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Acronyms and Abbreviations

A/C	Aircraft
Aero. Acct.	Aeronautics Account
AIP	Airport Improvement Program
BMP	Best Management Practice
FAA	Federal Aviation Administration
GA	General Aviation
Gal.	Gallon
GT	Ground Transportation
L/H	Leasehold
NPIAS	National Plan of Integrated Airport Systems
MV	Motor Vehicle
P3	Public Private Partnership
RC	Rental Car
Reall.	Reallocate or Reallocation
Rev.	Revolving or Revise
UAS	Unmanned Aircraft Systems
WCX	West Coast Infrastructure Exchange
WSDOT	Washington State Department of Transportation





Solutions Performance Analysis

Determining Possible Solution Contributions

Contribution Levels

Analysis of each of the solutions generated a solution proposal, along with potential solution variations as possible means for contributing either:

1. additional revenues to address the statewide aviation system capital and preservation needs, or
2. ways to reduce the cost element of the statewide aviation system capital and preservation needs.

In order to most readily assess the possible performance of implementing a given solution and provide a comparison of possible solutions, it is important to quantify the potential contribution for each solution and its potential variations.

For many of the solutions, the predicted contribution levels once the solutions are implemented are challenging to predict to any degree of certainty.

As an example, for solutions that involve new revenue sources such as Public Private Partnerships or the West Coast Infrastructure Exchange (WCX), quantifying the contribution of these is a function of both the number of large, revenue producing (ineligible) projects envisioned in the 20-year statewide need, and whether or not those airports will favor this type of funding over other methods, such as bonding.

Similarly, for solutions that target reallocation of funds from one state account (such as the general fund) to the Aeronautics Account, there are a number of factors that may influence if, and to what extent, the funds may be redirected. Needs outweigh constrained state funding in nearly all aspects, and as

such, prioritization of these needs becomes a highly debated and politically driven process that is difficult to predict.

Due to the challenge of predicting specific revenue potential for each solution, the study team identified three potential contribution levels to map the solutions to, based on \$4 million ranges, from \$0 to \$12 million. \$12 million is used as an upper bound, to coincide with the average annual state share of the 20-year statewide program need. The contribution levels are:

- Contribution Level 1: \$0 to \$4 million
- Contribution Level 2: \$4 to \$8 million
- Contribution Level 3: \$8 to \$12 million

Solution Mapping

The purpose of “mapping” the potential contribution levels of any given Solution is to visually illustrate two primary components: 1) whether a solution has the potential to have a substantial impact on the aviation system capital and preservation needs, and 2) what it might take for a solution to reach higher contribution levels. For example, there might be multiple fee and tax increases associated with a proposed solution, but even doubling those rates might only achieve a Contribution Level 1, thus illustrating a substantial change needed to an existing tax/fee structure (thus high potential opposition), but with limited overall impact potential.

The study team analyzed each solution to visually map the solution and its variations, determining milestones for which a contribution could be realized.

Exhibit 5-1 illustrates the mapped milestones for the ten solutions, as described in Exhibit 4-2 in the previous Section.



EXHIBIT 5-1

Solution Milestone Mapping



** Opportunities and benefits associated with new private funding sources to be determined in future.*

LEGEND AND NOTES

1/ Key Objectives Barometer

- Key Objective 1 Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
- Key Objective 2 Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
- Key Objective 3 Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
- Key Objective 4 Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)

2/ Weighted Criteria / Evaluation

Scoring for Key Objectives

- 1-1.5 "Fair"
- 1.6-2 "Good"
- 2.1-2.5 "Better"
- 2.6-3 "Best"

3/ Contribution Levels

- Contribution Level 1
\$0-\$4m potential
- Contribution Level 2
\$4-\$8m potential
- Contribution Level 3
\$8-\$12m potential

4/ See Appendix 13 for State Legislative Process Summary

Solutions with Key Objectives Barometer

Solution Name

2 (1g) Alternative taxing of airport operationally oriented uses

(Focus on taxes on Parking and Ground Transportation only, using SEA Airport values for illustrative purposes)

Key Objectives Barometer ^{1/,2/}

1 Best	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Better	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Better	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Best	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)

Activities with Associated Contribution Levels ^{3/}



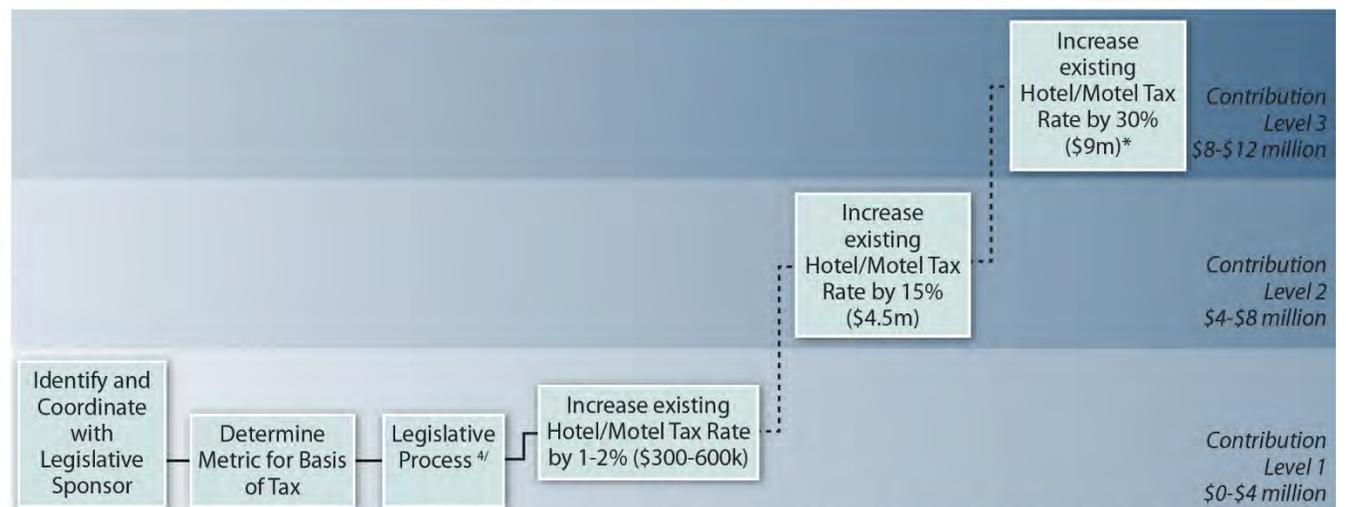
* This is not assumed to be a reasonable tax to levy. The purpose is to illustrate what percentage it would take to push this Solution, as a standalone Solution, into a Benefit Level 2 and 3. ^{4/} See Appendix 13 for State Legislative Process Summary

3 (1j) Alternative economic development based consumption tax

(Values based on existing 2009 taxes collected for illustrative purposes)

Key Objectives Barometer ^{1/,2/}

1 Best	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Better	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Better	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Best	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)



* This is not assumed to be a reasonable tax to levy. The purpose is to illustrate what percentage it would take to push this Solution, as a standalone Solution, into a Benefit Level 3. ^{4/} See Appendix 13 for State Legislative Process Summary

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Solutions with Key Objectives Barometer

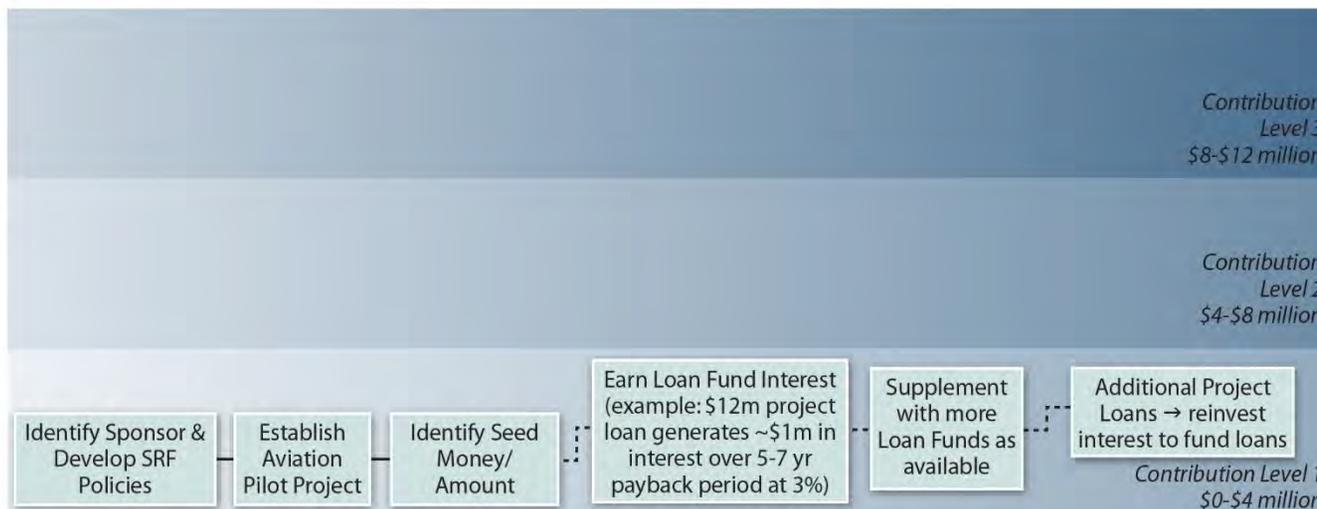
Activities with Associated Contribution Levels ^{3/}

Solution Name

4 (1k) Establish a State sponsored revolving aviation infrastructure loan fund

Key Objectives Barometer ^{1/,2/}

- 1 Better** Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
- 2 Best** Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
- 3 Fair** Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
- 4 Better** Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)

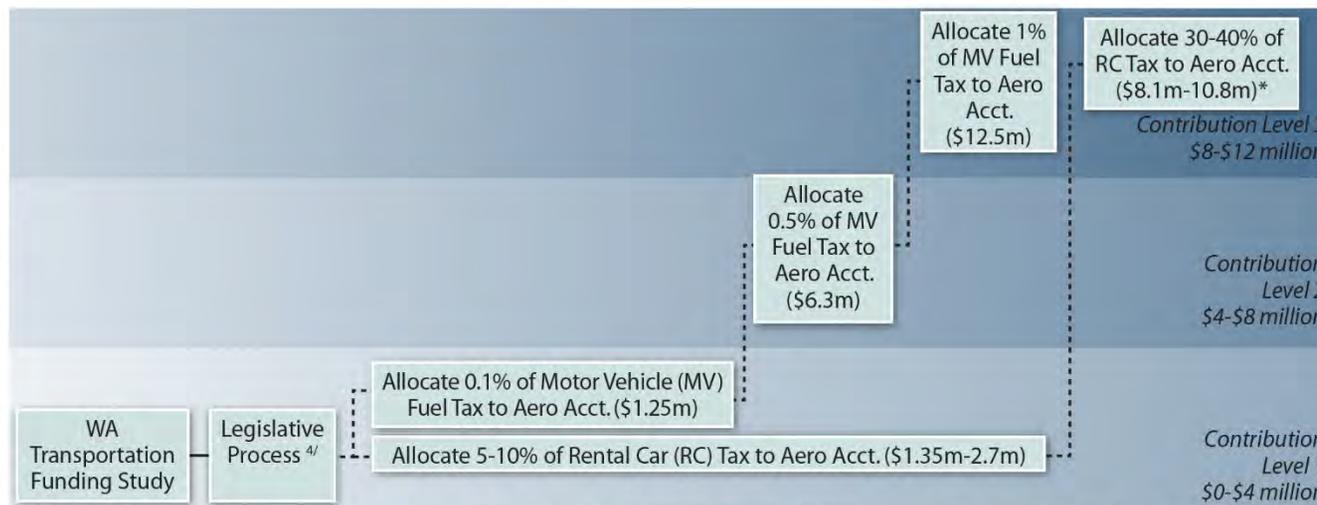


5 (2a) Realignment of Current Transportation Revenue Allocations

(Values determined from FY 2013-15 WSDOT budgets, for illustrative purposes)

