-airport funding reported in the survey. Because of the wide variation in reported non-airport funding, an average non-airport contribution per airport would not indicate the level of federal support received by a typical airport. Consequently, no attempt was made to estimate the average federal funding per airport.

The survey did not include questions about funding sources for some requirements. For those requirements, the non-airport funding amount is assumed to be zero. Considering these circumstances and the wide variation in the percentage of non-airport funding reported in the survey, the results shown in Tables ES-7 and ES-8 are considered high-level approximations that show the order of magnitude of non-airport federal funding.

Table ES-9 presents estimates of compliance costs for the small airport industry minus non-airport funding, based on the data reported in Table ES-4.

Table ES-7. Net initial cost of the most costly federal requirements for the small airport industry.

Rank[1]	Requirement	Industry Initial Costs	Non-airport Funding[2]		Industry Net Initial Costs
			Percentage	Amount	
1	Runway Safety Area Requirements	$695,166,000	95%	$657,840,769	$37,325,231
2	Any Other Equipment or Systems Related to Access Control	$265,608,000	Not reported	$0	$0
3	Security Fencing Requirements	$146,982,000	96%	$141,453,316	$5,528,684
4	Wildlife Hazard Fencing Requirements	$138,296,000	94%	$129,462,173	$8,833,827
5	Physical Access System	$130,122,000	Not reported	$0	$130,122,000
6	Part 139 Aircraft Rescue & Firefighting Requirements, Existing Certificate Holders	$106,026,000	91%	$96,521,258	$9,504,742
7	Vehicle Operations in Aircraft Operations Area, Enforcement and Control	$101,835,000	80%	$81,181,004	$20,653,996
8	Enhanced Checked Baggage Screening[3]	$68,028,000	87%	$59,391,243	$8,636,757
9	Runway Protection Zone Requirements	$60,150,000	95%	$57,179,732	$2,970,268
10	Enhanced Passenger Screening[3]	$54,101,000	32%	$17,375,007	$36,725,993
11	Closed Circuit TV (CCTV) Monitoring System	$51,639,000	Not reported	$0	$51,639,000
12	Environmental Assessments (NEPA)[4]	$32,535,000	84%	$27,398,328	$5,136,672
13	Consultant Selection Requirements for AIP-Funded Projects	$29,295,000	96%	$28,074,039	$1,220,961
14	Requirements for Use of Geospatial Information System (GIS) Techniques	$28,371,000	90%	$25,574,352	$2,796,648
15	Part 139 Fencing Requirements, Existing Certificate Holders	$26,608,000	69%	$18,259,711	$8,348,289
16	Airport Industrial Waste Requirements	$25,686,000	98%	$25,043,852	$642,148
17	Airfield Sign Requirements	$22,042,000	96%	$21,266,573	$775,427
18	Perimeter Security Systems or Equipment	$16,781,000	Not reported	$0	$16,781,000
19	Aboveground Storage Tank Requirements	$15,810,000	Not reported	$0	$15,810,000
20	Construction Notice of Intent Requirements	$12,094,000	Not reported	$0	$12,094,000
	Total	**$2,027,175,000**	**68%**	**$1,386,021,357**	**$375,545,643**

[1] Rank based on Table ES-2.
[2] Unless otherwise noted non-federal funding is sum of reported FAA funding and other funding sources.
[3] Based on reported TSA funding and other funding sources.
[4] Based on reported third-party funding. Third-party funding assumed to be applied to initial costs.

Conclusions

The Cost of Compliance with Federal Requirements Continues to Grow

A total of 291 federal actions related to FAA/DOT, environmental, security, and occupational safety and health requirements were issued from 2000 to 2010. Many new requirements add continuing costs to airports by specifying periodic updates, inspections, monitoring, etc.

The cost continues to grow. The FAA has an ongoing process to maintain and update all advisory circulars on a regular basis. The revisions may result in additional costs on airports as the FAA seeks to reduce the risk of accidents and incidents. The FAA is currently developing requirements for safety management systems and environmental management systems that will likely add new costs for airports. The FAA is also moving toward requiring the use of Geospatial Information System (GIS) data to support airport surveys and development of approach procedures and electronic airport layout plans. Full implementation of this requirement will also result in additional costs on airports.

Table ES-8. Net recurring costs of the most costly federal requirements for the small airport industry.

Rank[1]	Requirement	Industry Recurring Costs	Non-airport Funding[2]		Industry Net Recurring Costs
			Percentage	Amount	
1	Vehicle Operations in Aircraft Operations Area, Enforcement and Control	$29,191,000	46%	$13,345,060	$15,845,940
2	Vehicle Operations in Aircraft Operations Area, Emergency Operations	$12,229,000	1%	$101,633	$12,127,367
3	Requirements for Use of Geospatial Information System (GIS) Techniques	$5,642,000	0%	$0	$5,642,000
4	Part 139 Aircraft Rescue & Firefighting (ARFF) Requirements, Newly Certificated Airports	$3,278,000	13%	$427,565	$2,850,435
5	Vehicle Operations in Aircraft Operations Area, Vehicle Access	$3,040,000	3%	$85,593	$2,954,407
6	Vehicle Operations in Aircraft Operations Area, Vehicle Inspection and Marking	$3,013,000	0%	$0	$3,013,000
7	Mobile Refueler, Material and Equipment Replacement	$2,635,000	Not reported	$0	
8	Part 139 ARFF Requirements, Existing Certificate Holders	$2,558,000	13%	$336,598	$2,221,402
9	Requirements for Airfield Signs	$2,449,000	2%	$58,310	$2,390,690
10	Aboveground Storage Tanks, Material and Equipment Replacement	$2,108,000	Not reported	$0	$2,108,000
11	Disadvantaged Business Enterprise (DBE) Requirements for AIP-Funded Projects	$1,773,000	5%	$85,781	$1,687,219
12	Occupational Health & Safety Training	$1,218,000	Not reported	$0	$1,218,000
13	Wildlife Hazard Fencing Requirements	$1,166,000	93%	$1,084,844	$81,156
14	Pesticide Applicators, Material and Equipment Replacement	$1,116,000	Not reported	$0	$1,116,000
15	Personal Protective Clothing, Annual Cost	$971,000	Not reported	$0	$971,000
16	Vehicle Operations in Aircraft Operations Area, Driver Training Curriculum	$867,000	8%	$67,314	$799,686
17	Airport Industrial Waste Requirements	$670,000	0%	$0	$670,000
18	Perimeter Fencing for Part 139, Existing Certificate Holders	$516,000	0%	$0	$516,000
19	Modified ARFF Training Requirements	$401,000	0%	$0	$401,000
20	DBE Requirements for Airport Concessions	$396,000	6%	$21,952	$374,048
	Total	**$75,237,000**	**21%**	**$15,614,648**	**$56,987,352**

[1] Rank based on Table ES-3.
[2] Unless otherwise noted non-federal funding is sum of reported FAA funding and other funding sources.

Table ES-9. Summary of net compliance cost for the small airport industry.

Compliance Category	Total Cost ($ Millions)[1]	Estimated Non-airport Payments ($ Millions)[2]	Industry Net Cost ($ Millions)[2]
FAA/DOT	$1,459.5	$965.7	$493.8
Security	$610.8	$417.6	$193.2
Environmental	$90.2	$57.6	$32.6
Occupational Safety and Health	$11.7	$2.4	$9.3
Total Compliance Costs	**$2,172.2**	**$1,443.4**	**$728.8**

[1] Includes initial and recurring costs where applicable.
[2] Column totals may not add up due to rounding.

Environmental regulations are also reviewed periodically to evaluate options that streamline requirements and update outdated practices. For example, prior to 2002, the SPCC regulations had not been updated since 1990. In some cases, the amended regulations minimized the regulatory cost for small airports (i.e., exemptions for underground storage tanks and containers with capacities less than 55 gallons), whereas other changes resulted in increased regulatory costs (e.g., integrity testing and plan updates).

In the security area, the TSA has reduced the funding to airports through the law enforcement officer (LEO) support program. The reduced TSA assistance means airports are shouldering a higher share of supplying required law enforcement presence at or near screening checkpoints. In addition, airports have reported an increase in the number and complexity of TSA reviews and audits. These review and audit activities require full participation of airport staff during the audit itself and following the audit to respond to reports and recommendations.

Small Airports Do Not Have the Revenue-Generating Capacity to Meet the Costs of Expanding Requirements

For many small airports, low levels of passenger enplanements and/or operations limit their ability to raise revenue to meet the cost of new requirements. Because of low traffic levels and limited tenant operations, the airports have little leverage with airlines to increase fees and charges to cover new compliance costs. Therefore, the additional costs reduce the operating margin (if any) that airports generate and ultimately reduce the airport's cash reserves. This situation is particularly important because small airports are typically subject to the same or similar requirements as larger airports with greater revenue-generating capacity. For example, a new $500,000 requirement would cost a small airport with 20,000 passengers $25 per passenger. That same requirement at an airport with 2 million passengers would cost only 25 cents per passenger.

Although two of the case study airports operate industrial parks or multimodal transportation centers that provide supplemental revenue to help defray the costs of compliance, most small airports do not have such ancillary revenue sources.

Published Cost Estimates for Regulatory Requirements Understate the Full Compliance Costs

There are two major causes for the understatement of costs by regulatory agencies. First, agencies published cost estimates for only a small portion of the federal requirements identified in the study. Many requirements are adopted without an estimate of cost. In general, only formal rulemaking documents may be subject to a requirement for a cost analysis. For example, only six of the 140 requirements adopted by the FAA were formal regulatory documents. The FAA typically adopts ACs, PGLs, CertAlerts, and other guidance documents without analyzing compliance costs, even when the guidance is effectively binding on airports. Similarly out of 81 security requirements adopted during the study period, only two were formal regulatory documents.

Even when formal rulemaking is employed, unless the requirement will meet minimum cost levels, or will have a significant impact on small entities, a detailed estimate of costs is not required. Only two of the six FAA regulatory documents issued during the study period included a full analysis of compliance costs. Fourteen of the 39 environmental requirements included specific cost projections. Additionally, in many cases, regulatory actions had multiple components. Costs may be projected separately for each component, and some rules may include combinations of components with cost reductions and increases.

Second, based on the survey results, cost estimates published by agencies often understate the results of airports' actual experience. For example, the FAA's projections of the cost of compliance with the 2004 amendments to Part 139 were lower than the initial and recurring costs reported by existing certificate holders and lower than the initial costs reported by newly certificated carriers. Estimated costs from the economic analysis for Phase I environmental site assessments (ESAs) ranged from $2,185 to $2,190. The results of industry experience with preparing an ESA for airports and related properties range from $5,000 to $9,000.

The Cost of Compliance with Unfunded Federal Requirements Continues to Grow

The 291 federal requirements identified in this study (with limited exceptions) either added to or expanded upon existing requirements. Airports must absorb at least some of the costs of these requirements and, in many cases, must absorb the full costs.

FAA/DOT Requirements

Only those FAA requirements that involve capital development may be eligible for federal AIP funding. Requirements that affect airport operations, administration, or maintenance are ineligible for AIP funds. For example, one of the case study airports with a substantial runway safety area project reported receiving only a 50 percent contribution from the FAA, even when statutory federal share was 95 percent. DOT has no independent funding programs available for airports. Moreover, AIP eligibility does not guarantee funding.

Even when AIP funding is available, airports must pay a local matching share. This matching share recently increased from 5 to 10 percent of eligible project costs. Also, use of AIP funds to comply with federal requirements reduces the amount of funds available for actual project implementation. Finally, the level of AIP funding has not kept pace with increases in federal requirements. AIP funding was essentially flat from FY 2008 through FY 2011 at approximately $3.5 billion. AIP funding decreased in FY 2012 by approximately $200 million and will remain at this level through FY 2015.

PFCs are available to help pay for compliance costs associated with eligible capital projects. However, like AIP funds, PFCs cannot be used for operational costs. In addition, the PFC ceiling has not been raised since 2001. The only source of increased PFC revenue since that time has been through increased passenger traffic. Since 2007, the year before the last recession started, passenger traffic at small hub and non-hub airports has declined by 8 percent and 3 percent, respectively. In short, PFC revenue opportunities for small airports have declined while compliance requirements have increased.

Environmental Requirements

Funding to comply solely with environmental requirements is even more limited. There is no distinct federal program (comparable to AIP) for general environmental compliance. *ACRP Synthesis of Airport Practice 24: Strategies and Financing Opportunities for Airport Environmental Programs* (2011) provides a comprehensive list of federal and state funding sources for environmental initiatives. However, in many cases, funds are provided only for voluntary initiatives, not for mandatory compliance actions.

In some cases, AIP funds associated with other projects may be used to fund a portion of the environmental mitigation measures necessary for the project or for projects needed to comply with air and water quality requirements. However, the limitations discussed above apply.

Security Requirements

TSA and AIP funds have been provided for projects to comply with security requirements. As with FAA requirements, the issues of local matching requirements and limits on annual appropriations also arise. Moreover, small airports may not receive the same priority for funding as larger airports with perceived greater security concerns. In addition, Congress has prohibited the use of AIP grants for screening projects since 2003.

Federal funding is not available for operational and administrative costs, which have been growing. For example, TSA has increased its monitoring, auditing and investigation activities, with a corresponding increase in costs to airports. The LEO support program provides reimbursement to participating airports for LEO staffing at screening checkpoints. However, airports report the costs of meeting TSA requirements for program funding are substantial. In addition, TSA has been reducing its share of costs reimbursed.

Occupational Safety and Health Requirements

OSHA does not have direct jurisdiction over airports. In these circumstances, there is no direct federal support for occupational safety and health compliance. When airport contractors reflect OSHA compliance costs in their bids, AIP funding could be available, but with the limitations noted previously.

However, OSHA requirements may be implemented through states or included in voluntary programs. During the study period, 21 compliance actions were adopted by OSHA, without federal funding.

The Limited Staff Resources of Small Airports Exacerbate the Costs of Compliance with Federal Requirements, Especially for Non-hub Airports

Non-hub airports, in particular, have limited staff available to satisfy new compliance requirements. For example, the three non-hub airports included in the case studies average 10 full-time employees for all administrative and operational functions. Moreover, the limited revenue opportunities available preclude hiring additional staff or contracting out for assistance with compliance requirements.

Small airport staff members are responsible for a variety of duties from performing administrative, maintenance, and operational tasks to understanding, planning, implementing, and enforcing regulatory requirements. When a new requirement is added, existing staff must assume responsibility for compliance. In addition, management cannot readily reassign existing duties to other employees to compensate for the added effort of meeting the new requirement. For example, one non-hub airport manager stated that the primary cost-driver for compliance with the FAA's new airfield signage requirements was not the installation of the signs themselves but the ongoing costs of maintaining visibility. In the summer, additional staff time is required to mow around signs. In the winter, additional time is required to keep signs clear of snow.

Furthermore, because non-hub airports typically have limited staff with so many duties, as highlighted by the case studies, airport staff do not always have the time or expertise to understand all the requirements the airport is subject to, especially new ones. The lack of expertise and limited available time could increase the risk of inadvertent non-compliance.

Small hub airports generally have greater staff resources, but more complex operational and administrative requirements, than non-hub airports. Even with larger staff, department heads and line personnel are still more likely to be generalists than specialists. As with non-hub airports, small hub airports have comparable impediments to raising revenue to pay for

specialized expertise (through staff or contractors) needed to understand and implement new compliance requirements as they are adopted.

The Prohibition on Charging Rent to the TSA Costs Small Airports Substantial Revenue

Airports are prohibited from charging rent to the TSA for the use of passenger and baggage screening space. For the case study airports, the lost revenue ranged from $46,000 to $350,000. For airports with TSA space funded by AIP grants, this prohibition would not have an impact, because the grant assurances would prohibit a charge. Airports are permitted to charge for utilities and janitorial services for screening space, but most airports do not seem to be aware of this policy and do not exercise the privilege.

The Recent Trend of Applying Uniform Standards to All Airports Results in a Disproportionate Responsibility on Small Airports

The FAA, in particular, has in recent years moved toward applying uniform requirements for all airports. The FAA has determined that there are benefits for the safety and efficiency of the aviation system when airports adopt uniform practices and procedures. However, when the FAA has adopted uniform requirements, the requirements tended to reflect the operations and airfield design of large airports. Therefore, small airports are paying added costs to develop plans and procedures that may be excessive to their needs. Small airports are concerned that the FAA will continue this practice when it implements requirements for safety management systems and environmental management systems.

Strategies

Additional Research

The research indicated that airports and agencies use a variety of methods to estimate current and projected cost impacts of regulations. The development of a standardized methodology for projecting costs was beyond the scope of this research. Additional research to develop standard procedures for cost projections and calculations could improve projections of cost impacts of regulatory actions and could be useful to airport operators in developing capital and operating budgets. A single approach, however, may not be suitable for all federal agencies and all regulatory actions.

There did not appear to be a relationship between compliance costs and two measures of activity—enplanements and commercial operations. The small number of responses to individual questions may have contributed to this outcome, but the outcome also could be attributed to the various approaches airports take to achieve compliance. Also, anecdotal information suggests compliance costs do not depend on enplanement or operations, as some small airports report compliance costs comparable to large airports. Additional research focused on determining whether statistically significant correlations exist between cost and activity level or other variables (e.g., airport size) would be useful. If such correlations do exist, the correlations could be used by small airports to estimate their cost of compliance, without the need to implement costly and complex accounting systems.

Options to Limit Exposure to Unfunded Requirements in the Future

In the research undertaken in this study, including the case studies, a number of options were identified that could help limit small airports' exposure to unfunded requirements in

the future. Most of the options, however, are not within the airports' control (and are outside the scope of this study); they would require action by government agencies and regulators—for example, increased funding, changes to policy or procedures to account for differences in the size and complexity of airports, or changes to policy or procedures that would estimate compliance costs more frequently and improve the accuracy and reliability of agency cost projections. Two options identified that are within the airports' control are as follows:

- Consider engaging federal, state, and local regulators during the regulatory comment period. Increased participation by small airports during this period could include providing comments in narrative form and/or submitting cost data.
- Provide public comment responses when agencies issue ACs, policy statements, PGLs, and related documents in draft form. The public comment process provides airports a chance to inform agencies of the cost impact of new proposals.

To assist small airports with engaging regulators, local officials, legislators at all levels, and other stakeholders, a presentation template, located on the *ACRP Report 90* summary page of the TRB website (www.trb.org/Main/Blurbs/168945.aspx) and included with notes as Appendix D, summarizes the information on the compliance requirements issued between 2000 and 2010 and their overall industry impact. The template can be modified to provide tailored information regarding the requirements applied to individual airports as well as the cost to the small airport industry.

CHAPTER 1

Introduction

1.1 Statement of the Problem

Over time, federal, state, and local governments have gradually increased the regulatory requirements for U.S. airports. The costs of compliance in a wide array of subject areas have steadily increased airport capital and operating costs. These costs are a growing concern for small hub and non-hub airports that have limited staff and financial resources. For many small airports, low levels of passenger enplanements and commercial aircraft operations limit their ability to raise revenue or cut costs significantly to pay for new requirements. With budgets already stretched by unavoidable operating costs and capital expenditures, many small airports struggle to absorb regulatory compliance costs. While government agencies provide some funding for new regulatory initiatives, most compliance costs remain the responsibility of the airport.

1.2 Research Objectives

The two objectives of this research study were (1) to identify the regulatory compliance requirements applicable to small airports adopted from 2000 through the end of 2010 (the study period) and (2) to quantify the costs, including initial and recurring costs (where available), of federal regulatory requirements on small airports. Additionally, potential funding sources to offset the cost of implementing regulatory requirements were identified.

For this research, a small airport means a small hub or non-hub primary airport as defined by the Federal Aviation Administration (FAA) under the Airport Improvement Program (AIP). The terms "action" and "requirement" are used interchangeably to refer to the rules, regulations, orders, advisory circulars, mandates, and other compliance provisions issued during the study period.

The research focused on the following requirements:

- FAA and U.S. Department of Transportation (DOT) requirements
- U.S. Environmental Protection Agency (EPA) and other federal environmental requirements
- FAA and the Transportation Security Administration (TSA) security requirements
- Occupational Safety and Health Administration (OSHA) requirements

The research study identified and documented each requirement. Where possible, the study attempted to identify the costs of the requirements from initial implementation through ongoing application. The goal was to provide airport operators and others with an understanding of the cumulative costs of regulatory compliance requirements. Further, airports can use the research results to inform the public, public officials, and others of the financial challenge these requirements pose and to encourage development of alternative solutions to funding shortfalls faced by many small airports. Information on potential sources of funding for compliance is also provided.

1.3 Study Methods

The study involved three major elements:

- Identification of compliance requirements and agency cost estimates
- Completion of industry surveys and interviews
- Development of case studies

Technical Appendix 1, Research Methodology, in Volume 2 of *ACRP Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports* (available

on the TRB website, www.trb.org/Main/Blurbs/168947.aspx) describes the research techniques used to compile this report in detail.

1.3.1 Identification of Compliance Requirements and Published Cost Estimates

Agency websites were a primary source of information for FAA/DOT, EPA and OSHA requirements and compliance actions. Agency personnel also assisted in providing copies of documents that were not available on the websites. Many security requirements and actions are considered to be security-sensitive information (SSI) and are not available for public disclosure. The experience of individual researchers and industry experts was employed to identify the applicable security requirements and compliance actions adopted during the study period.

Regulatory documents published by federal agencies are the primary source of published cost information for the requirements documented in this research. In addition to available rule documents, regulatory impact assessments and economic evaluations of regulatory actions were reviewed. The U.S. government's consolidated regulatory website (www.regulations.gov) was one source of this information. Published cost information is included in the tables included in Appendix A (available on the TRB website in Volume 1 of *ACRP Web-Only Document 15,* www.trb.org/Main/Blurbs/168946.aspx). However, a relatively small number of the 291 requirements and compliance actions adopted during the study period were accompanied by an agency estimate of cost impacts.

1.3.2 Industry Surveys and Interviews

An extensive two-phase survey effort was conducted. Phase 1 focused on determining whether airports were affected by particular compliance actions. Phase 2 focused on identifying the costs incurred to meet the requirements. For some requirements, separate questions were asked regarding initial and recurring compliance costs. The survey results were supplemented by telephone interviews with 13 select respondents.

1.3.3 Case Studies

The cases of the following five airports were studied:

- Golden Triangle Regional Airport (Columbus, MS)—non-hub
- Yakima Air Terminal (Yakima, WA)—non-hub
- Stewart International Airport (Newburg, NY)—non-hub
- Santa Barbara Municipal Airport (Santa Barbara, CA)—small hub
- Huntsville International Airport (Huntsville, AL)—small hub

Research for the first three airports was conducted by telephone interview. Research for the latter two airports was conducted by on-site interviews.

1.4 Report Structure

Chapter 2 provides an overview of the compliance actions adopted during the study period. The overview is supplemented by information included in Technical Appendixes 2 through 5 in Volume 2 of *ACRP Web-Only Document 15.*

Chapters 3 through 6 summarize the cost impact of compliance actions for each of the four regulatory areas—FAA/DOT requirements, environmental requirements, security requirements, and OSHA requirements. Each chapter presents a summary of published cost data and per-airport and industry cost impacts reported through the surveys. Technical Appendixes 2 through 5 provide additional details. The chapters also present the results of the correlation analyses of compliance costs with both commercial passenger enplanements and commercial operations. Finally, the chapters include discussions of the potential sources of financial assistance to help pay the costs of the requirements and data on actual use of financial assistance.

Chapter 7 summarizes the case study results. The full reports for each case study are contained in Appendix C (available in Volume 1 of *ACRP Web-Only Document 15*).

Chapter 8 presents conclusions and offers strategies that the airport community might employ to reduce or mitigate the costs of federal requirements in the future.

Appendixes A and B are also in Volume 1 of *ACRP Web-Only Document 15.* Appendix A consists of tables summarizing the requirements adopted during the study period. Appendix B consists of tables summarizing the survey data gathered as part of the research effort.

Appendix D contains the slides and note pages of a presentation that airports can use as a template to inform interested governmental officials and other stakeholders of the cost impacts of federal requirements. The Microsoft® PowerPoint template is available on the *ACRP Report 90* summary page of the TRB website (http://www.trb.org/Main/Blurbs/168945.aspx).

Technical Appendix 6 (available in Volume 2 of *ACRP Web-Only Document 15*) provides more detailed information on industry cost impacts of the compliance actions.

CHAPTER 2

Regulations Applicable to Small Airports

2.1 Overview

There was substantial regulatory and compliance activity during the study period. A total of 291 regulatory or compliance actions were adopted and are distributed as follows:

- FAA/DOT 150 actions
- Environmental 39 actions
- Security 81 actions
- OSHA 21 actions

The regulatory and compliance actions took a variety of forms, as described below. Tables A-1, A-2, A-4, and A-5 in Appendix A of *ACRP Web-Only Document 15,* Volume 1 (www.trb.org/Main/Blurbs/168946.aspx), provide information on each individual regulatory or compliance action. The tables include the title of the document; the type of action, e.g., new regulation, amendment, or new advisory circular; the adoption or issue date of the action; and a summary of the action. If the document is available on the Internet, a URL is provided. For documents published in the *Federal Register,* the issue date is the *Federal Register* publication date. For other documents, the issue date is the date listed in the document. Within the lists for each regulatory agency, documents are listed in chronological order, with one exception. Some documents or regulations were modified or reissued multiple times during the study period. For these items, all revisions, amendments, reissuances, etc. are listed sequentially to aid in the tracking of changes over time.

2.2 FAA/DOT Requirements

The FAA and DOT together adopted 150 compliance actions during the study period. The FAA adopted 140 regulatory or compliance actions, and the DOT adopted 10. Table A-1 in Appendix A summarizes each requirement. FAA documents are listed first and followed by the DOT documents.

2.2.1 FAA Requirements

The 140 FAA requirements took many forms besides regulations, which are directly binding on airports. Other compliance documents include advisory circulars (ACs), agency orders, certification alerts (CertAlerts), program guidance letters (PGLs), and passenger facility charge (PFC) updates. The documents become binding on airports through various indirect methods. For example, an FAA order includes direction to FAA staff on administering the programs covered by the order. Airports become subject to the order through the FAA's administration of the program. PGLs and PFC updates work similarly. Some ACs are incorporated by reference into AIP grant agreements and become binding when a grant agreement is executed. Other ACs are defined as one (and sometimes the only) means of complying with *Code of Federal Regulations* (CFR) Title 14, Part 139.

The FAA compliance actions were distributed among the following document types:

- Regulations—6
- Orders—8
- ACs—86
- CertAlerts—20
- PGLs—10
- PFC updates—7
- Other—3

The requirements fall broadly into the following categories:

- Part 139 airport certification requirements
- Airport safety, standards and design
- Airport operations
- AIP administration
- PFC administration
- Airport grant assurance compliance

There is substantial overlap among categories.

The small airports included in the study are required by statute to hold an Airport Operators Certificate. The primary source of the compliance requirements for the airport certification program is 14 CFR Part 139, a mandatory regulation. Additional requirements are introduced through the issuance of ACs—for example, the FAA has developed and published airport design standards in ACs. Others are applied through CertAlerts.

Airport safety and design standards are based on Part 139 requirements, as noted. FAA also has authority to establish standards for projects funded with AIP grants. During the study period, the FAA issued 43 airport design ACs or modifications.

Most requirements for airport operations are based on the FAA's authority under Part 139. Other operational requirements are applied through CertAlerts and ACs. The airport grant assurances also contain requirements for on-airport operations and management, as discussed in the following paragraphs.

The AIP is one of two federal financial assistance programs available to airports. The PFC program is the other.

The AIP provides direct cash grants to airports for capital development and planning. The primary source of guidance for the AIP is the *AIP Handbook,* Order 5100.38C (June 28, 2005). Other orders address specific issues, such as development of the national Airports Capital Improvement Plan (*Airports Capital Improvement Plan,* Order 5100.39A, August 22, 2000), and designation of airports in the National Plan of Integrated Airport Systems (*Field Formulation of the National Plan of Integrated Airport Systems,* Order 5090.3C, December 4, 2000). The orders are supplemented by PGLs and program information memos. Many ACs also establish requirements for design and implementation of AIP-funded projects.

The PFC program enables airports to collect a fee of up to $4.50 per passenger to pay the costs of projects for capital development, planning, and noise compatibility. The collection and use of the fee is subject to FAA approval. The FAA approval requirement is the reason PFCs are considered federal assistance, but PFCs are in fact airport-generated funds. 14 CFR Part 158 establishes the basic requirements of the program. The *PFC Order,* Order 5500.1 (August 9, 2001) provides comprehensive guidance on program administration. The PFC Order is supplemented by PFC updates.

