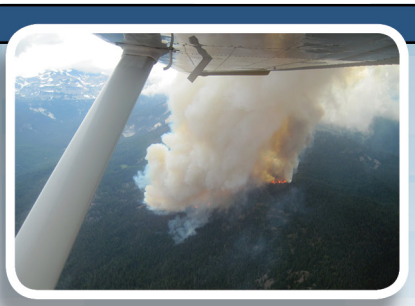

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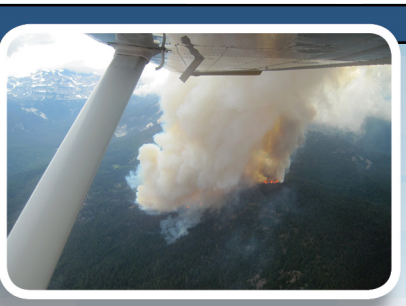


Acronyms and Abbreviations

ACIP	Airport Capital Improvement Program (FAA)
AIP	Airport Improvement Program
AIS	Airport Information System
ALP	Airport Layout Plan
APMS	Airport Pavement Management System
B&O	Business and Occupational
FAA	Federal Aviation Administration
M&R	Maintenance and Rehabilitation
NextGen	Next Generation Air Transportation System
NPIAS	National Plan of Integrated Airport Systems
PCI	Pavement Condition Index
PSRC	Puget Sound Regional Council
SBP	Seaplane Base
SCIP	State Capital Improvement Program
WSDOT	Washington State Department of Transportation

Consequences of Perpetuating Current Funding

Application of Forecast Funding to Statewide Project Needs

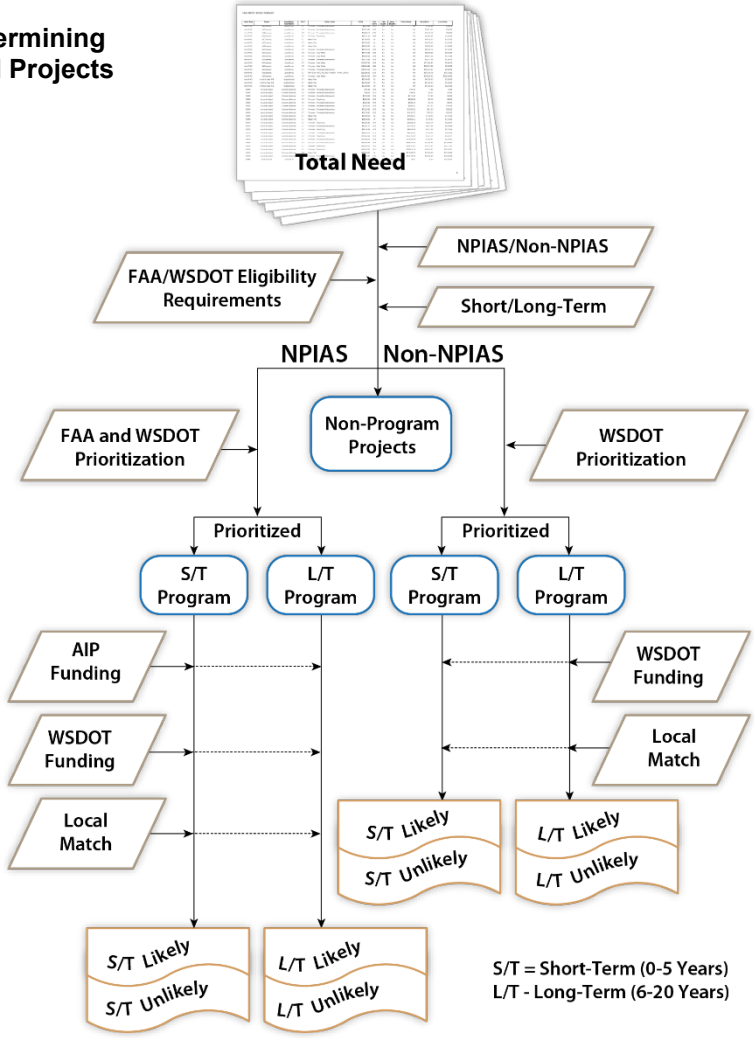
Background

Building upon the analysis of economic impacts, it is also important to understand the consequences and potential impacts to airports and aviation-related activities of perpetuating current funding levels.

This section utilizes projects identified in the needs portion of this study.

As illustrated in Exhibit 5-1, the study applied revenue forecasts to the *Total Project Needs List* to determine the potential gap in funded and unfunded projects. The study prioritized projects to be funded based on their FAA and WSDOT eligibility and funding score. With the funding available, the study grouped projects within the short-term (0-5 years) and long-term

EXHIBIT 5-1
Process Chart for Determining Funded and Unfunded Projects



(6-20 years) and identified the projects as one of the following:

- Likely projects to be funded,
- Unlikely projects to be funded, and
- Ineligible projects

From these categories, the study measured the consequences of each and determined the relative impacts to airports and aviation-related activities. For the purpose of simplicity, some tables and graphs use an abbreviated term "funded" or "unfunded".

As will be addressed in further detail, the study learned that the fidelity of long term projects (6-20 years) is limited and the long-term project list is conservative. This is due to the uncertainty associated with long-term planning, which resulted in what appears to be a significant understating of future need. To respond to this development, the study developed an alternative approach to more realistically project long-term projects. The information that follows portrays both the *Baseline* and *Projected* data. The study discusses the two sets of projects using the following terms; *Baseline Need*, the distinct short-term and long-term projects collected by the study, and *Projected Need*, the projection of the short-term, high-fidelity data set as an alternative to the under-defined long-term need.

In addition to uncertainty related to long-term planning, as mentioned in the needs section, the study also recognized the impact of eligible versus ineligible projects. The study identifies the needs in these two categories as *Total Need*, which includes both eligible and ineligible projects, and *Program Need*, which includes only eligible projects.

For clarity, the bullets below reflect these definitions:

- *Total Need* – Includes both eligible and ineligible projects
- *Program Need* – Includes eligible projects only
- *Baseline Need* – Includes short and long-term project data as collected by the study
- *Projected Need* – Includes the projection of high-fidelity short-term projects into the long-term

Determining Funded Projects

The study determined revenue forecasts of $444 million and $1.62 billion for Federal funding available in the short-term and long-term, respectively. Likewise, the study determined revenue forecasts of $7 million and $21 million for State funding available in the short-term and long-term, respectively. As stated earlier, the study applied these short-term and long-term funding amounts to the prioritized *Total Project Needs List,* based on Federal and State funding eligibility and an airport sponsor's ability to contribute their local funding match to define the list of funded projects in Appendix 14. Exhibit 5-2 presents the eligible Federal and State funding shares of total project costs.

EXHIBIT 5-2
Funding Percentage Split of Eligible Capital Improvement Projects

Eligibility	Federal Percent Share	State Percent Share*	Local Percent Share
Federal Only	90%	0%	10%
State Only	0%	95%	5%
Federal and State	90%	5%	5%

*Up to $250,000 per project.

The study assumes local funding available for Federal and State funding match percentages by Airport Classification, since detailed local revenue forecasts are not available. Exhibit 5-3 summarizes the airport sponsor's ability to afford its Federal and State funding match percentages.

EXHIBIT 5-3
Local Airport Sponsor's Ability to Contribute Local Match to Grant Funded Projects

Funding Scenario	Airport Classification					
	Commercial	Regional	Community	Local	Rural Essential	SPB
NPIAS - FEDERAL + STATE + LOCAL	YES	YES	YES*	<$1k / yr**	<$1k / yr**	<$1k / yr**
NPIAS - FEDERAL + LOCAL	YES	YES	YES*	<$1k / yr**	<$1k / yr**	<$1k / yr**
NPIAS - LOCAL ONLY	NA	NA	NA	NA	NA	NA
NON-NPIAS - STATE + LOCAL	NA	NA	YES*	<$1k / yr**	<$1k / yr**	<$1k / yr**
NON-NPIAS - LOCAL ONLY	NA	NA	NA	NA	NA	NA

*Airports known to have limited local revenue treated on a case-by-case basis

**Up to $20,000 local funding contribution toward Federal and/or State match over 20-years. Airports known to generate more than $5,000 per year local revenue range treated on a case-by-case basis.

As shown in Exhibit 5-3, **Commercial**, **Regional** and most **Community** airports have enough reliable revenue to support their local funding share. Only Mears and Cashmere-Dryden are limited to **$5,000 per year** capability to fund their CIP programs based on information provided by the airport sponsor in the airport survey conducted by the study.

Based on the survey information from airport sponsors, **Local**, **Rural Essential** and **Seaplane Bases** (SPB) have very limited revenue. The study generally established the funding threshold for Local, Rural Essential and SPB airports to be **$1,000 per year**. However, a case-by-case review of the survey information indicated greater annual revenues at some airports. This established the basis for increasing the following airports CIP funding threshold to $5,000 per year:

- Anderson Field
- Crest Airpark
- Cle Elum
- Desert Aire
- Mansfield
- Methow Valley State
- Ocean Shores
- Sunnyside
- Vashon
- Waterville
- Whidbey Airpark

Likely Funded Projects

Using the Federal and State funding eligibility requirements and the prioritized *Total Project Needs List*, the *Baseline* study data shows that 36% of the short-term and 52% of the long-term projects are likely to be funded. The other projects are either ineligible for Federal or State funding or do not have enough local funding available. The *Baseline* study data concludes the State's total capital need (funded, unfunded, and ineligible) is just short of $3 billion.

For all airports, except SeaTac, the Federal Share for eligible projects is 90%. For SeaTac, the Federal Share is 75% because it is a large hub airport. The Federal funding share for this group of airports totaled almost $1.47 billion. Of the Federal funding share, more than $338 million is likely to be unfunded due to insufficient state/local match.

$338 million of Federal fund supported projects are likely to be unfunded due to insufficient state/local match.

The *Baseline* study data shows that 36% of the short-term and 52% of the long-term projects are likely to be funded.

The State share of eligible projects is 5% if the projects are also eligible for Federal funding. If not, the State funds 95% of the project cost. The State funding share for this group of projects totals just over $116 million. Of the State funding share, $69 million is expected to go unfunded. The Local funding share is 10% if the project is only eligible for Federal funding and 5% if it is eligible for Federal and/or State funding. The study shows that the Local funding share required for WSDOT airports is more than $1.39 billion. Of the Local funding share, $1.15 billion is ineligible for Federal and State grant aid. Exhibits 5-4 through 5-6 detail the *Baseline* short-term and long-term project costs, funding status and funding share responsibilities.

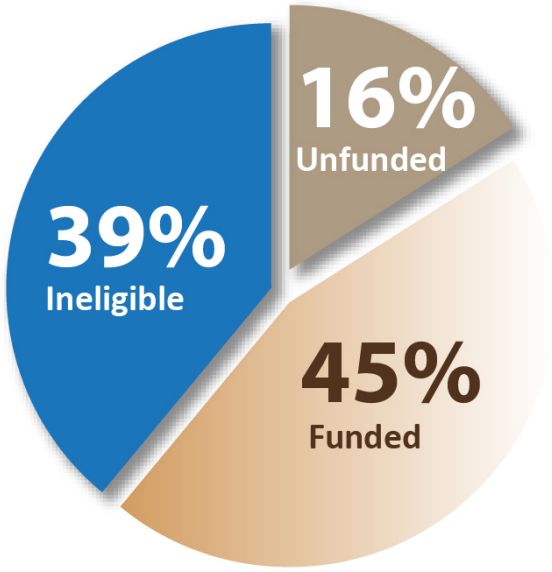
Of the State funding share, $69 million is expected to go unfunded.