Key Objectives Barometer ^{1/,2/}

- 1 Best** Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
- 2 Best** Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
- 3 Better** Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
- 4 Best** Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)



** This is not assumed to be a reasonable tax reallocation amount. The purpose is to illustrate what percentage it would take to push this Solution, as a standalone Solution, into a Benefit Level 3. ^{4/} See Appendix 13 for State Legislative Process Summary*

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Solutions with Key Objectives Barometer

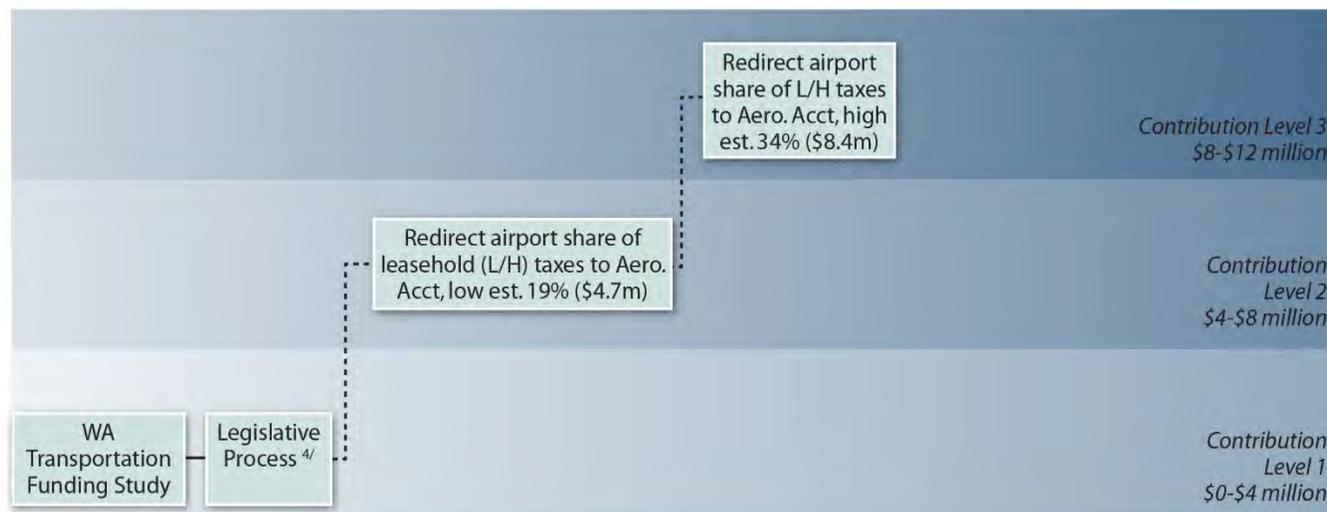
6 (3b) Reallocate Airport Leasehold Tax to the Aeronautics Account

(Values determined from FY 2013-15 WSDOT budgets, for illustrative purposes)

Key Objectives Barometer ^{1/,2/}

1 Best	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Best	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Better	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Best	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)

Activities with Associated Contribution Levels ^{3/}



Solution Name

7 (3a) Increase Select Aviation Tax Rates

Key Objectives Barometer ^{1/,2/}

1 Best	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Better	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Better	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Best	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)



^{4/} See Appendix 13 for State Legislative Process Summary

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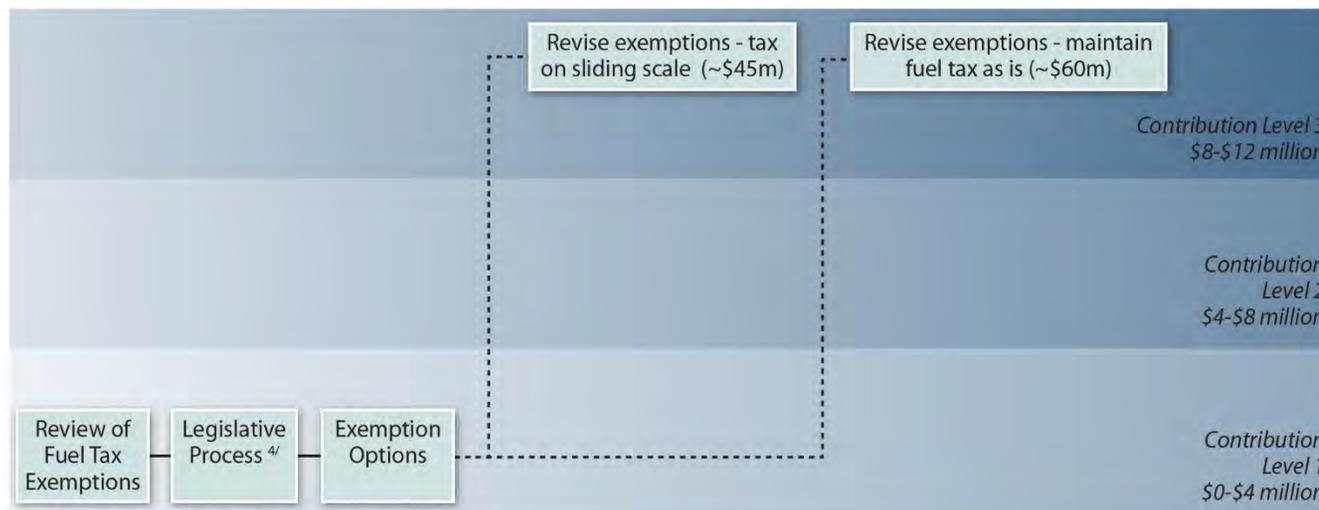
Solutions with Key Objectives Barometer

Activities with Associated Contribution Levels ^{3/}

8 (3c) Revise Fuel Excise Tax Exemptions

Key Objectives Barometer ^{1/, 2/}

1 Best	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Fair	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Better	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Best	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)



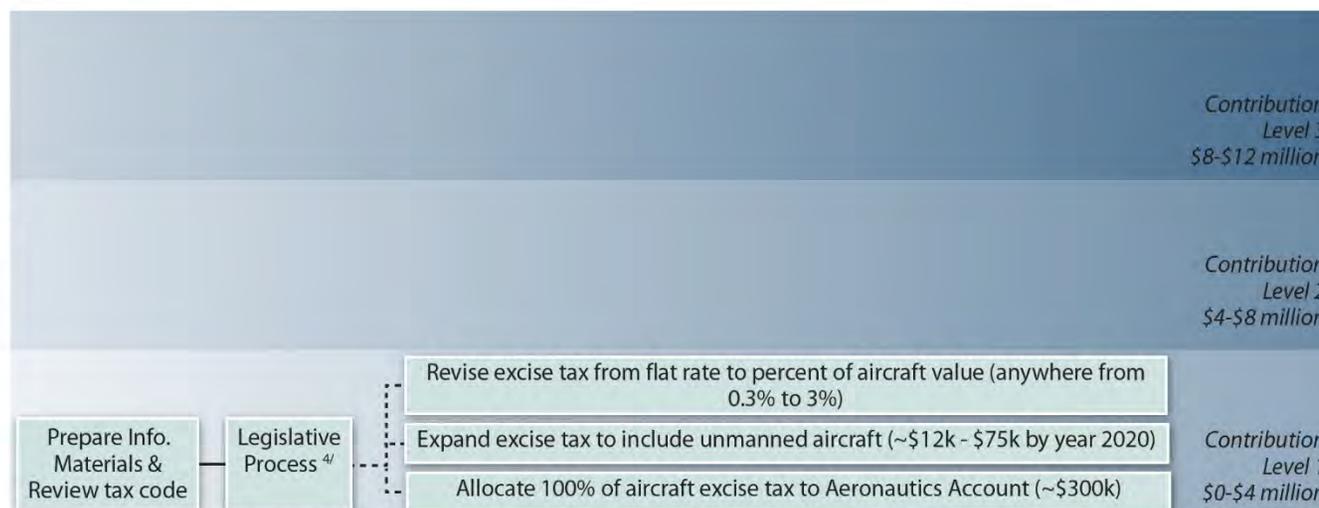
^{4/} See Appendix 13 for State Legislative Process Summary

Solution Name

9 (3d) Modify the State Aircraft Excise Tax Program

Key Objectives Barometer ^{1/, 2/}

1 Best	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Fair	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Better	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Best	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)



^{4/} See Appendix 13 for State Legislative Process Summary

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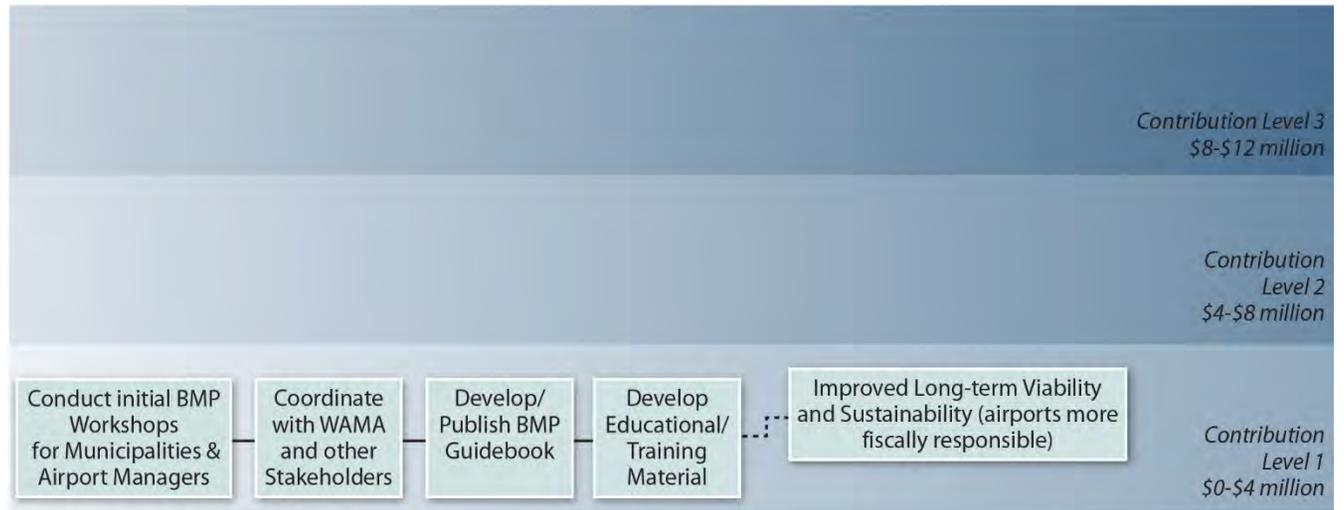
Solutions with Key Objectives Barometer

Activities with Associated Contribution Levels ^{3/}

10 (4f) Develop a Management Best Practices toolkit for airports

Key Objectives Barometer ^{1/, 2/}

1 Better	Seek solutions that produce the greatest benefit to the aviation system capital and preservation needs. (Criteria AE, AG)
2 Best	Seek solutions that yield scalable and appropriate outcomes to users. (Criteria AK, AL, AM)
3 Best	Seek solutions that support the Governor's "Results Washington" initiatives and support Washington State "Priorities of Government." (Criteria AJ, AQ, AV, AX, AY)
4 Fair	Seek solutions that improve the aviation system benefit to the Washington State Economy. (Criteria AR, AS, AW)



Comparison of Possible Solutions

The study identifies a number of possible solutions for WSDOT and aviation stakeholders to consider that can either individually, or in combination, be implemented over time to help to address the State's \$12 million share of the projected 20-year funding gap.