As a condition of receiving AIP funds, airports execute a grant agreement with 39 grant assurances. Some assurances govern implementation of the projects. Others govern airport operation, management, and finance. The assurances are all based on provisions in the statute governing the AIP. The primary source of guidance on grant assurance compliance is the *Airport Compliance Manual,* Order 5190.6B (September 2009). The order provides general guidance and direction to FAA staff in administering the Airport Compliance Program. Additional general guidance is provided in policy statements and compliance guidance letters. The FAA also issued one guidebook addressing air carrier incentive programs. The FAA often interprets the grant assurances and gives direction to airports on a case-by-case basis, after an administrative investigation. FAA compliance investigations are usually based on complaints from airport users, but the FAA occasionally begins an investigation on its own volition.

Technical Appendix 2 provides additional information on the nature and scope of the FAA requirements.

2.2.2 DOT Requirements

Nine of the 10 DOT requirements adopted during the study period were regulatory documents (regulations or amendments to regulations). One document was a policy statement. Eight of the regulations apply to airports as recipients of federal assistance. Three apply only to programs administered by DOT elements, e.g., 49 CFR Part 26, Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs. Five regulations are DOT versions of government-wide regulations [e.g., 49 CFR Part 29, Government-wide Debarment and Suspension (Non-procurement)]. Only two of the regulations and the policy statement apply specifically to airports (e.g., 49 CFR Part 23, Participation of Disadvantaged Business Enterprises in Airport Concessions).

Additional information on the nature and scope of the DOT requirements is included in Technical Appendix 2.

2.3 Environmental Requirements

A total of 39 potential environmentally related regulatory and compliance actions were adopted during the study period. Of these actions, 28 were issued by the EPA, three by the DOT, and seven by the FAA. One Executive Order was issued. The specific regulatory and compliance actions are summarized in Table A-2 in Appendix A. Some PGLs issued during the study period address environmental requirements. Because of their relation to AIP funding requirements, they are summarized in Table A-1.

2.3.1 General Environmental Requirements

Most federal environmental regulatory requirements are found in Title 40 of the CFR, administered under the authority of the EPA. However, federal environmental regulations are not always implemented and enforced at the federal level. The EPA has delegated the responsibility to administer many environmental regulations to its state counterparts that have adopted the federal regulations or promulgated regulations that are at least as stringent. To a limited extent, environmental regulations appear under Title 10 [Energy, administered by the Department of Energy (DOE)] and Title 49 (Transportation, administered by the DOT).

The general environmental requirements fall under one of the following regulatory areas:

- Air quality
  - General conformity
  - Hazardous air pollutants
- Emergency planning, response, and reporting
- Planning and development—all appropriate inquiries
- Waste management
  - Hazardous waste
  - Recordkeeping
- Water resources
  - Drinking water
  - Spill prevention, control, and countermeasure (SPCC)
  - General National Pollutant Discharge Elimination System (NPDES) permits
  - Construction stormwater

Each topic may include regulations covered under separate regulatory programs or under the authority of different federal agencies. For example, actions identified as part of waste management include amendments to the hazardous waste, universal waste, and used oil regulations, which may be regulated under the authority of the EPA or the DOT.

Table A-3 in Appendix A provides a summary of the typical federal environmental requirements applicable to small airports. The table also lists potential airport activities related to each requirement. The table includes requirements that were not adopted or revised during the study period. Those topics addressed in this study are indicated by check marks. The table is included to indicate the full range of environmental requirements that may apply to small airports. Detailed descriptions of each regulatory program are presented in *ACRP Report 43: Guidebook of Practices for Improving Environmental Performance at Small Airports* (2011).

2.3.2 FAA Environmental Requirements

Small airports are also subject to the FAA environmental requirements, including regulations under Title 14 (Aeronautics and Space), ACs, and orders. The FAA Airport Environmental Program helps airports implement the provisions of the National Environmental Policy Act (NEPA), noise compatibility planning (14 CFR Part 150), noise and access restrictions (14 CFR Part 161), and property transfers. During the study period, the FAA issued updates to FAA Orders 1050.1 and 5050.4, which establish requirements for implementing NEPA for FAA programs generally and AIP-funded projects, respectively. The FAA also issued various ACs under series 150 addressing environmental issues (Table A-2). Subjects included management of hazardous waste, management of wildlife hazards, and minimizing pollution from earthwork during airport construction. The FAA also issued PGLs addressing noise compatibility (Table A-1).

2.3.3 Executive Orders

Environmental requirements are also issued in the form of Executive Orders that provide direction to cabinet departments and other executive branch agencies on implementing federal laws and policies. During the study period, one Executive Order was issued, E.O. 13158, Marine Protected Areas, to protect natural and cultural resources in the marine environment.

2.4 Security Requirements

During the study period, responsibility for aviation security changed as did security requirements themselves.

In January 2000, the FAA was responsible for civil aviation security functions and responsibilities under Title 49 of the *United States Code* (USC). The FAA issued and administered Federal Aviation Regulations (FARs) for aviation security. The primary regulatory documents were 14 CFR Part 107, governing airport security, and Part 108, governing air carrier security.

Under FAR Part 107, airports were required to adopt and carry out an airport security program (ASP). The ASP described how the airport would comply with and carry out the federal regulations and requirements. The FAA frequently introduced new security requirements not by amending Part 107, but by issuing emergency amendments requiring changes to ASPs. All changes or amendments to ASPs also required approval prior to implementation.

Following the events of September 11, 2001 (9/11), Congress enacted the Aviation and Transportation Security Act (ATSA) of 2001 (Pub. L. 107-71, November 19, 2001). ATSA required significant changes in airport and airline security. ATSA established the TSA and transferred authority for all civil aviation security functions from the FAA to the TSA. The TSA reissued and updated airport security requirements, which are now located at 49 CFR Part 1542. In addition, the TSA redesignated emergency amendments for ASPs as security directives (SDs).

During the study period, federal agencies adopted a total of 81 security requirements. These requirements are summarized in Table A-4 in Appendix A. Twenty-one were adopted by the FAA; 58 were adopted by the TSA; one was adopted jointly by the FAA and TSA; and one was adopted by Customs and Border Protection (CBP). Most of the FAA and TSA security requirements were adopted to improve aviation security in response to the events of 9/11.

Two of the requirements were regulatory actions published in the Federal Register; 77 were emergency amendments or SDs; one was an amendment to ASP Requirements (AP);

and the CBP document was a guidance document on airport technical design standards.

This report cannot provide specific information on the contents of the emergency amendments, SDs, and AP, because they include SSI and public disclosure is prohibited. The changes affected passenger and baggage screening procedures and equipment, access controls and perimeter security, airfield security, badging and ID requirements, and background checks for people with access to secure areas.

2.5 Occupational Safety and Health Requirements

The small hub and non-hub primary airports included in this study are publicly owned and therefore not subject to the direct jurisdiction of OSHA. Depending on the approach to occupational safety and health regulation adopted by its state, an airport may be subject to state regulation or governed by a voluntary program. States are authorized to adopt comprehensive occupational safety and health requirements for private sector employees. States doing so must include the public sector employees within their programs. In addition, states are authorized to adopt mandatory programs strictly for state employees. Local governmental units may also adopt occupational safety and health programs as mandatory or voluntary measures.

As reflected in Table A-5 in Appendix A, 21 OSHA regulatory or compliance actions with potential impacts on airports were adopted during the study period. Fourteen of the actions were regulatory. One was a compliance directive (Table A-5, Item 20). Two were revisions to voluntary programs and the remaining four were guidance documents. Most employees of airport operators would be considered public employees. Therefore, the OSHA requirements would apply to these employees only through the application of state programs or voluntary programs.

OSHA requirements adopted during the study period may be relevant, to the extent they are incorporated in state programs or airport voluntary programs. In addition, private contractors and tenants would be subject to OSHA regulation, unless they are covered by a qualifying state plan.

Few new regulations adopted from 2000 through 2010 have a significant direct impact on airports. For example, the revisions to the personal protective equipment, respirator fit testing protocols, and recordkeeping forms could have affected many airports, but the revisions were not significant and should not involve major costs.

CHAPTER 3

Cost Impacts from FAA/DOT Requirements

To determine compliance cost impacts, this research used two sources: (1) published estimates of cost impacts and (2) data provided by small airports through the Phase 2 survey, telephone interviews, and case studies. To simplify the analysis and discussion of the survey results, the FAA/DOT requirements were grouped into the following broad categories:

- Airfield design, standards, and operations
- Part 139 requirements for newly certificated airports
- Part 139 requirements for existing airport-operating certificate holders
- Requirements for vehicles in Aircraft Operations Areas (AOAs)
- PFC requirements
- Disadvantaged Business Enterprise (DBE) requirements
- Miscellaneous FAA administrative requirements

To the extent data was available, initial and recurring costs were analyzed separately. Technical Appendix 2 contains a more detailed analysis of the cost data for FAA/DOT requirements.

3.1 Published Cost Estimates

Under Executive Order (EO) 12866, *Regulatory Planning and Review,* federal agencies are required to evaluate potential costs and benefits of proposed regulatory actions, including whether the action results in unacceptable or unreasonable costs to society. If a significant regulatory action is identified, federal agencies conduct an economic analysis to estimate implementation costs. Reports are publicly available in regulatory docket folders.

EO 12866 defines a significant regulatory action as one that is likely to have an annual effect on the economy of $100 million or more. Unless another criterion for significance applies, a comprehensive economic analysis is not required for any regulation with less than $100 million economic impact. In addition, EO 12866 applies only to regulatory documents adopted using the rulemaking procedures specified in the Administrative Procedure Act (APA), i.e., notice and comment and publication in the *Federal Register.*

The Regulatory Flexibility Act (RFA) requires federal agencies to certify whether regulatory actions have a significant economic impact on small entities. The Small Business Administration advises that agencies should consider both adverse and beneficial impacts and identify opportunities to minimize adverse impacts. Because the airports included in this study are publicly owned, the relevant definition of a small entity is local government with a population of less than 50,000. As is the case with EO 12866, the RFA applies only to APA rulemaking actions.

As a result of these limitations, only a small portion of the compliance actions adopted during the study period included economic analysis or cost estimates. Even when APA rulemaking procedures were followed, a full economic analysis was not conducted in many cases. Often a rulemaking document will include a statement that the costs of a rule, or the impact on small entities, will be negligible or minimal.

Table A-1 presents available published cost information for the FAA and DOT requirements. Where specific cost data is published, the source, other discussion of cost by the agencies, and brief comments are included.

With few exceptions, the FAA did not publish cost information when adopting new compliance actions. Only six of the 140 compliance actions were APA rulemakings, and only two out of those six documents included specific cost projections.

One of the regulatory documents with a specific cost projection was an amendment to the PFC Regulation (14 CFR Part 158). This amendment implemented administrative streamlining for non-hub airports. The rulemaking document projected an average cost reduction of $9,500 (Table A-1, Item 4). The only FAA regulation that quantified an increase in costs to small airports was the amendment to the Airport Certification Regulation (14 CFR Part 139) to implement the new airport certification requirement for airports receiving

scheduled service from small aircraft (Table A-1, Item 25). The FAA projected increased costs for existing and new certificate holders. The added costs projected for new certificate holders (Class III airports) ($98,000 in initial costs; $119,000 in recurring costs) were substantially higher than the added costs projected for existing certificate holders.

Several of the compliance actions in Table A-1 were intended to modify requirements to reduce airport compliance costs or to defer implementation of new requirements. Table A-1 notes the beneficial impact of these actions on airports.

3.2 Airport Population Affected by Requirements

Regulatory compliance creates an impact only if it applies to an airport. The impact on the small airport industry as a whole depends upon the number of affected airports and the cost of compliance. For example, according to the survey, new standards for runway protection zones (RPZs) affect only 13 percent of airports, but compliance cost averages $1.4 million for each affected airport (based on interquartile mean cost). In contrast, new FAA standards for airport emergency plans affect 95 percent of airports, but the average cost per airport is only $4,364.

The Phase 1 survey focused on identifying airports affected by particular requirements. Appendix B, Table B-1, presents data on the number of airports affected by each requirement covered in the Phase 1 survey. The analysis summarized in the rest of this chapter and presented in Technical Appendix 2 focused on the most costly requirements in each subject area.

3.2.1 Airfield Design, Standards, and Operations

Airfield design, standards, and operations include a range of issues from the composition of airfield pavement to airfield lighting and marking. Approximately 43 individual regulatory and compliance actions fall into this category.

The primary document establishing airfield design standards is AC 150/5300-13, *Airport Design.* This document provides general guidance on airport design. During the study period, this AC was revised seven times. Some of the changes amounted to clarifications or adjusting written standards to match current practices, but others were potentially costly. For example, Change 11 to the AC prohibits automobile parking in the central portion of the RPZ and adopts conditions on automobile parking in other areas of the RPZ.

Other ACs address specific design, construction, or equipment issues. For example, AC 150/5340-1, *Standards for Airport Markings,* addresses airfield markings. There were four revisions to this AC during the study period. The revisions addressed a variety of issues. For example, AC 150/5340-1K included 29 revisions characterized as "principal changes." A separate AC addresses runway and taxiway signs; this AC (150/5345-44, *Specification for Runway and Taxiway Signs*) was revised three times during the study period. One of the revisions, AC 150/5345-44J, listed 42 "principal changes."

The analysis of requirements for airfield design, standards, and operations focused on the following:

- RPZ requirements
- Wildlife hazard fencing requirements
- Runway safety area (RSA) requirements
- Security fencing requirements
- Airfield signage requirements

Figure 1 shows the percentage of airports responding to the Phase 1 survey that reported being affected by the changes in requirements.

As shown, the highest percentage of responding airports (79 percent) were required to modify airfield signs. The fewest airports (13 percent) were required to move facilities out of RPZs.

3.2.2 Part 139 Certification Requirements

The primary change to Part 139 certification requirements was the 2004 amendment, although other potentially significant requirements were adopted in the form of ACs or CertAlerts throughout the study period. The analysis of the impact of Part 139 modifications focuses on four subjects:

- Aircraft rescue and firefighting (ARFF) requirements
- Perimeter fencing requirements
- Snow and ice control plan requirements
- Airport certification manual requirements

The new requirements for existing certificate holders and newly certificated airports were different. Therefore, the survey attempted to identify whether airports held certificates in 2004 or obtained them for the first time in response to the 2004 amendment. The survey responses were inconsistent with the FAA census of airports included in the regulatory evaluation for the rule. Most of the newly certificated airports identified by the FAA (Class III airports under the 2004 amendment) are non-primary commercial service airports (airports with less than 10,000 annual enplanements), which are outside the scope of this research study. Many of the airports that reported being newly certificated in the survey were identified by the FAA as certificate holders. The survey results were adjusted to reflect the certification status reported by the FAA in 2004 with one exception. In 2004, there were two categories of airport certificates—full certificates (Class I and Class IV airports under the 2004 amend-

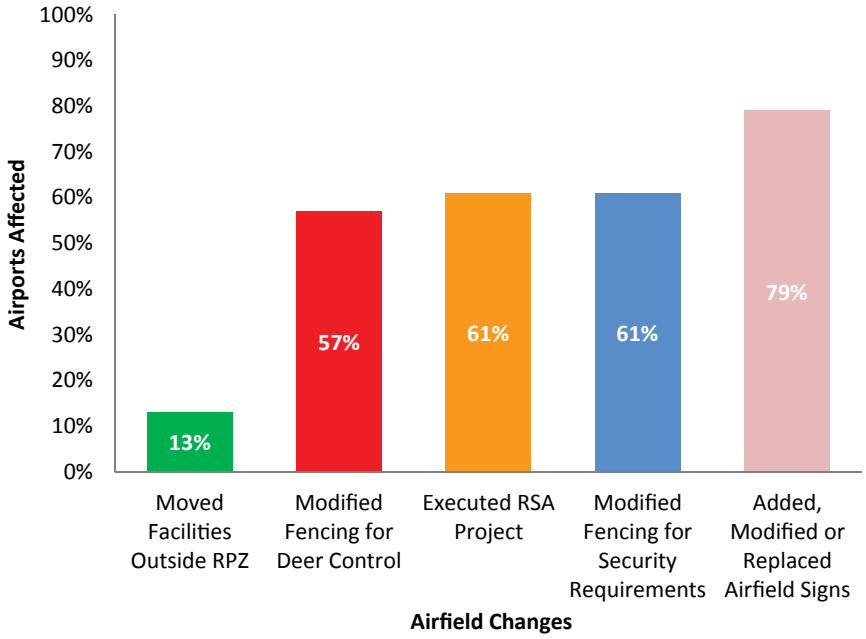


Figure 1. Airports affected by changes to FAA requirements for airfield design, standards, and operations.

ment) and limited certificates (Class II airports under the 2004 amendment). Limited certificate holders were exempt from many of the requirements applicable to full certificate holders. The 2004 amendment eliminated this distinction and established equivalent requirements on all certificate holders. The costs to a limited certificate holder for compliance with the 2004 amendment are more likely to be comparable to those incurred by a newly certificated airport than to an airport that was a full certificate holder. Therefore, for purposes of this research, the analysis categorizes limited certificate holders as newly certificated airports.

Figure 2 summarizes the percentage of the newly certificated airports (as defined in the previous paragraph) responding to the Phase 1 survey that reported an impact from the requirements.

As shown in Figure 2, 100 percent of newly certificated airports reported developing or modifying their airport certification manual. The requirement for ARFF facilities and

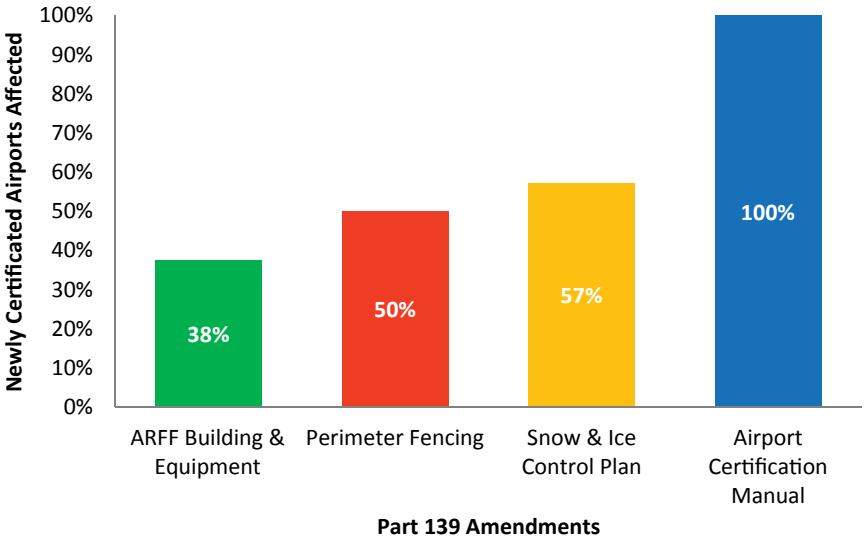


Figure 2. Newly certificated airports affected by Part 139 amendments.

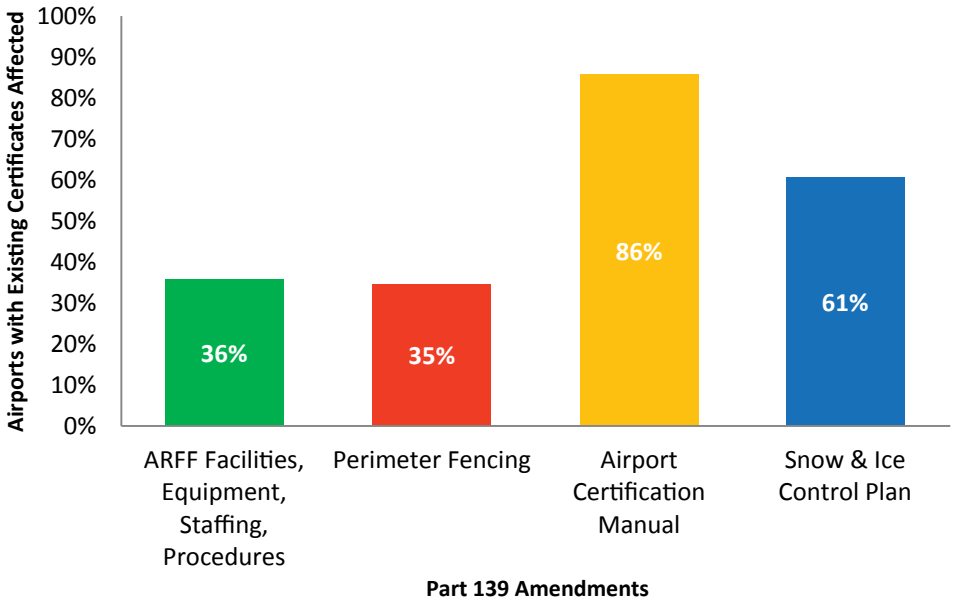


Figure 3. Existing certificate holders affected by Part 139 amendments.

equipment affected the fewest airports, but at 38 percent, the proportion was still substantial.

Existing certificate holders were also potentially subject to requirements to modify ARFF facilities or equipment and perimeter fencing. The 2004 amendment and subsequent compliance actions also required modifications to airport certification manuals and snow and ice control plans. Figure 3 summarizes the survey findings on affected existing certificate holders.

More airports were affected by the requirement to modify their airport certification manual (86 percent) than by any other. This result may understate the actual proportion of affected airports because, under the terms of the rule, all certificate holders were required to submit a revised airport certification manual for FAA approval. The new requirements for perimeter fencing affected the fewest existing certificate holders (35 percent).

3.2.3 Requirements for Vehicles in the Aircraft Operations Area

The FAA has an ongoing program to reduce the frequency of vehicle and pedestrian incursions onto active runways or taxiways (called "vehicle/pedestrian deviations"). In support of this policy, the FAA issued a new AC addressing vehicle access, vehicle marking and inspection, driver training, emergency operations, and enforcement and control [AC 150/5210-20, *Ground Vehicle Operations on Airports* (June 21, 2002)]. In 2008, the FAA issued Change 1 to the AC.

The Phase 1 survey requested airports to indicate if they were affected by five elements of the AC and Change 1:

- Driver training
- Vehicle inspection and marking
- Vehicle access
- Emergency operations
- Enforcement and control

A high percentage of the responding airports reported modifying their policies in each of the areas, as reflected in Figure 4. The highest percentage modified their driver training programs (92 percent), and the lowest percentage (60 percent) modified their vehicle inspection and marking procedures.

3.2.4 PFC Requirements

During the study period, the FAA issued 11 compliance documents related to PFCs—four amendments to Part 158, FAA Order 5500.1 (the PFC order), and six PFC updates. Three of the four Part 158 amendments implemented changes in 49 USC §40117, which governs the PFC program. The FAA issued the fourth amendment, which increased the rate of carrier compensation for PFC collection on its own initiative. Order 5500.1 reflected Part 158, as in effect at the time of issuance, and policies and procedures already developed by the FAA on a case-by-case basis. It did not contain new policies or requirements. Two of the PFC updates were administrative in nature, and two provided guidance on amendments to Part 158. One of the updates reversed a prior determination that certain airline self-service kiosks are ineligible for PFCs. A more complete discussion of the PFC compliance actions is included in Technical Appendix 2.

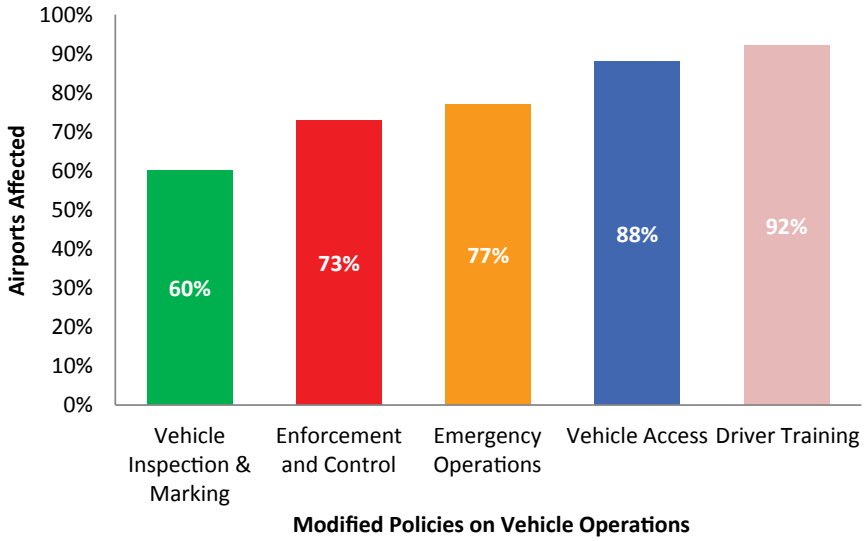


Figure 4. Airports affected by modifications to policies on vehicle operations in aircraft operations areas.

The survey effort for PFCs focused on four changes to PFC requirements adopted during the study period, as follows:

- Amendment to Part 158 to increase carrier compensation to 11 cents per PFC collected
- Implementation of the non-hub airport PFC streamlining pilot program
- New cost documentation requirements for projects exceeding $10 million in PFCs (PFC Update 50-06)
- New documentation requirements for FAA staff analysis of PFC projects (PFC Update 59-09)

Figure 5 summarizes the survey results for three of the PFC requirements. Eighty-eight percent reported using PFCs. According to FAA records, however, 84 percent of small hub and non-hub airports collect PFCs. Of non-hub airports reporting they use PFCs, 47 percent submitted a PFC application after the FAA implemented the non-hub pilot program. Of the airports that submitted a PFC application after issuance of PFC Update 50-06, 27 percent incurred increased costs to supply the additional cost information specified in the update. Thirty-four percent of airports submitting a PFC application after issuance of PFC Update 59-09 reported that the FAA requested additional information. The survey

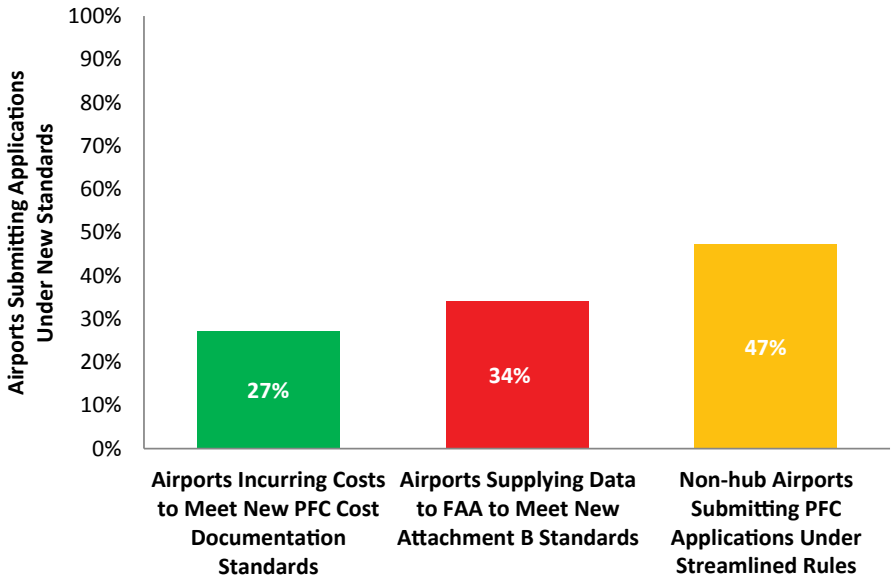


Figure 5. Airports affected by changes to PFC requirements.

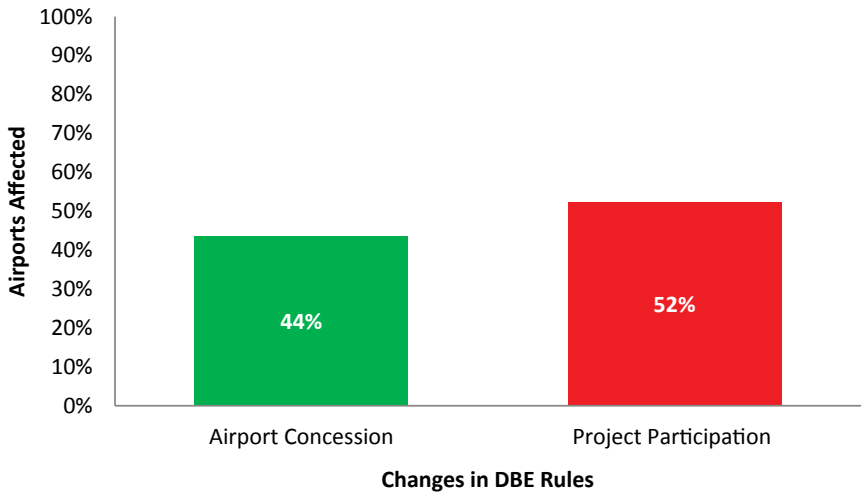


Figure 6. Airports affected by DBE rule changes.

did not ask whether airports were affected by the change in the carrier compensation rate, because all airports collecting PFCs are subject to the new rate.