EXHIBIT 5-4

Short-term and Long-term Funding Share Responsibility – *Baseline Need*

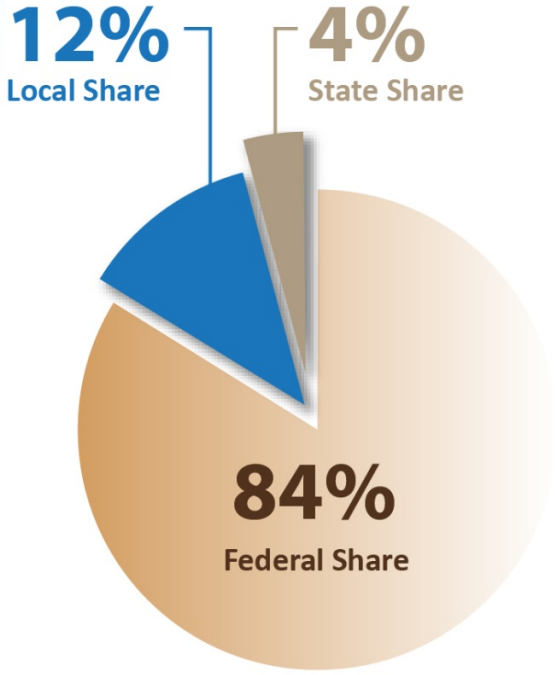
Short-Term	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$474,505,031.00	$420,883,975.50	$18,233,811.30	$35,387,244.20
Likely Unfunded	$414,942,531.00	$321,928,107.60	$42,225,958.50	$50,788,464.90
Ineligible	$422,168,921.00	$ -	$ -	$422,168,921.00
Total	**$1,311,616,483.00**	**$742,812,083.10**	**$60,459,769.80**	**$508,344,630.10**
Long-Term (*Baseline*)	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$866,254,055.60	$710,373,254.61	$28,747,722.02	$127,133,078.96
Likely Unfunded	$61,575,714.64	$16,701,590.24	$27,027,338.68	$17,846,785.72
Ineligible	$731,873,593.00	$ -	$ -	$731,873,593.00
Total	**$1,659,703,363.24**	**$727,074,844.85**	**$55,775,060.70**	**$876,853,457.68**
Total Need (*Baseline*)	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$1,340,759,086.60	$1,131,257,230.11	$46,981,533.32	$162,520,323.16
Likely Unfunded	$476,518,245.64	$338,629,697.84	$69,253,297.18	$68,635,250.62
Ineligible	$1,154,042,514.00	$ -	$ -	$1,154,042,514.00
Total	**$2,971,319,846.24**	**$1,469,886,927.95**	**$116,234,830.50**	**$1,385,198,087.78**
Annual Average (*Baseline*)	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$67,037,954.33	$56,562,861.51	$2,349,076.67	$8,126,016.16
Likely Unfunded	$23,825,912.28	$16,931,484.89	$3,462,664.86	$3,431,762.53
Ineligible	$57,702,125.70	$ -	$ -	$57,702,125.70
Total	**$148,565,992.31**	**$73,494,346.40**	**$5,811,741.53**	**$69,259,904.39**

EXHIBIT 5-5
Total Funding Status for All Projects – Baseline Need



WSDOT_Total_Fund_4_all_Projects_v1

EXHIBIT 5-6
Total Share of Funded Projects – Baseline Need



WSDOT_PIE_Total_Funded_Baseline_v1

From Exhibit 5-4, almost half ($1.3 billion) of the total projects defined in this study are programmed in the short-term (0-5 years). This is very simply due to the uncertainly of long-term projects when compared to the data available on short-term projects. In response to this finding, **the study developed an alternative or *Projected* long-term funding scenario to the *Baseline* data to more realistically forecast the value of long-term project needs.** A projection of long-term needs extending 15 years from the short-term needs is presented in Exhibit 5-7 Using the long-term *Projected Need*, the total capital need at the State's airport is expected to exceed $5.2 billion over the next 20 years. **Of which, the State's funding share responsibility is over $241 million. With only $28 million of forecasted State funding available, a significant gap will exist in CIP projects being implemented**. Exhibits 5-8 and 5-9 detail the *Projected* short-term and long-term funding status and funding share responsibilities.

As is illustrated in Exhibits 5-7 and 5-9, the short-fall in State funding requires the Local funding share be greater. In many cases, the study found that the State is unable to contribute its 5% match for eligible projects at NPIAS airports under the state grant Airport Aid Program. In these cases, the airport sponsor must contribute the entire 10% grant match when Federal funding is available, rather than 5% if the State were able to contribute its share. **For Non-NPIAS airports, the State's inability to fund all eligible projects places the responsibility for the entire project cost on the airport sponsor.**

Exhibits 5-10 through 5-12 provide detail on the funding status and funding share of short-term and long-term project costs by NPIAS and Non-NPIAS airport.

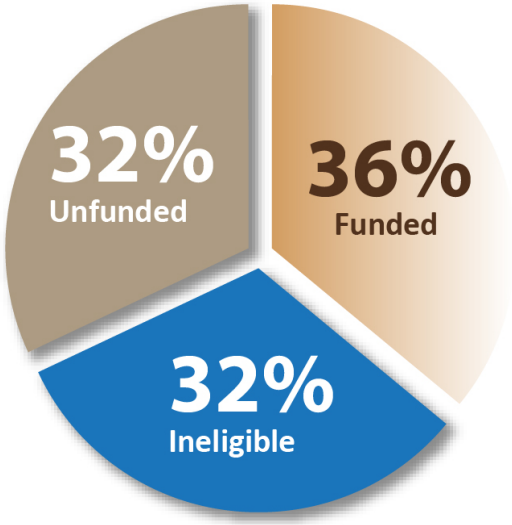
EXHIBIT 5-7

Short-term and Long-term Funding Share Responsibility – *Projected Need*

Short-Term	Total Cost	Federal Share	State Share	Local Share
Likely Funded	$474,505,031.00	$420,883,975.50	$18,233,811.30	$35,387,244.20
Likely Unfunded	$414,942,531.00	$321,928,107.60	$42,225,958.50	$50,788,464.90
Ineligible	$422,168,921.00	$ -	$ -	$422,168,921.00
Total	**$1,311,616,483.00**	**$742,812,083.10**	**$60,459,769.80**	**$508,344,630.10**
Long-Term (*Projected*)	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$1,423,515,093.00	$1,262,651,926.50	$54,701,433.90	$106,161,732.60
Likely Unfunded	$1,244,827,593.00	$965,784,322.80	$126,677,875.50	$152,365,394.70
Ineligible	$1,266,506,763.00	$ -	$ -	$1,266,506,763.00
Total	**$3,934,849,449.00**	**$2,228,436,249.30**	**$181,379,309.40**	**$1,525,033,890.30**
Total Need (*Projected*)	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$1,898,020,124.00	$1,683,535,902.00	$72,935,245.20	$141,548,976.80
Likely Unfunded	$1,659,770,124.00	$1,287,712,430.40	$168,903,834.00	$203,153,859.60
Ineligible	$1,688,675,684.00	$ -	$ -	$1,688,675,684.00
Total	**$5,246,465,932.00**	**$2,971,248,332.40**	**$241,839,079.20**	**$2,033,378,520.40**
Annual Average (*Projected*)	**Total Cost**	**Federal Share**	**State Share**	**Local Share**
Likely Funded	$94,901,006.20	$84,176,795.10	$3,646,762.26	$7,077,448.84
Likely Unfunded	$82,988,506.20	$64,385,621.52	$8,445,191.70	$10,157,692.98
Ineligible	$84,433,784.20	$ -	$ -	$84,433,784.20
Total	**$262,323,296.60**	**$148,562,416.62**	**$12,091,953.96**	**$101,668,926.02**

EXHIBIT 5-8

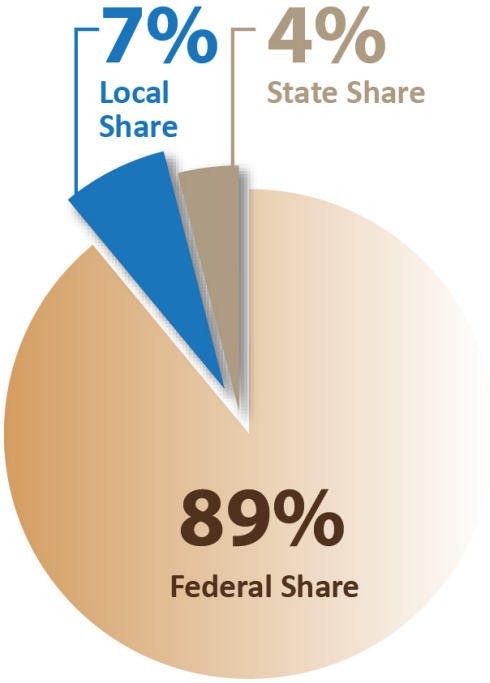
Total Funding Status for All Projects – *Projected Need*



WSDOT_Total_Fund_Projected_v1

EXHIBIT 5-9

Total Share of Funded Projects – *Projected Need*



WSDOT_Gap_State_Funded_v1

EXHIBIT 5-10

Short-term and Long-term Funding Share Responsibility (NPIAS vs. Non-NPIAS)

NPIAS Short-Term	Total Cost	Federal Share	State Share	Local Share
Likely Funded	$471,670,695.00	$420,883,975.50	$15,633,642.40	$35,153,077.10
Likely Unfunded	$368,141,564.00	$321,928,107.60	$15,409,367.40	$30,804,089.00
Ineligible	$408,764,513.00	$ -	$ -	$408,764,513.00
Total	**$1,248,576,772.00**	**$742,812,083.10**	**$31,043,009.80**	**$474,721,679.10**
NPIAS Long-Term (*Baseline*)				
Likely Funded	$856,627,449.57	$710,373,254.61	$20,879,622.48	$125,374,572.48
Likely Unfunded	$18,557,322.49	$16,701,590.24	$927,866.12	$927,866.12
Ineligible	$718,352,493.00	$ -	$ -	$718,352,493.00
Total	**$1,593,537,265.06**	**$727,074,844.85**	**$21,807,488.60**	**$844,654,931.60**
NPIAS Long-Term (*Projected*)				
Likely Funded	$1,415,012,085.00	$1,262,651,926.50	$46,900,927.20	$105,459,231.30
Likely Unfunded	$1,104,424,692.00	$965,784,322.80	$46,228,102.20	$92,412,267.00
Ineligible	$1,226,293,539.00	$ -	$ -	$1,226,293,539.00
Total	**$3,745,730,316.00**	**$2,228,436,249.30**	**$93,129,029.40**	**$1,424,165,037.30**
Non-NPIAS Short-Term				
Likely Funded	$2,834,336.00	$ -	$2,600,168.90	$234,167.10
Likely Unfunded	$46,800,967.00	$ -	$26,816,591.10	$19,984,375.90
Ineligible	$13,404,408.00	$ -	$ -	$13,404,408.00
Total	**$63,039,711.00**	**$0.00**	**$29,416,760.00**	**$33,622,951.00**
Non-NPIAS Long-Term (*Baseline*)				
Likely Funded	$9,626,606.03	$ -	$7,868,099.55	$1,758,506.48
Likely Unfunded	$43,018,392.15	$ -	$26,099,472.56	$16,918,919.59
Ineligible	$13,521,100.00	$ -	$ -	$13,521,100.00
Total	**$66,166,098.18**	**$0.00**	**$33,967,572.11**	**$32,198,526.07**
Non-NPIAS Long-Term (*Projected*)				
Likely Funded	$8,503,008.00	$ -	$7,800,506.70	$702,501.30
Likely Unfunded	$140,402,901.00	$ -	$80,449,773.30	$59,953,127.70
Ineligible	$40,213,224.00	$ -	$ -	$40,213,224.00
Total	**$189,119,133.00**	**$0.00**	**$88,250,280.00**	**$100,868,853.00**