In particular each of the ten solutions analyzed further in the study are viable options for implementation. The study provides a baseline understanding of the potential contribution, strengths, weaknesses, benefits, and impacts for each solution.

Exhibit 5-2 illustrates potential contribution amounts, based on scenario-based data provided in the study. Potential contribution amounts are truncated at \$12 million although some solutions could exceed that amount.

Solutions and possible variations are presented to illustrate potential contribution, depending on the selected approach. For example, *Solution 2 – Alternative Taxing of Airport Operationally Oriented Uses* is split in to 2A – *New Parking Tax*, and 2B – *New Ground Transportation (GT) Tax*. Further, for 2A and 2B, different contribution levels are possible depending on the tax rate. Exhibit 5-2 depicts a wide array of potential contributions for the ten solutions.

It is valuable for WSDOT and aviation stakeholders to understand the potential relative level of complexity in implementing each of these solutions. The Solutions Analysis discussion earlier identifies potential challenges, and recommends potential strategies for implementation. The study team determined that stakeholder support, and impacts to industry are two key components that may provide insight as to the relative ability for WSDOT to move solutions forward.

For example, the Evaluation Criterion developed earlier in the study – *Solutions that Can Garner Stakeholder Support*, was the 2nd highest weighted criteria, as determined by the consultant team, WSDOT, and the Advisory Committee.

In addition, *Tax Impacts to Industry* were considered to be potentially the greatest direct negative impacts as a result of implementing some solutions. The study anticipates solutions that impose new taxes may have a greater impact to industry than reallocating funds from an existing tax.

The study team assessed each solution and its variations against criterion "stakeholder support", and against "tax impacts to industry". The analysis is provided in Appendix 15. Exhibit 5-3 overlays potential stakeholder support onto the previous solution "contribution" exhibit. Stakeholder support is measured on the right axis of the Exhibit, on a scale of 1 to 5, with 1 representing poor support, and 5 representing wide support. Green circles represent the stakeholder support scores for each solution.

Exhibit 5-3 shows that there is a potentially wide array of stakeholder acceptance associated with each solution, and may vary depending on the solution variation that is considered. Many of the most acceptable solutions are non-controversial in nature, such as P3 funding (Solution 1), new revolving loan fund (Solution 4), and Airport Management BMP toolkit (Solution 10). A number of the most accepted solutions demonstrate lower potential contributions towards the aviation system preservation and capital needs.

To add another dimension to the analysis, Exhibit 5-4 overlays tax impacts to industry on to the previous exhibit. Tax impacts to industry are also measured on the right axis of the Exhibit, on a scale of 1 to 5. The number 1 represents solutions that impose no new costs (least negative impact), and number 5 identifies solutions that impose new costs (high negative impact). Orange triangles represent the tax impact to industry scores for each solution.

Exhibit 5-4 shows a potentially wide array of stakeholder tax impacts to industry associated with each solution, and may also vary depending on the solution variation that is considered. Solutions that are more readily able to be implemented are identified in the exhibit by looking for solutions that indicate fair

to wide stakeholder support (score 3-5), and indicate no new costs to new low impact costs (score 3-5). Examining Exhibit 5-4 in this way suggests that the following solutions may be more readily able to move forward:

- 2A – New Parking Tax (<5%)
- 2B – New Ground Transportation (GT) tax (1%)
- 4 – New Revolving Loan Fund
- 5A – Reallocating Motor Vehicle Fuel Taxes (1%)
- 5B – Reallocating Rental Car Taxes (<10%)
- 6 – Reallocating Airport Leasehold Taxes
- 10 – Airport Management BMP Toolkit

With exception of solutions 4 and 10 that may yield no opposition, each of these solutions will require diligence in further exploring potential direct and indirect impacts, and vetting the approach with decision makers and affected stakeholders. A good recent example is the legislation (SB 5430) attempted in 2014 to reallocate 100 percent of the aircraft excise tax to the Aeronautics Account. The approach that works best with decision makers and political leaders requires proof that the benefits of the solution to the state economy and general fund outweigh the immediate loss of revenues to the general fund.



**EXHIBIT 5-2
Solution Comparison – Potential Financial Contribution**

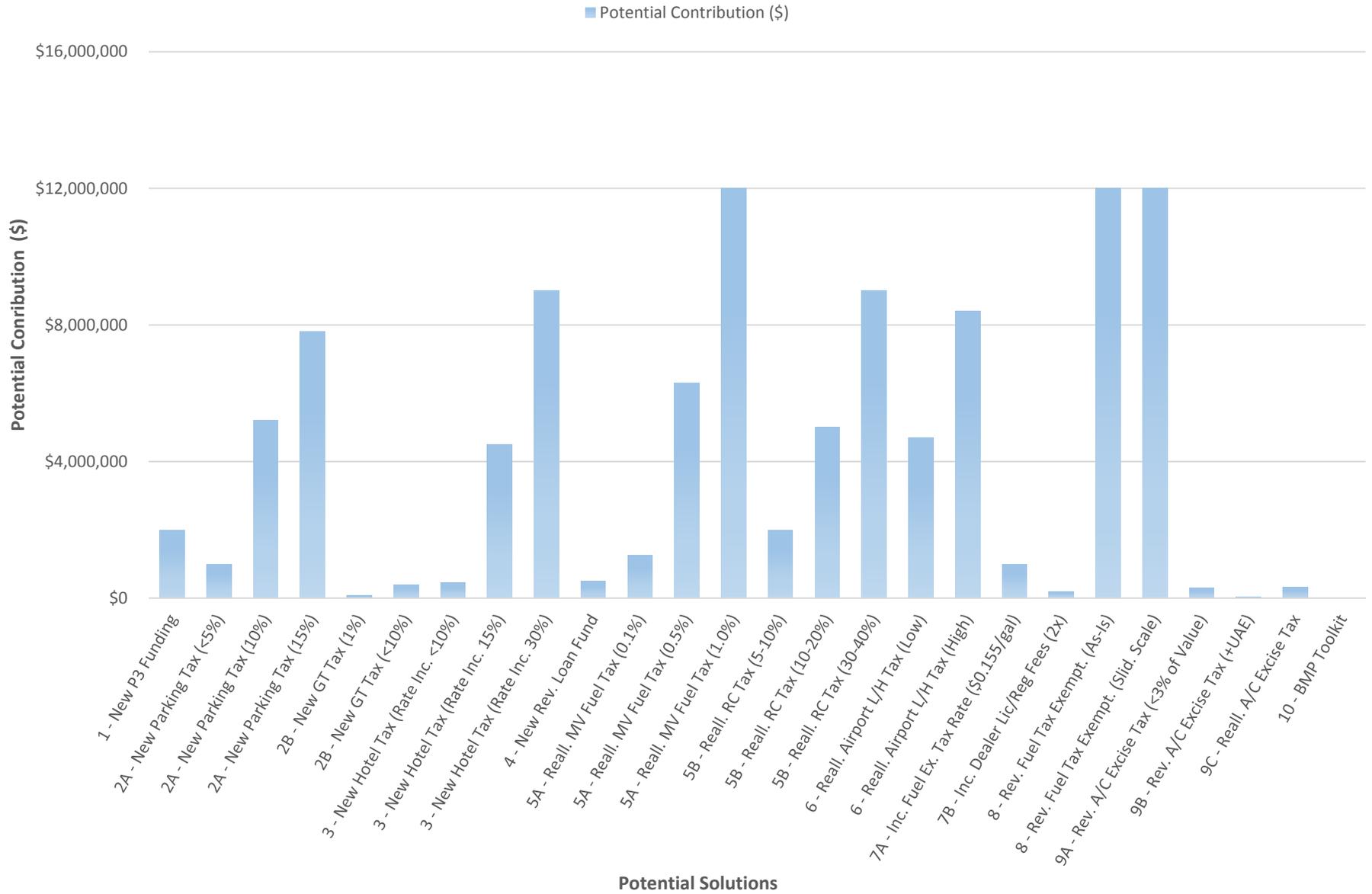
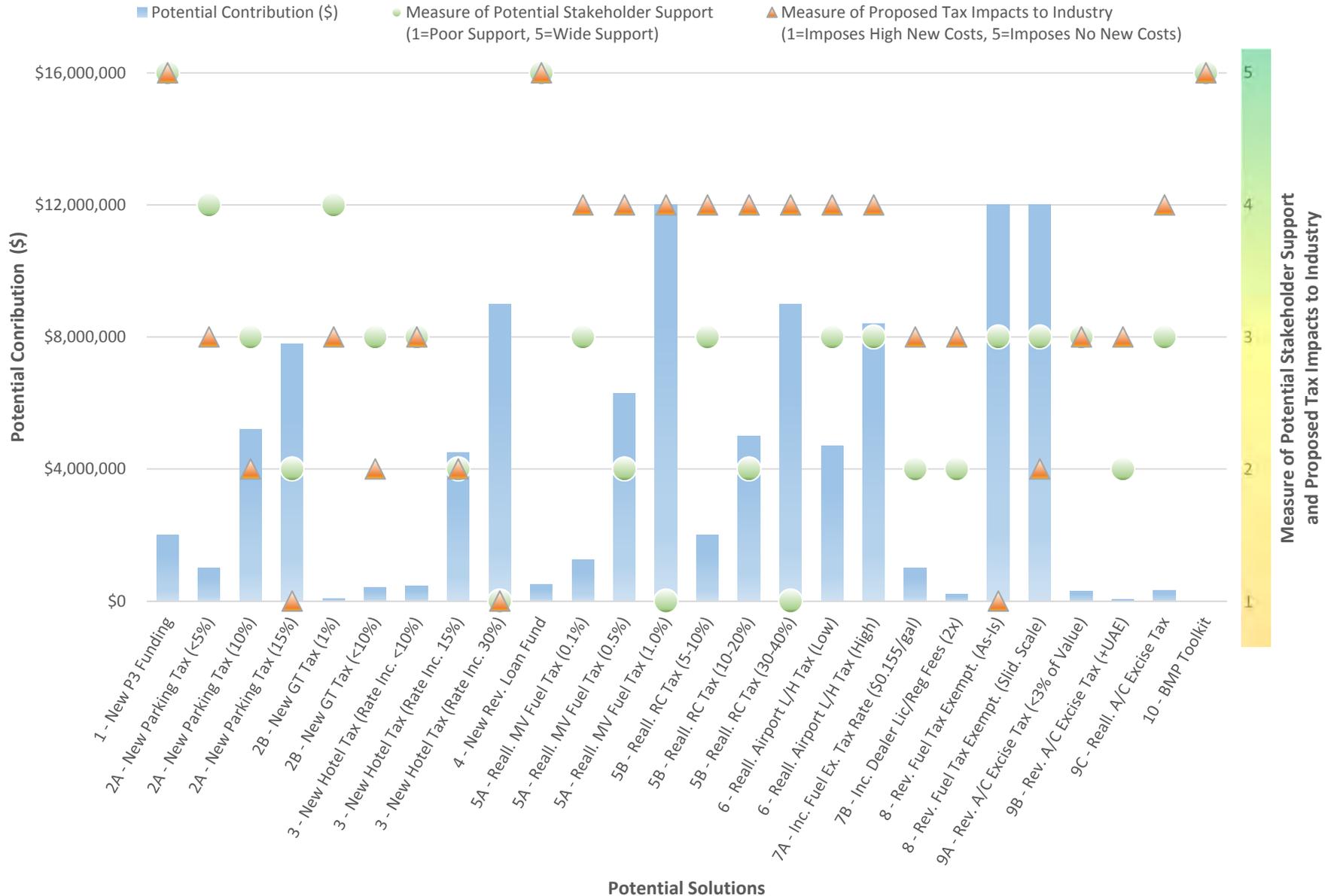