3.2.5 DBE Requirements

The DOT maintains separate rules for DBE participation in airport concessions (49 CFR Part 23, the airport concession DBE rule) and in federally funded projects (49 CFR Part 26, the DBE Project Participation Rule). Part 23 applies only to airports. Part 26 applies to airports and other DOT-funded entities.

The DOT amended Part 23 once and Part 26 twice during the study period.

As shown in Figure 6, the airport concession DBE rule affected 44 percent of responding airports, and the DBE Project Participation Rule affected 52 percent.

3.2.6 Miscellaneous Administrative Requirements

During the study period, the FAA modified a number of administrative requirements relating to the AIP, or operation of AIP-obligated airports. Actions included changes to requirements for procurement of architectural, engineering, and consulting services for grant-funded projects, internal guidance to FAA staff on administering the AIP (FAA Order 5100.38C) and identifying projects for potential discretionary funding (FAA Order 5100.39A), and standards for applying AIP grant assurances (FAA Order 5190.6B). Twenty-eight of the requirements listed in Table A-1, Appendix A, are considered to fall into the category of administrative requirements. Requirements in this category include amendments to DOT regulations governing debarment of businesses from participating in grant-funded projects.

The survey focused on five specific compliance actions with the potential for substantial impacts or with costs that could be readily calculated, as follows:

- Selection of architects, engineers, and other consultants
- Development and use of geospatial information system (GIS) data in airport planning
- Modification to financial reporting forms for grant-funded projects
- Modification of requirements for airport snow and ice control plans
- Modification of requirements for airport emergency plans

The last two listed compliance actions are also closely linked to the airport certification requirements.

Figure 7 summarizes the percentage of airports affected by these requirements. The new requirements for airport emergency plans affected the largest percentage of airports (95 percent). Only 15 percent of airports reported a change in costs due to the new financial reporting requirement. For all these airports, costs of financial reporting increased.

3.3 Unit Cost Estimates from Phase 2 Survey Results

The Phase 2 survey, as supplemented by telephone interviews and the case studies, provided data on the cost to individual airports of the requirements discussed in Section 3.2. Technical Appendix 2 provides detailed initial and recurring costs of the requirements included in the foregoing Figures 1 through 7 and presents calculations of average costs per airport, per thousand enplanements, and per thousand commercial operations. To eliminate the effects of outliers, the interquartile mean—the arithmetic mean of data between

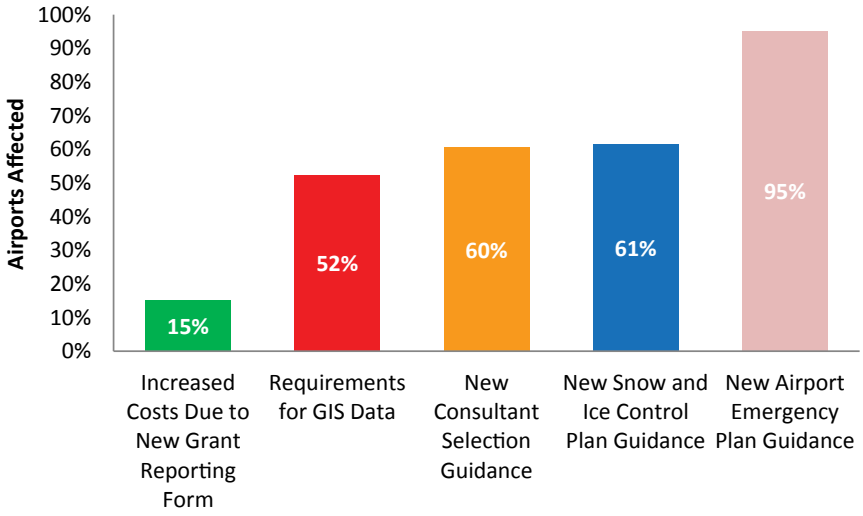


Figure 7. Airports affected by various FAA administrative requirements.

the 25th and 75th percentile—was used as a measure of average (central tendency), unless otherwise indicated. Where requirements are related (e.g., Part 139 certification requirements), the average costs of individual requirements were added to arrive at an estimate of total airport cost for the requirement category.

The summary data in Tables 1 through 3 is derived from the Phase 2 survey results and shows the interquartile range of cost estimates—excluding the lowest and highest 25 percent—for the two items with the highest cost per airport in each requirement category. For one exception, Part 139 requirements, estimates of total cost per airport are listed to compare with the FAA-published per-airport cost estimates for the full compliance cost of the 2004 amendments to Part 139. As discussed in the next section, most cases do not appear to have a relationship between costs and activity levels (i.e., enplanements or operations). Therefore, the summary tables do not present unit cost estimates based on activity levels.

3.3.1 FAA Requirements

Tables 1 and 2 summarize the most significant initial and recurring costs, on a per-airport basis, for each category of FAA requirements.

As shown in Table 1, the new RSA requirements result in the highest average cost per airport at around $3.7 million. The change to RPZ requirements results in the second highest cost at approximately $1.5 million.

As shown in Table B-2 (Appendix B) and Table TA-12 (Technical Appendix 2), the FAA compliance actions with the lowest initial costs were modifications to requirements for airport water rescue plans ($500 per airport) and modifications to requirements for snow and ice control plans ($639 per airport).

As shown in Table 2, the individual requirement with the highest recurring cost is ARFF compliance for newly certificated airports ($575,000). The second most expensive is enforcement and control of vehicles in aircraft operations areas (approximately $129,000). The compliance action with the lowest recurring cost was adoption of new requirements for snow and ice control plans ($150), as shown in Table TA-13 (Technical Appendix 2). The second least expensive requirement was the modification of snow and ice NOTAMs ($500) as shown in Table B-3 (Appendix B).

Also, airports did not report recurring costs for many requirements. For example, no newly certificated airports reported recurring costs related to their airport certification manual or snow and ice control plans. Recurring costs are frequently operational or administrative. At small airports, these activities are often completed by airport staff in the normal course of their duties, and it is hard to estimate compliance costs. Nevertheless, the time required to comply with the requirements is ultimately taken away from accomplishing other operational or administrative tasks. This staff time is an opportunity cost to small airports.

The FAA provided cost projections for two compliance actions issued during the study period—the Part 139 amendments and the non-hub airport PFC streamlining pilot program. The latter was an estimate of cost savings.

In general, the FAA projections understated the cost of the Part 139 amendment, as compared with the survey results. The FAA projected the initial costs of the Part 139 amendments to be $98,000. The average cost of compliance with new ARFF requirements alone reported in the survey was almost 15 times higher than the FAA figure, and total initial compliance costs were almost 23 times higher. The recurring costs reported by newly certificated airports were

Table 1. Summary of highest cost FAA requirements per airport (initial costs).

Requirement(s)	Estimated Cost of Compliance		
	25th Percentile	75th Percentile	Interquartile Mean[1]
Airfield Design, Standards & Operations Requirements			
Executed RSA project	$1,200,000	$10,500,000	$3,676,184
Moved facilities outside of RPZ	$298,383	$3,040,086	$1,492,556
Part 139 Requirements for Newly Certificated Airports[2]			
ARFF facilities, equipment & clothing[3]	$1,462,733	$1,462,733	$1,462,733
Modification of perimeter fencing[4]	$784,390	$784,390	$784,390
Subtotal Part 139 Costs			**$2,248,640**
Part 139 Requirements for Existing Certificate Holders[1]			
ARFF facilities, equipment, staffing or procedures	$500,000	$1,625,100	$998,360
Modification of perimeter fencing	$180,000	$1,100,000	$257,706
Subtotal Part 139 Costs			**$1,261,074**
Requirements for Vehicles in Operations Area			
Enforcement and control	$95,500	$2,125,000	$450,000
Emergency operations	$2,125	$257,500	$26,933
PFC Requirements			
Compliance with new cost documentation requirements	$7,000	$26,000	$17,167
Reduction in PFC revenue due to carrier compensation increase	$1,900	$16,250	$7,067
Miscellaneous FAA Administrative Requirements			
Requirements for use of GIS	$62,496	$507,212	$176,000
Requirements for consultant selection	$4,875	$450,000	$157,500

[1] Unless otherwise noted.
[2] Airports holding limited certificates in 2004 are classified as newly certificated.
[3] Interquartile mean value cannot be determined with less than three responses. Arithmetic mean value used.
[4] Single airport response. Value of response used.

almost five times higher than the FAA cost projection of $119,000.

The FAA made separate initial cost projections for each newly designated category of full certificate holders, as follows:

- Class I airports—$1,360
- Class IV airports—$1,791

The initial Part 139 compliance costs reported by existing certificate holders are approximately 690 times the higher FAA projection above.

Recurring costs were projected by the FAA as follows:

- Class I airports—$8,479
- Class IV airports—$911

Reported recurring costs are approximately 69 times higher than the projection.

For newly certificated airports and existing certificate holders, the FAA projected that recurring costs would be higher than initial costs of compliance. The survey results are reversed, with initial costs reported as higher for both groups.

The projection of cost savings in the non-hub airport PFC streamlining pilot program similarly overstated the anticipated cost reduction reported in the survey. The rule-making document projected an average cost reduction of $9,500. The average cost savings reported in the survey is $2,300.

3.3.2 DOT Requirements

The Phase 2 survey focused on the cost of compliance with modifications to the DBE requirements adopted during the study period. The results are summarized in Table 3. The 25th percentile, 75th percentile, and interquartile mean costs are shown, with separate listings for initial and recurring costs. The initial costs of the airport concession DBE requirements were less than half of the lowest cost FAA requirement listed in Table 1. Initial costs for project participation requirements are approximately one-third lower. Recurring DBE compliance costs are also generally lower.

Table 2. Summary of highest cost FAA items per airport (recurring costs).

Requirement(s)	Estimated Cost of Compliance 25th Percentile	75th Percentile	Interquartile Mean[1]
Airfield Design, Standards & Operations Requirements			
Modification of airfield signs	$4,600	$10,000	$10,000
Modification of perimeter fencing for wildlife hazards	$5,000	$14,000	$6,600
Part 139 Requirements for Newly Certificated Airports[2]			
ARFF requirements[3]	$362,500	$787,500	$575,000
Modifications of perimeter fencing[4]	$10,000	$10,000	$10,000
Subtotal Part 139 Costs			**$585,000**
Part 139 Requirements for Existing Certificate Holders[2]			
ARFF requirements	$2,500	$75,000	$24,083
Modifications of perimeter fencing[5]	$1,000	$5,000	$5,000
Subtotal Part 139 Costs			**$29,646**
Requirements for Vehicles in Operations Area			
Enforcement and control	$35,868	$283,000	$128,992
Emergency operations	$3,000	$225,000	$51,230
Miscellaneous FAA Administrative Requirements			
Requirements for use of GIS	$7,538	$71,500	$35,000
Requirements for airport emergency plans	$500	$1,200	$867

[1] Unless otherwise noted.
[2] Airports holding limited certificates in 2004 are classified as newly certificated airports.
[3] Interquartile mean value cannot be determined with less than three responses. Arithmetic mean value used.
[4] Single airport response. Value of response used.
[5] Interquartile mean value results from low number of responses and single values duplicated in multiple responses for minimum and between minimum and maximum.

3.4 Relationship between Costs and Activity Levels

The costs of the requirements summarized above were analyzed to determine if there was a relationship between the level of costs and two measures of activity—passenger enplanements and commercial operations. In all but two cases, quantitative analyses showed that there did not appear to be a relationship between compliance costs and activity level. In the following two cases where quantitative analyses indicated possible correlation with activity level, inadequate sample and qualitative considerations prevailed in ruling out correlation:

- A relationship between the recurring costs of complying with new FAA requirements for perimeter fencing to prevent wildlife hazards and both enplanements and commercial operations was ruled out because of an inadequate sample of only three observations and logical consideration. The cost of perimeter fencing would depend on material cost and airfield perimeter, not necessarily on traffic level.
- Qualitative factors ruled out a relationship between the recurring costs of compliance with the DBE concession requirements and both enplanements and operations, on a very small number of observations. The recurring costs of the DBE requirements relate to reporting and updating

Table 3. Summary of DBE compliance costs per airport.

Requirement(s)	Estimated Cost of Compliance 25th Percentile	75th Percentile	Interquartile Mean
Airport Concession DBE Requirements			
Initial cost	$2,100	$18,000	$7,620
Recurring cost	$1,750	$4,750	$2,900
DBE Project Participation Requirements			
Initial cost	$6,250	$15,907	$11,000
Recurring cost	$6,500	$14,576	$11,000

DBE concession plans and goals. While concession revenues and hence minimum DBE concession revenues may vary with the level of activity, the fundamental requirements to monitor and report performance and update the plan apply regardless of an airport's DBE concession revenue.

3.5 Industry Cost Estimates

Industry cost impacts for FAA and DOT requirements were estimated by following a three-step process:

1. The total number of potentially affected airports (airport population) was determined. In many cases, the airport population consisted of all small airports. In other cases, such as the certification requirements and PFC requirements, only a subset of small airports was potentially affected, and the appropriate airport population was determined using FAA records.
2. The number of airports actually affected by the requirement was determined. Unless the terms of a requirement or other information indicated otherwise, this number was calculated by multiplying the airport population subject to the requirement (Step 1) by the percentage of airports reporting an impact from the requirement in the Phase 1 survey. If the terms of the requirement or other information clearly indicated that the survey results were inaccurate, the percentage was adjusted to conform to the percentage indicated by the terms of the requirement or other percentage. For example, embedded in the total costs of Part 139 requirements is the cost of preparing a new airport certification manual. This requirement applied to 100 percent of certificated airports by the terms of the regulation.
3. Because there does not appear to be a relationship between compliance costs and activity measures, the average cost per airport was multiplied by the number of affected airports to arrive at an industry cost estimate.

The summary tables in the rest of this section provide the industry cost impacts for the two requirements with the highest industry cost in each category of FAA and DOT requirement discussed previously. Because the industry costs account for the number of airports affected by individual requirements, the requirements listed do not exactly match the requirements listed in the tables in Section 3.3. For example, the documentation requirements for PFC projects exceeding $10 million were the most costly PFC requirement for individual airports. However, after accounting for the number of airports affected, the change in the carrier compensation requirement was the most costly PFC requirement to the small airport industry as a whole.

In addition, because it is possible to account for the number of airports affected by each requirement, total costs for the cost categories and all requirements are presented.

3.5.1 FAA Requirements

Table 4 summarizes the initial industry costs and highlights the most costly requirements in each broad category of the FAA compliance requirements. Table 5 summarizes the recurring industry costs and highlights the most costly requirements in each broad category.

As shown in Table 4, total initial costs of FAA requirements adopted during the study period were just under $1.4 billion. The most costly category was airfield design, standards, and operational requirements (almost $1.1 billion), and the most costly single requirement was the new standard for RSAs ($695 million). Also, Part 139 compliance costs were $1 million more per airport for newly certificated airports than they were for existing certificate holders. However, because of the small number of newly certificated airports in the affected population (15), their aggregate compliance costs were only 11 percent of the aggregate costs for existing certificate holders.

As shown in Table 5, total recurring costs were almost $65 million. The most costly category of requirements was vehicle access ($48 million). The most costly single requirement was enforcement and control procedures for vehicle access ($29 million). The recurring Part 139 compliance costs for newly certificated airports ($585,000) were so much higher than the recurring costs for existing certificate holders (just under $30,000) that the industry costs for newly certificated airports were higher, even though the affected population was limited to 15 airports.

Comparing Tables 4 and 5, initial FAA compliance costs were substantially higher than recurring costs. However, if initial costs represent construction of facilities or equipment purchases, FAA financial assistance may be available. Recurring costs, in contrast, are typically considered operational or administrative costs and generally do not qualify for federal assistance. Moreover compliance is often accomplished by airport staff in the normal course of duties. The costs therefore cannot be readily determined by many airports, but are very real.

3.5.2 DOT Requirements

Table 6 summarizes the industry compliance costs of the modifications to DOT's DBE requirements. Initial costs of compliance with the airport concession DBE requirements are 2.6 times higher than recurring costs. Initial and recurring costs of DBE participation requirements reported in the survey were equal at $1.7 million. The initial and recurring

Table 4. Summary of industry cost impacts of FAA requirements (initial costs).

Requirement(s)	Estimated Cost per Airport (Interquartile Mean)[1]	Estimated Industry Initial Cost		
		Airports Subject to Requirement	Airports Affected by Requirement[2]	Industry Initial Cost
Airfield Design, Standards & Operational Requirements				
Runway safety area (RSA) requirements	$3,676,184	310	61%	$695,166,000
Security fencing requirements	$777,269	310	61%	$146,982,000
Total cost of all airfield requirements	**$6,818,672**	**310**		**$1,062,636,000**
Part 139 Requirements, Newly Certificated Airports[3]				
ARFF requirements	$1,462,733	15	38%	$8,338,000
Perimeter fence requirements	$784,390	15	50%	$5,883,000
Subtotal cost for Part 139	**$2,248,640**	**15**		**$14,243,000**
Part 139 Requirements, Existing Certificate Holders[3]				
ARFF requirements[4]	$998,360	295	36%	$106,026,000
Perimeter fence requirements[5]	$257,706	295	35%	$26,608,000
Subtotal cost for Part 139	**$1,261,074**	**295**		**$133,896,000**
Requirements for Vehicle Access to Aircraft Operations Area				
Enforcement and control	$450,000	310	73%	$101,835,000
Emergency operations	$26,933	310	77%	$6,429,000
Total cost of all vehicle access requirements	**$517,634**	**310**		**$118,404,000**
PFC Requirements				
Reduction in PFC revenue due to carrier compensation increase	$7,067	260	100%	$1,837,000
Compliance with new cost documentation requirements	$17,167	260	18%	$807,000
Total "cost" increase	$30,567	260		**$2,958,000**
Non-hub pilot program cost savings	(2,300.00)	188	19%	($82,000)
Net cost				**$2,876,000**
Miscellaneous FAA Administrative Requirements				
Requirements for consultant selection	$157,500	310	60%	$29,295,000
Requirements for use of GIS	$176,000	310	52%	$28,371,000
Total cost for all miscellaneous requirements	**$338,629**			**$59,109,000**
Grand Total FAA Requirements				**$1,391,164,000**

[1] Unless otherwise noted.
[2] Unless otherwise indicated, percentage of airports is based on Phase 1 survey results.
[3] Airports holding limited certificates in 2004 are classified as newly certificated airports.
[4] Interquartile mean value cannot be determined with less than three responses. Arithmetic mean value used.
[5] Single airport response. Value of response used.

industry costs are substantially less than costs of compliance with the FAA requirements listed in Tables 4 and 5.

3.6 Funding Sources

The financial impact of compliance requirements can be reduced to the extent that airports may rely on outside funding sources. The research identified outside funding sources potentially available to airports for the six categories of requirements. These funding sources will reduce the financial impact on airports only if they are actually used. The Phase 2 survey included questions about funding sources for some of the requirements addressed in the survey. This section discusses the outside funding sources (primarily grants) potentially available to airports to help meet compliance requirements and the actual use of outside funding reported in the surveys.

Two financial assistance programs administered by the FAA are an important source of funding for some of the requirements in each of the six categories.

The AIP is a significant source of funding for airport capital development, planning, and environmental mitigation. AIP funds cannot be used for operations and maintenance (O&M) costs of the airport, with a possible exception for DBE compliance costs. For small airports, the federal share of project costs was 95 percent during most of the study period, with the airport responsible for a 5 percent local matching share. Before 2003, the federal share was 90 percent and the local matching share was 10 percent. Under the FAA Modernization

Table 5. Summary of industry cost impacts of FAA requirements (recurring costs).

Requirement(s)	Estimated Cost per Airport (Interquartile Mean)[1]	Estimated Industry Recurring Cost		
		Airports Subject to Requirement	Airports Affected by Requirement[2]	Industry Recurring Cost
Airfield Design, Standards & Operational Requirements				
Modification of airfield signs	$10,000	310	79%	$2,449,000
Modification of perimeter fencing for wildlife hazards	$6,600	310	57%	$1,166,000
Total cost for all airfield requirements	**$18,100**	**310**		**$3,880,000**
Part 139 Requirements, Newly Certificated Airports[3]				
ARFF requirements[4]	$575,000	15	38%	$3,278,000
Perimeter fence requirements[5]	$10,000	15	50%	$75,000
Subtotal cost for Part 139	**$585,000**	**15**		**$3,353,000**
Part 139 Requirements, Existing Certificate Holders[2]				
ARFF requirements	$24,083	295	36%	$2,558,000
Perimeter fence requirements[6]	$5,000	295	35%	$516,000
Subtotal cost for Part 139	**$29,646**	**295**		**$3,175,000**
Requirements for Vehicle Access to Aircraft Operations Area				
Enforcement and control	$128,992	310	73%	$29,191,000
Emergency operations	$51,230	310	77%	$12,229,000
Total cost for all vehicle access requirements	**$210,606**	**310**		**$48,340,000**
Miscellaneous FAA Administrative Requirements				
Requirements for use of GIS	$35,000	310	52%	$5,642,000
Requirements for airport emergency plans	$867	310	95%	$255,000
Total cost for all miscellaneous requirements	**$36,017**	**310**		**$5,925,000**
Grand Total FAA Requirements				**$64,673,000**

[1] Unless otherwise noted.
[2] Unless otherwise indicated, percentage of airports is based on Phase 1 survey results.
[3] Airports holding limited certificates in 2004 are classified as newly certificated airports.
[4] Interquartile mean value cannot be determined with less than three responses. Arithmetic mean value used.
[5] Single airport response. Value of response used.
[6] Interquartile mean value results from low number of responses and single values duplicated in multiple responses for minimum and between minimum and maximum.

Table 6. Summary of industry cost impacts of DOT DBE requirements.

Requirement(s)	Estimated Cost per Airport (Interquartile Mean)	Estimated Industry DBE Cost		
		Airports Subject to Requirement	Airports Affected by Requirement[1]	Industry DBE Cost
Airport Concession DBE Requirements				
Initial cost	$7,620	310	44%	$1,039,000
Recurring cost	$2,900	310	44%	$396,000
DBE Project Participation Requirements				
Initial cost	$11,000	310	52%	$1,773,000
Recurring cost	$11,000	310	52%	$1,773,000
Total DBE Compliance Costs				
Total Initial Costs	**$18,620**	**310**		**$2,812,000**
Total Recurring Costs	**$13,900**	**310**		**$2,169,000**

[1] Unless otherwise indicated, percentage of airports is based on Phase 1 survey results.

and Reform Act, Pub. L. 112-95 (February 14, 2012), the local matching share for most small airports returned to the 10 percent level, effective in FY 2012. The local matching share may come from any non-federal source.

PFCs are considered another form of federal assistance because of the FAA's role in approving their collection and use. However, PFCs are generated locally and collected at the discretion of the individual airport operator. Currently the maximum PFC is $4.50 per enplaned passenger. In general, PFCs may be used for any costs that are eligible for AIP grants, with broader eligibility in the area of terminal projects and noise mitigation. Currently 188 out of 237 non-hub airports collect a PFC, as do 72 out of 73 small hub airports. PFC funding can be applied to pay the full amount of any incremental costs that are eligible for AIP funding or to pay for the local matching share of a project receiving grant funds. PFC project administrative costs, including costs of preparing applications, are also eligible. Like AIP funds, PFCs cannot be used for airport O&M expenses.

Some states maintain their own airport assistance programs. State funds may be provided to assist airports in paying the local share of AIP-funded projects or may be provided to fund projects that do not receive AIP grants. When state funds are used for the local match, 50 percent of the local matching requirement is typically provided from state airport assistance programs. Table 2 in *ACRP Synthesis of Airport Practice 24: Strategies and Financing Opportunities for Airport Environmental Programs* (*ACRP Synthesis 24;* 2011) includes a listing of all state airport assistance programs. Eligibility for state airport assistance programs generally follows federal standards (although some states may fund projects that are ineligible for AIP).

3.6.1 Potential Funding Sources

The capital costs of many of the FAA compliance requirements listed in Table A-1 may be eligible in part for AIP or fully eligible for PFC funding. Potential eligibility is discussed in the "Notes on Published Costs" column of the table.

AIP Funding

During most of the study period, the federal share for AIP-funded projects at small airports was 95 percent. Beginning in FY 2012, the federal share for most small airports is 90 percent.

For the FAA requirements listed in Table A-1, incremental costs associated with the design or construction standards listed in ACs, orders, and CertAlerts are eligible for AIP funding, to the extent they apply to AIP-eligible construction. Capital costs associated with the Part 139 requirements are eligible, as well. Development of plans or manuals may be eligible, if the exercise qualifies as airport planning under the AIP statute. However, ongoing staffing costs and any operating costs of facilities or equipment required by Part 139 are not eligible. Thus, although recurring costs of FAA compliance are generally lower than initial costs, airports cannot look to federal funding to help pay the costs.

Any incremental costs associated with preparing or submitting AIP applications as a result of changes to FAA requirements are eligible for reimbursement as a project formulation cost. Incremental project administration costs resulting from FAA requirements may be reimbursable.

One exception to the general rule that operational and administrative costs cannot be funded with AIP is the DOT DBE requirements. Although these expenses are operational or administrative, the FAA may consider these costs to be project administration costs that are eligible for reimbursement. As discussed in Section 3.6.2, however, only a small number of airports have received federal assistance for DBE compliance.

PFC Funding

PFCs can be used to fund any incremental costs associated with the FAA requirements included in Table A-1 that are eligible for AIP funding. PFCs can be used to pay the full cost (if the associated project was funded entirely with PFCs), the local matching share of the incremental costs (if the associated project received AIP funds), or any other amounts provided that the project is approved. Finally, any incremental costs associated with changes to PFC application or administrative requirements can be funded with PFCs.

State Funding Programs

Depending on the location, state or local economic development funds may be available to projects that are subject to the design and construction standards listed in Table A-1. Where available, these funds could also be used to defray the incremental costs associated with any of the standards. The research team has not attempted to catalogue state or local economic development funding opportunities.

In states with airport assistance programs, state airport funds could be used for incremental costs resulting from the FAA requirements listed in Table A-1 that are applicable to eligible capital development projects. In most cases, state participation would be limited to one-half of the local matching requirement.

Limitations on the Benefits of Federal Assistance

The use of AIP or PFC funds may reduce the amount of cash airports must generate from other sources—e.g., rates and charges, bond proceeds, discretionary funds—to comply with federal requirements, but there is an opportunity cost.

AIP and PFC funds applied to comply with federal requirements cannot be used for the physical completion of projects that benefit airport users and generate a financial return to the airport.

In addition, AIP and PFC funding has not kept pace with the growth in federal requirements. From October 1, 2008 (beginning of FY 2008), through the end of the study period, the FAA and DOT adopted 35 new requirements (23 percent of the total adopted). However, AIP funding remained flat at approximately $3.5 billion from 2008 through 2011 and actually declined by $165 million in 2012. The $4.50 PFC cap was implemented in June of 2000, close to the beginning of the study period.

3.6.2 Use of Financial Assistance

The Phase 2 survey for FAA and DOT requirements included questions about the sources of funding to pay for compliance. The survey addressed use of AIP and PFC funds, other airport funds, and other funding sources. Figures 8 through 20 and the discussion in this subsection summarize the survey results and focus on the use of AIP and PFC funds. Generally speaking, other airport revenue was used to cover costs that were not financed by AIP or PFC funds. A limited number of airports reported using other funding sources.

For AIP funds, the figures show the number of airports that used no AIP funds; the number that used some AIP funds, but less than the full federal share; and the number that used the full federal share. For PFC funds, the figures show the number of airports that used no PFC funds; the number that used PFC funds for the full amount of the local matching share; the number that used PFC funds for less than the matching share; and the number that used PFC funds for more than the local matching share. The results in many cases include airports that reported using both AIP and PFC funds.