For the reasons stated earlier regarding the understatement of the *Baseline* long-term project needs, the long-term projection of the short-term needs results in a more realistic view of the magnitude of funding share responsibilities over the next 20 years. From Exhibits 5-11 and 5-12, the study prioritizes projects at NPIAS airports higher and they benefit greatly from Federal grant aid, where the total of State grant aid and the local funding share is 10% of an eligible project's cost.

EXHIBIT 5-11
Total Funding Status for Projects at NPIAS and Non-NPIAS Airports – *Baseline Need*

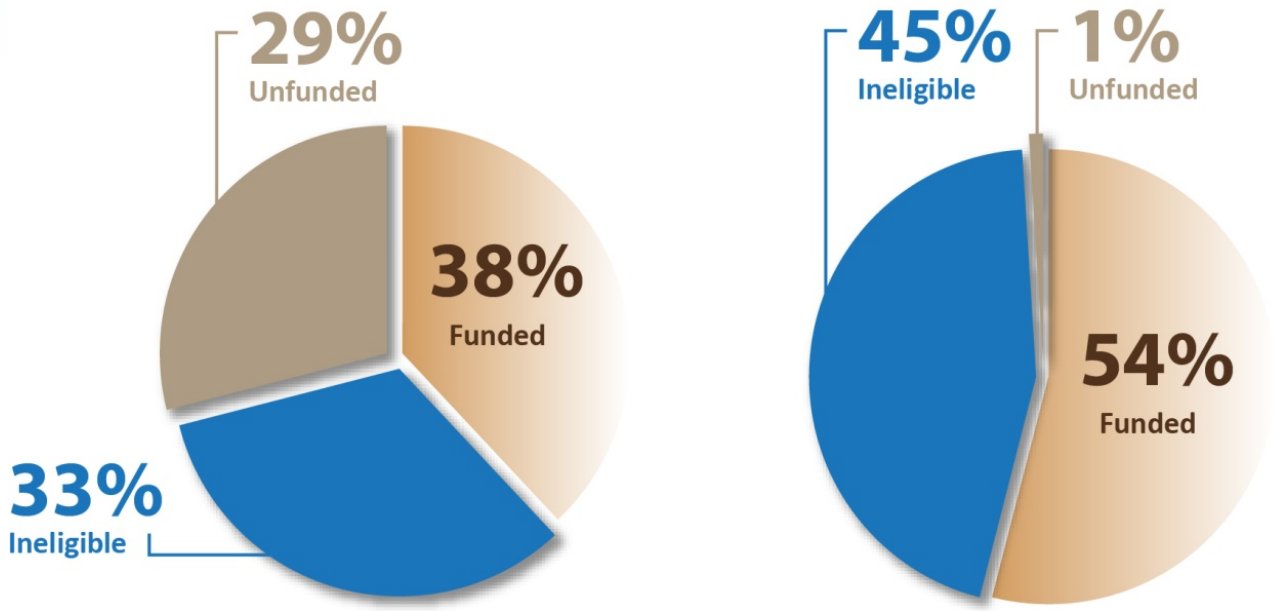
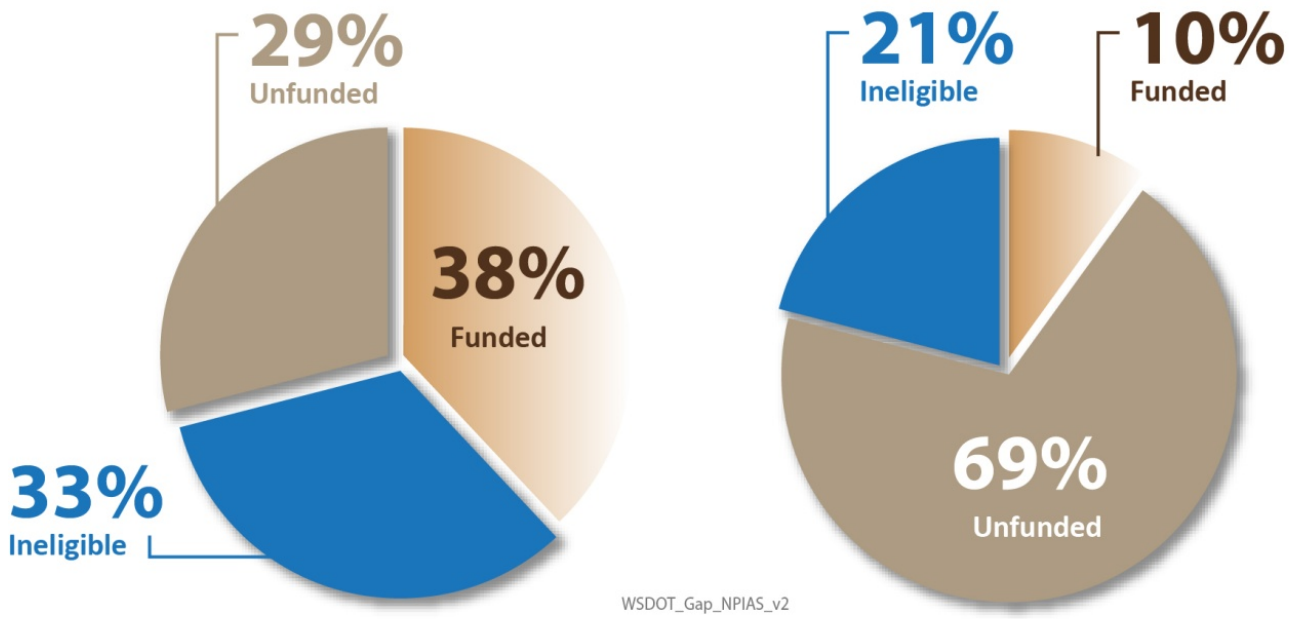


EXHIBIT 5-12
Total Funding Status for Projects at NPIAS and Non-NPIAS Airports – *Projected Need*



Ineligible Projects and Influence of Large Commercial Airports

The study identified over $1.6 billion of ineligible projects mentioned. These projects, which are typically projects that result in revenue generation to the airport (i.e., parking, terminal and hangar facilities, etc.), do not currently meet FAA and WSDOT eligibility requirements. In order to arrive at a more realistic conclusion, the study excluded ineligible projects from federal and state funding programs, and analyses of consequences resulting from funding gaps. The projects that remain are eligible for Federal and State funding and are referred to as the *Program Need*. While ineligible projects are excluded from the analyses, it is important to understand that eligibility requirements can change over time. In particular, the State recognizes the value in adjusting its aid eligibility requirements to support projects beyond just basic infrastructure needs that can spur economic development and create revenue for airports. However, it is not expected that project eligibility for Federal funding will change substantially to include revenue producing projects. With that, the State's support for ineligible project needs could assist local airport sponsors with implementing these projects.

In addition to identifying ineligible projects, the study recognizes that the State's large commercial airports have not typically requested or received grant aid, despite being eligible. As discussed in the *Airport Investment Needs* section, State funding was not allocated to projects at SeaTac and has no influence on the State's funding share responsibility of the *Program Need*. Bellingham, Boeing Field, Spokane and Tri-Cities have also not typically participated in the State's grant aid program to date. For sensitivity purposes to State funding share responsibilities, Exhibit 5-13 summarizes the *Program Need* without projects from those five airports which have not typically received State grant aid.

EXHIBIT 5-13
Statewide Program Need Summary without Large Commercial Service Airports

20-year Program Need	$2,938,151,284.00
20-year Program Need State Share	$229,587,731.00
20-year Gap	$1,244,116,336.00
20-year Gap State Share	$161,115,544.60
Average Annual Need	$146,907,564.20
Average Annual Need State Share	$11,479,386.55
Average Annual Gap	$62,205,816.80
Average Annual Gap State Share	$8,055,777.23

The *Program Need* is reduced from almost $3.6 billion to just over $2.9 billion without large commercial airports. However, the State funding share responsibility is only reduced by about $12 million from $241 million to $229 million, largely because the study already excluded State funding allocations to SeaTac.

Additionally, the five large commercial airports have about $827 million worth of ineligible projects. This represents roughly half of the projected $1.6 billion of total ineligible projects identified by the study.