EXHIBIT 5-4

Solution Comparison – Potential Contribution, Stakeholder Support, and Tax Impacts to Industry



Note: Content, possible solutions, or recommendations contained within these documents should not be considered indicators of WSDOT's future legislative priorities. These possible solutions may not be supported by all members of the Advisory Committee and the organizations they represent.

A cursory review of this exhibit reveals that the solutions with the greatest likelihood of implementation provide little or no financial contribution to the funding gap. Exhibit 5-5 examines more closely, the solutions that have high potential contributions (\$4 million and greater). All of these solutions are compelling from the standpoint of the magnitude of contribution they can make to fund statewide airport capital and preservation needs. As was stated earlier, the more funds that are available to the Airport Aid Grant Program, the greater the potential to offset the federal and local funding shortcomings and provide a strong and healthy aviation system.

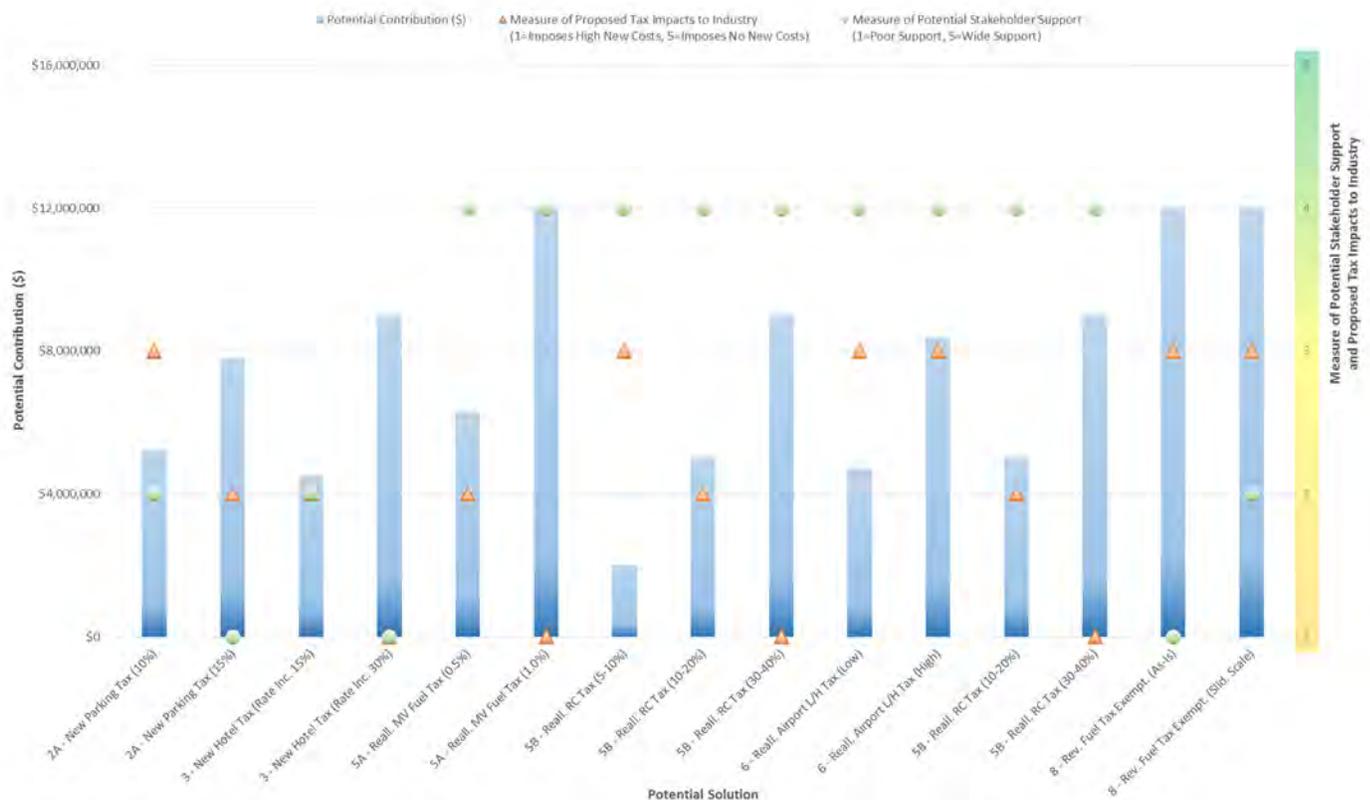
The exhibit shows that all of these solutions have lower levels of stakeholder support, which may equate to a higher degree of resistance to implementation by some. The reallocation solutions (5A, 5B, and 6) may be widely accepted by aviation stakeholders, but there could be challenges to convincing legislators to redirect funds away from the general fund to the Aeronautics Account.

A new airport parking tax (Solution 2A) may be resisted by commercial airports if additional revenues generated at these facilities are distributed to other airports. Ultimately the costs may likely be passed on to the consumer, which may prove to be unpopular.

Levying an increased hotel/motel tax (Solution 3) could be strongly resisted by the hotel/motel and tourism industries unless a strong case can be made for the state aviation system serving as a strong enabler for growth in these industries.

Revising fuel tax exemptions (Solution 8) could generate strong resistance from the group(s) impacted by removal of the fuel tax exemption. Application of a sliding scale tax based on miles traveled in the state may be a sound approach to partnering with Industry, as it offers benefits for those who fly more miles. It is important to note that the potential contribution for this solution could extend well beyond the \$12 million statewide need, which could significantly help mitigate the federal and local funding shortfalls.

EXHIBIT 5-5 Solution Comparison – High Potential Contributors



Benefits and Impacts to Industry

Background

Part of the evaluation of the proposed solutions involves assessing the potential economic consequences that each solution would have on the aviation industry. To facilitate this assessment, six specific segments of the aviation industry were analyzed. Those six segments are:

Aerospace Manufacturing: This industry segment refers to companies engaged in the manufacture of aircraft, aircraft engines, avionics, and aircraft parts. In Washington, aerospace manufacturing is dominated by Boeing and its commercial airline manufacturing facilities. However, Washington is also home to several general aviation aircraft manufacturers, including Glasair Aviation, a creator of high-performance kit planes, and CubCrafters, a producer of several modernized versions of the iconic Piper Cub aircraft. The sale of general aviation aircraft indirectly supports funding of state aviation through aircraft registration and aircraft excise taxes.

Commercial Air Service Providers: This industry segment refers to the scheduled airlines that provide air travel to and from the commercial service airports in Washington. Commercial air service providers provide little funding of state aviation since their fuel purchases are exempt from the state aircraft fuel excise tax. Additionally, aircraft used in providing airline service are exempt from the state aircraft excise tax.

Aerial Agricultural Applicators: This industry segment includes those companies that deliver herbicides, insecticides, and fungicides to agricultural crops by air. In Washington, the vast majority of aerial applicators operates from private airfields and do not depend heavily on the state airport system. In general, aerial applicators do not support funding of state aviation since their fuel purchases are exempt from the state aircraft fuel excise tax.

Aerial applicators are subject to the aircraft excise tax.

Emergency Medical Air Transport: This industry segment consists of air ambulance operators using either fixed-wing aircraft or rotorcraft to transport patients, medical personnel, and time-critical healthcare supplies. In general, the emergency medical air transport industry does not support funding of state aviation since their fuel purchases are exempt from the state aircraft fuel excise tax. This industry segment is subject to the aircraft excise tax.

Recreational Aviation: This segment of the aviation industry includes all general aviation that is not conducted for business or training reasons. This segment's participation in aviation activities is predominately discretionary and highly sensitive to cost. Recreational aviation supports funding of state aviation through the aircraft fuel excise tax, aircraft registration fees, and aircraft excise taxes.

General Aviation: This segment captures all of the general aviation that is not included in the previously defined industry segments. General aviation includes aviation activity conducted for business, including charter flights, corporate flight operations, and flight training. This segment supports funding of state aviation through the aircraft fuel excise tax, aircraft registration fees, and aircraft excise taxes.

Analysis of Impacts to Industry

Each solution was qualitatively evaluated in terms of the impacts and benefits it would have on each of the six industries described previously. A scale from 1 to 5 was used to score each solution in each of the industries.

On the impacts side of the evaluation, solutions were assessed based on the relative new cost they could impose on an industry. These costs could be directly imposed on an industry, such as a new or increased tax on an aircraft, or they could be levied indirectly, such as a new hotel tax that could make it more costly for visitors, which could discourage airline travel. Solutions that



imposed the highest relative costs, and therefore had the greatest impacts, were scored with a 1, while solutions with the lowest relative costs were scored with a 3. Solutions whose new costs fell in between were scored with a 2. Solutions that did not impose a new cost, but funded the Aeronautics Account by shifting existing costs were scored with a 4. Solutions that imposed no new costs, and therefore had the lowest impacts, were scored with a 5. These scores and their description are shown in Exhibit 5-6. The analysis of each solution is described in detail below. The results of the analysis are summarized in Exhibit 5-7.

The analysis of each solution was limited to the base solution. The variations of each solution were not evaluated.

**EXHIBIT 5-6
Impacts to Industry Scoring Table**

Description	Score
Solution imposes new costs (high impact)	1
Solution imposes new costs (moderate impact)	2
Solution imposes new costs (low impact)	3
Solution transfers existing costs to Aeronautics Account	4
Solution imposes no new costs	5

Solution 1 (1d): Public Private Partnerships, (P3) project funding

This solution imposes no new costs, so it was scored as a 5 for all six industries.

Solution 2A (1g) New Parking Tax

This solution collects additional tax revenue from users of airport parking lots at commercial service airports. No additional costs are imposed directly on any of the six aviation industry segments. However, the users of airport parking lots are predominately airline passengers, so the customers of commercial air service providers could experience increased costs. This increased cost could result in decreased demand for air travel, resulting in negative economic benefits for the commercial air service provider industry. There are three different levels of taxation proposed for this solution, so the solution with the lowest tax rate was scored with a 3, and the highest

tax rate was scored with a 1. The solution with a tax rate in the middle was scored with a 2. None of the other aviation industries would be affected economically by this solution, so each was scored with a 5.