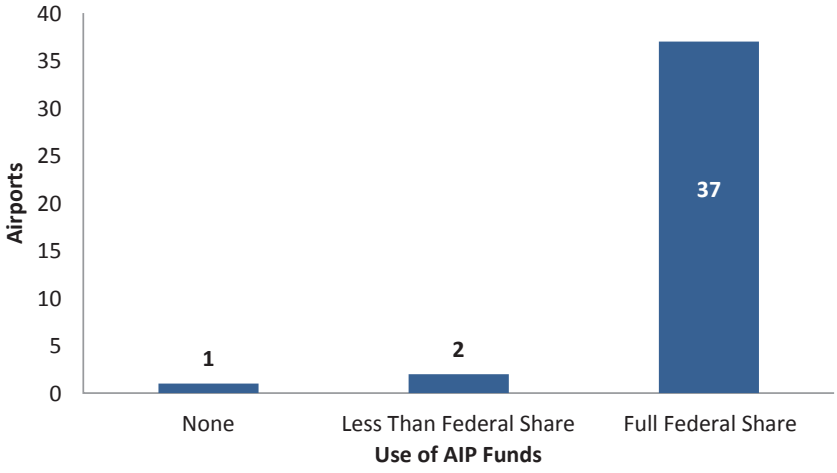
The data is presented separately for initial and recurring costs, because the patterns of use are significantly different.

Initial Compliance Costs

Figures 8 through 19 provide summary data on the use of AIP and PFC funds for the FAA requirements. The data is presented for the individual categories (and sometimes individual requirements) because of variations in the pattern of usage of AIP funds that are masked by aggregation of data. PFC usage was more consistent but unexpected. In most cases, a majority of airports did not use PFC funds, even to finance all or part of the local matching requirement for an AIP grant.

Airfield Design, Standards, and Operations. The funding sources for airfield design, standards, and operation requirements are summarized in Figures 8 through 13. A substantial number of airports were able to obtain AIP funding for the full federal share of project costs for these compliance requirements. This outcome is to be expected, because the compliance requirements involve capital development and address safety and security issues. More noteworthy is the limited use of PFCs, even to fund the local matching share of projects. At some airports, this may reflect the use of state grant funds, but many airports reported the use of no PFCs at all.

Data on the use of AIP funding for fencing requirements (wildlife and security) is presented in Figure 8, and data on the use of PFCs for wildlife fencing is presented in Figure 9. The survey did not include a specific question on the use of PFCs for security fencing. As shown, 37 out of 40 responding airports reported receiving the full federal share to comply



Total count may include multiple responses for individual airports

Figure 8. AIP funding levels for initial costs of perimeter fencing requirements.

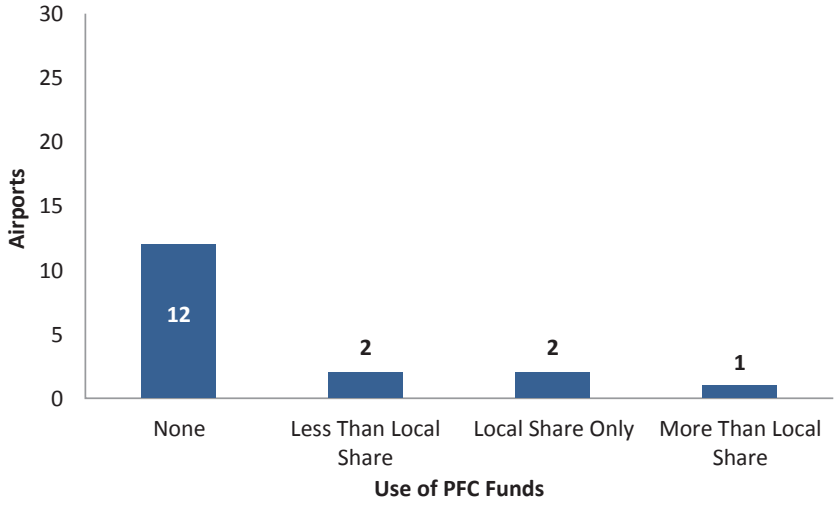


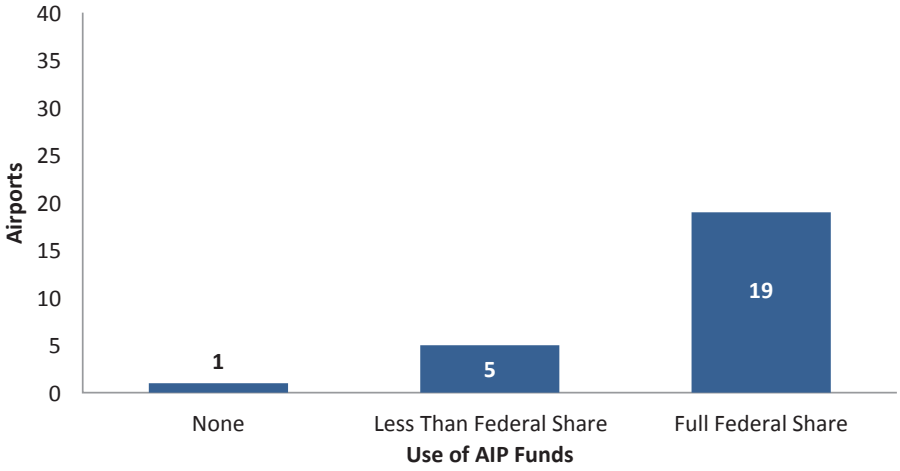
Figure 9. PFC funding levels for initial costs of wildlife fencing requirements.

with perimeter fencing requirements. Only one airport did not receive any federal funds. In contrast, 12 out of 17 airports reported using no PFC funds to comply with wildlife fencing requirements. Only two relied on PFCs to finance the full local matching share of their projects, and one airport's PFC share exceeded the local matching requirement.

Data on the use of AIP funding for runway protection requirements (RPZ and RSA) is presented in Figure 10, and data on use of PFCs for RPZ requirements is presented in Figure 11. The survey did not include a specific question on the use of PFCs for RSAs. Nineteen out of 25 airports received AIP funds for the full federal share of their runway protection projects, and only one airport received no federal funding. As shown, a majority of airports (three out of five) did not use PFCs to finance their RPZ projects.

Figures 12 and 13 show the use of AIP and PFC funds, respectively, to finance the costs of compliance with new airfield signage requirements. Twelve out of 16 airports reported receiving AIP grants for the full federal share of their signage projects, but three airports did not receive any AIP grants. Consistent with the other requirements, a majority of airports (nine out of 16) did not use any PFCs to meet airfield signage requirements. However a substantial number (six) did finance their local matching share with PFCs.

Part 139 Certification Requirements. No newly certificated airport reported the use of either AIP or PFC funds to finance their compliance requirements. Airport funds or funding from other sources finance the compliance costs. This result is unexpected, because projects to meet safety requirements



Total count may include multiple responses for individual airports

Figure 10. AIP funding levels for initial costs of runway protection (RPZ and RSA) requirements.

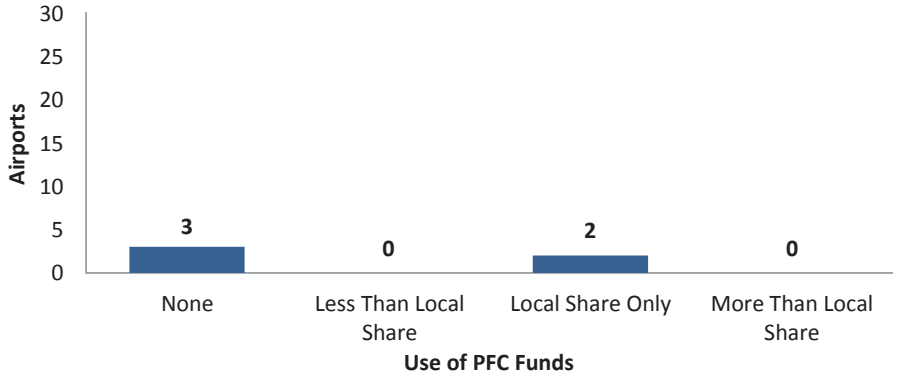


Figure 11. PFC funding levels for initial costs of RPZ requirements.

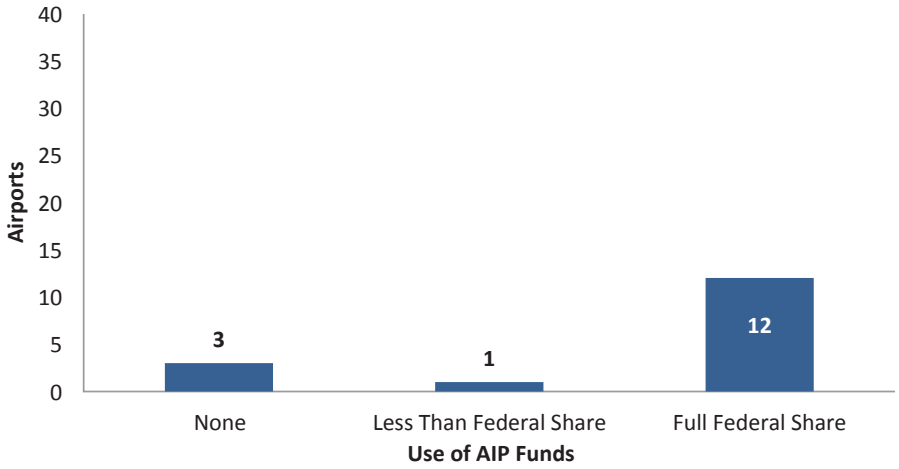


Figure 12. AIP funding levels for initial costs of airfield signage requirements.

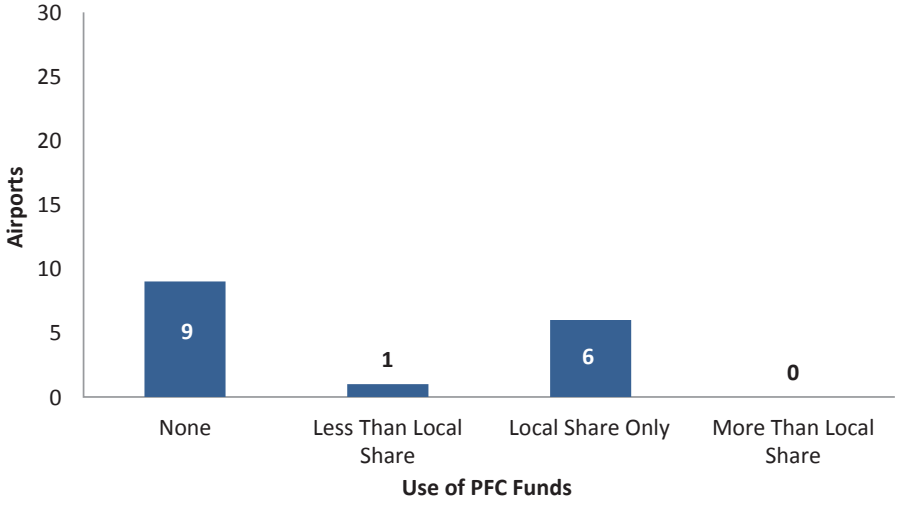
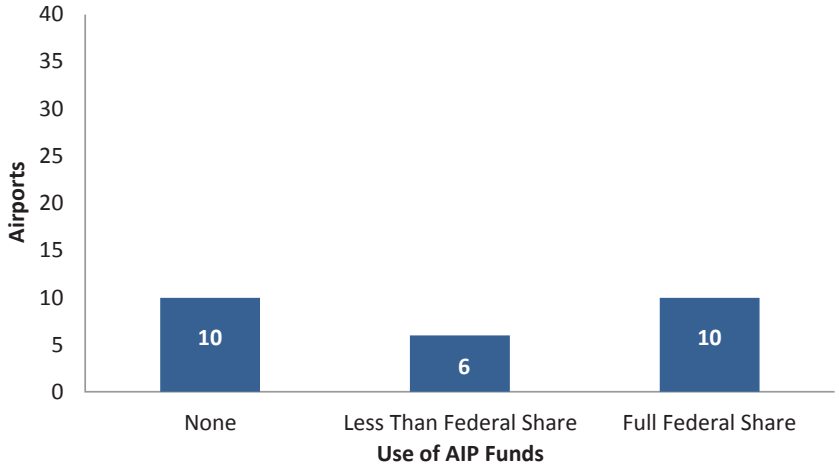


Figure 13. PFC funding levels for initial costs of airfield signage requirements.



Total count may include multiple responses for individual airports

Figure 14. AIP funding levels for initial costs of Part 139 requirements, existing Part 139 airports.

receive the highest priority for AIP funding, and Congress directed the FAA to set aside funds to help newly certificated airports pay the costs of the new Part 139 requirements.

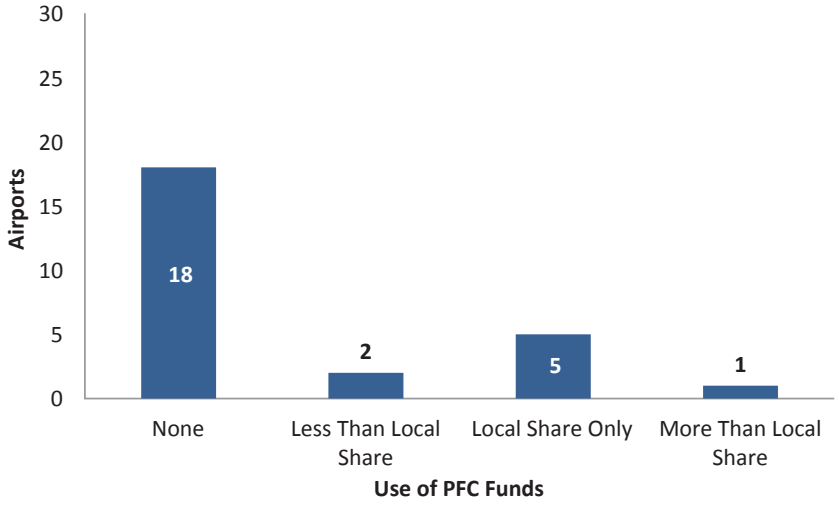
Figures 14 and 15 show the use of AIP funds and PFCs, respectively, to finance the Part 139 compliance for existing airports. The figures show the funding for all requirements combined, and they include multiple responses from individual airports, i.e., the same airport may have incurred costs for compliance with ARFF requirements and perimeter fencing requirements.

There was more diversity in the use of AIP funds for Part 139 requirements than the previous requirements. An equal number of airports (10 each) received no AIP funds and received the full federal share for their Part 139 compliance projects. This pattern may reflect the status of some Part 139 requirements as administrative or operational.

Consistent with the previous requirements, 18 out of 26 airports used no PFC funds to finance their Part 139 compliance projects.

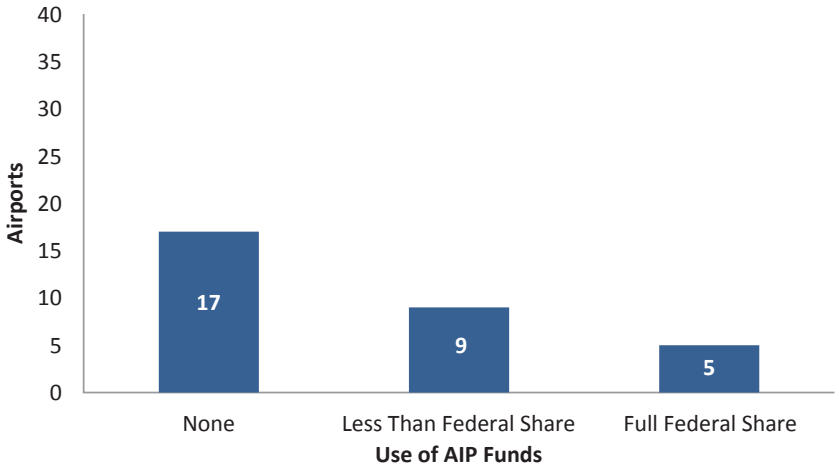
Requirements for Vehicle Operations on the Airport. Figures 16 and 17 show the use of AIP funds and PFCs, respectively, for financing compliance with requirements for vehicle operations on the airfield. The figures show the funding for all requirements combined, and they include multiple responses from individual airports, i.e., the same airport may have incurred costs for compliance with enforcement and control requirements and emergency vehicle operations requirements.

A majority of airports (17 out of 31) received no AIP funding for compliance with these requirements. Only five airports reported receiving the full federal share. This pattern of



Total count may include multiple responses for individual airports

Figure 15. PFC funding levels for initial costs of Part 139 requirements, existing Part 139 airports.



Total count may include multiple responses for individual airports

Figure 16. AIP funding levels for initial cost of requirements for vehicle operations.

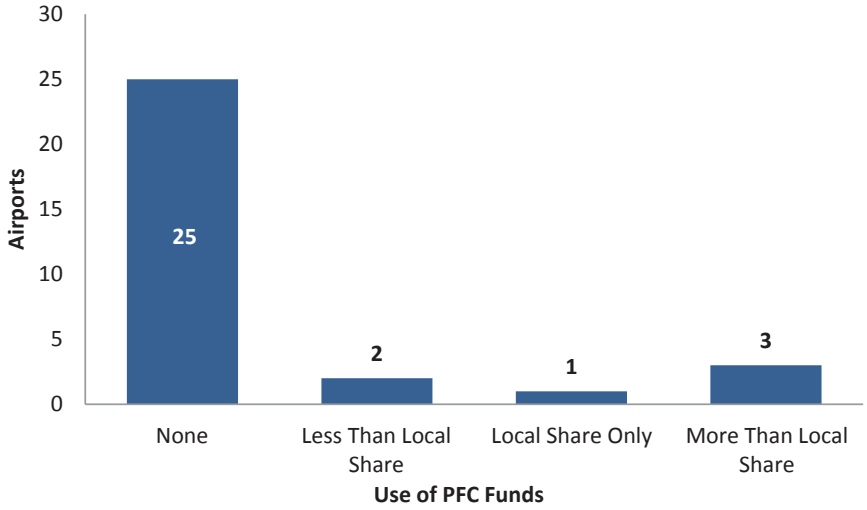
funding may reflect the status of some of the requirements as administrative or operational.

A substantial majority of airports (25 out of 31) did not use any PFC funds to comply with these requirements. The pattern is consistent with PFC usage for previous requirements.

PFC Program Requirements. Three of the changes to PFC program requirements affect the preparation of applications. The costs of PFC applications are eligible for PFC funding and are typically financed with PFCs. The fourth requirement was the change in the required carrier compensation rate. This requirement did not require out-of-pocket expenditures by airports, but reduced monthly net PFC revenue received. Therefore, the survey did not include questions about funding sources for PFC requirements.

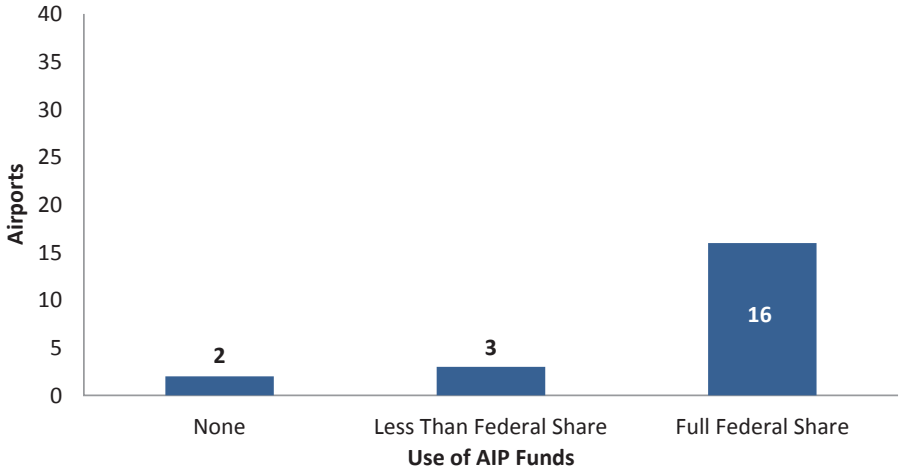
Miscellaneous FAA Administrative Requirements. The miscellaneous administrative requirements addressed in the survey fall into distinct subcategories. Two requirements—consultant selection and use of GIS—are directly related to AIP-eligible projects; the funding sources for these requirements are presented together. The other two requirements—modifications to snow and ice control plans and modifications to airport emergency plans—are administrative or operational in nature and are generally not eligible for AIP funds.

Figures 18 and 19 show the use of AIP and PFC funds, respectively, to finance the costs of consultant selection requirements



Total count may include multiple responses for individual airports

Figure 17. PFC funding levels for initial cost of requirements for vehicle operations.



Total count may include multiple responses for individual airports

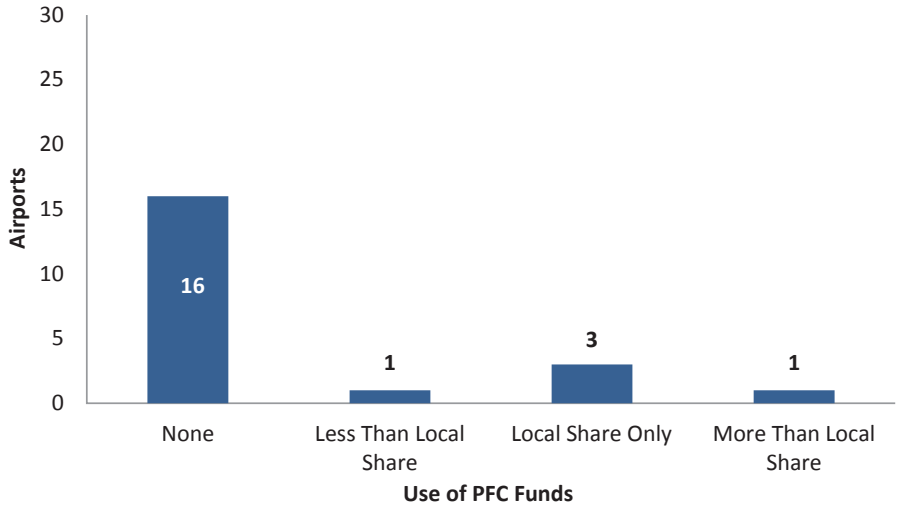
Figure 18. AIP funding levels for initial costs of consultant selection and GIS requirements.

and the requirements for the use of GIS techniques and data. They include multiple responses from individual airports, i.e., the same airport may have incurred costs for compliance with both requirements. A substantial majority of airports (16 out of 21) received the full federal share of AIP grants for their compliance projects, and only two airports received no AIP funding. A majority of airports (16 out of 21) reported using no PFCs to fund the costs of the consultant selection and GIS requirements.

The pattern of funding for modifications to snow and ice control plans and modifications to airport emergency plans reflects the differences in AIP (and hence PFC) eligibility. Thirteen out of 14 airports reported using only airport funds (other than PFCs) to finance the initial costs of compliance with the requirements for snow and ice control plans. One airport received an AIP grant for the full federal share and used PFCs to finance its local matching share. Twenty-six airports reported incurring costs to meet new requirements for airport emergency plans, and all 26 used airport funds to finance the full initial costs of compliance.

These results are consistent with treatment of preparing and updating these plans as operational or administrative activities ineligible for AIP and PFC funding.

DOT DBE Requirements. Eight airports incurred initial costs for compliance with the new airport concession



Total count may include multiple responses for individual airports

Figure 19. PFC funding levels for initial costs of consultant selection and GIS requirements.

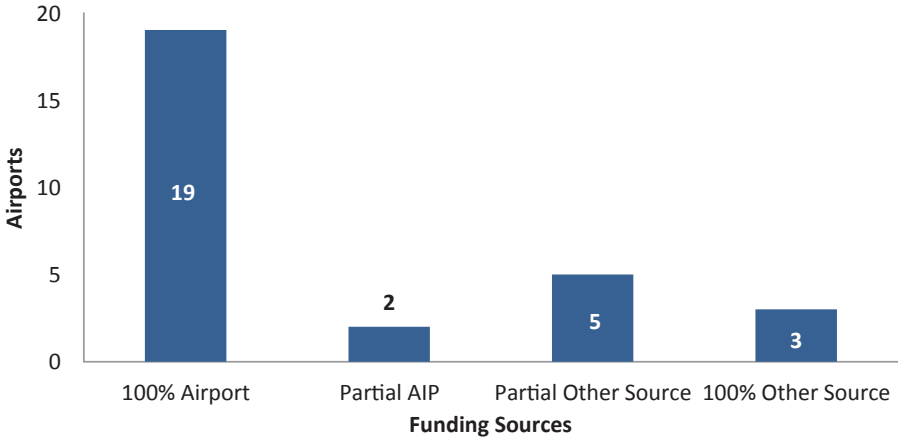


Figure 20. Funding sources for recurring costs of requirements for vehicle operations.

DBE requirements. Seven relied entirely on airport funds to pay these costs. One airport received an AIP grant for 75 percent of compliance costs and used PFCs to pay for the balance.

All four airports that incurred initial costs for compliance with the DBE project participation requirements relied entirely on airport funds to pay these costs.

One airport reported that the FAA considers DBE compliance to be a project administrative cost that can be reimbursed with AIP funds (and hence PFCs). The results above suggest that this interpretation of eligibility is not being widely followed in the small airport community.

Recurring Costs

FAA Requirements. With one exception—vehicle operations—AIP grants and PFCs are not used to finance the recurring costs of FAA requirements. Airports relied in most cases entirely on airport funds. A small number of airports (five in total) relied on third-party funding to cover recurring compliance costs. One airport (out of 14 total) reported receiving an AIP grant to pay a portion of its recurring Part 139 compliance costs.

Figure 20 summarizes the sources of funding used by small airports to pay the recurring costs of the FAA requirements on vehicle operations.

While the majority (19 out of 29) of airports used airport funds to pay the full cost of compliance, 10 airports were able to obtain funding from other sources, including two that received AIP funds. The prevalence of airport funds to finance recurring costs is consistent with the typical status of recurring costs as operational or administrative.

DOT DBE Requirements. Seven out of eight airports used airport funds (other than PFCs) to finance the full recurring costs of airport concession DBE compliance. The eighth airport used a combination of AIP (75 percent) and PFC (25 percent) funds.

Three out of four airports used airport funds (other than PFCs) to finance the full recurring costs of project DBE requirements. The fourth airport used a combination of AIP (95 percent), PFC (2.5 percent) and other (2.5 percent) funds.

CHAPTER 4

Cost Impacts from Environmental Requirements

This chapter discusses the environmental actions with the greatest potential to result in cost-related impacts to small airports. A more detailed analysis of the cost data obtained for environmental requirements appears in Technical Appendix 3.

4.1 Published Cost Estimates

The research team found cost-related information from published sources for some of the regulatory environmental actions identified in the *Federal Register* notices and reports prepared to comply with EO 12866 and the RFA (refer to Section 3.1). Table A-2 presents available published cost information for the environmental requirements. Fourteen of the 39 items listed include specific cost projections. The remaining regulatory environmental actions either did not have a significant economic impact triggering an economic analysis or did not have cost-related publications prepared or obtainable.

For some of the regulatory actions with cost data, it was possible to estimate the specific cost impact on each affected entity. For other regulatory actions, only annual national costs or annualized costs over a period of years was presented. Eleven of the regulatory actions with cost data had multiple cost components with costs projected separately for each component. A "rolled up" annual cost could not be calculated.

Eleven regulatory actions had projections of minimal costs. For these actions a zero value was assigned in the cost column of Table A-2. There were no published cost estimates for 14 compliance actions (six regulatory actions, seven FAA Orders/ACs, and EO 13158). These actions are indicated by a dash in the cost column.

4.2 Airport Population Affected by Requirements

The environmental actions identified for the study period encompass a variety of regulatory topics and programs. As with the other areas described in this report, identifying the airport population subject to environmental regulations adopted during the study period is not straightforward. For example, a regulatory requirement may apply to some airports but not others. When requirements apply, compliance is typically achieved on an airport-specific basis and based on existing infrastructure and feasible/cost-effective best management practices or controls. Compliance actions are influenced by the environment surrounding the airport and regional environmental concerns. Each airport's level of upfront planning or coordination also varies, and this effort can ultimately affect overall costs. As a result, the Phase 1 survey questions did not focus exclusively on the requirements adopted during the study period. Rather, the questions were related to typical activities; plans or documents; and permits, certifications, or registrations related to the actions identified for the study period.

The Phase 1 survey questionnaire identified 33 activities that could trigger environmental requirements in the areas addressed during the study period. Technical Appendix 3 presents data on the percentage of airports involved in each of the activities. Figure 21 summarizes responses to the questions and activities for which cost data is discussed in this chapter.

The Phase 1 survey questionnaire identified 13 environmental plans or documents that airport operators might be required to prepare; the data on the percentage of airports actually preparing these documents and plans is presented in Technical Appendix 3. Figure 22 summarizes the results for the nine environmental plans or documents for which cost data is discussed in this chapter.