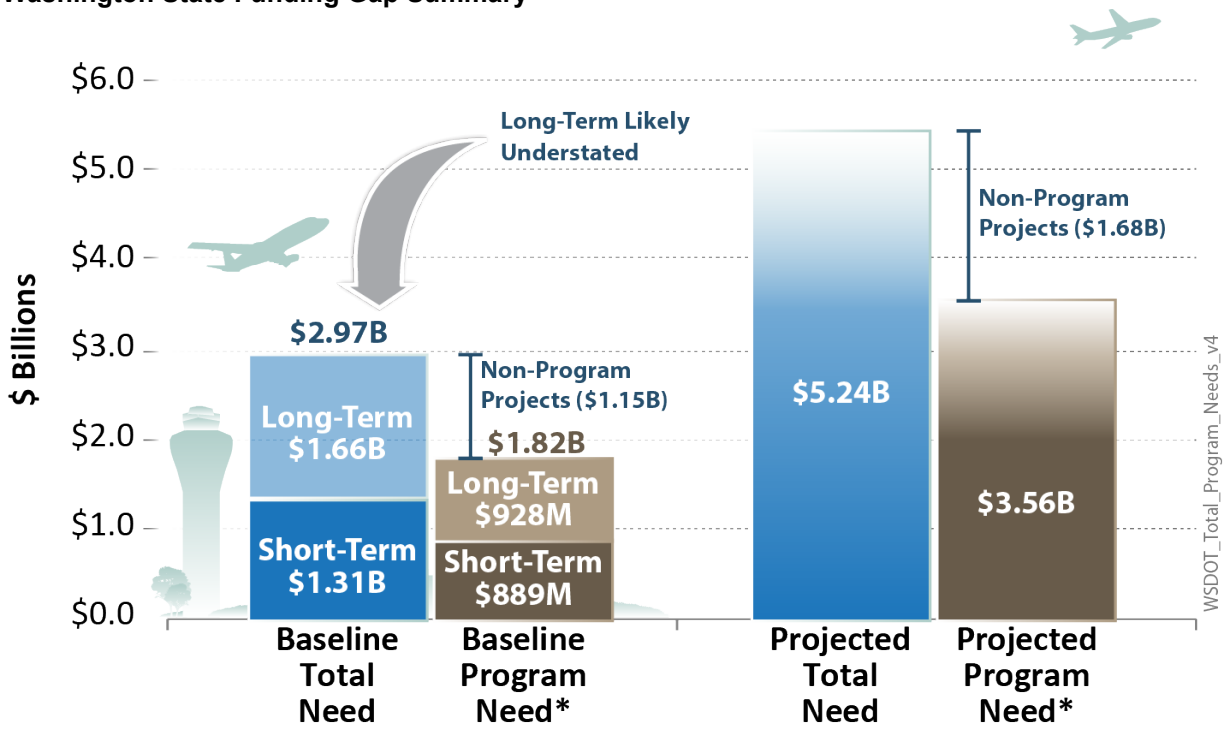
Conclusion

Application of the forecast available short and long-term funding from FAA and WSDOT to the total prioritized project needs list resulted in an assessment of projects that are 'likely to be funded', projects that are 'unlikely to be funded' and projects that are ineligible for FAA and/or WSDOT funding. The funding gap in Washington State is demonstrated by the short and long-term 'unlikely to be funded' projects. Exhibit 5-14 summarizes determination of the funding gap, based on the *Baseline Program Need* as determined from the study data short and long-term projects, as well as the *Projected Program Need* as determined from projection of the short-term need throughout the 20-year planning horizon. **The funding gap in Washington State is significant, identified as $477 million, but may likely be closer to $1.7 billion.** Exhibit 5-15 illustrates the split between 'likely to be funded' and 'unlikely to be funded' for the *Baseline* and *Projected Total and Program Need*.

EXHIBIT 5-14
Washington State Funding Gap Summary
($ Millions)

	Baseline Program Need			*Projected Program Need*		
	NPIAS	Non-NPIAS	TOTAL	NPIAS	Non-NPIAS	TOTAL
Program Need	$1,715	$102	$1,817	$3,559	$198	$3,557
Likely to be Funded	$1,328	$12	$1,340	$1,887	$11	$1,898
Unlikely to be Funded	$387	$90	$477	$1,472	$187	$1,659

EXHIBIT 5-15
Washington State Funding Gap Summary



* Based on short-term project costs, allocations, and ratios

Economic Impacts

Background

In a study that considers future projects, it is important to understand the consequences and potential impacts of perpetuating current funding levels. Impact analyses should include economic impacts as well as tax revenue implications. To measure these consequences, this section utilized projects identified in the needs portion of this study. Projects within the needs section were categorized based on their FAA and WSDOT funding score and identified for the short-term (0-5 years) and long-term (6-20 years) as:

- Projects likely to be funded,
- Projects unlikely to be funded, and
- Ineligible projects

By assigning projects into these categories, it was possible to measure the consequences of each and determine the financial implications in terms of economic and tax revenue impact. The methodology used to measure these impacts is explained in the subsections below. The results of individual airport impacts as well as overall system wide impacts are included in Appendix 16.

The study uses the following resources to collect, define and compare economic and tax revenue impacts associated with projects: Prior sections of this study, Total Project Needs List, WSDOT Aviation Economic Impact Calculator, Washington city/county tax tables (effective April 1 – June 30, 2014) (Appendix 15), Washington on-line Business and Occupational (B&O) Tax guidance, Internal Revenue Service sales tax table, and the WSDOT Airport Investment Study advisory committee.

Economic Impact

Washington's airports help to sustain business and leisure visitors in Washington. The airports themselves are significant generators of economic activity. While daily activities at airports support jobs, payroll, and economic output for Washington's economy, so does construction at those airports. This section identifies the economic impacts associated with possible future airport development options and their employment, annual payroll, and total economic activity (output) impacts.

The study calculated economic impacts from construction categories identified above using an input-output modeling process found in the WSDOT Aviation Economic Impact Calculator. The WSDOT Aviation Economic Impact Calculator is designed to assist users in estimating an airport's change in regional economic impacts based on potential changes in activity or capital development at an airport. The calculations in this model are high-level estimates designed to give a sense of magnitude of economic impacts, but are not to be taken as specific projections. The calculator uses averages and typical ranges to provide a reasonable estimate of impacts based on project costs entered, which should not be assumed to be precise calculations.

The calculator considers economic impacts associated with on-airport development and construction activities. Impacts that are measured include the following:

- **Direct Impacts –** Direct impacts account for the initial point where money from on-airport construction first starts circulating in the economy. Impacts include the employment, payroll, and material cost associated capital expenditures to develop short and long term projects. Project cost amounts from each category become direct jobs and wages in the impact tables because the jobs (and the wages associated with them) are all assumed to be tied to the project at the airport, which is within the economic impact region.
- **Indirect and Induced Impacts –** Indirect and induced impacts result when the direct dollars from construction projects are recirculated within the local economy.
- **Total Impacts –** Total impacts are the sum of all direct, indirect/induced economic impacts attributable to construction of the airports.

The calculator used for this analysis projects direct, indirect/induced and total estimates for the following three separate components of Washington's economy:

- **Employment –** Employment is based on the total number of full-time jobs attributed to construction projects.
- **Labor Income –** Payroll represents the annual salary, wages, and benefits paid to all employees working on the projects identified.
- **Total Output –** Output for construction activities is the sum of annual gross sales for materials and services related to capital expenditures.

In addition to these measures, the study estimated the amount for products and materials purchased for construction projects by subtracting labor income from total output. The study uses direct impacts from this component to calculate local and state sales tax from construction (discussed later in this section).

Tax Revenues

Each project carried out at a Washington airport contributes to the Washington state tax base. The study categorizes contributions in tax revenue as follows:

- **Sales/Use Tax on Development –** The cost of materials, equipment, supplies, and other goods needed to construct airport projects is subject to sales/use tax. The Washington state sales/use tax is 6.5 percent and is applied to the direct economic output (minus labor) of projects. Each city/county throughout Washington has its own sales/use tax. Local sales/use taxes range from .5 to 3.1 percent and are also applied to the direct economic impact (without labor) of projects based on the city or county in which the airport is located.
- **Sales Tax on Jobs –** The Internal Revenue Service provides estimates for sales taxes paid annually by workers. These estimates are broken down by salary range and the number of exemptions an employee qualifies for. The economic impact analysis estimates the number of full-time jobs and wages created by projects. Using these measures, it is possible to calculate the average annual salary of workers and estimate the sales taxes paid by workers employed on airport construction projects.
- **Business & Occupational (B&O) Tax –** The state B&O tax is a gross receipts tax, measured on the value of products, gross proceeds of sale, or gross income of a business. Washington, unlike many other states, does not have an income tax. Washington's B&O tax is calculated on gross income, meaning there are no deductions from the B&O tax for labor, materials, or other costs of doing business. Therefore, in this analysis, the B&O tax is applied to total project costs. For almost all project categories, the B&O tax rate is .471 percent (B&O Retailing rate). Another rate, included in the B&O tax, is for design services (1.5 percent – B&O Services rate). Based on information available in the Project Needs List, it is not possible to isolate projects that are dedicated to design. Therefore, all projects in this analysis are subject to the B&O Retailing rate of .471%.

By calculating the estimated tax revenue from the categories of projects discussed earlier, it is possible to measure and compare the tax revenue implications of performing or not performing projects.

Economic Impact and Tax Revenue Implications

For each airport, projects identified in the Project Needs List are sorted and costs entered as short-term, long-term and total into the WSDOT Aviation Economic Impact calculator to determine the economic impacts for each category. Additionally, tax impacts related to these same project costs are calculated to measure and compare tax revenue implications. The following is a description of projects entered into the calculator and measured for tax revenue implications:

- **All Projects:** All projects for each airport throughout the 20-year period. This includes all three categories of projects; likely to be funded, unlikely to be funded, and ineligible.
- **Projects Likely to be Funded:** Based on FAA and WSDOT scoring, projects likely to be funded throughout the 20-year period. This analysis applies forecasted funding to projected, prioritized need and yields a group of projects that score high enough to be funded with forecasted funds.
- **Projects Unlikely to be Funded:** Although eligible, these projects do not score highly on the FAA or WSDOT ranking system and may not be funded.
- **Ineligible Projects:** Although valid airport projects, these projects are considered ineligible for FAA and/or WSDOT funding and are not considered as part of the program need.
- **Consequence:** Remaining Projects (All Projects - Likely Funded Projects): This category measures the difference between all projects and those that are likely to be funded. Essentially, this quantifies the impact of not funding the remaining projects defined in the Project Needs List.

The results generated from inputting projects from the Project Needs List (in the categories stated above) into the WSDOT Economic Impact calculator as well as applied to the various tax rates mentioned above, illustrates the economic impact and tax revenue implications of funding projects on various levels. Washington aviation officials and state legislators can use this information to determine how much economic benefit and tax revenue is lost or gained from funding projects at Washington State airports.

Exhibits 5-16 and 5-17 show the economic impacts associated with projects in each category discussed above. The study estimated total economic output of $2.9 billion in projects to be $3.5 billion and worth over 24,000 jobs. This total economic output includes all three categories of projects; likely to be funded, unlikely to be funded and ineligible. **If likely funded projects are the only projects to be developed (worth approximately $1.3 billion), the consequence of not doing remaining projects would reduce the economic impact contribution of delivering all projects by almost $2 billion and over 13,000 jobs.**

EXHIBIT 5-16
Economic Impacts
($ Millions)

	Project Costs	Jobs			Labor Income			Total Output		
		Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
All Projects										
Short Term	$1,312	5,780	4,132	9,912	$355	$192	$547	$847	$545	$1,392
Long Term	$1,660	7,308	7,105	14,413	$449	$354	$803	$1,072	$1,005	$2,077
Total	$2,971	13,088	11,237	24,325	$804	$546	$1,350	$1,919	$1,550	$3,469
Likely Funded Projects										
Short Term	$475	2,094	1,138	3,232	$128	$50	$178	$307	$141	$448
Long Term	$866	3,818	3,521	7,339	$234	$172	$407	$560	$491	$1,050
Total	$1,341	5,912	4,659	10,571	$362	$222	$585	$867	$632	$1,498
Unlikely to be Funded Projects										
Short Term	$415	1,823	1,253	3,076	$112	$57	$169	$268	$162	$430
Long Term	$62	264	109	373	$17	$5	$22	$40	$14	$54
Total	$477	2,087	1,362	3,449	$129	$62	$191	$308	$176	$484

EXHIBIT 5-16
Economic Impacts
($ Millions)