Solution 2B (1g) New Ground Transportation Fee

This solution collects additional revenue from customers of ground transportation at commercial service airports. No additional taxes are imposed on any of the six aviation industry segments. However, the users of ground transportation services (e.g., taxis and shuttle buses) are predominately airline passengers, so the customers of commercial air service providers could experience increased costs. This increased cost could result in decreased demand for air travel, resulting in negative economic impacts for the commercial air service provider industry. There are two different levels of assessment proposed for this solution, so the solution with the lowest fee was scored with a 3, and the fee was scored with a 2. None of the other aviation industries would be affected economically by this solution, so each was scored with a 5.

Solution 3 (1j) New Hotel Tax

This solution collects additional tax revenue from users of hotels and motels. No additional taxes are imposed on any of the six aviation industry segments. However, aviation visitors that overnight in Washington could be subject to higher costs. These aviation visitors are customers of the commercial air service providers, recreational aviation, and general aviation industry segments. Each of these segments could experience negative economic impacts from reduced customer demand. There are three different levels of taxation proposed for this solution, so the solution with the lowest tax rate was scored with a 3, and the highest tax rate was scored with a 1. The solution with a tax rate in the middle was scored with a 2. None of the other aviation industries would be affected economically by this solution, so each was scored with a 5.



Solution 4 (1k) New Revolving Loan Fund

This solution imposes no new costs, so it was scored as a 5 for all six industries.

Solution 5: Realignment of Current Transportation Revenue Allocations

(A): Reallocation of Motor Vehicle Fuel Tax.

This solution allocates a greater share of motor vehicle fuel taxes paid into the General Fund to the Aeronautics Account. Airlines use motor vehicle fuel in their ground handling equipment, as does Boeing, so both the commercial air service providers and aerospace manufacturing industries would contribute more taxes to the Aeronautics Account under this solution, without incurring additional costs, so each of these industries was scored with a 4. Some aircraft used in the recreational aviation industry use motor vehicle fuel instead of aviation fuel, so this industry would also contribute more to the Aeronautics Account without suffering greater costs. Since this solution is a reallocation of existing tax revenue, no additional costs are imposed upon recreational or general aviation, so each was scored with a 4. Three levels of tax reallocation are proposed for this solution. Since costs do not change under any of the proposed tax reallocations, the scores do not change among the proposed tax levels.

(B): Reallocation of Rental Car Tax

This solution allocates a greater share of taxes paid for rental cars into the General Fund to the Aeronautics Account. Users of commercial air service providers, recreational aviation, and general aviation are the ones that pay rental car taxes. Since this is a reallocation of existing costs and not an imposition of additional costs, these industries are scored with a 4. All other industries are unaffected and scored with a 5. Three levels of tax reallocation are proposed for this solution. Since costs do not change under any of the proposed tax reallocations, the scores

do not change among the proposed tax levels.

Solution 6 (3B): Reallocate Airport Leasehold Tax to the Aeronautics Account

This solution reallocates leasehold taxes paid for publicly-owned airport land from the General Fund to the Aeronautics Account. With the exception of aerial applicators (that operate predominately from private airfields), all aviation industries are potentially subject to leasehold taxes through hangar rentals and other lease agreements on airport-owned property. This solution proposes two reallocations for leasehold taxes. In either case, the shift of these tax receipts to the Aeronautics Account does not impose additional costs on any of the effected industries, so each of these industries is scored with a 4. The aerial agricultural applicator industry is scored with a 5 since, as stated above, it is not affected by this solution.

Solution 7A (3a) Increase Fuel Excise Tax Rate

This solution increases the existing aircraft fuel excise tax rate. Four of the six industries are exempt from this tax, so only recreational aviation and general aviation could be subject to increased costs. Higher fuel excise tax would impose greater expense on general aviation. Businesses that use general aviation for travel could respond by passing on the higher costs to their customers, or cutting back their use of aircraft. Charter companies and flight schools could pass along the higher costs, which would likely result in reduced demand for their services, or could absorb those costs and realize smaller profits. Likewise increased costs on recreational aviation could result in fewer flight hours, which translate into reduced fuel consumption and aircraft maintenance needs, hurting the economics for aviation service providers. For these reasons, both industries were scored with a 1. All other industries were scored with a 5.



Solution 7B (3a) Increase Dealer License and Aircraft Registration Fees

This solution increases the fees for aircraft dealer licensing and aircraft registration. The increased costs for aircraft dealers could be passed on to aircraft buyers, predominately affecting recreational aviation and general aviation. Higher aircraft registration fees could affect recreational aviation and general aviation. Commercial air service providers, aerial agricultural applicators, and emergency medical air transport providers are exempt from aircraft registration fees, so these industries would not suffer higher costs. Manufacturers of general aviation aircraft, such as CubCrafters, would not incur higher costs, but their customers could, which could drive down demand for their product. For these reasons, aerospace manufacturing, recreational aviation, and general aviation were scored with a 3, while the other industries were scored with a 5.

Solution 8 (3c) Revise Fuel Excise Tax Exemptions

This solution revised the aircraft fuel excise tax exemptions enjoyed by the aerospace manufacturing, commercial air service provider, aerial agricultural applicator, and emergency medical air transport industries. The recreational aviation and general aviation industries already pay this tax, so they are not affected and were scored with a 5.

Two methods of applying the fuel excise tax are proposed for this solution. One involves imposing the existing \$0.11 per gallon fuel excise tax on the aerospace manufacturing, commercial air service provider, aerial agricultural applicator, and emergency medical air transport industries, which would impose the highest costs, so this solution was scored as a 1 for each of these industries. The second method involved the use of a sliding scale, where the rate varied depending upon the number of miles flown annually in Washington. The more miles flown in Washington, the lower the fuel excise tax rate paid by the fuel purchaser. Under this solution, some commercial air service providers and

aerospace manufacturing companies could incur lower costs, so these two industries were scored with a 2 for this solution, while aerial agricultural applicators and emergency medical air transport providers remained at a score of 1.

Solution 9A (3d) Revise the Aircraft Excise Tax (< 3% of Value)

This solution revises the aircraft excise tax from a fixed fee to a percentage of aircraft value. Due to exemptions, this solution only affects aerial agricultural applicators, emergency medical air transport, recreational aviation, and general aviation, so the other two industries were scored with a 5. Shifting aircraft excise taxes to a percentage of aircraft value could impose significant costs on aircraft owners, so this solution was scored as a 1 for aerial agricultural applicators, emergency medical air transport, recreational aviation, and general aviation.

Solution 9B (3d) Revise the Aircraft Excise Tax (tax Unmanned Aircraft)

This solution extends the existing aircraft excise tax to include unmanned aircraft. Since none of the six identified aviation industries currently operate unmanned aircraft, this solution has no cost impacts on any of them, so each was scored with a 5.

Solution 9C (3d) Reallocate Aircraft Excise Tax to the Aeronautics Account

This solution reallocates the current aircraft excise tax paid into the General Fund to the Aeronautics Account. Two industries, aerospace manufacturing and commercial air service providers, are exempt from this tax, so they are scored with a 5. The other four industries that currently pay this tax – aerial agricultural applicators, emergency medical air transport, recreational aviation, and general aviation – could increase their deposits to the Aeronautics Account without incurring additional costs, so they are each scored with a 4 on this solution.



Solution 10 (4f) Develop a Best Management Practices Guidebook/Toolkit for Airports

This solution imposes no costs on any of the industries, so each was scored with a 5 for this solution.

EXHIBIT 5-7 Impacts to Industry

Solution	Aerospace Manufacturing	Commercial Air Service Providers	Aerial Agricultural Applicators	Emergency Medical Air Transport	Recreational Aviation	General Aviation
1 - New P3 Funding	5	5	5	5	5	5
2A - New Parking Tax (<5%)	5	3	5	5	5	5
2A - New Parking Tax (10%)	5	2	5	5	5	5
2A - New Parking Tax (15%)	5	1	5	5	5	5
2B - New GT Tax (1%)	5	3	5	5	5	5
2B - New GT Tax (<10%)	5	2	5	5	5	5
3 - New Hotel Tax (Rate Inc. <10%)	5	3	5	5	3	3
3 - New Hotel Tax (Rate Inc. 15%)	5	2	5	5	2	2
3 - New Hotel Tax (Rate Inc. 30%)	5	1	5	5	1	1
4 - New Rev. Loan Fund	5	5	5	5	5	5
5A - Reall. MV Fuel Tax (0.1%)	4	4	5	5	4	4
5A - Reall. MV Fuel Tax (0.5%)	4	4	5	5	4	4
5A - Reall. MV Fuel Tax (1.0%)	4	4	5	5	4	4
5B - Reall. RC Tax (5-10%)	5	4	5	5	4	4
5B - Reall. RC Tax (10-20%)	5	4	5	5	4	4
5B - Reall. RC Tax (30-40%)	5	4	5	5	4	4
6 - Reall. Airport L/H Tax (Low)	4	4	5	4	4	4
6 - Reall. Airport L/H Tax (High)	4	4	5	4	4	4
7A - Inc. Fuel Ex. Tax Rate (\$0.155/gal)	5	5	5	5	1	1
7B - Inc. Dealer Lic/Reg Fees (2x)	3	5	5	5	3	3
8 - Rev. Fuel Tax Exempt. (As-Is)	1	1	1	1	5	5
8 - Rev. Fuel Tax Exempt. (Slid. Scale)	2	2	1	1	5	5
9A - Rev. A/C Excise Tax (<3% of Value)	5	5	1	1	1	1
9B - Rev. A/C Excise Tax (+UAE)	5	5	5	5	5	5
9C - Reall. A/C Excise Tax	5	5	4	4	4	4
10 - BMP Toolkit	5	5	5	5	5	5



Analysis of Benefits to Industry

For the benefits side of the evaluation, solutions were assessed based on the relative benefits each made to the six industry segments from the funding of improved infrastructure at airports.

To accomplish this, each solution was categorized to one of three contribution levels based upon the amount it was expected to contribute to the Aeronautics Account. Within each of these contribution levels, Aeronautics Account money available for capital projects was distributed to airports to fund specific projects. Each project was evaluated for its contribution to 17 different areas of aviation-related activities.

All of the funded projects were totaled to determine the overall contribution each aviation-related activity received at each of the three contribution levels. The 17 aviation-related activities were assessed for their connection to the six previously defined aviation industry segments, so that the relative benefits of each solution could be scored on a scale from 1 to 5 for each industry segment. Exhibit 5-8 shows which aviation-related activity was assigned to the six aviation industry segments for purposes of this assessment.

As can be seen, each aviation industry segment has different aviation-related activities, which in turn are impacted by varying degrees by the infrastructure projects funded at different contribution levels.

**EXHIBIT 5-8
Aviation-Related Activity for Each Aviation Industry Segment**

Aviation Industry Segment	Aviation-Related Activity
Aerospace Manufacturing	Aircraft Manufacturing
Commercial Air Service Providers	Commercial Service
Aerial Agricultural Applicators	Agriculture
Emergency Medical Air Transport	Medical Air Transport Blood Tissue and Organ Transportation
Recreational Aviation	Skydiving General Aviation - Personal Transportation
General Aviation	Aerial Sightseeing Aerial Photography Scientific Research Emergency Preparedness and Disaster Response National Security Firefighting Search and Rescue Air Cargo Pilot Training General Aviation - Business and Corporate Travel



Exhibit 5-9 shows the scoring scale and description used to categorize each solution's benefits.