The Phase 1 survey questionnaire identified 16 typical permits, certifications, or registrations applied for or held by airports to meet regulatory requirements. Technical Appendix 3 provides data on the percentage of airports that reported holding or applying for these documents. Figure 23 provides the participation rates for the four items for which cost data was collected in the Phase 2 survey.

The full impact of regulatory changes in some cases may depend not only on the regulatory changes themselves, but

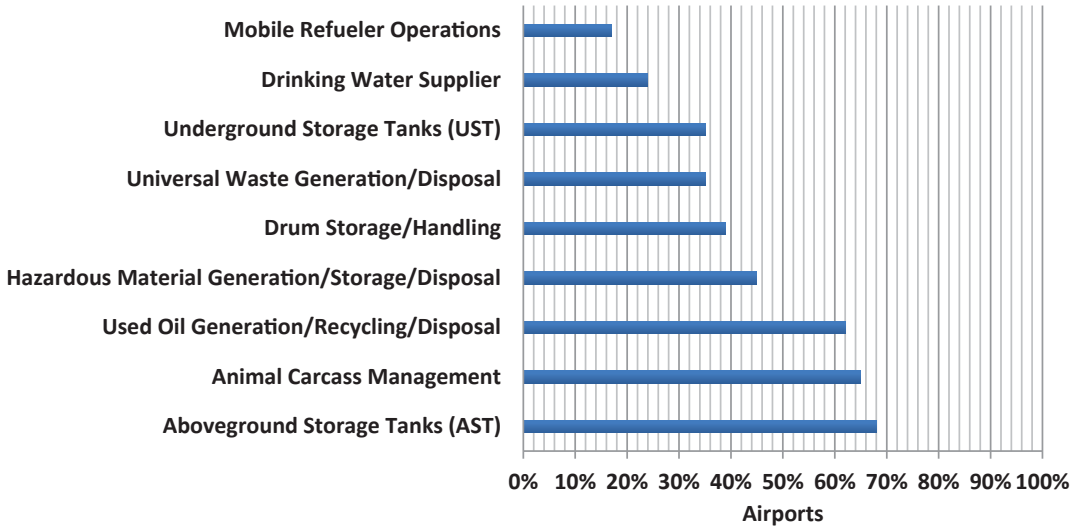


Figure 21. Airport operator participation in environmentally regulated activities for which cost data was generated.

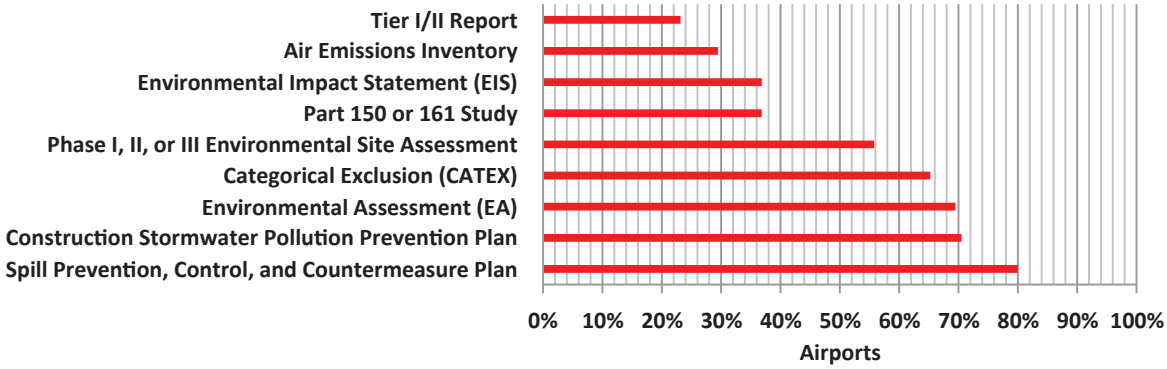


Figure 22. Airport participation in preparing environmental plans and documents for which cost data was generated.

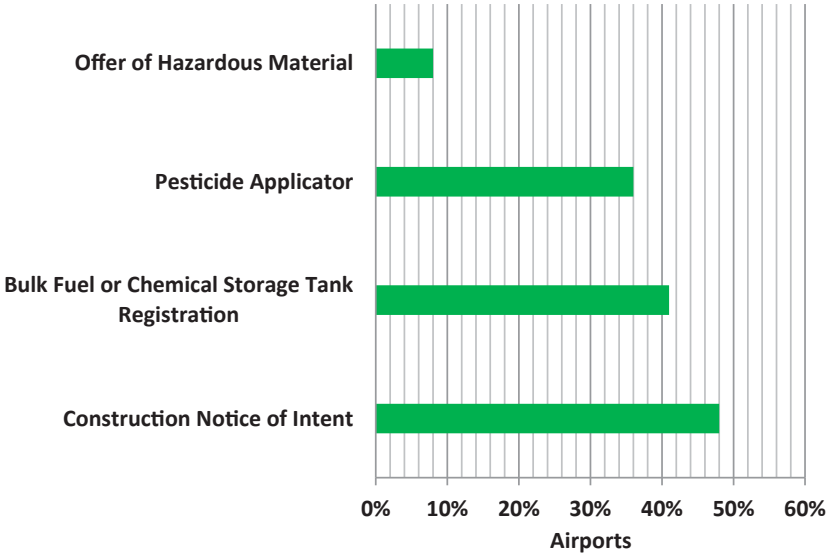


Figure 23. Airports applying for or holding environmental permits, certifications, or registrations for which cost data was generated.

also on links between airport operations like those listed in Figure 21 and documents listed in Figures 22 and 23. Particularly, rule amendments and regulatory guidance related to the SPCC rule, stormwater programs, NEPA documentation for airport actions, and environmental site assessments (ESAs) were promulgated during the study period. A summary of the regulatory changes is provided in the following sections. A summary of other regulatory changes made during the study period is provided in Technical Appendix 3.

4.2.1 Bulk Oil Storage Operations and Spill Prevention, Control, and Countermeasure

The SPCC rule was amended in 2002, 2006, 2008, and 2009 to provide increased clarity, tailor requirements to particular industry sectors, and streamline certain requirements for facility owners or operators subject to the rule. Amendments with a potential impact on airport costs included the following:

- Exemptions
- Administrative Requirements
- Plan Certification
- Records and Testing

A total of 80 percent of airports responding to the Phase 1 survey reported an SPCC plan was prepared for their operations (Figure 22). Operations or activities related to the airport's SPCC program (Figure 21) include:

- Aboveground storage tanks—68 percent
- Underground storage tanks—35 percent
- Mobile refuelers—17 percent
- Drum storage and handling—39 percent

In addition to the federal SPCC regulations, state or local agencies may require bulk fuel or oil storage tanks to be registered with the agency. A total of 41 percent of airports reported being responsible for registering bulk storage tanks (Figure 23), which may include chemical storage. Chemical storage tanks are not subject to state registration requirements for petroleum storage.

4.2.2 Construction Stormwater Requirements

EPA and/or state environmental/natural resource agencies require notification prior to commencement of development activities through submittal of a notice of intent (NOI) for stormwater runoff from construction sites. As part of authorization under the NOI, most state agencies also require preparation and implementation of a construction stormwater pollution prevention (SWPP) plan to minimize impacts on stormwater discharges from construction sites. Prior to 2009, numeric effluent limitation guidelines (ELGs) were not established for stormwater discharges.

On December 1, 2009, EPA established a numeric ELG for stormwater discharges from construction sites. However, EPA has stayed the numeric limitation pending future rulemaking.

FAA AC 150/5370-10, *Specifying Construction of Airports,* was also issued during the study period and primarily incorporates information related to airport safety, design, and construction standards. The AC also incorporates information related to controls to implement during earthwork activities to help minimize stormwater pollution. Use of the AC is mandatory for AIP- or PFC-funded projects.

Construction activities at an airport of any size are almost inevitable, and 48 percent of airports responding to the Phase 1 survey reported preparing a construction NOI (Figure 23). Seventy-one percent of airports also reported preparing a construction SWPP plan (Figure 22).

4.2.3 National Environmental Policy Act Requirements

The FAA relies on two guidance documents in its implementation of NEPA. Order 1050.1E, *Environmental Impacts: Policies and Procedures,* sets the agency-wide protocol for implementing NEPA. The FAA updated this order twice during the study period (Table A-2, Items 24 and 25). Order 5050.4B, *NEPA Implementing Instructions for Airport Actions* (2006), supplements 1050.1E and provides specific guidance for evaluating potential environmental effects resulting from major FAA actions affecting airports (Table A-2, Item 26). The revisions to the two orders updated thresholds for impacts requiring additional analyses and added new projects to the list of Categorical Exclusions (CATEX).

The analyses to support NEPA are tailored to the type of project and necessary documents that demonstrate the FAA has appropriately evaluated the environmental impacts of a proposed action and its reasonable alternatives. Specifically, a CATEX applies to actions that do not individually or cumulatively have a significant effect on the environment. Most FAA actions affecting airports qualify for a CATEX.

If the proposed action does not meet the criteria for a CATEX, preparation of an Environmental Assessment (EA) begins. If no significant impacts are identified from the EA, the FAA will issue a "finding of no significant impacts," and the airport is able to undertake the action. If significant impacts are identified or likely based on the type of action, an Environmental Impact Statement (EIS) may be required. Projects such as major runway extensions trigger an EIS.

In the Phase 1 survey, the following percentages of airports reported participating in the NEPA review process (Figure 22):

- Categorical Exclusion—65 percent
- Environmental Assessment—69 percent
- Environmental Impact Statement—37 percent

As expected, a higher percentage of small airports report completing a CATEX and EA compared to an EIS. Proposed projects qualifying for an EIS are generally limited at small airports primarily based on the level of operations and need for new or updated facilities. The higher percentage of airports participating in EAs than participating in CATEXs is not consistent with the overwhelmingly high percentage of FAA actions affecting airports qualifying for a CATEX. The most likely explanation is that in many cases, the FAA can make the CATEX determination without the airport's participation.

4.2.4 All Appropriate Inquiries (Land Acquisition)

40 CFR Part 312 establishes procedures to protect potential property purchasers from buying property that may have existing environmental contamination under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The rule includes criteria for innocent landowner defense through conduct of "all appropriate inquiries" (AAI) into the previous ownership and uses of the property. EPA amended the AAI standards three times during the study period.

Airports must provide a Certificate of Environmental Site Assessment to the FAA after conducting a Phase 1 ESA when purchasing properties using AIP funds. Airports should also consider performing ESAs when purchasing any property as a standard practice to prevent encumbering liabilities of previous owner's activities. Fifty-six percent of airports responded that an ESA has been prepared (Figure 22).

4.2.5 FAA Noise Compatibility Program (including land acquisition)

The FAA Noise Compatibility Program (14 CFR Part 150) provides funding for airports to develop and implement noise compatibility programs. The purchase of land for noise compatibility or for development is subject to uniform federal requirements on land acquisition. The FAA treats the administration of the land acquisition requirements as an environmental issue. Thirty-seven percent of airports reported a noise study was conducted (Figure 22).

During the study period, the FAA issued two PGLs related to Part 150—PGL 03-02 (November 12, 2003), requiring periodic updates or revalidation of noise exposure maps (NEMs) (Table A-1, Item 23), and PGL 08-02 (February 1, 2008), requiring development of noise land reuse plans for land acquired for noise compatibility with AIP funds (Table A-1, Item 101). The DOT implements the land acquisition through regulation 49 CFR Part 24. The DOT amended Part 24 during the study period, and the FAA's Airport Planning and Environmental Division revised its implementing guidance to incorporate the rule changes (Order 5100.37B) (Table A-1, Items 148 and 69, respectively). The amendments to the regulation were intended to bring Part 24 up to date, improve service to property owners, and reduce the costs of government regulation.

Figure 24 summarizes the percentage of airports affected by these modifications.

Seventeen percent of responding airports reported revising their NEMs in response to the new guidance on this subject. Sixteen percent reported acquiring noise land with AIP funds and were potentially required to complete a noise reuse plan.

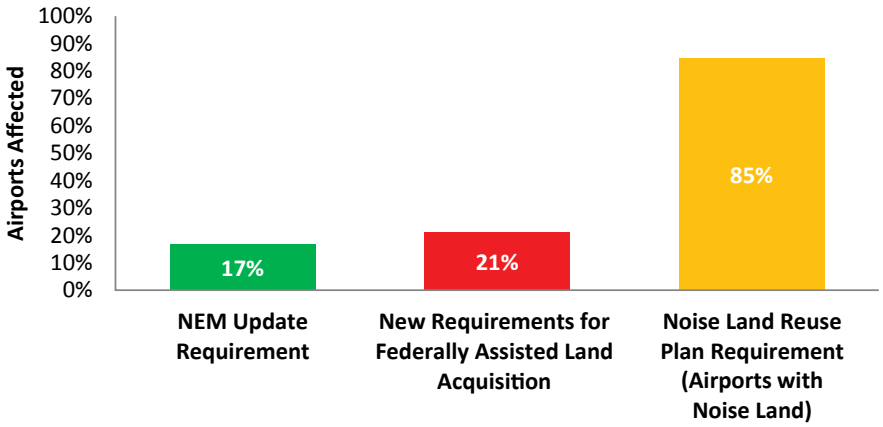


Figure 24. Airports affected by modifications to noise compatibility and land acquisition requirements.

Eighty-five percent of these airports had done so. Forty percent of responding airports reported acquiring real property with AIP funds for any purpose and were potentially affected by the revisions to Part 24 and the implementing guidance. Twenty-one percent of these airports reported being affected by the revisions to the regulations and guidance on federally assisted land acquisition.

4.3 Unit Cost Estimates from Phase 2 Survey Results

Questions for the Phase 2 survey built upon the Phase 1 information by focusing on initial/capital and ongoing operating costs associated with implementing an activity or preparing a plan/document/permit. The survey was also supplemented by telephone interviews and the case studies. Costs were totaled to indicate the overall costs associated with compliance, and not necessarily the incremental costs of new requirements or regulatory changes. It is important to note that reported costs related to operational activities may be incurred more than once (i.e., monthly, annually, etc.).

The complete list of environmental actions and reported costs is presented in Technical Appendix 3. The following activities were determined to contribute to the majority of costs for the small airport population, based on the interquartile mean as the measure of average costs:

- Bulk oil storage (aboveground storage tanks and mobile refuelers)
- Construction stormwater
- NEPA-related documents (EISs and EAs)
- All appropriate inquiries (land acquisition)
- Noise compatibility

Table 7 summarizes the costs in each of the categories listed above. A total cost for each individual activity or requirement listed in the table is presented. In many cases, a particular activity or requirement may have multiple cost drivers. As with the FAA requirements in Chapter 3, each individual airport may not have experienced all of the cost drivers that contribute to the average total cost for a requirement. The table presents the interquartile mean as the measure of average costs and 25th- and 75th-percentile values to indicate the typical range of costs based on the interquartile range. The use of these measures is explained in Section 3.3.

For bulk petroleum storage and SPCC plans, the installation of equipment and controls and equipment/material replacement for aboveground storage tanks and mobile refueler spill prevention are the primary reported cost drivers. The cost of the SPCC plan itself is relatively minor (less than 25 percent of the cost of complying with requirements for aboveground storage tanks and mobile refuelers). SPCC plan costs include annual training. The reported average annual cost of training is $4,000, as reflected in Technical Appendix 3. This result is higher than the range of published estimates for training costs ($1,930 to $3,650 per year).

In contrast, for construction stormwater requirements, the initial registration/application requirements for a construction NOI are the primary cost driver ($50,000). The cost of required controls, equipment, or mitigation is modest but may increase as a result of compliance with future construction stormwater ELGs. In addition, as reflected in Technical

Table 7. Summary of per-airport costs of significant environmental requirements.

Requirement(s)	Estimated Cost of Compliance		
	25th Percentile	75th Percentile	Interquartile Mean
Bulk Petroleum Storage and SPCC Plans			
Mobile refueler operations	$87,100	$210,243	$121,000
Aboveground storage tanks	$44,625	$128,125	$77,750
SPCC plan	$5,328	$51,750	$15,452
Construction Stormwater Requirements			
Construction Notice of Intent	$51,920	$110,640	$81,280
Construction SWPP plan	$8,000	$19,000	$10,417
NEPA Requirements			
Environmental Assessment	$44,000	$419,588	$152,102
Environmental Impact Statement	$13,500	$378,000	$48,000
Categorical Exclusion	$2,125	$3,325	$2,650
All Appropriate Inquiries			
Phase I, II, or III Environmental Site Assessment	$33,250	$74,250	$38,500
Noise Compatibility			
Noise exposure map update requirement	$25,250	$150,025	$74,175
Noise land inventory and reuse plan requirement	$2,375	$29,051	$3,600

Appendix 3, the average cost of preparing and submitting a construction SWPP is only 12 percent of the total costs per airport reported for a construction NOI. However, the survey results are not consistent with airport field experience of preparing construction NOIs. This experience suggests that fees associated with NOI submittals are typically less than $500, with the contractor preparing the NOI and incorporating the fee into the contract price.

As presented in Table 7, the total average cost for an EA was $152,102, more than three times higher than the average cost of an EIS at approximately $48,000. The greater costs reported for an EA are attributed to the additional mitigation or controls reported as part of proposed projects. Although studies, mitigation, and/or controls are also typically applicable to projects qualifying for an EIS, it appears that airports did not report this information for an EIS. However, the average cost of preparing the EA itself is reported at $60,000. This is 41 percent higher than the average cost of preparing an EIS ($42,500). The results are unexpected, because the procedures and types of analysis required for an EIS is generally more detailed than what is required for an EA.

The average cost associated with preparation of a CATEX ($2,650) is much lower compared to an EA or EIS. Inclusion of additional CATEXs and triggering thresholds in the updated FAA Orders, as discussed above, likely saved many airports money that would have been needed for an EA or EIS.

The average cost of Phase I, II or III ESAs combined, as reflected in Table 7, is $38,500. This figure includes costs for controls, equipment, remediation, mitigation, and specialized training. The average published cost of preparing the ESA itself is $16,750. Estimated costs per Phase I ESA from the regulatory economic analysis ranged from $2,185 to $2,190. Costs for Phase I ESAs for airport and related properties based on industry experience are usually between $5,000 and $9,000. Thus, the survey results show a higher average cost than either agency projections or previous industry experience. The survey question requested airport costs to prepare either a Phase I, Phase II, or Phase III ESA. Therefore, the higher average in the survey could reflect the results of including more complex and costly Phase II or Phase III ESAs.

For the noise compatibility requirements, survey questions focused on the incremental costs of the new requirements. A total per airport cost was not calculated because the compliance actions affected different populations of airports.

Only one airport reported a cost for the changes to the land acquisition requirements. Therefore, the data is not included in the table. The average cost of the NEM update is more than 20 times higher than the cost of developing the noise land inventory and reuse plan. This result reflects the need to use a computer-based model, validated with noise exposure measurements, to complete the NEM update.

4.4 Relationship between Costs and Activity Levels

Analyses were performed to determine any possible relationship between the costs of environmental requirements and two measures of activity—passenger enplanements and commercial operations. Because the same airports did not respond to the same individual questions, correlation was evaluated for each aspect contributing to the overall compliance cost (e.g., separate analysis for document development, controls, and training). Correlation of costs was not evaluated for questions that had three or fewer responses because of the lack of statistical reliability of the results. Section 3.4 describes the process used to evaluate the relationship between requirements and activities in more detail.

After excluding the highest and lowest costs, no relationship was found between environmental compliance costs and activity level measured by either enplanements or commercial operations. Of the most costly environmental compliance actions, four involve preparation of a plan, report, or study, which does not depend on airport operations or enplanements. For example, costs to develop an EA vary depending on the amount of data readily available, type of project, and level of coordination with public and regulatory authorities, etc., not on the number of operations or enplanements.

For bulk storage operations, one might expect compliance costs to increase with fuel use, which in turn increases with airport operations or enplanements. However, some small airports contract out aircraft fueling and only utilize bulk storage tanks for minor equipment or vehicle maintenance activities. In these instances, costs are too small to be correlated with enplanements and operations. The number of responses for mobile refueler activities was too small to perform correlation analysis.

4.5 Industry Cost Impacts of Environmental Requirements

Table 8 summarizes the industry cost impacts for the five categories of environmental requirements addressed in Table 7. Industry cost impacts for environmental requirements were determined using the process described in Section 3.5. Cost per airport was used, because there did not appear to be a relationship between cost and activity (after accounting for the impact of outliers and qualitative considerations).

Reported costs in many cases represent full compliance costs, not the incremental costs of modifications or new requirements added during the study period. As shown, total industry costs for the significant environmental requirements are $94.5 million. The most costly compliance category is bulk petroleum storage and SPCC plans with an overall cost of

Table 8. Summary of industry cost impacts of significant environmental requirements.

Requirement(s)	Estimated Cost per Airport (Interquartile Mean)	Estimated Industry Environmental Cost		
		Airports Subject to Requirement	Airports Affected by Requirement[1]	Industry Env. Cost
Bulk Petroleum Storage and SPCC Plans				
Aboveground storage tanks	$77,750	310	68%	$16,390,000
Mobile refuelers	$121,000	310	17%	$6,377,000
SPCC plan	$15,452	310	80%	$3,832,000
Total Cost	**$214,202**			**$26,599,000**
Construction Stormwater Requirements				
Construction Notice of Intent	$81,280	310	63%	$15,874,000
Construction SWPP plan	$10,417	310	71%	$2,293,000
Total Cost	**$91,697**			**$18,167,000**
NEPA Requirements				
Environmental Assessment	$152,102	310	65%	$30,648,000
Environmental Impact Statement	$48,000	310	69%	$10,267,000
Categorical Exclusion	$2,650	310	37%	$304,000
Total Cost	**$202,752**			**$41,219,000**
All Appropriate Inquiries				
Phase I, II, or III Environmental Site Assessment	$38,500	310	56%	$6,684,000
Noise Compatibility				
Noise exposure map update requirement	$74,175	129	17%	$1,627,000
Noise land inventory and reuse plan requirement[2]	$3,600	52	100%	$187,000
Total Costs	**$77,775**			**$1,814,000**
Grand Total Significant Environmental Costs				**$94,483,000**

[1] Percentage based on Phase 1 survey results unless otherwise noted.
[2] Per terms of PGL, all airports with AIP-funded noise land required to prepare inventory and plan.

$26.6 million. The most costly individual requirement within this category relates to the operation of aboveground storage tanks at a cost of $16.4 million. This requirement had only the second highest cost on a per-airport basis ($77,750). Because of the high percentage of airports impacted by the requirement, industry costs are the highest.

The least costly separate requirement is the preparation of a CATEX under NEPA. The low industry cost is a result of the low individual cost ($2,650) and the low percentage of airports required to provide CATEX documentation (37 percent).

The average cost for preparation and submission of a construction NOI reported in the survey probably overstates the true industry average. Therefore the industry cost for construction NOIs is probably also overstated.

For noise compatibility, the per-airport cost for the NEM update is 20 times higher than the cost of the noise land reuse plan requirement. The industry cost is only nine times higher because of the low number of airports affected by the NEM requirement.

Technical Appendix 6 includes the estimates of industry costs for environmental requirements with lesser impacts. Additional requirements appear in Appendix B. The total industry costs for these items are $34,743,000. Combining this amount with the total costs presented in Table 8 results in total industry cost impact from environmental requirements of $129,226,000.

4.6 Funding Sources

4.6.1 Potential Funding Sources

A variety of funding sources is potentially available to help airports finance environmental compliance costs. The AIP and the PFC program administered by the FAA are sources of funding for certain requirements. Other federal agencies may also provide funding, either directly or through state programs. State funding sources may also be available. A comprehensive discussion of federal and state funding sources for environmental initiatives is contained in *ACRP Synthesis 24.*

AIP Funding

The AIP statute explicitly provides for AIP eligibility of projects for compliance with the Clean Water Act and the Federal Water Pollution Control Act. Systems for collection of aircraft deicing fluid are also eligible. In addition, funds from the "Noise Set-Aside" established by 49 USC §47117 may be used for defined projects to comply with the Clean Air Act.

The primary use of the Noise Set-Aside is to fund development of NEMs and development and implementation of noise compatibility programs under 14 CFR Part 150. The Noise Set-Aside was potentially available to defray a portion of any increased costs associated with the modifications to Part 150 program requirements, subject to certain conditions.

If a development project is eligible for AIP funding, preparation of the EA or EIS is also eligible for AIP funding as a project formulation cost. Required mitigation measures may also be eligible for AIP funding.

The AIP share of environmental projects at small airports was 95 percent during most of the study period. In FY 2012, the AIP share for most small airports was reduced to 90 percent.

PFC Funding

PFC eligibility for environmental requirements is comparable to AIP eligibility. PFCs can be used to pay the local matching share of AIP-funded projects or can be used to pay the full costs of projects. One difference is that AIP funds (with limited exceptions) can be used to fund Part 150 noise compatibility projects only if the project is included in an FAA-approved noise compatibility program. PFCs can be used for a project that is eligible for approval under Part 150, even if it is not in an approved plan.

Other Federal Funding Sources

ACRP Synthesis 24, Table 1, summarizes federal funding opportunities for environmental initiatives. Eight other federal agencies provide environmental funding. For some of the federal agencies or programs, funds are provided only for voluntary actions, not for mandatory compliance actions.

State Funding Sources

State funds are also available for many environmental initiatives. *ACRP Synthesis 24,* Table 2, summarizes state funding opportunities. Funding opportunities are listed by state and category of initiative. Many of the state program funds are available only for voluntary actions.

State airport grant programs may also be available to fund environmental initiatives. These programs are also summarized in *ACRP Synthesis 24,* Table 2.

4.6.2 Use of Financial Assistance

The Phase 2 survey requested information on cost of compliance with environmental requirements and the amounts funded by or received from third parties. Airports did not specify the sources of third-party funding. Several airports reported receiving funds from third parties for various environmental requirements, including the categories of environmental requirements discussed previously. The reported financial assistance is described in the following paragraphs. Additional information is provided in Technical Appendix 3.

Bulk Oil Storage Operations and SPCC

Two airports reported receiving third-party funds in the amounts of $17,300 and $61,750 to implement the airport's SPCC program. In the first case, the amount was exactly equal to reported cost of preparing the SPCC plan and was 87 percent of the combined cost of the plan and equipment purchases or facility retrofits. In the second case, the amount was 95 percent of the reported cost of equipment purchase or retrofits. This percentage is consistent with receipt of an AIP grant for the capital costs associated with compliance.

Construction Stormwater Requirements

In many cases, stormwater controls implemented as part of an airport's construction SWPP plan also meet the pollution prevention criteria for earthwork activities required under FAA AC 150/5370-10, *Specifying Construction of Airports.* Use of the AC is also mandatory for AIP- or PFC-funded projects. Two airports reported receiving funds associated with the construction SWPP plan from third parties in the amounts of $2,438 and $14,250. These funding amounts represented 97.5 and 95 percent of the cost of preparing the construction SWPP plan, respectively. These percentages are consistent with the receipt of an AIP grant by a small airport, with the former airport receiving additional assistance to cover one-half of the matching share requirement. If the projects triggering the construction SWPP plan were funded with AIP grants, the costs of developing the plan would have been eligible for AIP funding.

National Environmental Policy Act Requirements

Two out of six airports reporting costs for a CATEX also reported receiving third-party funding. One airport received 95 percent of the cost; the other received 97.5 percent. These percentages are consistent with the receipt of an AIP grant by a small airport, with the latter airport receiving additional assistance to cover one-half of the matching share requirement.

Figure 25 depicts the number of airports reporting third-party funding for EAs and EISs. Because many projects triggering EAs or EISs are eligible for AIP funding, the figure presents the data in terms of the federal share of the costs of the EA or EIS. The airports reporting receipt of more than the federal share from third parties probably received additional assistance to pay for the local matching requirement.