	Project Costs	Jobs			Labor Income			Total Output		
		Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
Ineligible Projects										
Short Term	$422	1,867	1,747	3,614	$114	$85	$200	$273	$242	$515
Long Term	$732	3,225	3,467	6,692	$198	$176	$374	$473	$500	$972
Total	$1,154	5,092	5,214	10,306	$312	$261	$574	$746	$742	$1,487
Consequence: All Projects - Likely Funded Projects										
Short Term	$837	3,686	2,994	6,680	$226	$142	$369	$541	$404	$945
Long Term	$793	3,490	3,584	7,074	$215	$182	$397	$513	$514	$1,026
Total	$1,630	7,176	6,578	13,754	$441	$324	$766	$1,053	$918	$1,971

EXHIBIT 5-17
Tax Revenue Implications
($ Millions)

	Sales/Use Tax on Development		Sales Tax Paid by Jobs	B&O Tax	Total Tax Revenue Implications
	State Tax	Local Tax			
All Projects					
Short Term	$32	$10	$8	$6	$56
Long Term	$40	$16	$12	$8	$76
Total	$72	$26	$20	$14	$132
Likely Funded Projects					
Short Term	$12	$3	$3	$2	$20
Long Term	$21	$8	$6	$4	$39
Total	$33	$11	$9	$6	$59
Unlikely to be Funded Projects					
Short Term	$10	$3	$3	$2	$18
Long Term	$2	$1	$0	$	$2
Total	$12	$4	$3	$2	$20
Ineligible Projects					
Short Term	$10	$4	$3	$2	$19
Long Term	$18	$7	$5	$3	$34
Total	$28	$11	$8	$5	$53
Consequence: All Projects - Likely Funded Projects					
Short Term	$21	$7	$5	$4	$37
Long Term	$19	$8	$6	$4	$37
Total	$40	$15	$11	$8	$77

Conclusion

Economic impacts and tax revenue implications of project categories discussed within this section are presented in Appendix 16. This data may be used to gain an understanding of the benefits associated with funding projects at Washington airports as well as the implication of not funding them.

This analysis also serves as a useful tool in estimating the implications of alternative funding scenarios. Through the analysis described within this section, the study established a correlation between project funding levels and economic impact/tax revenue. Meaning, that for every project dollar spent there is a corresponding economic impact and tax revenue implication. This allows for the ability to estimate the implications with alternative funding scenarios. The study accomplishes this by calculating the ratio between project funding and economic impact/tax revenue values (presented in Appendix 16. Using this ratio, project funding levels may be adjusted (alternative funding scenarios) to determine their economic and tax revenue implications.

On an average basis, the analysis performed, using the WSDOT Aviation Economic Impact Calculator, yielded the following correlative results:

- Every $122,000 in project cost yields one full-time construction job
- Every $2.20 in project cost yield $1 in construction labor income
- Every dollar spent on a construction project produces $1.17 in total economic output

Through an evaluation of projects and WSDOT long term goals, the study determined that data collected for long term projects (6-20 years) is conservative. Almost half ($1.3 billion) of the total project needs defined in this study are programmed in the short term (0-5 years). This is due to the uncertainty of long term projects when compared to the data available on short term projects. As such, the study developed an alternative funding scenario to more accurately align long term projects with short term projects.

Projecting the short term project needs over the long term creates an estimated total project need of $5.2 billion over the next 20 years, as opposed to the baseline need of $2.9 billion. Using the correlation values described above, a $5.2 billion level of projects would create more than 42,000 jobs, $2.3 billion in wages and $6.0 billion total economic output.

This consequences evaluation may be summarized as follows:

- Unlikely to be funded projects, requiring $477 million funding forecasted to be unavailable, result in an opportunity cost of $484 million in total economic output, 3,900 jobs not provided and $20 million in tax revenues not received.
- Ineligible projects not funded represent an even larger impact with nearly $1.5 billion unrealized total economic output, more than 9,400 jobs unavailable, and $53 million in unrecognized tax revenues.

Airport Services Impacts

Background

This study addresses potential impacts to airport provided services and/or community impacts associated with those services from insufficient capital improvement project funding in terms of the 17 aviation-related activities identified in *WSDOT's Aviation Economic Impact Study* (2012). Those 17 aviation-related activities are:

- Commercial Passenger Service
- General Aviation: Business and Corporate Travel
- General Aviation: Personal Transportation
- Pilot Training and Certification
- Air Cargo
- Blood, Tissue and Organ Transportation
- Medical Air Transport
- Search and Rescue
- Firefighting
- National Security
- Emergency Preparedness and Disaster Response
- Scientific Research
- Aerial Photography
- Aircraft Manufacturing
- Agriculture
- Aerial Sightseeing
- Skydiving

Analysis

The study develops the impact to the airport-related activities from the relationship and ability to fund short-term and long-term airport projects. This study analyzes each of the 17 aviation-related activities by comparing a weighted percent of funded projects over the *Projected Program* period for each airport and the impact of the resulting ability to fund those projects. The study uses weighted percentages to differentiate the importance of a particular project to a specific aviation-related activity. The project weighting factors are determined for each aviation-related activity by performing a pairwise comparison of the project component codes discussed next. A pairwise comparison is a decision-making process using criterion comparisons performed in pairs to derive the relative importance or ranking of each criterion evaluated together.

A pairwise comparison is a decision-making process using criterion comparisons performed in pairs to derive the relative importance or ranking of each criterion evaluated together.

For each aviation-related activity analysis, the study includes only the airports providing that activity. For example, only projects at the State's 16 commercial service airports are used in the analysis for Commercial Passenger Service. Additionally, projects are weighted according to their importance to a particular activity. In the *Total Project Needs List,* all projects are categorized according to their FAA component code. The component codes are defined in FAA Order 5100.39A Appendix 5 and as follows:

- AP – Apron
- BD – Building
- EQ – Equipment
- FI – Financing
- GT – Ground Transportation
- HE – Helipad
- HO – Homes (Noise Abatement)
- LA – Land
- NA – New Airport
- OT – Other
- PB – Public Building
- PL – Planning
- RW – Runway
- SB – Seaplane Base
- TE – Terminal
- TW – Taxiway
- VT – Vertiport

The study determines weights by a pairwise comparison model which evaluates the importance of each project component specific to a particular aviation-activity. For example, Commercial Passenger Service weighs Terminal (TE) projects much higher than Firefighting. Runway (RW), taxiway (TW) and apron (AP) projects are critical to an airport's function and consistently rank high among all aviation-related activities. Each aviation-related activity pairwise comparison model is included in Appendix 17. A sample pairwise comparison model is illustrated in Exhibit 5-18.

In addition to weighting the importance of projects to a specific aviation-related activity, the type of airport and size is also weighted accordingly with larger activity airports having more importance. The study follows WSDOT's Statewide Capital Improvement Program for ranking airports and is presented in Exhibit 5-19.

As stated earlier, the study evaluates impacts to the aviation-related activities by comparing a weighted percent of funded projects over the projected program period for each airport and ranks the impact of the resulting ability to fund those projects from "minimally affected" to "completely affected" as is defined in Exhibit 5-20.

EXHIBIT 5-18

Sample Pairwise Comparison Model

Component Code Pairwise Comparison Model – Commercial Passenger Service

	AP	BD	EQ	FI	GT	HE	HO	LA	NA	OT	PB	PL	RW	SB	TE	TW	VT
AP - Apron		AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	RW	AP	AP	AP	AP
BD - Building			BD	BD	BD	BD	BD	BD	BD	BD	PB	BD	RW	BD	TE	TW	BD
EQ - Equipment				EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	RW	EQ	TE	TW	EQ
FI - Financing					GT	FI	FI	FI	FI	FI	FI	FI	RW	FI	TE	TW	FI
GT - Ground Transportation						GT	GT	GT	GT	GT	GT	PL	RW	GT	GT	TW	GT
HE - Helipad							HE	LA	NA	OT	PB	PL	RW	SB	TE	TW	HE
HO - Homes								LA	NA	OT	PB	PL	RW	SB	TE	TW	VT
LA - Land									LA	OT	PB	PL	RW	LA	TE	TW	LA
NA - New Airport										OT	PB	PL	RW	SB	TE	TW	NA
OT - Other											PB	PL	RW	OT	TE	TW	OT
PB - Public Building												PL	RW	SB	TE	TW	PB
PL - Planning													RW	PL	TE	TW	PL
RW - Runway														RW	RW	RW	RW
SB - Seaplane															TE	TW	SB
TE - Terminal																TW	TE
TW - Taxiway																	TW
VT - Vertiport																	

Weights			Relative Component Weight	Weight
AP - Apron	15	x	11.19	11
BD - Building	11	x	8.21	8
EQ - Equipment	11	x	8.21	8
FI - Financing	9	x	6.72	7
GT - Ground Transportation	10	x	7.46	7
HE - Helipad	2	x	1.49	1
HO - Homes	0	x	0.00	1
LA - Land	5	x	3.73	4
NA - New Airport	3	x	2.24	2
OT - Other	6	x	4.48	4
PB - Public Building	7	x	5.22	5
PL - Planning	9	x	6.72	7
RW - Runway	16	x	11.94	12
SB - Seaplane	4	x	2.99	3
TE - Terminal	12	x	8.96	9
TW - Taxiway	14	x	10.45	10
VT - Vertiport	0	x	0.00	1
	134	x	100.00	100
	100			
x =	0.746269			

EXHIBIT 5-19
Airport Weighting

Airport Classification	Airport Description	Airport Code	Weight
Commercial	Large/Medium-hub & At least 2,500 ops	A	4
Commercial	Small/Non-hub & At least 2,500 ops	B	3
Regional	All NPIAS relievers; 40+ based aircraft & 20,000+ ops	B	3
Regional	All NPIAS relievers; 40+ based aircraft & 8,000+ ops	C	2
Community	At least 20 based aircraft	C	2
Local	Fewer than 20 based aircraft	D	1
Rural Essential	Other land-based airports	D	1
Seaplane Base	FAA identified Seaplane Bases	NA	1

Source: WSDOT

EXHIBIT 5-20
Definition of Funding Consequences

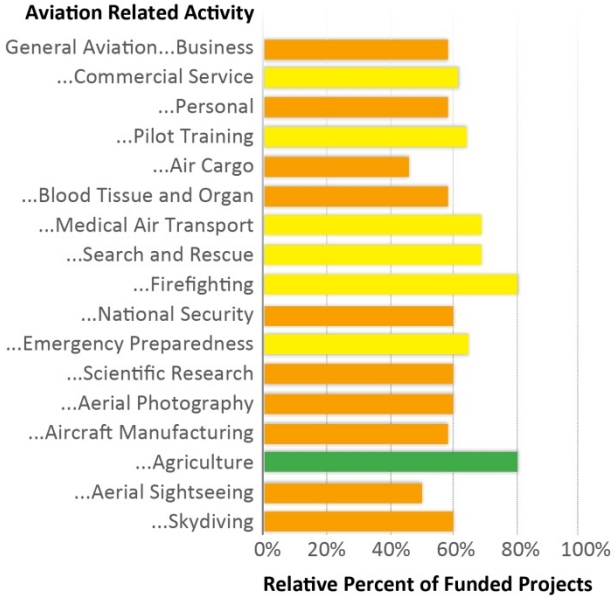
Impact	Definition	Consequences Narrative
Minimally Affected	(81 - 100% of Projects Funded)	Airport can afford to implement their planned capital improvement plan. Airport is able to maintain their current operations and facilities at a high level. Airport is also able to plan and construct improvements to fully meet projected 20-year demands.
Moderately Affected	(61 - 80% of Projects Funded)	Airport can largely afford to implement their planned capital improvement plan. Airport is able to maintain their current operations and facilities at a moderate-to-high level. Airport may need to defer the planning and construction of some improvements needed to fully meet projected 20-year demands.
Largely Affected	(41 - 60% of Projects Funded)	Airport can only partially afford to implement their planned capital improvement plan. Airport is able to maintain their current operations and facilities at a moderate level. Airport will have to defer lower priority maintenance projects and will need to defer the planning and construction of most improvements needed to meet projected 20-year demands.
Seriously Affected	(21 - 40% of Projects Funded)	Airport cannot afford to implement the majority of their planned capital improvement plan. Airport is able to maintain their current operations and facilities at a low level. Airport will have to defer most maintenance projects and will not be able to plan or construct improvements to meet projected 20-year demands.
Completely Affected	(0 - 20% of Projects Funded)	Airport cannot afford to implement their planned capital improvement plan. Airport is not able to maintain their operations and facilities. Airport will have to defer all but a few maintenance projects and will not be able to plan or construct improvements to meet projected 20-year demands.