**EXHIBIT 5-9
Benefits to Industry Scoring Table**

Description	Score
Solution provides negligible benefits	1
Solution provides slight benefits	2
Solution provides moderate benefits	3
Solution provides significant benefits	4
Solution provides very significant benefits	5

As can be seen in Exhibit 5-10, which summarizes the benefits of each solution across each industry segment, half of the industries see little relative change among

solutions. The aerial agricultural applicator industry is projected to receive very significant benefits (a score of 5) across all solutions. Similarly, both the commercial air service provider industry and emergency medical air transport industry are projected to receive significant benefits (a score of 4) from any solution. The other industry segments – aerospace manufacturing, recreational aviation, and general aviation – are all expected to receive moderate benefits (a score of 3) from all solutions, except for those solutions that rise to contribution level 3 (solution 3, 5A, and 5B at their highest rates, and solution 8). For these solutions, the benefits for aerospace manufacturing, recreational aviation, and general aviation rise from moderate to significant (a score of 4).

**EXHIBIT 5-10
Benefits to Industry**

Solution	Aerospace Manufacturing	Commercial Air Service Providers	Aerial Agricultural Applicators	Emergency Medical Air Transport	Recreational Aviation	General Aviation
1 - New P3 Funding	3	4	5	4	3	3
2A - New Parking Tax (<5%)	3	4	5	4	3	3
2A - New Parking Tax (10%)	3	4	5	4	3	3
2A - New Parking Tax (15%)	3	4	5	4	3	3
2B - New GT Tax (1%)	3	4	5	4	3	3
2B - New GT Tax (<10%)	3	4	5	4	3	3
3 - New Hotel Tax (Rate Inc. <10%)	3	4	5	4	3	3
3 - New Hotel Tax (Rate Inc. 15%)	3	4	5	4	3	3
3 - New Hotel Tax (Rate Inc. 30%)	4	4	5	4	4	4
4 - New Rev. Loan Fund	3	4	5	4	3	3
5A - Reall. MV Fuel Tax (0.1%)	3	4	5	4	3	3
5A - Reall. MV Fuel Tax (0.5%)	3	4	5	4	3	3
5A - Reall. MV Fuel Tax (1.0%)	4	4	5	4	4	4
5B - Reall. RC Tax (5-10%)	3	4	5	4	3	3
5B - Reall. RC Tax (10-20%)	3	4	5	4	3	3
5B - Reall. RC Tax (30-40%)	4	4	5	4	4	4
6 - Reall. Airport L/H Tax (Low)	3	4	5	4	3	3
6 - Reall. Airport L/H Tax (High)	4	4	5	4	4	4
7A - Inc. Fuel Ex. Tax Rate (\$0.155/gal)	3	4	5	4	3	3
7B - Inc. Dealer Lic/Reg Fees (2x)	3	4	5	4	3	3
8 - Rev. Fuel Tax Exempt. (As-Is)	4	4	5	4	4	4



Solution	Aerospace Manufacturing	Commercial Air Service Providers	Aerial Agricultural Applicators	Emergency Medical Air Transport	Recreational Aviation	General Aviation
8 - Rev. Fuel Tax Exempt. (Slid. Scale)	4	4	5	4	4	4
9A - Rev. A/C Excise Tax (<3% of Value)	3	4	5	4	3	3
9B - Rev. A/C Excise Tax (+UAE)	3	4	5	4	3	3
9C - Reall. A/C Excise Tax	3	4	5	4	3	3
10 - BMP Toolkit	3	4	5	4	3	3

Conclusions

The preceding analysis examined the possible consequences and benefits on six aviation industry segments that could result from each proposed solution. Impacts to industries outside of aviation were not evaluated.

The majority of solutions impose no new costs on the aviation industry. This is primarily because most of the solutions either do not involve taxes or fees, or involve shifting where existing taxes are deposited. The solutions with the greatest impact on aviation industries are those that raise taxes that the industry already pays, namely the aircraft fuel excise tax and the aircraft excise tax. The solutions that impose new taxes on visitors to Washington (solutions 2 and 3 that impose new airport parking, ground transportation and hotel taxes/fees) also have the potential to have a

large impact on certain segments of the aviation industry, depending upon how steep those new taxes/fees are.

In terms of how the solutions benefit these six aviation industries, the analysis shows that all of the solutions provide some degree of benefit. Those solutions that reallocate the largest amount of tax or impose the highest tax rates also tend to be the solutions that deliver the greatest benefits. Two notable exceptions to this general observation are solution 9A (Revising the Aircraft Excise Tax to 3% of Aircraft Value) and solution 7A (Increasing the Aircraft Fuel Excise Tax Rate to \$0.155 per gallon). Both of these solutions impose high costs on specific segments of the aviation industry, yet the benefits of these solutions are evaluated as being no better than many other solutions that do not impose steep costs.



Application of Contribution Levels to Statewide Aviation System Need

Background

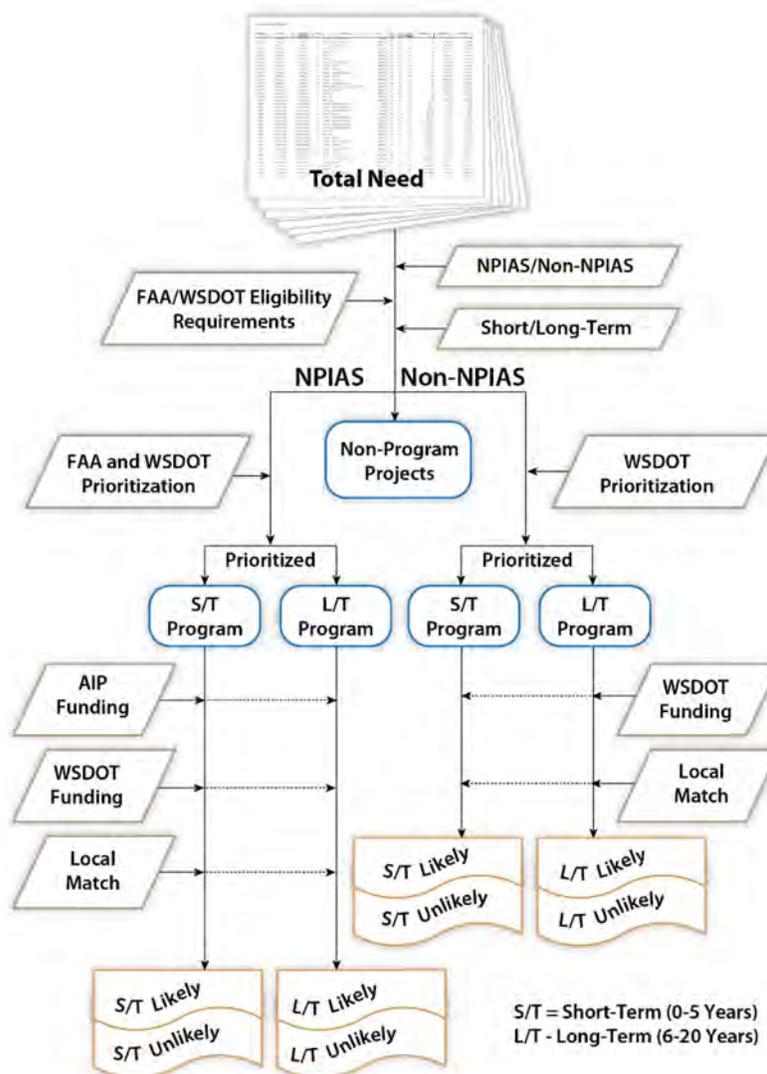
As illustrated in Exhibit 5-11, the *Airport Investment Study* applied forecast “status-quo” federal, state and local funding to the projected 20-year *Total Project Needs List* to determine the potential gap in funded and unfunded projects.

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 (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.

EXHIBIT 5-11
Process Chart for Determining Funded and Unfunded Projects



The study identified the state’s share of the statewide aviation system need. Nearly \$12.1 million of state funding is required annually to support the projected 20-year need. The study also projected “status-quo” annual state funding of only \$1.4 million available to support aviation system capital and preservation needs.

In order to understand the potential consequences of implementing potential solutions, each of the three annual contribution levels identified (\$4, \$8, and \$12 million) were applied as the state’s share to the 20-year *Total Project Needs List* to determine projects likely to be funded and projects unlikely to be funded.

Forecast assumptions for Federal and local share contributions to the statewide need remain as they were in the Airport Investment Study, status-quo scenario. Federal funds are forecast at \$2.1 billion for the 20-year plan. Exhibit 5-12 presents the eligible Federal and State funding shares of total project costs.

**EXHIBIT 5-12
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%

**EXHIBIT 5-13
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 \$250,000 per project.

Airport sponsors’ ability to meet the local match for Federal and State grants were applied as illustrated in Exhibit 5-13.

For the purpose of simplicity, some tables and graphs use an abbreviated term “funded” or “unfunded”.

Determining Funded Projects

Total Funding and Federal, State and Local Share

The list of potential funded projects for each contribution level is provided in Appendix 16.

Baseline (Status-Quo) Scenario

Recall from the Airport Investment Study baseline scenario, 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.**



**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.

Contribution Level 1 (\$4 million annually)

Exhibit 5-14 summarizes short and long-term funding responsibility results when \$4 million state share contribution is available annually. Similar to the baseline scenario, over the 20-year period, state funds are able to leverage an average of over \$95 million in completed projects annually. On average there is an \$83 million shortfall in funding for eligible projects at this contribution level.

At Contribution Level 1, the State's funding is primarily supporting its 5% share of projects at NPIAS airports and additionally supports approximately \$10 million of projects at Non-NPIAS airports up to a 95% share of project costs.

As stated under the baseline scenario above, NPIAS airport sponsors were contributing the State's 5% share to fund projects. Under Contribution Level 1, these airport sponsors are able to reallocate approximately \$2.2 million of their local funds annually as the State is able to contribute the majority of its 5% share.

Contribution Level 2 (\$8 million annually)

Exhibit 5-15 summarizes short and long-term funding responsibility results when \$8 million state share contribution is available annually. Over the 20-year period, state funds are able to leverage an average of over \$96 million in completed projects annually. The average shortfall in funding for eligible projects is reduced to \$81 million at this contribution level.

At Contribution Level 2, the State achieves its 5% share of projects at NPIAS airports and additionally supports approximately \$40 million of projects at Non-NPIAS airports up to a 95% share of project costs.

However, of the \$8 million, approximately \$5 million is being utilized. Despite State funding availability of approximately \$3 million annually at Contribution Level 2, project funding is restricted by insufficient Federal and

local funds. Approximately \$850,000 of annual State funding is available but unutilized as a result of an approximate \$17 million per year deficit in Federal funding. Similarly, \$2.15 million of annual State funding is available but unutilized as a result of insufficient local funding share at small airports (i.e., Local, Rural Essential, Seaplane Bases, and a few Community Service airports).