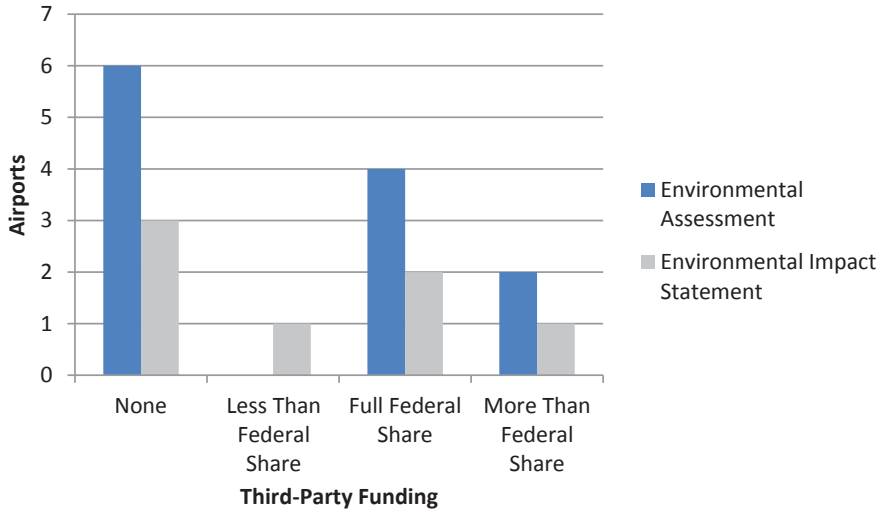


Figure 25. Third-party funding of NEPA documents.

An equal number of airports that conducted EAs received no third-party funding as received at least the full federal AIP share (six each). Three airports performing EISs received no third-party assistance, and three received at least the full federal share. The seventh airport that received third-party assistance received less than the full federal AIP share.

All Appropriate Inquiries (Land Acquisition)

Airports must provide an ESA certificate to the FAA after conducting a Phase 1 ESA when purchasing properties using AIP funds. Three airports reported funding was provided by a third party for work related to Phase I, II, and III ESAs. For two of the airports, the third-party payment was 95 percent of the total costs to prepare the ESA—a figure consistent with AIP funding. The third airport received 50 percent of the reported costs to perform the ESA. It is possible that this percentage represented the share of AIP funding provided by the FAA for the underlying land acquisition project, but the basis of funding cannot be determined with certainty.

FAA Noise Compatibility Program Requirements

Airports reported using only airport funds (other than PFCs) to fund development of noise land inventories and reuse plans.

The analysis of funding for Noise Compatibility Program requirements focuses on the use AIP and PFC funds, similar to the analysis of other FAA requirements in Chapter 3.

Figure 26 summarizes the use of AIP funds. Seven out of eight airports received the full federal share of funds for their NEM updates. One airport did not receive any AIP funding.

Figure 27 summarizes the use of PFCs to fund compliance with the noise compatibility requirements. The same number of airports used no PFCs (four) as used some PFCs. The single airport that used PFCs for more than the local match funded its project entirely with PFCs.

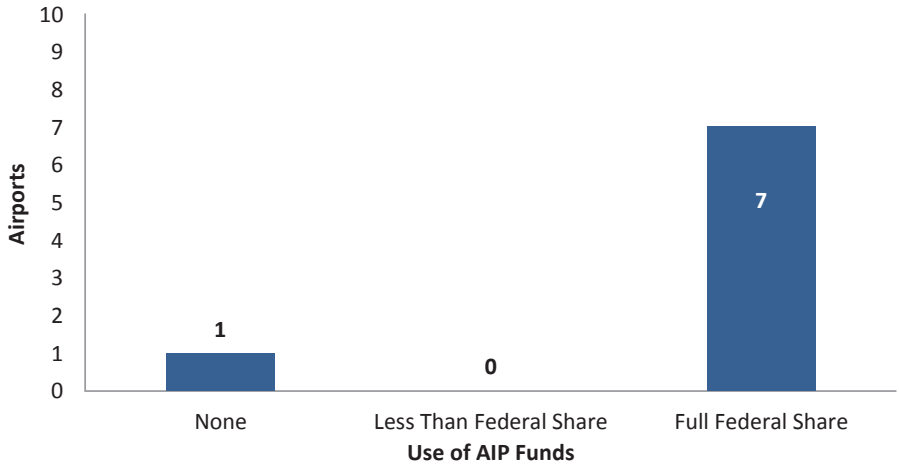


Figure 26. AIP funding levels for noise compatibility requirements.

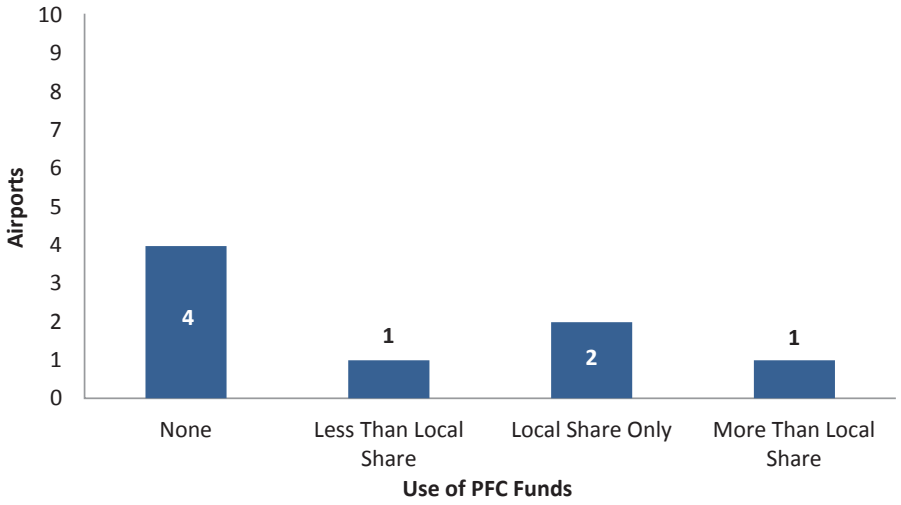


Figure 27. PFC funding levels for noise compatibility requirements.

CHAPTER 5

Cost Impacts from Security Requirements

5.1 Published Cost Estimates

Agency estimates of the cost of compliance with security requirements are limited. One security rulemaking document (Table A-4, Item 21) included a projection of costs. The regulation amended Parts 107 and 108 to expand the scope of the criminal history check requirement. Annual costs to all entities (airports and carriers) were projected to be $2.8 million. The regulation transferring security requirements from the FAA to the TSA (Table A-4, Item 27) noted that the rule would add costs to *aircraft operators* and stated that an assessment of costs would be conducted in the future. None of the other compliance actions listed in Table A-4 included estimates of costs. An assessment of the likely cost impacts of the SDs and emergency amendments would have required a discussion of the nature of these documents, which is SSI.

5.2 Airport Population Affected by Requirements

The security requirements adopted during the study period generally apply to all Part 139 airports. The applicability of specific provisions in some cases may depend on a particular airport's security classification, but the specific requirements generally involve SSI. Because the specific security requirements adopted during the study period mostly involve SSI, the security survey questions focused on whether airports had installed or modified equipment or systems to comply with new security requirements during the study period.

5.2.1 Security Equipment and Access Control Systems

The survey identified six security systems used for access control or used to support access control or security. Figure 28 summarizes the Phase 1 responses. A low of 47 percent of responding airports installed or modified breach prevention systems or equipment. A high of 78 percent installed or modified a physical access system.

5.2.2 Screening Requirements

Following the events of 9/11, passenger and checked baggage screening requirements were enhanced. At many airports, screening facilities or equipment were modified. In addition, in 2006, the CBP issued new guidance on design and construction for CBP inspection facilities (Table A-4, Item 77).

As shown in Figure 29, 79 percent of airports executed a project for passenger screening, and 78 percent executed a project for checked baggage screening. Only 27 percent of airports reported being affected by the CBP design standards. This lower percentage probably reflects the lack of CBP activities at many small airports.

5.3 Unit Cost Estimates from Phase 2 Survey Results

Technical Appendix 4 provides detailed cost information on the requirements discussed above. The data is presented in a series of tables with discussion. The format of the tables and discussion is comparable to the format used in Technical Appendix 2 for data on FAA and DOT requirements, as described in Section 3.3.

Table 9 summarizes the most significant initial costs of security equipment and access controls and summarizes the initial costs of complying with passenger, baggage, and immigration and customs screening requirements, based on per-airport costs. A per-airport total cost for screening and access control equipment cannot be calculated, because each responding airport did not acquire the same kinds of equipment. There did not appear to be a relationship between the costs of any of the individual security requirements and either commercial operations or passenger enplanements. Therefore the data is presented only for cost per airport.

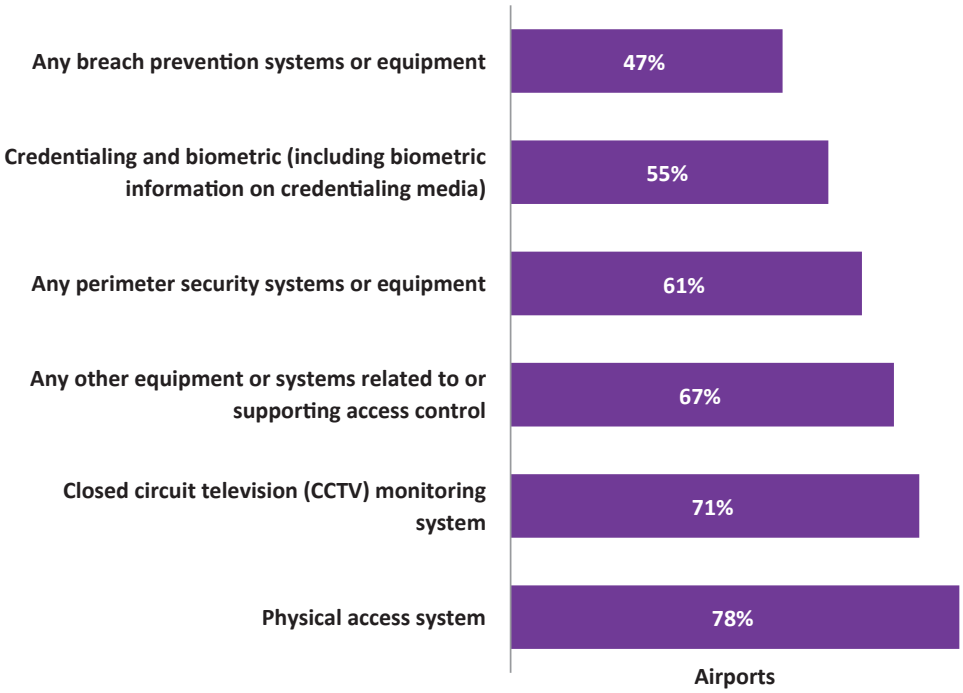


Figure 28. Airports installing security equipment or access control systems.

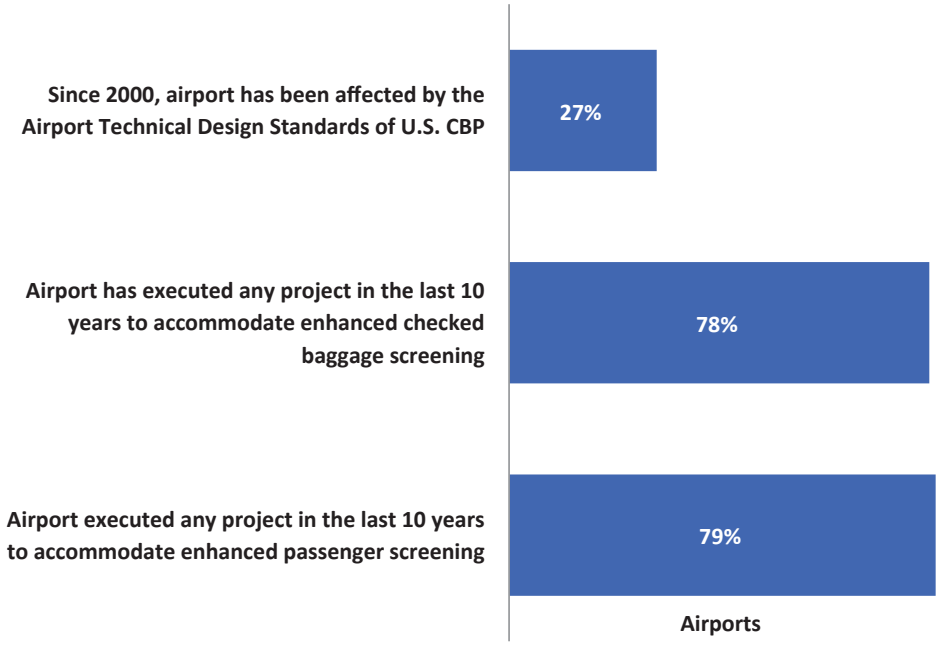


Figure 29. Airports executing passenger or baggage screening and CBP projects.

Table 9. Summary of initial per-airport costs of security requirements.

Requirement(s)	Estimated Cost of Compliance		
	25th Percentile	75th Percentile	Interquartile Mean
Security Equipment & Access Control (Most Costly)			
Any other equipment or systems related to access control	$640,000	$1,880,000	$1,260,000
Physical access system	$176,531	$1,576,162	$538,137
Screening Equipment and Facilities			
Enhanced checked baggage screening	$121,695	$2,500,000	$768,055
Enhanced passenger screening	$55,000	$2,330,000	$637,377
Customs and Border Protection	$275,000	$450,000	$375,000

A summary of recurring costs was not prepared because the survey did not generate sufficient recurring cost data.

As shown in Table 9, the most costly requirement per airport was "any other" equipment or systems related to access control (~ $1.3 million). The second most costly requirement was enhanced checked baggage screening ($768,055). As shown in Technical Appendix 4, the least costly requirement was credentialing and biometric equipment (~ $47,000).

Two other categories of costs were not included in the survey but were discussed in the case studies. First, airports are required to provide law enforcement officer (LEO) presence or availability for passenger screening checkpoints. Second, airports are required to provide screening space to the TSA on a rent-free basis. Airports are entitled to reimbursement for utility costs and certain maintenance costs, but not all airports seek reimbursement.

The case study airports noted the LEO expense, but only one airport, Huntsville, could estimate the costs. Four out of the five case study airports were able to estimate the annual lost rental income resulting from the rent-free space requirement. Figure 30 summarizes the lost revenue reported by these airports. For airports with TSA space funded by AIP grants, the grant assurances preclude charging the TSA rent in any event, however. Also, some airports may include the cost of TSA space in calculating terminal rental rates for airlines.

5.4 Relationship of Costs and Activity Levels

The data was analyzed to determine any relationship between the costs of security requirements and two measures of activity—passenger enplanements and commercial operations, as described in Chapter 3.

Only one security requirement—installation of closed circuit television (CCTV) systems—has a relationship, based on the results of the data analyses. However, even after excluding outliers, the responses are skewed. Three out of 16 responses had costs in excess of $2.1 million, with the next highest cost of only $500,000. Enplanement counts in the sample are also skewed. Oklahoma City had the highest enplanement count

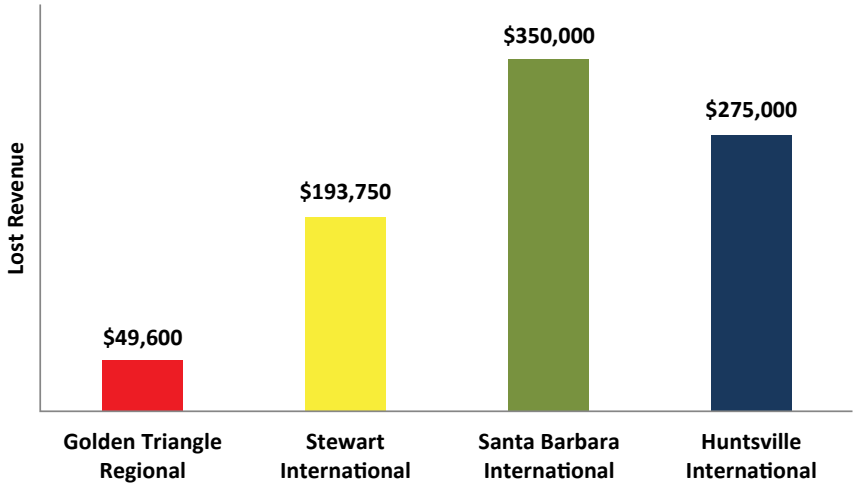


Figure 30. Lost rental revenue from TSA screening space.

at 1.7 million. The second highest passenger count in the sample was only 643,000. Moreover, the cost of a CCTV system is most likely a function of the area and complexity of the terminal layout. The volume of passenger traffic is a significant consideration in the design of terminals, but typically once facilities are constructed, they remain fixed until a major addition or renovation is undertaken, regardless of the year-to-year fluctuation in traffic. Moreover, terminals are often designed to accommodate expected future, not current, traffic levels. The basis for the correlation, thus, appears to be weak.

5.5 Industry Cost Estimates

Industry cost impacts were determined using the same methodology as described in Section 3.3. Because there did not appear to be a relationship between costs and activity levels, industry costs were estimated using average cost per airport based on the interquartile mean. Table 10 summarizes the industry costs of the security requirements included in the survey. The table provides the estimate of the industry costs for the two most costly requirements for security equipment and access control, based on industry costs, and the industry costs for each of the three screening requirements. Because industry costs account for the number of airports affected by individual requirements, Table 10 includes an estimate of the total cost for requirements for security equipment and access control, and total costs for all security requirements.

As shown in Table 10, total initial security compliance costs incurred were ~ $611 million. The most expensive category of security compliance was security equipment and access control at ~ $482 million.

5.6 Funding Sources

Enhanced screening of passengers and baggage after the events of 9/11 has led many airports of all sizes to incur substantial capital costs. In particular, passenger screening checkpoints have been expanded and reconfigured. Baggage handling systems and the facilities housing them have been reconfigured as well to accommodate automated in-line screening of checked baggage. Even where in-line systems were not installed, airports may have incurred expenses to modify ticketing areas to accommodate free-standing bulk explosive detection system (EDS) installations. The TSA is responsible for the costs of acquiring and installing the screening equipment itself. Modification of facilities and baggage handling equipment is the responsibility of the airport—as are any incremental O&M costs (primarily electric utilities and additional law enforcement personnel). Since the passage of ATSA, both the FAA and TSA have administered financial assistance programs for the capital costs associated with passenger and baggage screening.

In addition, airports have incurred costs to upgrade various security systems for access control, perimeter security, and monitoring functions. Also, in 2006, the CBP issued revised standards and guidance for design and implementation of CBP facilities in airports.

Finally airports have incurred added personnel costs to provide enhanced security staffing and patrols and to provide for LEO presence at screening checkpoints.

5.6.1 Potential Funding Sources

AIP and PFC Funding

ATSA made capital development to comply with TSA security requirements eligible for AIP passenger entitlement and

Table 10. Summary of industry cost impacts of security requirements.

Requirement(s)	Estimated Cost per Airport (Interquartile Mean)	Estimated Industry Security Cost: Airports Subject to Requirement	Airports Affected by Requirement[1]	Industry Security Cost
Security Equipment & Access Control				
Any other equipment or systems related to access control	$1,260,000	310	68%	$265,608,000
Physical access system	$538,137	310	78%	$130,122,000
Total costs for all equipment & access control requirements	**$2,235,337**	**310**		**$481,760,000**
Screening Equipment & Facilities				
Enhanced checked baggage screening	$768,055	310	29%	$68,028,000
Enhanced passenger screening	$637,377	310	27%	$54,101,000
Customs and Border Protection	$375,000	310	7%	$6,920,000
Total costs for all screening requirements				**$129,049,000**
Grand Total Security Costs	**$4,015,769**			**$610,809,000**

[1] Unless otherwise indicated, percentage of airports is based on Phase 1 survey results.

discretionary funds. In FY 2002 and FY 2003, AIP funding for security projects increased substantially to support reconfiguration of passenger screening checkpoints and checked baggage handling equipment and facilities. In FY 2002, the federal share of security projects was temporarily increased to 100 percent. Security projects eligible for AIP funding were also eligible for PFC funding. The airport's local matching share or the entire amount of project costs was eligible for PFC funding.

In 2003, Congress limited AIP eligibility for checked baggage screening to AIP passenger entitlement funds. However, in the same fiscal year and the years since, annual FAA appropriation legislation has prohibited use of any AIP funds for these purposes. The projects continue to be eligible for PFC funding.

Facilities to accommodate CBP functions are considered terminal development and are eligible for AIP funding. At small hub airports, only passenger entitlement funds may be used for terminal development. At non-hub airports, discretionary funds may be used as well. Only limited amounts of AIP discretionary funds are made available for terminal development each year. The federal share for AIP grants for terminal development at small airports was 95 percent for most of the study period. Effective in FY 2012, the federal share is 90 percent.

As terminal development, CBP facilities may be funded with PFCs. PFCs can be used as the local match for AIP funds or can be used as an exclusive funding source.

TSA Funding

Since enactment of ATSA, the TSA has provided funds directly to airports to support installation of automated in-line checked baggage EDSs. The legal document supporting the transfer of funds is called an Other Transaction Agreement. Unlike the AIP, there is no statutorily defined federal share for TSA-funded projects. Generally, the TSA determines federal share based on an airport's security category. For Category III and IV airports, which are usually smaller airports, the typical federal share is 95 percent.

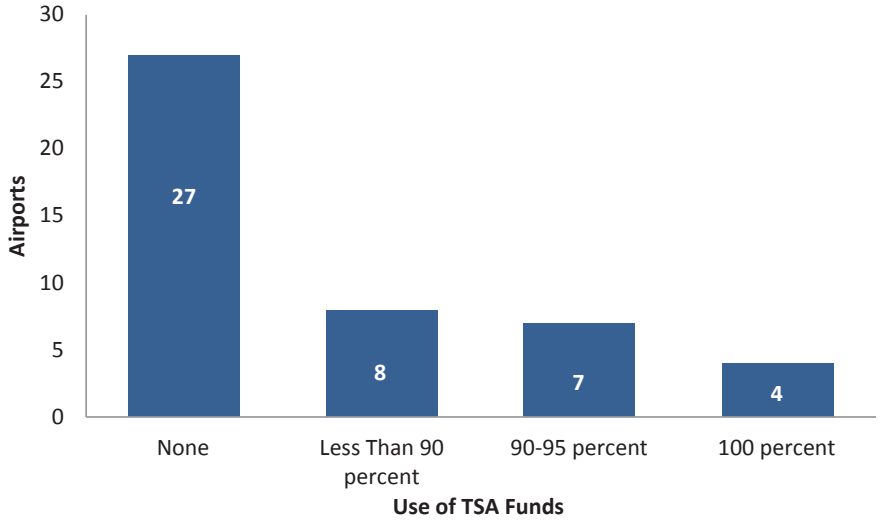
The TSA LEO support program reimburses participating airports for the cost of providing LEOs at screening checkpoints. The amount of reimbursement is based in part on the funds appropriated each year for this purpose, the number of airports participating and each airport's LEO costs.

5.6.2 Use of Financial Assistance

The Phase 2 survey requested information on funding sources for passenger and checked baggage screening systems and for compliance with CBP requirements. The survey did not include questions about funding sources for security and access control equipment and facilities.

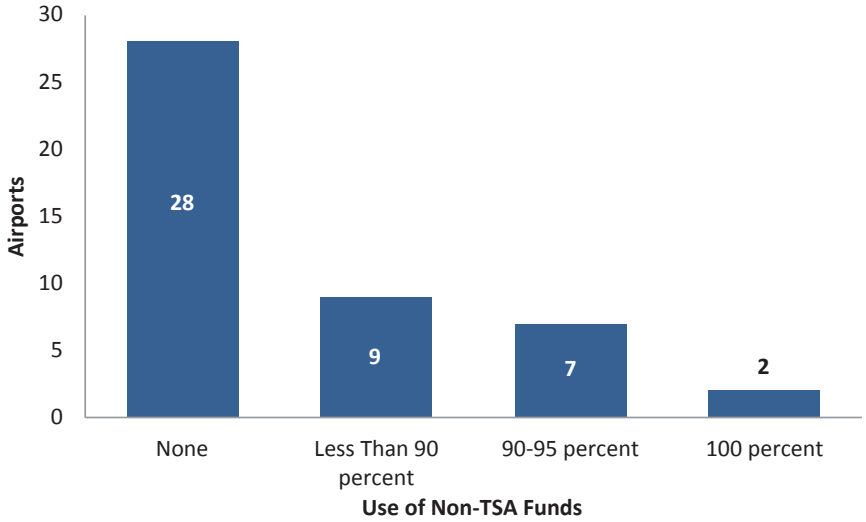
Passenger and Baggage Screening

For passenger and baggage screening, the survey included questions on funding provided by the airport, funding provided by the TSA, and funding provided by other sources. Other sources could include AIP funding, PFC funding, or state funding. Figure 31 summarizes the scope of TSA funding for screening projects during the study period. The counts for passenger and baggage screening are combined. The 90-95 percent bar reflects TSA funding at a share comparable to FAA funding, which is the typical percentage received by



Counts include airports completing both baggage and passenger screening projects

Figure 31. TSA funding levels for baggage and passenger screening projects.



Counts include airports completing both baggage and passenger screening projects

Figure 32. "Other source" funding levels for baggage and passenger screening projects.

smaller airports. Figure 32 summarizes the scope of funding from other sources. Because other funding sources could have included AIP funds until 2003, the same funding levels are used. The 90–95 percent bar reflects the federal AIP share during the study period.

As shown in Figure 31, a substantial majority of airports (27 out of 46) received no TSA funding. Four airports reported receiving 100 percent funding from TSA.

As shown in Figure 32, a similarly large majority (28 out of 46 projects) did not receive funding from other sources. Airports that did not receive either TSA or "other" funding would have used their own resources to finance the projects.

The survey did not include questions about the costs of providing LEO support for screening, including the extent of reimbursement. The case study airports reported that TSA participation is declining while the costs of providing LEO support are rising.

CBP Facility Requirements

Five airports reported initial costs of complying with CBP facility requirements. One airport used PFCs to finance the entire costs of compliance. Two airports used other airport resources to fund the full costs of compliance. Two airports relied entirely on other funding sources.

The survey included a question about recurring costs of compliance with CBP facility requirements. Three airports responded. Two reported funding compliance entirely from airport resources. One airport reported CBP funded the full costs of compliance.

CHAPTER 6

Occupational Safety and Health Requirements

As discussed in detail in Technical Appendix 5, airport operators generally are not subject to direct regulation by OSHA. Nevertheless, airports may be subject to many OSHA requirements through mandatory or voluntary state programs, or through local regulations. For ease of reference, occupational safety and health requirements will be referred to as "OSHA requirements," even though OSHA does not have direct jurisdiction over most airport operators.

Moreover, most requirements adopted during the study period would not have a significant cost impact on small airports. For example, new requirements for welding on stainless steel or other hexavalent chromium-containing products are potentially costly. They require an initial exposure assessment, and possibly engineering controls, training, and medical surveillance. The actual impact on airports is unclear. On the one hand, 98 percent of responding airports relied on contractors to perform construction and renovation work, as will be discussed later in the chapter. On the other hand, 59 percent reported being responsible for welding in the environmental portion of the survey, as discussed in Chapter 4.

Six of the listed OSHA standards primarily affect the construction industry. As noted, 98 percent of responding airports contract out construction. In these cases, the construction company—not the airport—bears the cost of complying with the construction regulations, such as those governing high visibility, cranes, signs, barricades, and steel erection. To the extent that airports use contractors for construction, airports would not be directly responsible for OSHA compliance. Rather compliance costs would fall on airport contractors, who would allocate the costs among all of their contracts.

The questions on this subject focused on two areas. First, the survey focused on whether the respondents had implemented various policies or programs that could generate additional compliance costs for occupational safety and health. Second, the survey focused on the types of work or activities airport employees perform. Many of the OSHA requirements adopted during the study period involve construction or construction-related activities.

6.1 Airport Population Affected by Requirements

As shown in Figure 33, only 9 percent of responding airports reported adding staff to comply with occupational safety and health requirements. Four percent are pursuing OSHA's Voluntary Protective Program certification, and 13 percent use OSHA's On-Site Consultation Program. Thirty-nine percent reported paying their workers compensation carrier for occupational safety and health services.

In addition, 43 percent of responding airports reported they track staff hours spent in health and safety training, and 9 percent reported they tracked expenditures for employee protective equipment. Costs reported by airports in these groups are discussed in the next section.

The survey included four questions on the use of airport employees and the use of contractors. As shown in Figure 34, 98 percent of responding airports reported using contractors for construction and renovation. However, 26 percent reported also using airport employees for new construction and 22 percent reported using airport employees for building renovation. Forty percent of responding airports reported their maintenance staff entered confined spaces. This situation could trigger the requirement to provide personal protective equipment to the maintenance staff.

6.2 Published Cost Projections

Thirteen of the 21 regulatory and compliance requirements listed in Table A-5 have OSHA estimates of compliance costs. For 11 of the items, OSHA published an estimate of annual cost per affected firm. For these 11 items, the highest cost per affected firm was $557. This figure suggests a modest impact. One item (Table A-5, Item 11) rescinded a requirement, representing total projected savings of $29.5 million.