The summary of aviation-related activity impacts based on the analysis of weighted and relative percentages of funded projects at respective airports providing each activity are presented in Exhibits 5-21 and 5-22. All individual aviation-related activity analyses are included in Appendix 18.

EXHIBIT 5-21
Summary Table of Aviation-related Activity Impacts (*Projected Program Need*)

Aviation-related Activity	Projected Program Need Impacts
Skydiving	
Aerial Sightseeing	
Agriculture	
Aircraft Manufacturing	
Aerial Photography	
Scientific Research	
Emergency Preparedness and Disaster Response	
National Security	
Firefighting	
Search and Rescue	
Medical Air Transport	
Blood Tissue and Organ Transportation	
Air Cargo	
Pilot Training	
General Aviation – Personal Transportation	
Commercial Service	
General Aviation – Business and Corporate Travel	

EXHIBIT 5-22
Summary Chart of Aviation-related Activity Impacts (*Projected Program Need*)



Conclusion

The results indicate that all aviation-related activities will be moderately to largely affected as result of projects not being funded. That is, airports as a whole can only partially afford to implement their planned capital improvement plan and are able to maintain their current operations and facilities at a moderate level. **Airports will likely have to defer lower priority maintenance projects and will need to defer the planning and construction of most improvements needed to meet projected program 20-year demands.**

While the percentage variances between aviation-related activities are subtle, projects associated with promoting commercial passenger service and life safety activities rank highest. Projects supporting non-commercial passenger service aviation-related businesses and recreational activities suffer as infrastructure degrades or is not expanded. Like life safety activities, agricultural activities benefit from needing little infrastructure other than a functional airfield (runway, taxiway, and apron) which are high priority projects at any airport. Furthermore, the agricultural services are limited to 19 of the State's airports. Of which, Pullman-Moscow and Walla Walla are NPIAS commercial service airports which have large capital programs and receive Federal funding and have the ability to develop their airports at a much higher level than agricultural services originating from local or rural essential airports. The magnitude of the two commercial service airports presents a favorable result, but excluding Pullman-Moscow and Walla Walla from the analysis, impacts to agricultural services are significant and would be considered completely affected.

Airport Facilities and Operations Impacts

Background

In addition to airport user impacts, the study evaluates impacts to the State's airport facilities. The study separates airport impacts into the following groups for evaluation:

- Airport Operations
- Airport Capacity
- Airport Sustainability
- Airport Facilities

Similar to the airport user analysis, the study evaluates impact to the airport facilities by comparing the percent of funded projects over the *Projected Program* period for each airport and ranks the impact of the resulting ability to fund those projects from "minimally affected" to "completely affected".

Analysis

To evaluate relative impacts to Airport Operations, Airport Capacity and Airport Sustainability, projects in the *Total Project Needs List* are grouped according to their FAA purpose codes. The purpose codes are defined in FAA Order 5100.39A Appendix 5 and as follows:

- CA – Capacity
- EN – Environment
- OT – Other
- PL – Planning
- RE – Reconstruction
- SA – Safety/Security
- SP – Statutory Emphasis Programs
- ST – Standards

The study determines weights by a pairwise comparison model which evaluates the importance of each project purpose specific to the group being evaluated. For example, the evaluation for Airport Operations weighs reconstruction, safety/security, statutory emphasis programs and safety projects higher than the evaluation for Airport Capacity. The evaluation for Airport Capacity weighs projects higher that are associated with long-term facility expansion, such as capacity and planning projects. Similarly, the evaluation for Airport Sustainability weighs projects heavier that are associated with the environmental and planning projects. Each pairwise comparison model is included in Appendix 19 and presented in Exhibits 5-23 and 5-24.

In addition to weighting the importance of project purposes, the study also weights airports by the type and size accordingly.

The summary of Airport Operations, Airport Capacity and Airport Sustainability impacts based on the analysis of weighted and relative percentages of funded projects are presented in Exhibits 5-25 and 5-26. All individual airport analyses of Airport Operations, Airport Capacity and Airport Sustainability are included in Appendix 20.

EXHIBIT 5-23

Pairwise Comparison Models for Weighting Projects between Airport Operations, Airport Capacity and Airport Sustainability

Airport Operations — Project Purpose Weight (Priority Scale 1 to 3)

	CA	EN	OT	PL	RE	SA	SP	ST
CA - Capacity		CA	CA	CA	RE	SA	SP	ST
EN - Environment			OT	PL	RE	SA	SP	ST
OT- Other				PL	RE	SA	SP	ST
PL - Planning					PL	SA	SP	ST
RE - Reconstruction						SA	RE	RE
SA - Safety/ Security							SP	SA
SP - Statutory Emphasis Programs								SP
ST - Standards								

Weights				Weight
CA - Capacity	3	X	10.71	11
EN - Environment	0	X	0.00	1
OT- Other	1	X	3.57	3
PL - Planning	3	X	10.71	11
RE - Reconstruction	5	X	17.86	18
SA - Safety/Security	6	X	21.43	21
SP - Statutory Emphasis Programs	6	X	21.43	21
ST - Standards	4	X	14.29	14
	28		100.00	100
	100			
X=	3.571429			

Airport Capacity — Project Purpose Weight (Priority Scale 1 to 3)

	CA	EN	OT	PL	RE	SA	SP	ST
CA - Capacity		CA	CA	CA	CA	CA	CA	CA
EN - Environment			OT	PL	RE	SA	SP	ST
OT- Other				PL	OT	SA	SP	ST
PL - Planning					PL	SA	PL	ST
RE - Reconstruction						SA	RE	RE
SA - Safety/Security							SP	SA
SP - Statutory Emphasis Programs								SP
ST - Standards								

Weights				Weight
CA - Capacity	7	X	25.00	25
EN - Environment	0	X	0.00	1
OT- Other	2	X	7.14	7
PL - Planning	4	X	14.29	14
RE - Reconstruction	3	X	10.71	11
SA - Safety/Security	5	X	17.86	18
SP - Statutory Emphasis Programs	4	X	14.29	14
ST - Standards	3	X	10.71	10
	28		100.00	100
	100			
X=	3.571429			

Airport Sustainability — Project Purpose Weight (Priority Scale 1 to 3)

	CA	EN	OT	PL	RE	SA	SP	ST
CA - Capacity		EN	CA	PL	RE	SA	SP	ST
EN - Environment			EN	EN	EN	SA	EN	EN
OT- Other				PL	RE	SA	SP	ST
PL - Planning					PL	SA	PL	PL
RE - Reconstruction						SA	RE	RE
SA - Safety/ Security							SP	SA
SP - Statutory Emphasis Programs								SP
ST - Standards								

Weights				Weight
CA - Capacity	1	X	3.57	4
EN - Environment	6	X	21.43	21
OT- Other	0	X	0.00	1
PL - Planning	5	X	17.86	18
RE - Reconstruction	4	X	14.29	14
SA - Safety/Security	6	X	21.43	21
SP - Statutory Emphasis Programs	4	X	14.29	14
ST - Standards	2	X	7.14	7
	28		100.00	100
	100			
X=	3.571429			

EXHIBIT 5-24

Pairwise Comparison Models for Weighting Projects by Facility

Component Code Pairwise Comparison Model – Facility

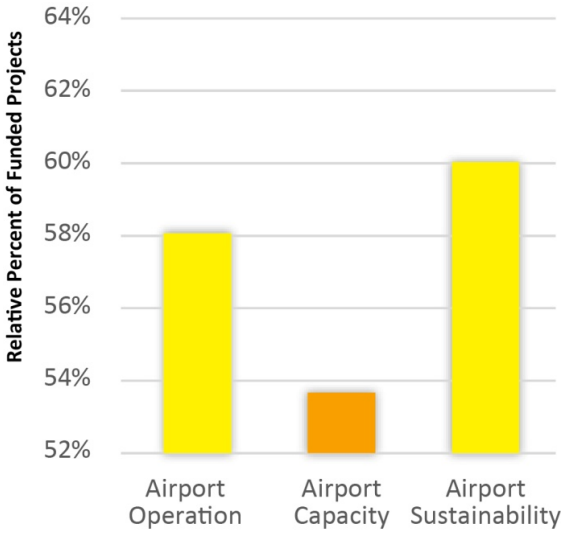
	AP	BD	EQ	FI	GT	HE	HO	LA	NA	OT	PB	PL	RW	SB	TE	TW	VT
AP - Apron		AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	RW	AP	AP	AP	AP
BD - Building			BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	RW	BD	TE	TW	BD
EQ - Equipment				EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	RW	EQ	TE	TW	EQ
FI - Financing					GT	FI	FI	FI	FI	FI	FI	FI	RW	FI	TE	TW	FI
GT - Ground Transportation						GT	GT	GT	GT	GT	GT	PL	RW	GT	GT	TW	GT
HE - Helipad							HE	LA	HE	OT	PB	PL	RW	SB	TE	TW	HE
HO - Homes								LA	HO	OT	PB	PL	RW	SB	TE	TW	VT
LA - Land									LA	OT	PB	PL	RW	LA	TE	TW	LA
NA - New Airport										OT	PB	PL	RW	SB	TE	TW	VT
OT - Other											PB	PL	RW	OT	TE	TW	OT
PB - Public Building												PL	RW	PB	TE	TW	PB
PL - Planning													RW	PL	TE	TW	PL
RW - Runway														RW	RW	RW	RW
SB - Seaplane															TE	TW	SB
TE - Terminal																TW	TE
TW - Taxiway																	TW
VT - Vertiport																	

Weights			Relative Component Weight	Weight
AP - Apron	15	x	11.19	11
BD - Building	12	x	8.96	9
EQ - Equipment	11	x	8.21	8
FI - Financing	9	x	6.72	7
GT - Ground Transportation	10	x	7.46	7
HE - Helipad	3	x	2.24	2
HO - Homes	1	x	0.75	1
LA - Land	5	x	3.73	4
NA - New Airport	0	x	0.00	1
OT - Other	6	x	4.48	4
PB - Public Building	7	x	5.22	5
PL - Planning	9	x	6.72	7
RW - Runway	16	x	11.94	12
SB - Seaplane	3	x	2.24	2
TE - Terminal	12	x	8.96	9
TW - Taxiway	14	x	10.45	10
VT - Vertiport	1	x	0.75	1
	134	x	100.00	100
	100			
x =	0.746			
	269			

EXHIBIT 5-25
Summary Table of Airport Operations, Capacity and Sustainability Impacts (*Projected Program Need*)

	Projected Program Need Impacts
Airport Operations	
Airport Capacity	
Airport Sustainability	

EXHIBIT 5-26
Summary Chart of Airport Operations, Capacity and Sustainability Impacts (*Projected Program Need*)



Conclusion

The results indicate that airports will be moderately to largely affected as result of projects not being funded. That is, airports as whole can only partially afford to implement their planned capital improvement plan and are able to maintain their current operations and facilities at a moderate level. **Airports may have to defer lower priority maintenance projects and will need to defer the planning and construction of most improvements needed to meet projected 20-year demands.**

While the percentage variances are subtle, projects associated with keeping airports in the best operating condition it can be sustained and viable into the future rank highest over airport operations and airport capacity. Projects supporting the ability to expand airport infrastructure and promoting current and regulatory compliant airport operations are further strained.