Contribution Level 3 (\$12 million annually)

Exhibit 5-16 summarizes short and long-term funding responsibility results when \$12 million state share contribution is available annually. Over the 20-year period, state funds are able to leverage an average of nearly \$97 million in completed projects annually. The average shortfall in funding for eligible projects is reduced substantially to \$80 million at this contribution level.

The funding situation at Contribution Level 3 is similar to Contribution Level 2. The State achieves its 5% share of projects at NPIAS airports and additionally supports approximately \$58 million of projects at Non-NPIAS airports up to a 95% share of project costs.

However, of the \$12 million, approximately \$5.8 million is being utilized. Despite State unutilized funding availability of approximately \$6.2 million annually at Contribution Level 3, project funding is restricted by insufficient Federal and local funds. Approximately \$2.4 million of annual State funding is available but unutilized as a result of an approximate \$57 million per year deficit in Federal funding. Similarly, \$3.8 million of annual State funding is available but unutilized as a result of insufficient local funding share at small airports (i.e., Local, Rural Essential, Seaplane Bases, and a few Community Service airports).



EXHIBIT 5-14

Contribution Level 1: Short-term and Long-term Funding Share Responsibility – Projected Need

Short-Term	Total Cost	Federal Share	State Share	Local Share
Likely Funded	\$476,736,283.00	\$420,293,264.10	\$19,661,889.45	\$36,781,129.45
Likely Unfunded	\$412,711,279.00	\$322,518,819.00	\$40,797,880.35	\$49,394,579.65
Ineligible	\$422,168,921.00	\$0.00	\$0.00	\$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	\$1,430,208,849.00	\$1,260,879,792.30	\$58,985,668.35	\$110,343,388.35
Likely Unfunded	\$1,238,133,837.00	\$967,556,457.00	\$122,393,641.05	\$148,183,738.95
Ineligible	\$1,266,506,763.00	\$0.00	\$0.00	\$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	\$1,906,945,132.00	\$1,681,173,056.40	\$78,647,557.80	\$147,124,517.80
Likely Unfunded	\$1,650,845,116.00	\$1,290,075,276.00	\$163,191,521.40	\$197,578,318.60
Ineligible	\$1,688,675,684.00	\$0.00	\$0.00	\$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	\$95,347,256.60	\$84,058,652.82	\$3,932,377.89	\$7,356,225.89
Likely Unfunded	\$82,542,255.80	\$64,503,763.80	\$8,159,576.07	\$9,878,915.93
Ineligible	\$84,433,784.20	\$0.00	\$0.00	\$84,433,784.20
Total	\$262,323,296.60	\$148,562,416.62	\$12,091,953.96	\$101,668,926.02

EXHIBIT 5-15

Contribution Level 2: Short-term and Long-term Funding Share Responsibility – Projected Need

Short-Term	Total Cost	Federal Share	State Share	Local Share
Likely Funded	\$484,280,772.00	\$420,465,429.60	\$24,755,799.95	\$39,059,542.45
Likely Unfunded	\$405,166,790.00	\$322,346,653.50	\$35,703,969.85	\$47,116,166.65
Ineligible	\$422,168,921.00	\$0.00	\$0.00	\$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	\$1,452,842,316.00	\$1,261,396,288.80	\$74,267,399.85	\$117,178,627.35
Likely Unfunded	\$1,215,500,370.00	\$967,039,960.50	\$107,111,909.55	\$141,348,499.95
Ineligible	\$1,266,506,763.00	\$0.00	\$0.00	\$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	\$1,937,123,088.00	\$1,681,861,718.40	\$99,023,199.80	\$156,238,169.80
Likely Unfunded	\$1,620,667,160.00	\$1,289,386,614.00	\$142,815,879.40	\$188,464,666.60
Ineligible	\$1,688,675,684.00	\$0.00	\$0.00	\$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	\$96,856,154.40	\$84,093,085.92	\$4,951,159.99	\$7,811,908.49
Likely Unfunded	\$81,033,358.00	\$64,469,330.70	\$7,140,793.97	\$9,423,233.33
Ineligible	\$84,433,784.20	\$0.00	\$0.00	\$84,433,784.20
Total	\$262,323,296.60	\$148,562,416.62	\$12,091,953.96	\$101,668,926.02



EXHIBIT 5-16

Contribution Level 3: Short-term and Long-term Funding Share Responsibility – Projected Need

Short-Term	Total Cost	Federal Share	State Share	Local Share
Likely Funded	\$488,839,304.00	\$420,483,336.00	\$28,843,498.95	\$39,512,469.05
Likely Unfunded	\$400,608,258.00	\$322,328,747.10	\$31,616,270.85	\$46,663,240.05
Ineligible	\$422,168,921.00	\$0.00	\$0.00	\$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	\$1,466,517,912.00	\$1,261,450,008.00	\$86,530,496.85	\$118,537,407.15
Likely Unfunded	\$1,201,824,774.00	\$966,986,241.30	\$94,848,812.55	\$139,989,720.15
Ineligible	\$1,266,506,763.00	\$0.00	\$0.00	\$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	\$1,955,357,216.00	\$1,681,933,344.00	\$115,373,995.80	\$158,049,876.20
Likely Unfunded	\$1,602,433,032.00	\$1,289,314,988.40	\$126,465,083.40	\$186,652,960.20
Ineligible	\$1,688,675,684.00	\$0.00	\$0.00	\$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	\$97,767,860.80	\$84,096,667.20	\$5,768,699.79	\$7,902,493.81
Likely Unfunded	\$80,121,651.60	\$64,465,749.42	\$6,323,254.17	\$9,332,648.01
Ineligible	\$84,433,784.20	\$0.00	\$0.00	\$84,433,784.20
Total	\$262,323,296.60	\$148,562,416.62	\$12,091,953.96	\$101,668,926.02

Conclusion

Application of the forecast available short and long-term funding from FAA and the three Contribution Levels of state share to the total prioritized project needs list resulted in an assessment of projects that are ‘likely to be funded’ and projects that are ‘unlikely to be funded’ for FAA and/or WSDOT funding.

Solutions that are able to achieve Contribution Level 1 (up to \$4 million) are not able to provide significant improvement to the percentage of eligible projects funded over the baseline scenario. This is due, in part, to the assumption that larger airports could provide adequate local funding to match the balance of projects with federal funding, even if no state funding was available.

Additionally, as the State extends beyond the ability to contribute \$5 million annually, the current Airport Aid Program should be revisited

Once the State funding levels exceed \$5 million annually, State funds are no longer able to be utilized, due to insufficient Federal and local airport funds needed for match.

such that all State funding can be utilized and necessary projects funded. Program considerations should evaluate:

- Increasing current \$250,000 maximum grant aid per project (i.e., \$1 million or potentially no limit) for high priority projects at NPIAS airports.
- Increasing grant aid contribution percentage (i.e., 5% to 50%) for projects eligible for Federal funds but not receiving Federal funds due to funding deficits.

For example, the State could attempt to elect to alter its Airport Aid Program criteria (via legislation) to support high priority NPIAS projects at 50% of the project’s value, but no more than \$1 million, once

Federal and local funding runs out. This would continue to leverage available State funds at Contribution Level 3. Analysis of maximizing Contribution Level 3 funding shows this has a noticeable and positive influence on the ability to fund needed projects.



While the State's funding share responsibility has been determined to be \$12 million annually (from its current contribution of \$1.4 million annually) and is the near-term goal of the State to adopt solutions to achieve its \$12 million annual share, it is clear that the Federal and local agencies must also work to reach their share. However, the reality of raising Federal and local funding levels significantly in the foreseeable future is unlikely and outside the State's control. The State recognizes it will likely need to extend beyond historical funding parameters to compensate for these deficits and ensure the State's airports remain viable and sustained for the long term. For these reasons, both the States of Texas and Florida, for example, have expanded their State aid programs to award larger grants per airport.

Changes in the Airport Aid Program, as suggested previously, to offset deficits in Federal funding, will inherently raise the

annual funding needs of the State beyond the level of \$12 million annually previously defined. Based on the Federal funding deficits at larger airports (who are expected to be capable of sharing project costs with the State), the State will need to consider funding levels at approximately \$30 million annually to support up to 50% of these unfunded NPIAS project costs (determined to be an additional \$18 million annually) . The State is not likely to consider raising its 95% share of Non-NPIAS airport projects since it cannot reasonably assume responsibility for 100% funding of a project. Funding of Non-NPIAS projects is heavily restricted upon reaching Contribution Level 2. Non-NPIAS airport sponsors will have to continue to leverage local revenue sources as able, including evaluating new solutions that may arise out of this study, such as implementing Management Best Practices which could enhance airports' abilities to provide matching funds.



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, versus increasing the state share of funding for aviation preservation and capital needs. Impact analyses should look beyond one-time economic benefits from constructing the capital programs and provide a strong understanding of the economic output of the aviation system, and how growth of this output may be achieved by increasing funding.

Economic Benefits from Aviation Funding

One way to compare states with different levels of aviation funding is to examine average economic impacts of their respective airports. The average economic impacts of airports in five states with varying levels of airport funding were examined. The tables below list these states by average state funding per airport in order from highest to lowest, along with the average direct economic output per airport (a measure of the economic activity, generally equated to gross sales or total expenses) and the average direct number of jobs per airport.

The direct impacts account for only the initial economic benefits of on-airport activities, visitor spending, and capital improvement projects at the airport. No multiplier impacts (the re-spending of direct impacts within an economy, referred to earlier in the study as indirect and induced impacts) are included.

For Washington, the economic impacts of two general aviation airports were excluded – Renton Municipal and Snohomish County/Paine Field – from the averages because both of these airports include the off-airport impacts of Boeing. Off-airport impacts were not part of the averages for the airports in other states.

Although states may have differing priorities for investing in general aviation or commercial service airports, increased airport funding and increased economic benefits go hand in hand. This is generally found to be true regardless of whether the investment is in general aviation airports or commercial service airports.

Exhibit 5-17 shows the relationship between state funding per airport and the average output and average jobs per airport. The data is split into per airport output and jobs for general aviation and commercial service airports. In general, it can be seen that levels of output per airport and jobs per airport tend to reflect the level of state funding per airport.

EXHIBIT 5-17

Average Direct Output and Direct Jobs per Airport (in descending order of State Funding per Airport)

State	Number of System Airports	Airport Funding from State	State Funding per Airport	Average Direct Output per Airport		Average Direct Jobs per Airport	
				General Aviation Airports	Commercial Service Airports	General Aviation Airports	Commercial Service Airports
Florida	129	\$164,000,000	\$1,271,000	\$43,929,000	\$3,049,644,000	262	30,257
Louisiana	75	\$28,800,000	\$384,000	\$9,468,000	\$495,766,000	74	4,104
Colorado	76	\$20,100,000	\$264,000	\$19,207,000	\$1,297,475,000	83	9,327
Washington	134	\$1,100,000	\$8,000	\$3,920,000	\$1,214,975,000	33	7,760
Ohio	169	\$1,100,000	\$7,000	\$10,866,000	\$904,750,000	79	8,446

Source: Washington Airport Investment Study Reference Guide and CDM Smith



While Table 1 serves to illustrate the relationship between state funding and corresponding economic benefits, it should be noted that there are likely a great many other reasons that could drive the differences in output and jobs per airport from state to state. Identifying specific factors would require its own study, but possible explanations include such items as:

- State funding priorities
- FAA Airport District Office funding priorities
- The proportion of various aviation industry segments within the state (e.g., some states have a greater proportion of flight training than other states).
- The percentage of system airports in the National Plan of Integrated Airport Systems and, therefore, eligible for federal funding.
- Where the overall airport system is in its pavement maintenance cycle.