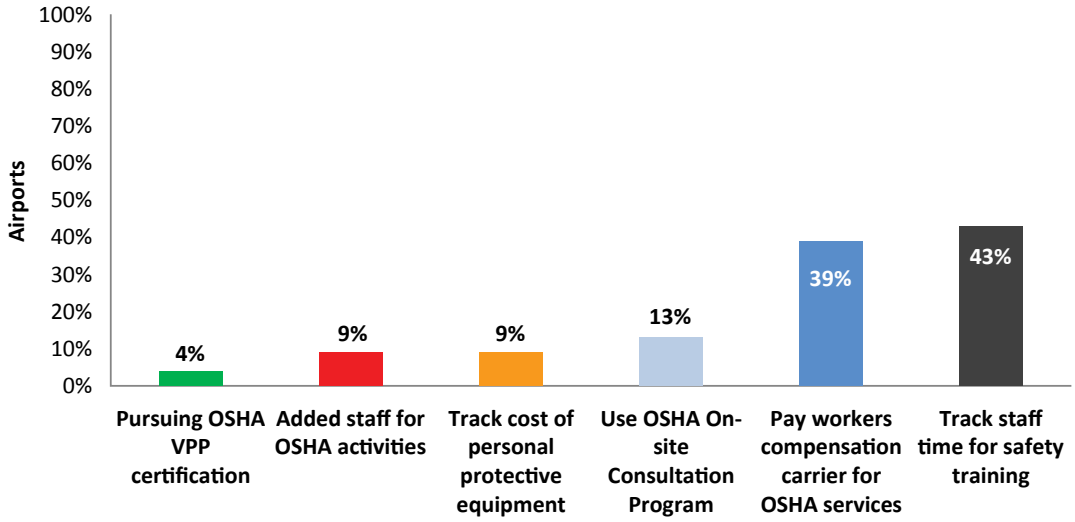


Figure 33. Airports reporting programs generating OSHA costs.

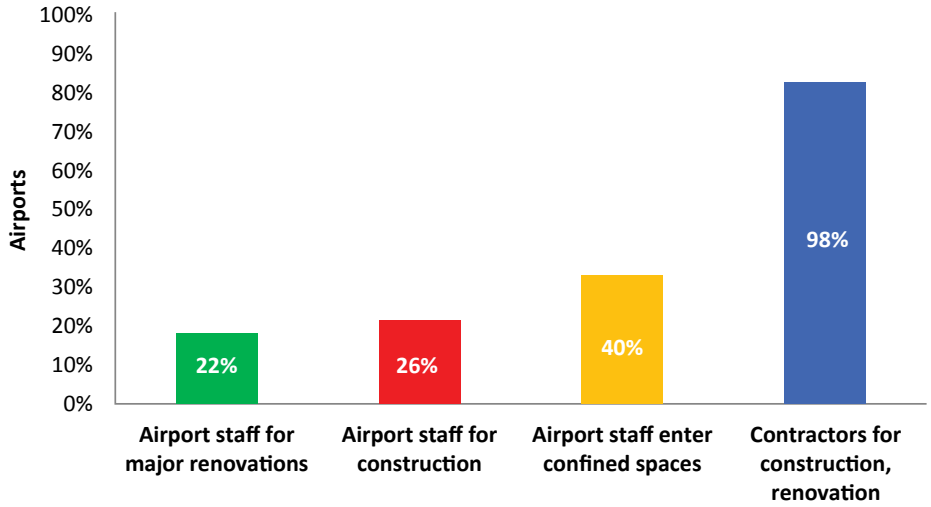


Figure 34. Use of airport staff and contractors for OSHA-regulated programs.

6.3 Unit Cost Estimates from Phase 2 Survey Results

Table 11 summarizes costs reported by airports related to general programs that may generate OSHA costs. Table 12 summarizes the OSHA compliance costs associated with construction and with the use of employees in confined spaces. Because of the disparate nature of the requirements and number of airports reporting costs, the costs of the individual items were not totaled. Costs are presented on a per-airport basis, because there did not appear to be a relationship between compliance costs and activity levels.

The costs reported in the survey are total compliance costs, not the incremental costs of complying with new requirements

Table 11. Summary of per-airport costs of OSHA-related programs.

Requirement(s)	Estimated Cost of Compliance		
	25th Percentile	75th Percentile	Interquartile Mean
Cost of additional staff to administer OSHA requirements[1]	$25,000	$25,000	$25,000
Cost of using insurance carrier for OSHA functions[1]	$125,000	$125,000	$125,000
Cost of staff training for OSHA	$4,900	$11,438	$9,138
Cost of personal protective equipment for employees	$1,000	$12,000	$6,267

[1] Only one airport provided cost data for this requirement.

Table 12. Summary of per-airport health and safety costs associated with construction and maintenance.

Requirement(s)	Estimated Cost of Compliance 25th Percentile	75th Percentile	Interquartile Mean
Compliance costs for employees entering confined spaces[1]	$3,813	$3,938	$3,875
Compliance costs for employees performing new construction[1]	$1,250	$1,750	$1,500
Compliance costs for employees performing major building renovations	$750	$1,500	$1,000

[1] Interquartile mean value cannot be determined for items with two responses. Mean value is used as a proxy.

adopted during the study period. Thus, comparison with OSHA's published cost estimates cannot be made.

As shown in Table 11, the most costly single item reported was payment to the airport's insurance carrier for OSHA functions—at $125,000. However, only a single airport reported costs in this area. The least costly requirement was providing personal protective equipment to employees—at $6,267.

Of the compliance costs summarized in Table 12, the highest reported costs were for compliance with requirements for employees entering confined spaces ($3,875). However, only two airports provided cost data.

6.4 Relationship of Costs and Activity Levels

Analyses were performed to determine any relationship between the costs of OSHA requirements and two measures of activity—passenger enplanements and commercial operations, as described in Chapter 3. After excluding the highest and lowest costs, none of the OSHA compliance requirements that were analyzed appear to be related to costs and either passenger enplanements or commercial operations.

6.5 Industry Cost Estimates

Industry cost impacts were determined using the same methodology as described in Section 3.3. Because there did not appear to be a relationship between costs and activity levels, industry costs were estimated using average (interquartile mean) cost per airport. Table 13 summarizes the industry costs of the OSHA requirements for each of the two broad categories of costs summarized in Tables 11 and 12. Because industry cost estimates account for the number of airports affected by individual requirements, Table 13 includes estimates of the total compliance costs.

As shown in Table 13, the most costly single OSHA-related item for the airport industry was for the use of airports' insurance carriers for OSHA compliance at around $8.8 million.

Table 13. Summary of industry cost impacts of OSHA requirements.

Requirement(s)	Estimated Cost per Airport (Interquartile Mean)	Estimated Industry OSHA Cost: Airports Subject to Requirement	Airports Affected by Requirement[1]	Industry OSHA Cost
OSHA-Related Programs				
Cost of additional staff to administer OSHA requirements	$25,000	310	9%	$698,000
Cost of using insurance carrier for OSHA functions	$125,000	310	23%	$8,765,000
Cost of staff training for OSHA[2]	$9,138	310	43%	$1,218,000
Cost of personal protective equipment for employees[2]	$6,267	310	50%	$971,000
Total Costs				**$11,652,000**
Health and Safety Costs Associated with Construction				
Compliance costs for employees entering confined spaces	$3,875	310	40%	$481,000
Compliance costs for employees performing new construction	$1,500	310	26%	$121,000
Compliance costs for employees performing major building renovations	$1,000	310	22%	$68,000
Total Costs				**$670,000**
Grand Total Costs				**$12,322,000**

[1] Unless otherwise indicated, percentage is based on number of airports reporting an impact in Phase 1 survey.

[2] Percentage is based on number of airports that reported tracking costs of this requirement.

The industry cost estimate should be used with caution, because it is based on a single airport response, as shown in Technical Appendix 5. Also, many airports report that the cost of their OSHA compliance services is included in annual insurance premiums. Total OSHA compliance costs were $12.3 million, with about $11.7 million attributable to the category of OSHA-related programs.

6.6 Funding Sources

6.6.1 Potential Funding Sources

No sources of financial assistance to airports specifically linked to OSHA compliance were identified. A few states have grant programs administered through their state-run workers compensation programs. These programs provide funding for implementation of controls to reduce injuries resulting in workers' compensation claims, not necessarily OSHA compliance.

If OSHA compliance increases the costs of construction projects funded with AIP grants or PFCs, these funds could be used to pay for the incremental costs.

6.6.2 Reported Use of Funds

Because significant outside funding sources were not identified for OSHA compliance, the Phase 2 survey questionnaire did not include questions on funding sources.

CHAPTER 7

Case Studies

This chapter summarizes the results of the five case studies conducted for this research. Appendix C provides detailed reports on each of the case studies. The following airports were the subject of case studies:

- Golden Triangle Regional Airport (GTR)—Columbus, Mississippi
- Yakima Air Terminal/McAllister Field (YKM)—Yakima, Washington
- Stewart International Airport (SWF)—Newburg, New York
- Santa Barbara Municipal Airport (SBA)—Santa Barbara, California
- Huntsville International Airport (HSV)—Huntsville, Alabama

7.1 Overview of Case Study Airports

The FAA classifies the first three airports as non-hub airports and the last two airports as small hub airports.

Table 14 summarizes data on activity and operations at the five airports. Golden Triangle receives service in the fewest markets (only one) with the fewest round-trips (three). It also had the fewest enplanements and commercial operations. From airport to airport, enplanements, commercial operations, and commercial service increase together, with Huntsville having the most enplanements and commercial operations and service.

Table 15 provides data on the physical facilities at the airport, including acreage, runway lengths, gates and loading bridges, ticket counters and ticketing positions, and baggage claim facilities.

7.2 Impacts of Federal Requirements

The detailed reports in Appendix C document the impacts to each of the case study airports from the requirements in each of the four regulatory areas. The impacts to the case study airports are compared with the average costs reported in the survey. This section provides a summary overview of the impacts.

7.2.1 FAA/DOT Requirements

GTR's costs for FAA/DOT requirements were generally below the average cost reported in the survey. Nevertheless, the airport management team considers FAA requirements to be the most significant. They noted in particular the cost of complying with new requirements for updating GTR's airport emergency plan (AEP). GTR's AEP went from 30 to 180 pages. The AEP requirement is an example of administrative or operational requirements that do not qualify for grant funding. As a small airport, GTR cannot afford to hire a consultant to perform work that is not grant funded; work is completed by existing staff. If requirements continue to grow, the airport management team is unsure if the airport will have the money to hire new staff.

The increase in the local matching share from 5 to 10 percent is another added cost. GTR's management team is also concerned about the cost impact of the proposed regulation on safety management systems (SMSs) for all Part 139 airports.

YKM's costs of FAA compliance were in some cases below average (e.g., for perimeter fencing modifications to comply with Part 139) and in other cases above average (e.g., airfield sign and marking requirements). Like GTR, it is difficult for YKM to meet FAA requirements that do not qualify for grants. Without grant funding, YKM cannot hire contractors or consultants to complete the work, and the airport cannot afford to add staff. YKM relied on existing airport staff to meet many of the FAA requirements, and the management team was unable to estimate the staff time required or cost of compliance. For AIP-funded projects, YKM regularly used PFCs to pay the local matching share, putting it in the minority of airports reporting funding.

SWF's organizational structure is unique among the case study airports. Since 2007, SWF has been part of the system

Table 14. Summary of operations for case study airports.

Airport	Enplanements	Commercial Operations	Non-stop Markets/Flights	Full-Service FBOs[2]
Golden Triangle Regional Airport	36,329	2,970	1 / 3	1
Yakima Air Terminal	53,832	7,237	3 / 9	1
Stewart International Airport	201,684	12,440	5 / 12[1]	2
Santa Barbara International Airport	382,894	29,185	6 / 33	2
Huntsville International Airport	606,127	32,716	9 /34	1

[1] Service to one market with three round-trips to be discontinued.
[2] Fixed-base operators.

of airports operated by the Port Authority of New York and New Jersey (Port Authority), with day-to-day operations managed by AFCO AvPORTS Management LLC. As a part of the Port Authority system, SWF benefits from access to the Port Authority's resources in meeting some FAA requirements. For example, Port Authority central staff provide engineering and architectural services or contract for them on behalf of SWF. Port Authority central staff also administer SWF's PFC program and absorbed any costs associated with the new PFC requirements adopted during the study period. However, as part of a larger organization, SWF faces more levels of review, and a more time-consuming review process to get approval for many initiatives. SWF sometimes finds itself in competition for resources with other Port Authority airports.

As to specific FAA requirements, SWF was minimally affected by the new Part 139 requirements for existing certificate holders. Its costs for acquiring a new vehicle access control system for the airfield were substantially higher than the reported average, but SWF acquired the system as a voluntary measure.

Although SBA has a larger staff than the non-hub airports in the case studies, airport management reported that compliance with federal requirements is sometimes difficult, due to lack of sufficient staff positions or lack of sophisticated technical expertise. With respect to the FAA requirements, SBA's costs were generally minimal or otherwise below average. One exception was compliance with FAA's new requirements for RSAs. For this requirement, SBA's cost was the highest reported and included major earthwork and road relocation. Another significant cost of the RSA project was environmental mitigation.

HSV's costs of compliance with FAA and DOT requirements were generally higher than the average costs reported in the survey. Requirements with higher than average costs include vehicle access controls, DBE requirements, and airfield signage and marking requirements. In contrast, HSV's costs for the new consultant selection requirements are below average.

7.2.2 Environmental Requirements

GTR performed an EA to support a runway extension during the study period. Because the extension involved land acquisitions, ESAs were conducted for three separate parcels. GTR's cost for the EA were consistent with the average reported in the Phase 2 survey; on a per-parcel basis, its costs for the ESAs were below average.

GTR meets SPCC plan requirements through a joint plan with its fixed-base operator (FBO) tenant. Airports typically do not include tenants in their plans to avoid potential liability for tenant actions.

Table 15. Summary of facilities for case study airports.

Airport	Acres	Runway Length(s)	Hold Rooms/ Gates/Loading Bridges	Ticket Counters/ Check-in Stations	Baggage Claim Facilities
Golden Triangle Regional Airport	1,000	8,002 x 150 ft	1 / 2 / 0	3 / 3	1 baggage carousel
Yakima Air Terminal	825	7,604 x 150 ft 3,825 x 150 ft	5 / 5 / 0	2 / 2	2 bag drops
Stewart International Airport	2,100	11,817 x 150 ft 6,004 x 150 ft	8 / 8 / 7	22 / 36	2 baggage carousels
Santa Barbara International Airport	948[1]	4,183 x 100 ft 4,178 x 74 ft	2 / 5 / 4[2]	5 counters	4 bag drops
Huntsville International Airport	7,178	10,006 x 150 ft 12,600 x 150 ft	10 / 14 / 12	6 / 32	3 baggage carousels

[1] Includes approximately 400 acres of wetland preserve.
[2] One loading bridge gate currently not operational.

In the area of environmental compliance, the YKM case study focused on wildlife management and spill prevention. YKM reported developing the new wildlife hazard training curriculum required by the FAA using staff resources and assistance from the U.S. Department of Agriculture. The new requirement for minimum training hours did not affect YKM because its existing training program exceeded the new minimum.

YKM's spill prevention costs are minimal. Replacement of materials in spill response kits costs only $400 per year. Required inspections are performed by airport staff as part of normal responsibilities, and training is incorporated into the airport's emergency response training exercises.

As for many of the FAA requirements, SWF's obligations under NEPA are carried out or managed by Port Authority central staff. SWF conducted an ESA with a cost of $20,000, which is substantially higher than industry norms. The cost was high because the site was known to be the location of a historic fuel spill.

SWF's SPCC compliance costs included updating its SPCC plan at a cost below the average reported in the survey. SWF also constructed a used oil collection and secondary containment system.

SBA's NEPA compliance costs were the largest of the case study airports. SBA spent $1 million to conduct an EIS and $9 million in mitigation measures identified in the EIS. The mitigation requirement includes annual expenditures of $325,000 that will continue until 2014. In addition, SBA needed water quality permits and certifications from California state agencies. The costs of these requirements were approximately $150,000. SBA also conducted a voluntary air emissions analysis and greenhouse gas inventory. Despite the costs outlined above, SBA does not consider federal environmental requirements to have the greatest impact.

HSV also conducted an EA under NEPA during the study period. HSV's costs for the EA ($61,000) were above the average reported. HSV also reported performing multiple ESAs at an average cost ($11,500) lower than the average reported in the survey. One ESA required HSV to clean up a leaking underground tank as a mitigation measure. The costs of the cleanup ($20,000) exceed the average mitigation costs reported in the survey.

HSV incurred spill prevention costs in the form of training and two updates to its SPCC plan. HSV also constructed spill containment for its mobile refueler, and it incurs costs for periodic inspections and testing.

7.2.3 Security Requirements

All case study airports added or upgraded physical access control systems or related systems, with HSV reporting the highest costs of any airport in the survey ($23 million).

GTR participates in the LEO support program, but TSA reimbursement is fixed. The airport is considering whether it would save money by giving up the TSA reimbursement and meeting its LEO obligation by less costly alternatives that do not qualify for the TSA reimbursement.

YKM noted the declining level of TSA reimbursement under the LEO support program. YKM also relocated its passenger screening checkpoint to accommodate office space for the TSA. The TSA paid the full costs of the project, which were below the average reported in the survey.

The State of New York provides LEO support at SWF in exchange for airport facilities, and SWF does not participate in the TSA's LEO support program. SWF added a passenger screening lane during a general terminal upgrade, but it could not isolate the costs of this component. The TSA funded minimal upgrades to checked baggage screening facilities. SWF is the only case study airport that reported adding facilities to accommodate CBP screening functions. SWF constructed the facilities on a voluntary basis, and its costs were below the average reported in the survey. SWF management considers security requirements to be the airport's largest continuing compliance effort.

SBA also upgraded passenger and baggage screening as part of the construction of a replacement passenger terminal. SBA reported the costs of each to be approximately $2 million, which were well above the averages reported in the survey.

SBA reported adding staff at a cost of $1 million per year to comply with new security requirements. SBA management considers security requirements to have had the greatest impact on the airport due to this recurring cost.

Like SBA, HSV considers security requirements to be the most significant. HSV's public safety budget increased 62 percent after the events of 9/11 to meet new operational requirements. The TSA's audit review and investigation activities have been increasing. There has been a corresponding increase in staff time and resources devoted to helping the TSA complete the oversight activities and to responding to TSA findings.

HSV also incurred the highest costs of any airport in the survey to accommodate passenger screening activities. The high costs resulted from the need to provide additional public space for meeters and greeters after the TSA limited gate access to ticketed passengers.

7.2.4 OSHA Requirements

None of the case study airports reported significant OSHA compliance costs. SWF reported the cost of staff training time for occupational safety and health training to be $12,000, which is above the average reported cost. SBA reported costs of $9,000 for staff training time, which is below the average reported.

As public agencies, airports are not subject to direct OSHA regulation. Two airports—GTR and HSV—have voluntary

Table 16. Summary of costs and non-airport funding for case study airports.

Airport	Total Compliance Costs	Non-airport Funds		Non-airport Funding
		Federal	State/Other	
Golden Triangle Regional Airport	$804,800	$443,000	$17,750	57%
Yakima Air Terminal	$8,539,046	$7,416,804	$0	87%
Stewart International Airport	$4,876,947	$1,771,564	$0	36%
Santa Barbara Municipal Airport	$39,469,200	$34,336,800	$0	87%
Huntsville International Airport	$29,789,321	$21,352,036	$12,060	72%
Total Case Study Airports	**$83,479,314**	**$65,320,204**	**$29,810**	**78%**

occupational health and safety programs. The remaining case study airports—YKM, SWF, and SBA—are subject to state requirements. SWF's airport management contractor is subject to OSHA jurisdiction.

7.3 Key Findings and Conclusions

Requirements that are administrative or operational in nature put a strain on all case study airports, because grant funding is generally unavailable. These airports lack the budget resources to add permanent staff or to retain consultants. The small hub airports (SBA and HSV) reported similar challenges to the non-hub airports, even though they have substantially larger staff than the non-hub airports.

SBA and HSV consider security requirements to be the most significant, as does SWF. Both small hub airports specifically mentioned operational requirements that led to additional staff and more of the time of existing staff devoted to security issues. These operational and administrative costs generally do not qualify for reimbursement or federal assistance. There was a consensus among the case study airports that the reimbursement provided through the LEO support program has not kept pace with the costs of providing LEO presence at passenger checkpoints.

HSV and SBA benefit from substantial non-aeronautical revenue from collateral development. These revenue sources are not typical. Moreover, even with the additional revenue, the airports reported feeling the same financial strains as the other case study airports.

Table 16 summarizes the compliance costs incurred by the case study airports and the funding received from other sources. The majority of non-airport funding is federal funding, but a small amount (less than $30,000 or less than one-tenth of 1 percent) came from state funds. No airport was able to finance its compliance costs without spending some airport funds. SBA and YKM had the highest percentage of non-airport funds at 87 percent each. SWF had the lowest percentage of non-airport funds at 36 percent.

CHAPTER 8

Conclusions

A number of conclusions can be drawn from the data, interviews, and case studies compiled for this project. The conclusions are summarized below and discussed in more detail in the sections that follow. Two areas of potentially useful research were also identified. Finally, the research indicates a number of strategies that might help reduce the impact of new compliance requirements in the future. The conclusions are as follows:

1. The cost of federal compliance requirements continues to grow.
2. Small airports do not have the revenue-generating capacity to meet the costs associated with increased regulatory action.
3. Published cost estimates for regulatory requirements understate the full cost of compliance.
4. The cost of unfunded requirements continues to grow.
5. Limited staff resources of small airports exacerbate the costs of federal requirements, especially at non-hub airports.
6. The prohibition on charging rent to the TSA costs airports substantial revenue.
7. The recent trend of applying uniform standards to all airports results in a disproportionate responsibility for small airports.

8.1 The Cost of Compliance with Federal Requirements Continues to Grow

A total of 291 regulatory and compliance actions related to FAA/DOT, environmental, security, and occupational safety and health requirements were issued from 2000 through the end of 2010. Put another way, the federal agencies adopted new requirements at a rate equivalent to one requirement every 2 weeks during the study period. Many new requirements add continuing costs to airports by specifying periodic updates, inspections, monitoring, etc.

The FAA has an ongoing process to maintain and update all advisory circulars on a regular basis. The revisions may result in additional costs to airports as the FAA seeks to reduce the risk of accidents and incidents. In its continuing efforts to enhance airport safety, the FAA Office of Airports business plan has identified new ACs for publication, which will result in new costs to airports. For example, the 2012 business plan calls for issuance of a proposed AC on the use of transponders in airport vehicles.

The FAA is currently developing requirements for SMSs and environmental management systems (EMSs) that will result in new costs for airports. The FAA is also moving toward requiring the use of GIS data to support airport surveys and development of approach procedures and electronic airport layout plans. Full implementation of these requirements will likely add new costs for airports. In interviews for the case studies and survey follow-up, many airport managers predicted that these initiatives would add to costs.

Environmental regulations are also reviewed periodically to evaluate options that streamline requirements and update outdated practices. For example, prior to 2002, the SPCC regulations had not been updated since 1990. In some cases, the amended regulations minimized the regulatory impact for small airports (i.e., exemptions for underground storage tanks and containers with capacities less than 55 gallons). Other changes, however, resulted in increased regulatory costs (e.g., integrity testing and plan updates).

In the security area, TSA funds for the LEO support program have remained flat or declined, while cost of providing LEO support has grown. In interviews for the case studies and survey follow-up, multiple airport managers said they were considering dropping out of the program, because they will save more in LEO costs than they currently receive from the TSA.

During these interviews, airports have reported an increase in the number and complexity of TSA reviews and audits. These review and audit activities require full participation of airport staff during the audit itself and following the audit to respond to reports and recommendations.

8.2 Small Airports Do Not Have the Revenue-Generating Capacity to Meet the Costs Associated with Increased Regulatory Action

For many small airports, low levels of passenger enplanements and/or operations limit their ability to raise revenue to meet the cost of new regulatory requirements. Because of lower traffic levels and limited tenant operations, small airports have little leverage with airlines and other tenants to increase fees and charges to cover new federal compliance costs. Therefore, the additional costs reduce the operating margin (if any) that airports generate and ultimately reduce the airport's cash reserves. This situation is particularly important because small airports are typically subject to the same or similar regulatory requirements as large airports with greater revenue-generating capacity. For example, a new $500,000 regulatory requirement would cost a small airport with 20,000 passengers $25 per passenger. That same requirement at an airport with 2 million passengers would cost only 25 cents per passenger.

A number of airport executives interviewed in survey follow-ups and the case studies noted the higher costs to small airports of meeting the same standards for snow and ice control plans, AEPs, and other administrative requirements that large airports meet. GTR's AEP grew from 30 to 180 pages, because the FAA determined that all Part 139 airports should follow the same format for the AEP and include the same information.

Financial data submitted by airports to the FAA demonstrate the financial challenges facing small airports. Figure 35 presents the aggregate operating results for small hub and non-hub airports for 2011. The data is submitted to the FAA based on each airport's fiscal year, and the non-hub data includes the results for non-primary commercial service airports that were not included in the scope of this study. As a group, small hub airports suffered operating losses of $221 million, and non-hub airports suffered operating losses of $530 million. Each group also generated net operating losses in 2010.

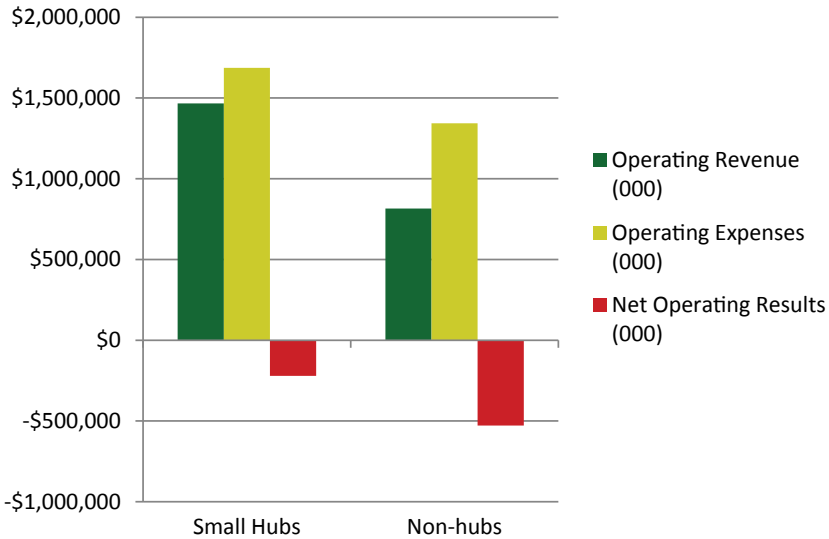
Figure 36 presents the results on a per-airport basis. Small hub airports on average lost $3.0 million and non-hub airports on average lost $1.5 million. Most small airports do not have access to ancillary revenues generated by industrial parks or multimodal transportation centers like those operated by HSV and SBA.

In contrast, large hub airports generated total operating surplus of $985 million in 2011 ($32.9 million per airport average). Medium hub airports, however, generated operating deficits of $104 million ($2.9 million per airport average).

8.3 Published Cost Estimates for Regulatory Requirements Understate the Full Cost of Compliance

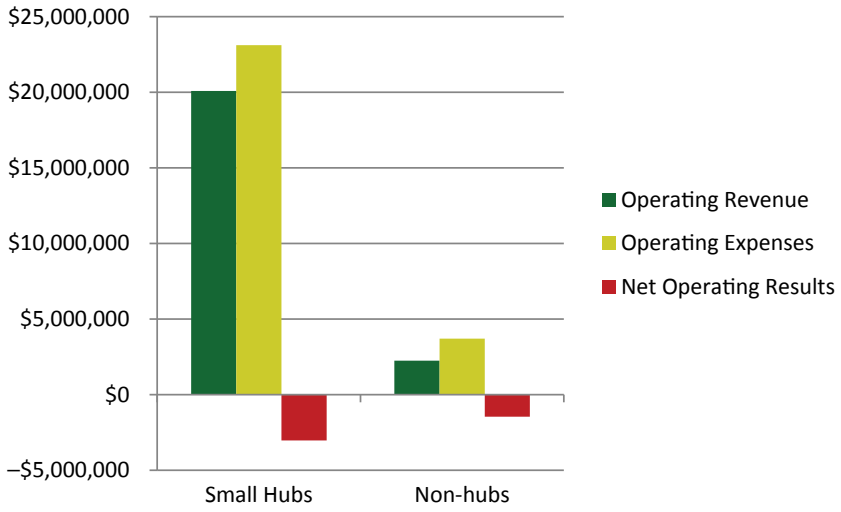
There are two primary causes for the understatement of costs. First, agencies publish cost estimates for only a small portion of the federal requirements identified in the study. Second, even when agencies estimate cost impacts, the estimates are frequently low.