The summary of Airport Facility impacts based on the analysis of weighted and relative percentages of funded projects are presented in Exhibits 5-27 through 5-30. All individual airport analyses of Airport Facilities are included in Appendix 20.

As can be seen in Exhibits 5-27 and 5-28, airports are only able to focus on the core infrastructure and operational needs (i.e., runways, taxiways, aprons, equipment). Even with the focus on core infrastructure, airports are not able to meet their needs. Airports are only able to maintain their facilities at a reduced level. From the analysis, taxiway-related projects are least impacted. This is primarily because taxiway improvements are higher priority and occur at larger NPIAS airports where Federal funding and local revenue streams are capable of funding the matching grant share. Additionally, the fact that many small airports do not have enough operations to justify the construction of taxiways, which also generally have significantly more difficulty funding improvements, tend to have fewer taxiways (or no taxiways in some cases) contributes to the reduced impact.

Of special note, the short-term impact to seaplane bases is associated with funded improvements listed under Renton Municipal's capital improvement program for Will Rogers Wiley Post SPB, otherwise SPB's were not able to fund any of their projects.

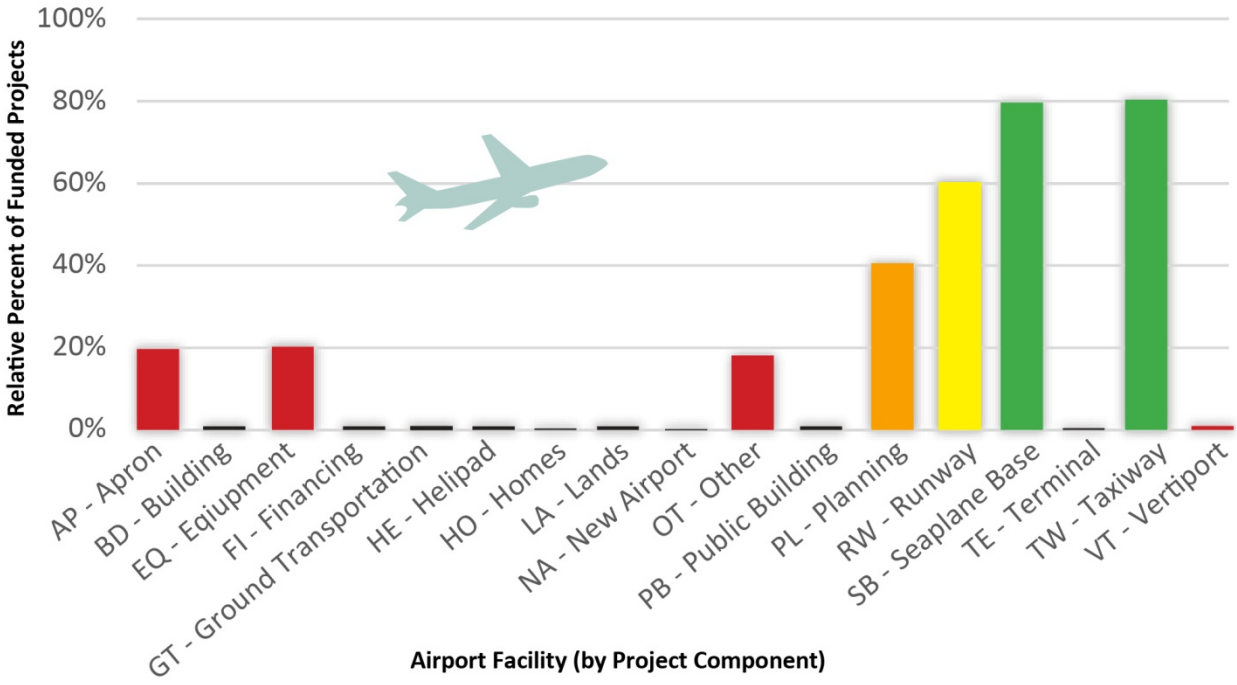
EXHIBIT 5-27

Summary Table of Airport Facility Impacts by Project Component (*Projected Program Need*)

Airport Component (Facility)	Projected Program Need Impacts
AP - Apron	
BD - Building	
EQ - Equipment	
FI - Financing	
GT - Ground Transportation	
HE - Helipad	
HO - Homes	NA
LA - Land	
NA - New Airport	NA
OT - Other	
PB - Public Building	
PL - Planning	
RW - Runway	
SB - Seaplane Base	
TE - Terminal	NA
TW - Taxiway	
VT - Vertiport	NA

EXHIBIT 5-28

Summary Chart of Airport Facility Impacts by Project Component (*Projected Program Need*)

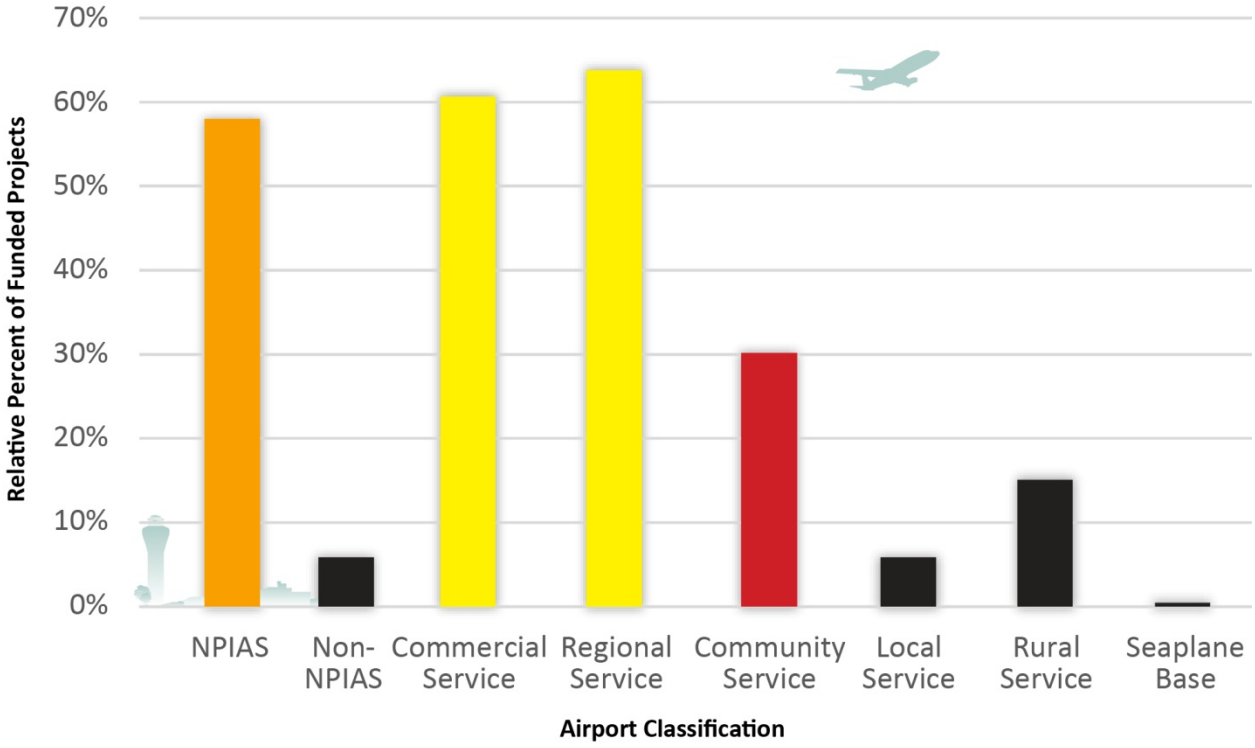


As can be seen in Exhibits 5-29 and 5-30, NPIAS airports significantly surpass Non-NPIAS airports in meeting their needs. Non-NPIAS are almost completely unable to meet their project needs. Likewise, the State's smaller airports that typically do not receive Federal funding and have limited revenue opportunities almost completely unable to meet their funding needs.

EXHIBIT 5-29
Summary Table of Airport Facility Impacts by Airport Classification (*Projected Program Need*)

Airport Classification	Projected Program Need Impacts
NPIAS	
NON-NPIAS	
Commercial Service	
Regional Service	
Community Service	
Local Service	
Rural Service	
Seaplane Base	

EXHIBIT 5-30
Summary Chart of Airport Facility Impacts by Airport Classification (*Projected Program Need*)



Airport Value to Community and Potential Impacts Resulting from Lack of Capital Funding

This study surveyed airport managers on the value of their airports to the community, and what the impact may be to their community from a lack of capital funding for the airport. Specifically, the study asked:

Impact to airport and community resulting from a lack of capital funding: From the airport's point of view, please explain the perceived or real impact associated with not meeting the capital needs of the airport to provide these aviation-related activities:

Airport value to community: From the airport's point of view, please provide examples of the success your airport and community have derived from providing these aviation-related activities:

A large number of the airport managers provided responses to these questions. The complete list of responses is included in Appendix 21. Exhibit 5-31 summarizes the types of aviation related services highlighted as important to the community, the associated reported risks to the community if there is insufficient funding for airport capital projects, and the types of projects identified as important to providing the activities and benefits.

EXHIBIT 5-31
Summary of Survey Results
Value of Airports to their Communities and Risks to the Community if Airport Projects are not Funded

Federal Airport Category	State Airport Category	Number of Responses	Important Project Types	Key Services	Risks to Community
Primary Commercial	Commercial Service	7	• General Infrastructure Maintenance and Improvements • Expansion to Increase Capacity • Pavement Maintenance and Improvements • Utility Infrastructure • GA Hangars • Runway Standards	• Aircraft Manufacturing • Medical Air Transport • Commercial Passenger Service • Pilot Training and Certification • Air Cargo • Emergency Preparedness and Response • Firefighting • Business and Corporate Travel	• Reduced Economic Growth • Limited Access for Island Residents • Safety to Island Residents • Reduced Service Levels • Reduced Access to National/Global Air System • Inability to Serve Universities
GA	Regional Service	15	• General Infrastructure Maintenance and Improvements • Runway Improvements to Meet Higher Aircraft Standards or FAA Standards • Corporate Hangars • Business Park • Pavement Maintenance and Improvements • Access Roadway • Runway and Taxiway • GA Hangars • Utilities and Fire Protection • Apron Pavements	• Air Cargo • Business and Corporate Travel • Aircraft Manufacturing • Personal Transportation • Emergency Preparedness and Response • Firefighting • Medical Air Transport • National Security • Pilot Training and Certification • Aerial Sightseeing • Glider/Soaring Services • Personal Transportation • Aircraft Maintenance	• Reduced Economic Growth • Reduced Industrial Growth • Reduced Tourism • Safety to Island Residents • Increased Safety Risks due to loss of Med Evac and/or Firefighting • Increased Economic Drain to City • Reduced access for U.S. Military or U.S. Government • Reduced Ability to Attract Business and Tenants • Safety • Scientific Research • Reduced Access for

EXHIBIT 5-31
Summary of Survey Results
Value of Airports to their Communities and Risks to the Community if Airport Projects are not Funded

Federal Airport Category	State Airport Category	Number of Responses	Important Project Types	Key Services	Risks to Community
			• Removal of Obstructions	• Pilot Training and Certification • Community Events / Fly-Ins	Businesses • Loss of Quality Jobs • Decline in Number of Pilots
GA	Community Service	11	• General Infrastructure Maintenance and Improvements • Commercial Land Development • Pavement Maintenance and Improvements • Runway/Taxiway Repairs • General Infrastructure Maintenance and Improvements • GA Hangars • Corporate Hangars • Taxilanes	• Business and Corporate Travel • Emergency Preparedness and Response • Firefighting • Search and Rescue • Air Cargo • Agriculture • Pilot Training and Certification • Medical Air Transport • Glider/Soaring Services • Pilot Training and Certification • Community Events / Fly-Ins	• Limited Access for Ag Sprayers Drive up Costs • Increased Safety Risks due to loss of Med Evac and/or Firefighting • Access for Civil Air Patrol Search and Rescue Operations • Impacts to College and Flight Training • Impact to Local Airport Association and Tenants • Additional Need for Sponsor Capital from General Budget • Reduced Access to Public • Reduced Access for Businesses
GA	Local Service	24	• Pavement Maintenance and Improvements • General Infrastructure Maintenance and Improvements • RSA Grading • Routine Pavement Maintenance • Airport Lighting • Airport Fencing • Improvements to Support Capacity & Growth • Non-eligible Maintenance • Runway Improvements to Meet Higher Aircraft Standards or FAA Standards • Removal of Obstructions	• Business and Corporate Travel • Agriculture • Medical Air Transport • Personal Transportation • Emergency Preparedness and Response • Firefighting • Pilot Training and Certification • Air Cargo • Access to Recreation • Aerial Sightseeing • Aircraft Maintenance • Search and Rescue • Aerial Photography • Community Events / Fly-Ins	• Limited Access for Ag Sprayers Drive up Costs • Increased Safety Risks due to loss of Med Evac and/or Firefighting • Access for Tourism • Higher Capital Costs in Future • Impacts to College and Flight Training • Reduced Tourism • Reduced Access for Businesses • Reduced access for U.S. Military or U.S. Government
GA	Rural Essential	23	• Storm Water Management • Erosion Protection • Improvements to Meet Higher Aircraft Standards or FAA Standards • Utilities and Communications Infrastructure • Removal of Obstructions • Staging Area Improvements • Runway Pavement	• Emergency Preparedness and Response • Firefighting • Personal Transportation • Access to Recreation • Medical Air Transport • Aircraft Maintenance • Pilot Training and Certification • Business and Corporate Travel	• Reduced access for U.S. Military or U.S. Government • Increased Safety Risks due to loss of Med Evac and/or Firefighting • Reduced Tourism • Reduced Access to Public • Limited Access for Ag Sprayers Drive up Costs • Limited opportunities for Emergency Preparedness

EXHIBIT 5-31
Summary of Survey Results
Value of Airports to their Communities and Risks to the Community if Airport Projects are not Funded

Federal Airport Category	State Airport Category	Number of Responses	Important Project Types	Key Services	Risks to Community
			Repairs • Environmental Reviews • Safety Area Improvements • Access Roadway Improvements • Multimodal Access	• Community Events / Fly-Ins • Skydiving	and Response Training • Limited Access for Island Residents
GA	Seaplane Base	6	• None Listed	• Access to Recreation • Personal Transportation • Business and Corporate Travel • Aircraft Maintenance	• Reduced Tourism • Reduced Access for Businesses • Limited Access for Island Residents

Regardless of the type or size of airport, Washington State airports provide value and benefits to their respective communities and to the State's aviation system in a variety of ways.

Airport managers across all airport categories (with the exception of seaplane bases) identified projects that are essential to providing the key airport services that benefit their respective communities. These projects may be categorized as follows:

- **General Infrastructure and Maintenance.** Projects in this category span across typical critical airport infrastructure that must be maintained to support airport services and operation, including airfield pavements, lighting, signing, roadways, stormwater and utilities.
- **Airport Safety Improvements.** Projects in this category are critical to meeting airport safety standards, and include projects such as obstruction removals, runway safety area improvements, runway, taxiway and taxilane geometric improvements, airfield lighting and signage, fencing, and communications infrastructure.
- **Airport Capacity Improvements.** These projects recognize the need for airports to grow to best serve existing or forecast needs of their communities. Projects include airfield geometric improvements, hangars, utilities, and business park or other commercial development.

Airport managers across all airport categories recognize that lack of funding will have a direct impact on their airports and communities. Each airport's services provided are unique and each airport exists to provide specific services that are important to the community and users. Identified risks to the community may be grouped into two significant categories:

- **Safety.** Airports provide services that benefit the safety of communities in Washington State. Airports provide critical access for island residents, medical air transport, firefighting, emergency response, military training, search and rescue, and national security.
- **Economic.** Airports provide a number of services that directly benefit the existing community economy. Whether it is supporting tourism, access to recreational areas, providing corporate hangers for local businesses, providing flight training for current and future pilots, providing local crop dusting capabilities, or providing transportation access to the national and global air systems – all of these are key economic components of their respective communities.

When looking across Washington State's aviation system, the economics (in dollars) of services provided varies significantly, as shown in the WSDOT Aviation Economic Impact Study. **Input received from the airport managers in this Study indicate that it is important to look across the system, but also at each airports' unique community needs and the supporting services provided.**

In responding to the risks associated with the lack of funding for airport infrastructure projects, a number of airport managers across all categories (except seaplane bases) reiterated the need for Federal and/or State grant assistance to maintain or improve their infrastructure and facilities. The following select quotes from the survey responses provide further support to this fact.

Commercial Service

Pangborn Memorial: "As an airport that provides both commercial and general aviation services, the ability for our community to utilize the nation's system of airports is significant. In 2013, over 100,000 people engaged in commercial air travel to or from our airport. Approximately 300 tons of air cargo is shipped/received via the airport each year. Aircraft designed to fight regional wildfires regularly use the airport as their base of operation."

Regional Service

Colville: "Major improvements aside, without needed funding it will be very hard for the city of Colville to provide the funding for the routine maintenance of the airport pavement. WSDOT Aviation maintenance grants are VERY important to keeping the Colville Municipal airport a viable and safe airport within Washington State's aviation infrastructure. Due to a past state WSDOT grant, a fuel system was installed which has made the airport a revenue generator for the city, bringing more aircraft into the area which has brought business and revenue into the area as well as to the city."

Community Service

Port of Whitman Business Air Center: "Without continued Federal and State infrastructure assistance, the port would be hard pressed to afford major upgrades at the airport. The port subsidizes the airport as management costs exceed revenue."

Local Service

Mansfield: "Crop dusting companies have based their operations at an airport land-lease site at Mansfield for years. Most of the aerial agricultural spraying operations in Douglas County originate from Waterville or Mansfield. If funding shortfalls precluded the capital projects necessary to maintain good pavement infrastructure, among other things, this essential service could be diminished for the entire agriculture-based county".

Rural Essential

Lynden Municipal: "Without capital funding, the City would be unable to continue to offer these services to the community. Severe budget constraints to smaller cities limit the amount of general funds available to commit to a Municipal Airport. Ongoing operations and maintenance consume almost all of the resources. Without capital investment the airport infrastructure will deteriorate and no longer serve the community. The Lynden Airport continues to be viable only through regular outside grants from WSDOT."

Seaplane Base

Poulsbo Seaplane Base: "The seaplane base most definitely has value for local businesses. Private operators often fly in and inject money into the tourism industry. In addition, other businesses use the seaplane base to fly in potential clients for factory tours."

Summary of Consequences for Perpetuating the Status Quo

The study determined that a significant aviation funding gap exists in Washington State. As shown in Exhibit 5-32, project needs outweigh available resources by as much as $1.7 billion.

EXHIBIT 5-32
Statewide Program Need Summary – All Airports

20-year Program Need	$3,557,790,248.00
20-year Program Need State Share*	$241,839,079.20
20-year Gap	$1,659,770,124.00
20-year Gap State Share**	*$168,903,834.00*
Average Annual Need	$177,889,512.40
Average Annual Need State Share	$12,091,953.96
Average Annual Gap	$82,988,506.20
Average Annual Gap State Share**	$8,445,191.70

* Excludes SeaTac Airport Projects

**20-year gap State share is understated. Commercial, Regional, and Community airports are assumed to contribute the State's share if Federal funding is available when State funding is not available. Projects are considered "funded" and the State funding share is included in the gap calculation.

AIP funds appear to be adequate to fund eligible projects at NPIAS airports in the next 20 years. However, WSDOT airport grant aid and local funding resources fall short, resulting in a number of NPIAS projects for which the local match requirement cannot be met, and a number of non-NPIAS projects that cannot be accomplished.

The consequences of not addressing the aviation funding gap in Washington State are significant and widespread. Not only are the airport facilities and operations impacted, but aviation-related activities, airport capacity and sustainability, and the Washington State economy are affected. **Impacts affect not only the airport owners and users, but extend to Washington State citizens as a result of economic and tax revenue opportunity costs.**

The study projected approximately $1.6 billion in project needs, such as fuel farms, hangars, building maintenance, etc. that are not currently eligible for AIP or WSDOT grant funding. Several of these ineligible project types promote or support revenue generation or economic development and eligibility requirements, and State support may be reconsidered as a way of helping airports become more financially independent. **The impacts of not implementing ineligible projects are on par with those associated with the funding gap.**

Non-NPIAS and smaller GA airports (20 or less based aircraft) that do not have access to AIP funds and have limited ability to generate revenues for capital projects are impacted to a higher degree than other airports. In numbers, these represent over 45% of the State's airports (excluding seaplane bases). Although the economic benefit for these airports may be relatively small in comparison, the value they provide to their communities via activities that support the unique health, safety, access, and businesses needs is best measured from the perspective of the communities itself.