Other factors in addition to the above non-exhaustive list may be responsible for differences in output and jobs per airport from state to state, but the underlying relationship between state funding and these economic benefits still holds.

The correlation between state funding per airport and corresponding economic benefits (in terms of direct jobs and direct output) can be expressed mathematically in the form of a correlation coefficient. A correlation coefficient is a measure of the linear dependence between two variables. The correlation coefficient can range from -1.0 to 1.0, with 1.0 indicating a perfect correlation where whatever percentage change occurs in one of the variables is matched by the same percentage change in the other. A negative correlation coefficient indicates that the variables move in opposite directions, and a coefficient of 0.0 indicates no relationship between the variables. Exhibit 5-18 shows the correlation coefficients between the variables shown in Exhibit 5-17.

**EXHIBIT 5-18
Correlation Coefficients**

Economic Impact Variable	Correlation Coefficient with Average State Funding per Airport	
	General Aviation Airports	Commercial Service Airports
Average Direct Output per Airport	0.94	0.85
Average Direct Jobs per Airport	0.96	0.80

Source: CDM Smith

All of the correlation coefficients are greater than or equal to 0.80, which is very close to 1.0, indicating a strong positive correlation between the economic impact variables and the average state funding. This means that as state funding increases, the economic impacts increase fairly proportionally in a linear fashion. Likewise, as state funding per airport decreases, a similar drop occurs in the corresponding economic impact variable. It should be noted that correlation is not causation – changes to one variable do not necessarily cause the change in the other variable.

It is not surprising that the economic benefits associated with general aviation airports have

a stronger correlation with state funding than commercial service airports, since commercial service airports generally receive more federal funding and are often capable of self-generating revenue for use in capital projects, making them less reliant on state funding. Because the correlation coefficients for the general aviation airports are higher than for the commercial service airports, the focus of this discussion will be on general aviation airports. However, it is important to recognize that the commercial service airports in the Washington airport system are crucial assets, and provide air transportation links for both business and leisure travelers. Their ability to move people and cargo, using either



scheduled airlines or general aviation aircraft as needed, is a significant contributor to the state's economy. The following discussion on general aviation airports is intended to illustrate the correlation between state funding and the economic benefits associated with general aviation airports, and much of this correlation will hold true for Commercial Service airports as well.

To better illustrate the relationship between these direct economic benefits found at general aviation airports and the average state funding per airport, each of these variables is plotted on a scatter plot, shown in Exhibit 5-19. The respective average direct output per general aviation airport and average direct jobs per general aviation airport are grouped by state in a blue box and labeled appropriately. From Exhibit 5-19, it can be clearly seen that the states trend upward from left to right on the plot, illustrating the positive correlation between state funding per airport and economic benefit.

Two trend lines are plotted on Exhibit 5-19, one for the direct output per general aviation (GA) airport and one for the direct jobs per GA airport. These trend lines were mathematically determined using regression analysis formulas. This means that these lines are the best fitting

linear relationship for their respective set of data points. The trend lines clearly illustrate the positive correlation between state funding per airport and economic benefits – as state funding per airport, shown along the horizontal axis, increases, the trend lines move up, indicating greater economic benefits, as shown along the vertical axis (output per airport on the left and jobs per airport on the right).

To illustrate what this could mean for Washington, projections of economic benefits were developed based upon potential future state funding levels. Three Contribution Levels were defined based on assumed state funding for airports of \$4 million, \$8 million, and \$12 million. These funding levels were converted to a per-airport figure for Washington and are shown in Exhibit 5-20.

Exhibit 5-20 is a zoomed in view of the lower left corner of Exhibit 5-20 and displays the current direct output and jobs per airport for Washington. Projections of Washington's per airport output and jobs at each of the Contribution Levels were determined by applying the slope of each respective trend line to the current Washington data points. As can be seen, greater Contribution Levels result in greater projected economic benefits.

**EXHIBIT 5-19
Average Economic Impacts at GA Airports vs. Average State Funding per Airport**

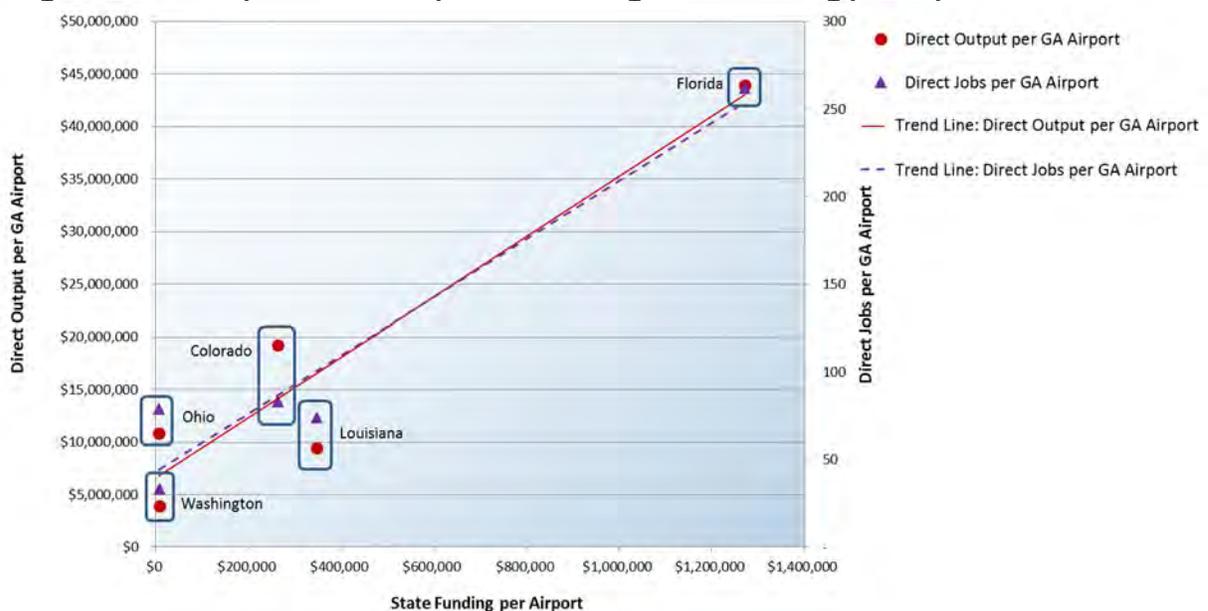
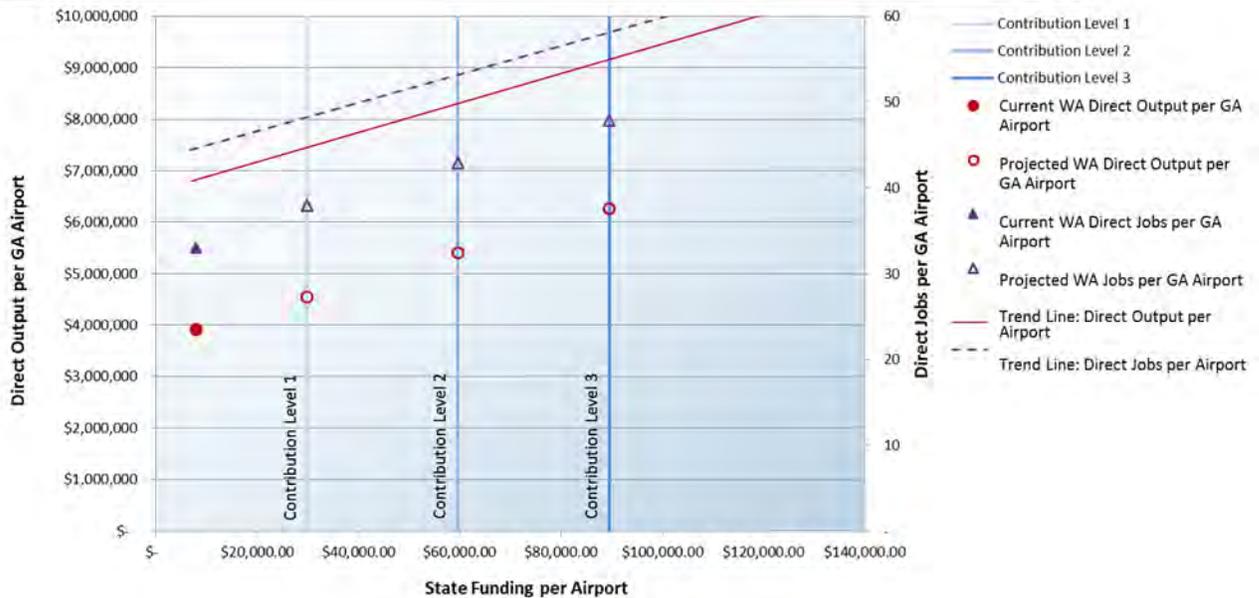


EXHIBIT 5-20

Projected Economic Impacts at Washington GA Airports at Three Contribution Levels



If WSDOT were to fund airports at these levels, and if the linear relationship between state funding and economic output were to hold, the direct output per general aviation airport in Washington could be expected to increase from its current level of approximately \$3.9 million, to between \$4.5 million (at Contribution Level 1) and \$6.3 million (at Contribution Level 3) per general aviation airport. That represents an increase of between 15 percent and 60 percent of current output. Likewise, the direct jobs per general aviation airport in Washington, which include people employed at the airport and jobs in the community supported by visitor expenditures, could be expected to increase from its current level of 33 jobs, to between 37 jobs (at Contribution Level 1) and 47 jobs (at Contribution Level 3) per general aviation airport. That represents an increase of between 12 percent and 42 percent of current jobs.

In addition to this quantitative evidence for the economic benefits stemming from increased state aviation funding, there are other reasons that increased aviation funding is beneficial.

Substantial Leveraging of Capital When Matched with Federal Funding

When state funds are used as matching funds for federal Airport Improvement Program (AIP) grants, they can be leveraged 18 times their value when used to provide 5 percent of the 10 percent local match for general aviation airport grants. This is an important means of stretching limited state funding dollars.

Preservation of Valuable Infrastructure

The State of Washington has created a valuable airport system through years of infrastructure investment. Maintenance of this significant asset is critical to preserving its utility and value to the state. Timely upkeep of pavement prevents rapid degradation of surfaces that can lead to more costly repairs or replacement. Additionally, well maintained pavement reduces the risk of foreign object debris damage to expensive airframes and aircraft engines. Maintenance of airport buildings and equipment ensures that the airport can provide the services that aviation users need.

Provide Access Across the State

The Washington system of airports provides access to all parts of the state, from major metropolitan areas, to remote, hard to reach regions. Funding for the airport system helps to maintain this level of access and provides



recreational opportunities and backcountry access. There is also an element of safety involved with preserving and operating airports that can provide emergency landing sites in remote areas. Starting in the 1940s, the state constructed airports in the Cascade Mountains near passes frequented by small

aircraft flying between eastern and western Washington. These airports provide a safe refuge to pilots when the passes are blocked by weather conditions.

These are some of the major reasons for supporting increased WSDOT Aviation funding.