In general, only formal rulemaking documents may be subject to a requirement for a cost analysis. For example, only six of the 140 requirements adopted by the FAA were formal



Source: FAA Compliance Activity Tracking System data, http://cats.airports.faa.gov/Reports/reports.cfm.

Figure 35. Aggregate operating results for small airports, 2011.



Source: FAA Compliance Activity Tracking System data, http://cats.airports.faa.gov/Reports/reports.cfm.

Figure 36. Average operating results for small airports, 2011.

regulatory documents. The FAA typically adopts ACs, PGLs, CertAlerts, and other guidance documents without analyzing compliance costs, even when the guidance is effectively binding on airports. Out of 81 security requirements adopted during the study period, only two were formal regulatory documents.

Even when formal rulemaking is employed, unless the requirement will meet minimum cost levels, or will have a significant impact on small entities, a detailed estimate of costs is not required. Only two of the six FAA regulatory documents issued during the study period included a full analysis of compliance costs. Fourteen of the 39 environmental requirements included specific cost projections. Only one security regulation had a cost analysis, and that analysis did not provide a separate breakout for airports. Additionally, in many cases, regulatory actions had multiple components. Costs may be projected separately for each component, and some rules may include combinations of components with cost reductions and increases.

Based on the survey results, cost estimates published by the agencies are not consistent with airports' actual experience. For example, the FAA's projections of the cost of compliance with the 2004 amendments to Part 139 were lower than the initial and recurring costs reported by existing certificate holders and lower than the initial costs reported by newly certificated carriers. Estimated costs from the economic analysis for Phase I environmental site assessments ranged from $2,185 to $2,190. Industry experience for airports and related properties are usually between $5,000 and $9,000. Similarly, the reported average costs for SPCC training ($4,000) exceeds the range of published estimated costs ($1,930 to $3,650 per year).

8.4 The Cost of Compliance with Unfunded Requirements Continues to Grow

The 291 federal requirements identified in this study (with limited exceptions) either added to or expanded upon existing requirements. Airports must absorb at least some of the costs of these requirements and, in many cases, must absorb the full costs.

Except for the LEO support program discussed in Section 8.4.3, federal assistance is not available to cover the O&M costs associated with new compliance requirements. For example, one airport reported that a significant cost of a new FAA airfield signage requirement is the cost of keeping the signs clear of snow and ice during the winter and clear of grass during the rest of the year.

8.4.1 FAA/DOT requirements

DOT has no independent funding programs available for airports.

Only those FAA requirements that involve capital development may be eligible for federal AIP funding. Requirements that affect airport operations, administration, or maintenance are ineligible for AIP funds.

Moreover, AIP eligibility does not guarantee funding. For example, one of the case study airports with a substantial RSA project received only a 50 percent contribution from the FAA, even when statutory federal share was 95 percent. At least one airport that incurred costs for perimeter fencing, runway protection work, and airfield signage work reported receiving no federal funds. Moreover, the level of AIP funding remained

flat between 2008 and 2011 at approximately $3.5 billion. It declined by $165 million in 2012 and will remain at this lower level through 2015.

Even when AIP funding is available, airports must pay a local matching share. This matching share recently increased from 5 to 10 percent of eligible project costs.

Finally, use of AIP funds to comply with federal requirements reduces the amount of funds available for actual project implementation. AIP funding is fixed each year at an absolute dollar amount. In the aggregate, each dollar of AIP funds spent on compliance requirements is one dollar less available to spend on project implementation. Similarly, there is a maximum amount of AIP funds the FAA can feasibly afford to provide an individual airport each year. Each dollar the airport spends on compliance requirements out of this amount is one less dollar available to the airport to finance project implementation.

PFCs are available to help pay for compliance costs associated with eligible capital projects. However, like AIP funds, PFCs cannot be used for operational costs. In addition, the PFC ceiling has not been raised since 2001. The only source of increased PFC revenue since that time has been through increased passenger traffic. Since 2007, the year before the last recession started, passenger traffic at small hub and non-hub airports has declined by 8 percent and 3 percent, respectively. In short, PFC revenue opportunities for small airports have declined while compliance costs have increased. This situation is reflected in the survey results discussed in Section 3.6.2. For most requirements, a majority of airports reported using no PFCs.

8.4.2 Environmental Requirements

Funding to comply solely with environmental requirements is even more limited than funding for FAA/DOT compliance requirements. There is no distinct federal program (comparable to AIP) for general environmental compliance. *ACRP Synthesis of Airport Practice 24: Strategies and Financing Opportunities for Airport Environmental Programs* (2011) provides a comprehensive listing of federal and state funding sources for environmental initiatives. However, in many cases, funds are provided only for voluntary initiatives, not for mandatory compliance actions.

In some cases, AIP funds associated with other projects may be used to fund a portion of the environmental mitigation measures necessary for the project or for projects needed to comply with air and water quality requirements. However, the limitations on AIP funding discussed in Section 8.4.1 apply.

8.4.3 Security Requirements

TSA and AIP funds have been provided for projects to comply with security requirements. Local matching requirements and limits on annual appropriations are also issues. Moreover, small airports may not receive the same priority for funding as larger airports with perceived greater security concerns. In the aftermath of the events of 9/11, Congress amended the AIP statute to make projects to accommodate in-line EDSs for checked baggage screening eligible for AIP funding. Relying on this expanded eligibility, the FAA provided substantial AIP funding in FY 2001 and FY 2002. However, Congress has prohibited the use of AIP grants for baggage screening projects since 2003, and airports have been required to use their own resources to finance these projects, unless TSA funding is provided.

Federal funding is not available for operational and administrative costs, which have been growing. For example, airports interviewed for the case studies and survey follow-up report that the TSA has increased its monitoring, auditing, and investigation activities, with a corresponding increase in costs to airports. The LEO support program provides reimbursement to participating airports for LEO staffing at screening checkpoints. However, airports interviewed for this research report that the costs of meeting TSA requirements for program funding are substantial. In addition, the TSA has been reducing its share of costs reimbursed.

8.4.4 Occupational Safety and Health Requirements

OSHA does not have direct jurisdiction over airports. In these circumstances there is no direct federal support for compliance with occupational safety and health requirements. When airport contractors reflect OSHA compliance costs in their bids, AIP funding could be available, but with the limitations noted previously. However, OSHA requirements may be applied through states or included in voluntary programs. During the study period, 21 compliance actions were adopted by OSHA, without federal funding attached.

8.5 Limited Staff Resources of Small Airports Exacerbate the Cost of Compliance with Federal Requirements, Especially at Non-hub Airports

Non-hub airports, in particular, have limited staff available to satisfy new compliance requirements. For example, the three non-hub airports included in the case studies average 10 full-time employees for all administrative and operational functions. Moreover, the limited revenue opportunities available preclude hiring additional staff or contracting out for assistance with compliance requirements. Non-hub airports averaged operating losses of $1.5 billion per airport in 2011. They also suffered operating losses in 2010.

Small airport staff members are responsible for a variety of duties from performing administrative, maintenance, and operational tasks to understanding, planning, implementing, and enforcing regulatory requirements. When a new requirement is adopted, existing staff must assume the responsibility for compliance. In addition, management cannot readily reassign existing duties to other employees to compensate for the added responsibility of meeting the new requirement. For example, one non-hub airport manager stated that the primary impact from the FAA's new airfield signage requirements was not the cost of installation of the signs themselves, but the ongoing costs of maintaining visibility. In the summer, additional staff time is required to mow around signs. In the winter, additional time is required to keep signs clear of snow.

Furthermore, non-hub airport staff members typically do not have the time or expertise to understand all the requirements applicable to the airport, especially new ones. The lack of expertise and limited time available could increase the risk of inadvertent non-compliance.

Small hub airports generally have greater staff resources, but more complex operational and administrative requirements, than non-hub airports. Even with larger staff, department heads and line personnel are still more likely to be generalists than specialists. As with non-hub airports, small hub airports have comparable impediments to raising revenue to pay for specialized expertise (through staff or contractors) needed to understand and implement new compliance requirements as they are adopted. Small hub airports had operating losses of $3 million per airport in 2011 and suffered losses in 2010 as well.

8.6 The Prohibition on Charging Rent to the TSA Costs Airports Substantial Revenue

Airports are prohibited from charging rent to the TSA for the use of passenger and baggage screening space. For the case study airports, the lost revenue ranged from $46,000 to $350,000. For airports with TSA space funded by AIP grants, this prohibition would not have an impact, because the grant assurances would prohibit a charge. Airports are permitted to charge for utilities and janitorial services for screening space, but most airports do not seem to be aware of this policy, or they do not exercise the privilege.

8.7 The Recent Trend of Applying Uniform Standards to All Airports Results in a Disproportionate Responsibility for Small Airports

The FAA, in particular, has in recent years moved toward applying uniform requirements for all airports. The FAA has determined there are benefits for the safety and efficiency of the aviation system when airports adopt uniform practices and procedures. However, when the FAA has mandated uniform requirements, the requirements tended to reflect the operations and airfield design of large airports, not small ones. Therefore, small airports are paying added costs to develop plans and procedures that may be excessive to their needs. Small airports are concerned that the FAA will continue this practice when it implements the requirements for SMSs and EMSs. For example, GTR's AEP grew from 30 to 180 pages, because the FAA determined that all Part 139 airports should follow the same format for the AEP and include the same information.

8.8 Additional Research

Two areas for future research that could increase understanding of the issues studied in this report or improve airport practices were identified.

First, airports and agencies use a variety of methods to estimate current and projected cost impacts of regulations. The development of a standardized methodology was beyond the scope of this research. Additional research to develop standard procedures for cost projections and calculations could lead to improved projections of cost impacts of regulatory actions and could be useful to airport operators in developing capital and operating budgets. It is recognized that a single approach may not be suitable for all federal agencies and all regulatory actions, however.

Second, it was not possible to identify a relationship between costs and two measures of activity—enplanements and commercial operations. The small number of responses to individual questions may have contributed to this outcome. Additional research focused on determining whether relationships exist between cost and activity level or other variables (e.g., airport size) would be useful. If such relationships do exist, they could be used by small airports to estimate their federal compliance costs, without the need to implement costly and complex accounting systems.

8.9 Options to Reduce Future Impacts

In the research undertaken in this study, including the case studies, a number of options were identified that could mitigate or reduce the impact of small airports' exposure to unfunded requirements in the future. Most of the options, however, are not within the airports' control (and are outside the scope of this study); they would require action by the government agencies and regulators—for example, increased funding, changes to policy or procedures to account for differences in the size and complexity of airports, or changes to

policy or procedures that would estimate compliance costs more frequently and improve the accuracy and reliability of agency cost projections. The following options were identified that are within the airports' control:

- Consider engaging federal, state, and local regulators during the regulatory comment period. Increased participation by small airports during this period could include providing comments in narrative form and/or submitting cost data. For example, when the FAA amended Part 139 in 2004, it adjusted its economic analysis to reflect cost data that had been submitted by individual airports.
- Provide public comment responses when agencies issue ACs, policy statements, PGLs, and related documents in draft form. The public comment process provides airports a chance to inform agencies of the cost impact of new proposals. Increased participation by small airports when agencies seek public comment on proposed requirements could lead to improved agency cost projections or reduced regulatory impacts.

Terms, Abbreviations, and Acronyms

AAI	All appropriate inquiries
AC	Advisory Circular
ACM	Airport Certification Manual
ACRP	Airport Cooperative Research Program
AEP	Airport Emergency Plan
AIP	Airport Improvement Program
Airport Concession DBE Rule	*Code of Federal Regulations* Title 49, Part 23, governing participation by Disadvantaged Business Enterprises in airport retail concession programs
AOA	Aircraft Operations Area
AP	Amendment to Airport Security Program requirements
APA	Administrative Procedure Act
ARFF	Aircraft rescue and firefighting
ASC	Airport Security Coordinator
ASP	Airport Security Program
AST	Aboveground storage tank
ASTM	American Society for Testing Materials
ATCT	Airport traffic control tower
ATSA	Aviation and Transportation Security Act
CATEX	Categorical Exclusion
CBP	U.S. Customs and Border Protection
CCTV	Closed Circuit Television
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CertAlert	Certification Alert
CESQG	Conditionally Exempt Small Quantity Generator
CFR	*Code of Federal Regulations*
CGL	Compliance Guidance Letter
DBE	Disadvantaged Business Enterprise
DBE Project Participation Rule	*Code of Federal Regulations* Title 49, Part 26, governing participation of Disadvantaged Business Enterprises in U.S. Department of Transportation-funded projects
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EA	Environmental Assessment
EDS	Explosive detection system
EIS	Environmental Impact Statement
ELG	Effluent limitation guideline
EMS	Environmental Management System
EO	Executive Order

EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed-base operator
FONSI	Finding of No Significant Impact
GIS	Geospatial Information System
GTR	Golden Triangle Regional Airport
HSV	Huntsville International Airport
LEO	Law enforcement officer
MOU	Memorandum of Understanding
NEM	Noise Exposure Map
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOTAM	Notice to airmen
NPDES	National Pollutant Discharge Elimination System
NSC	National Safety Council
O&M	Operations and maintenance
OSHA	Occupational Safety and Health Administration
PFC	Passenger Facility Charge
PGL	Program Guidance Letter
PM	Particulate matter
Port Authority	Port Authority of New York and New Jersey
Pub. L.	Public Law
RCRA	Resource Conservation and Recovery Act
RFA	Regulatory Flexibility Act
RPZ	Runway protection zone
RSA	Runway safety area
SBA	Santa Barbara Municipal Airport
SD	Security Directive
SMS	Safety management system
SPCC	Spill Prevention, Control, and Countermeasure
SSI	Security-sensitive information
Study period	Period from January 1, 2000, through December 31, 2010, when the new compliance requirements analyzed in this research report were adopted
SWF	Stewart International Airport
SWPP	Stormwater Pollution Prevention
TSA	Transportation Security Administration
URL	Uniform Resource Locator (web address)
USC	United States Code
UST	Underground storage tank
YKM	Yakima Air Terminal/McAllister Field

APPENDIXES A–C

The following appendixes are available in *ACRP Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports, Volume 1* (www.trb.org/Main/Blurbs/168946.aspx):

- Appendix A, Summaries of Regulatory and Compliance Actions and Published Cost Data
- Appendix B, Phase 1 and Phase 2 Survey Results
- Appendix C, Case Studies

APPENDIX D

Presentation Template

This presentation template is designed for use by individual airports to provide information to target audiences about the impacts of federal regulatory and compliance requirements. The template is intended to provide maximum flexibility to airports in structuring their presentation. Therefore, the slides cover the full range of the requirements discussed in the report. Slides on national impacts as well as customizable slides on the impact to an individual airport are provided.

Slides are presented in note page format, with instructions for completing customizable slides included as notes. Cost data is presented in tables within Microsoft® PowerPoint slides. Empty tables are to be completed in the PowerPoint file by those individual operators who are able to provide data or estimates of cost. The PowerPoint file is available on the *ACRP Report 90* summary page (www.trb.org/Main/Blurbs/168945.aspx).

Issues

- Small airports face increasing regulation
- Compliance adds costs to [INSERT AIRPORT NAME]
- Compliance adds substantial industry costs
- Small airports have limited means to raise revenue
- Federal funding is shrinking
- Compliance reduces funds available for revenue-generating services and facilities
- "One-size-fits-all" standards result in extra costs on small commercial airports
- Options to reduce compliance costs

Small commercial airports face increasing regulatory requirements

- 291 requirements adopted from 2000 to 2010
- Equivalent of one new requirement every two weeks
- Requirements continue to grow

COMPLIANCE ACTIONS ADOPTED IN 2000-10

Regulatory Area	Compliance Action Count
FAA/DOT	150
Environmental	39
Security	81
Occupational Safety/Health	21
GRAND TOTAL	**291**

Slide suitable for all airports

Slide should be used only by airports that have estimated costs.

Airport's individual costs should be inserted in right-hand column if available. Airports that cannot estimate costs should omit slide. Use of average airport cost data from research report is not advised.

Slide should be used only by airports that have estimated costs. Use of average airport cost is not advised.

Most Costly Requirements for [INSERT AIRPORT NAME]

Requirements with Highest Recurring Cost	
Requirement	$$$$$$$$$

5

Slide should be used only by airports that have estimated costs. Use of average airport cost is not advised.

Compliance Results in Substantial Aggregate Industry Costs

Total Small Airport Industry Costs	
FAA/DOT Requirements	$1,459,500,000
Environmental Requirements	$90,200,000
Security Requirements	$610,800,000
OSHA Requirements	$11,700,000
Total Compliance Costs	**$2,172,200,000**

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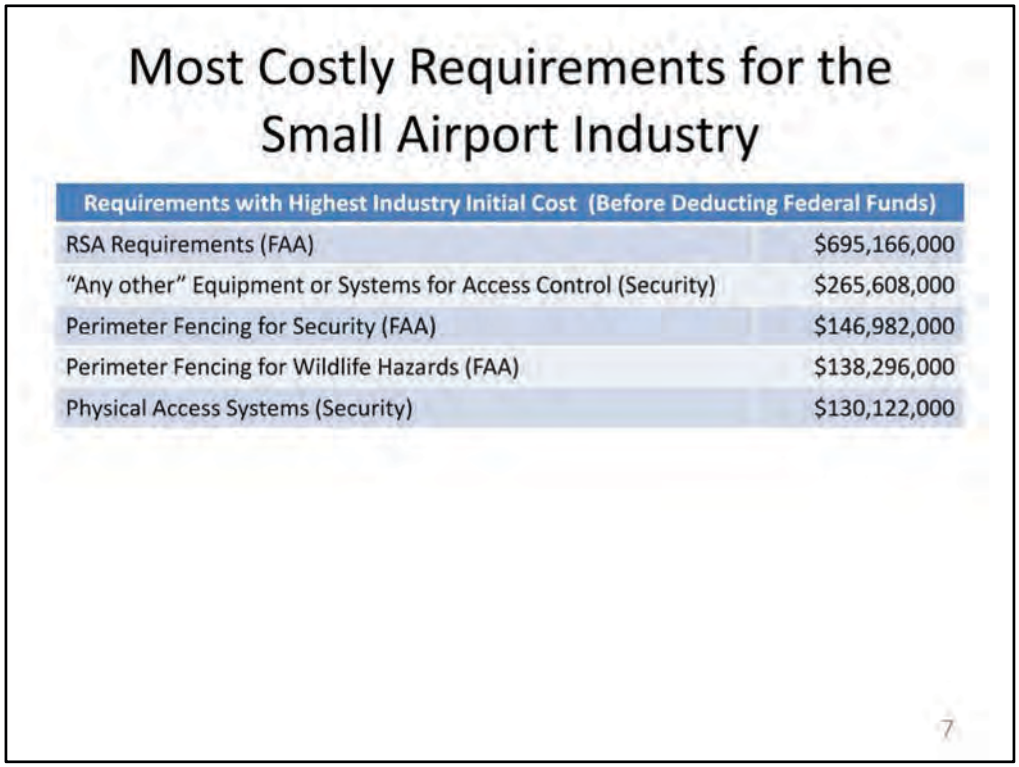
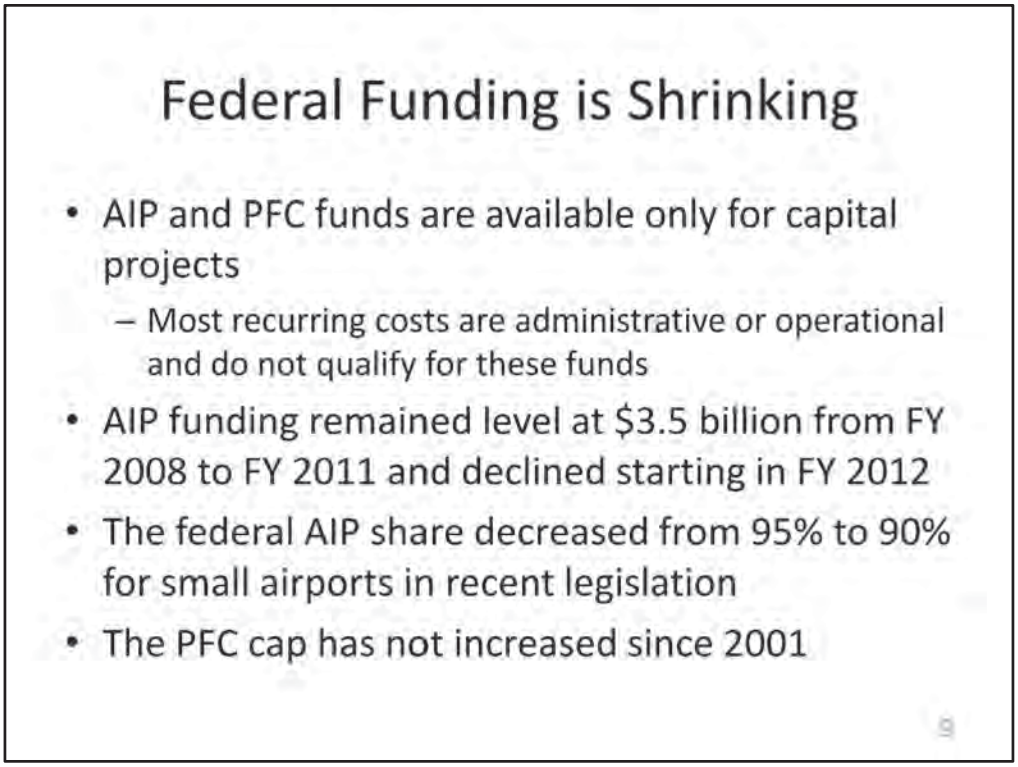
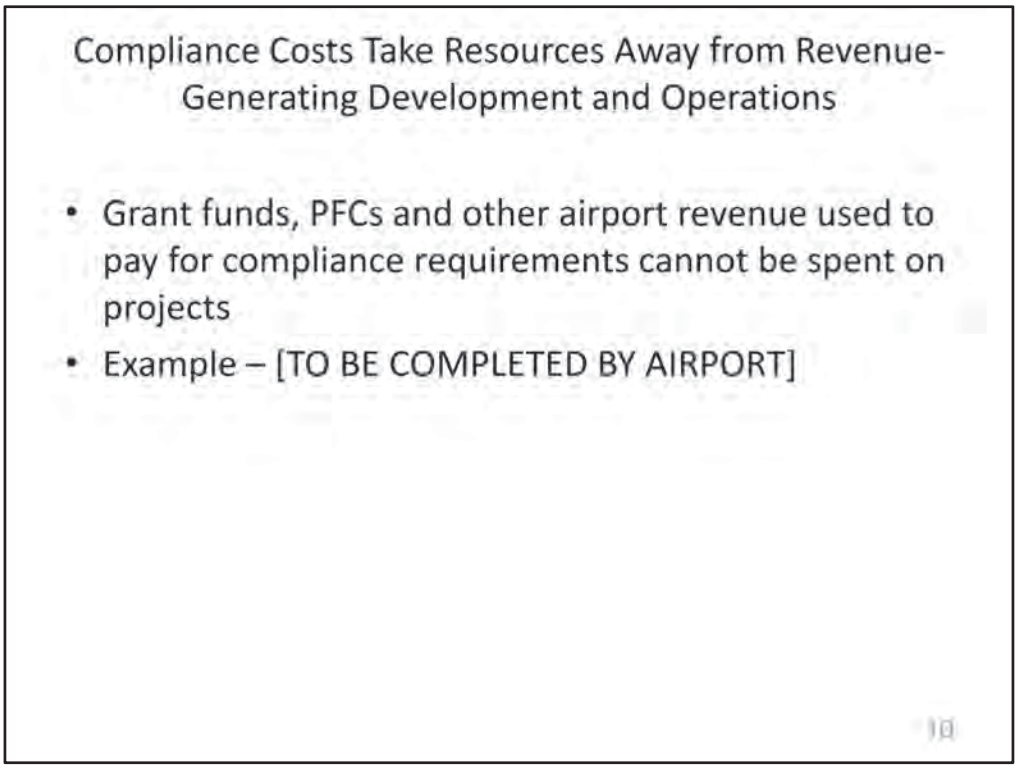


This slide can be omitted by airports that have inserted their costs into slide 4.

This slide can be omitted by airports that have completed slide 5.

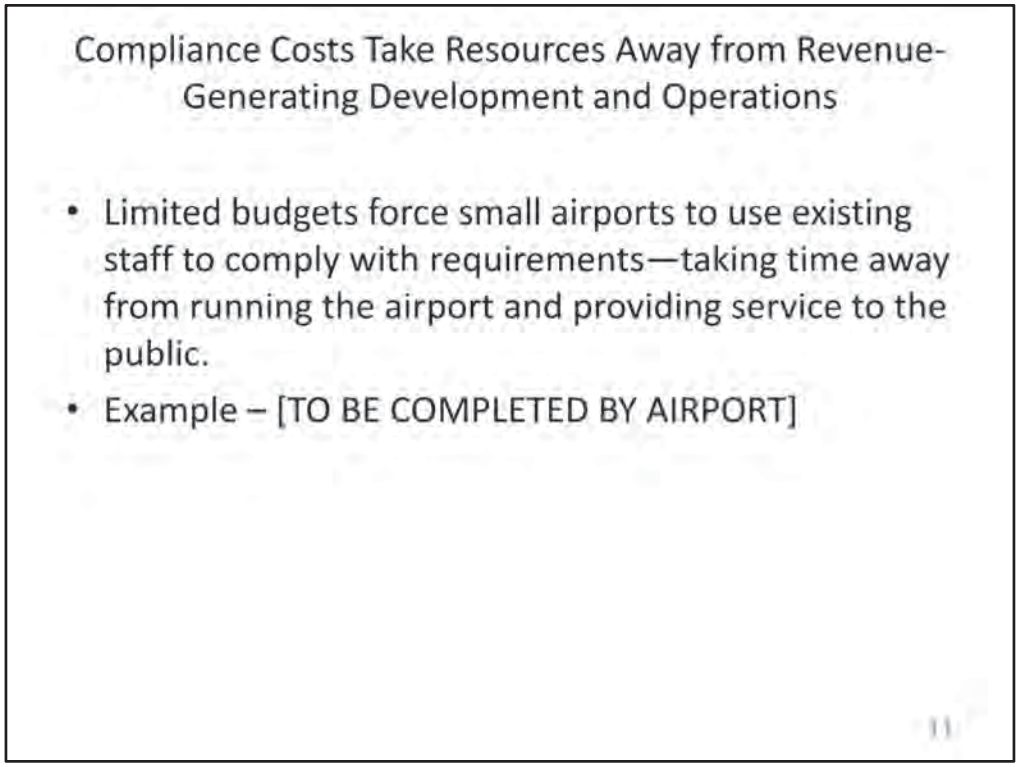


Airports may choose to omit this slide in presentations to local business groups.



Airport can provide example of grant funds used for costs of meeting federal requirement, instead of costs of project.

If airport is unable to provide examples for this slide and next, the first bullets of each slide can be combined into a single slide.



Airport can provide example of new requirement that added to workload of existing staff.

If airport can't provide an example for this slide and previous slides, the first bullets in each slide can be combined in a single slide.

Divide $1 million by twice your airport's annual enplanements to calculate cost per passenger. San Antonio was used because it represents the approximate middle of the range of passenger traffic for medium hub airports.

Options to Reduce Future Cost Impacts

- Increased participation by small airports in notice and comment rulemaking to provide better cost information
- Increased participation by small airports when agencies publish draft policy and guidance documents for comment
- Other potential options:
  - Are outside the control of airports
  - Would require action by government agencies and regulators
    (and thus were outside the scope of the research)

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TECHNICAL APPENDIXES

The following technical appendixes are available in *ACRP Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports, Volume 2* (www.trb.org/Main/Blurbs/168947.aspx):

- Technical Appendix 1, Research Methodology
- Technical Appendix 2, Analysis of FAA/DOT Requirements
- Technical Appendix 3, Analysis of Environmental Requirements
- Technical Appendix 4, Analysis of Security Requirements
- Technical Appendix 5, Analysis of Occupational Safety and Health Requirements
- Technical Appendix 6, Estimates of Industry Costs

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation