Washington State
Department of Transportation

Washington State
Long-Term Air Transportation Study

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Phase III Alternatives Report

Washington Aviation System Key Issues

January 15, 2009

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The following statement is provided as required by Paragraph 429.a of Federal Aviation Administration (FAA) Order 5100.38, Airport Improvement Program (AIP) Handbook:

The preparation of this document was financed in part through a planning grant (AIP 3-53-0000-05) from the FAA as provided under Section 505 of the Airport and Airway Improvement Act of 1982. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein; nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

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The report was developed through a joint effort with the Washington State Department of Transportation (WSDOT Aviation) and the SH&E study team, which included Simat, Helliesen & Eichner, Inc. (SH&E), W&H Pacific, URS Corp., PRR, and Cambridge Systematics, Inc. (CSI).

WSDOT Aviation expresses its appreciation to airport sponsors and the LATS Technical Advisory Committee for their participation in the development of this report.

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INTRODUCTION

The alternatives analysis is an essential component of the third and final phase of the Washington State Department of Transportation (WSDOT) Long-term Air Transportation Study (LATS). In this analysis, systemwide alternative strategy packages are proposed for the State for addressing key issues facing the Washington aviation system. The alternative packages, also referred to as "alternatives," present different possible levels of State initiative and investment. The alternatives are evaluated based on various decision criteria, resulting in a final recommendation of a preferred alternative for the State.

Overview of LATS

The three-phase LATS study was authorized in 2005 by the State Legislature through transportation bill ESSB 5121. The transportation bill requires WSDOT Aviation to conduct a study that identifies the State's long-term air transportation needs by documenting the extent and capacity of the existing aviation system, determining the future needs of the system and developing a strategy for meeting those needs.

As shown in Figure 1, each phase of LATS answers one of the three basic questions fundamental to the development of a systemwide approach to managing Washington's aviation resources.

Figure 1: The Three Phases of LATS

In Phase III of LATS, a ten-member Washington State Aviation Planning Council was appointed by the Governor to review the findings of LATS and make recommendations on how the State

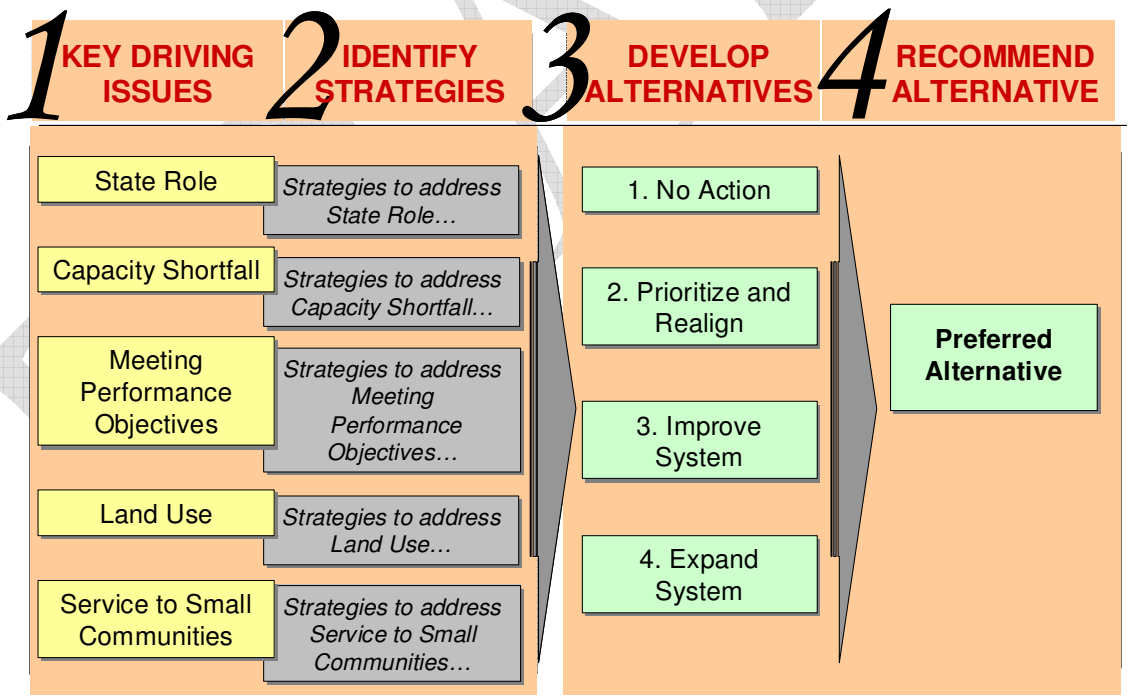
can meet its long-term air transportation needs. The alternatives analysis builds on the findings and conclusions from Phases I and II and will be used by the Council to develop recommendations for the Washington aviation system. The Council will consider feedback from aviation experts, stakeholders and the general public in order to assess alternatives and develop a preferred alternative.

Alternatives Development Process

The alternatives were developed and evaluated through a sequence of steps in Phase III. First, the key issues facing the air transportation system in Washington State were identified. Various strategies to address each of the key issues were then developed. Theses strategies were packaged into systemwide alternative packages for the State, involving different levels of State initiative and investments. The alternatives were evaluated by the Aviation Planning Council based on various decision criteria, including consistency with the directive ESSB 5121 and relative costs. The evaluation of alternatives, together with public input, led finally to the selection of a preferred alternative.

The sequence of the alternatives development process is graphically depicted in Figure 2 below.

Figure 2: Alternatives Development Process



STATEMENT OF KEY ISSUES

Five major issues have been identified by the Aviation Planning Council as high priority issues for the Washington State aviation system. These key issues represent major long-term challenges to the Washington air transportation system and impact both airports and aviation users across the state. Strategies to address these issues form the basis for the system alternatives presented in this alternatives analysis.

The five key issues include the following:

1. Historically, the State has been limited in its ability to finance and guide airport development in Washington. The State will need to redefine its role in the Washington air transportation system if it is to implement strategies to address aviation deficiencies on a system-wide basis.

2. Significant capacity constraints are anticipated in Washington by 2030:
   - Airfield capacity constraints (or the inability of an airport's runway system to accommodate forecast flight activity) are expected to emerge at twelve airports
   - Several of these constrained airports are among the state's busiest airports including Sea-Tac, Boeing Field, and Harvey Field
   - A significant number of Washington's public-use airports are expected to have aircraft storage capacity shortfalls by 2030
   - Several airports within key regions lack terminal capacity to accommodate the future passenger demand expected
   - Private airports contribute to capacity in key regions in the state. The loss of privately owned airports could further reduce available capacity in high-growth regions and impact key airport facilities in these areas.

3. A number of Washington airports require upgrades to satisfy their proposed roles within the state aviation system and meet recommended airport performance objectives. Insufficient funding will result in increased deficiencies in the system in the future.

4. The encroachment of incompatible land use adjacent to airports poses a significant threat to public airports in the state.

5. Trends contributing to the loss of scheduled passenger airline services at smaller Washington State commercial airports are expected to continue.

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KEY ISSUE 1: STATE ROLE IN AIRPORT DEVELOPMENT

Discussion of Issue

Nearly all airports in Washington are owned and operated by individual local governments or private entities that can, and generally do, plan, develop, and operate their airports with minimal regard for the aviation system. It is easy to underestimate the importance of the aviation system because, unlike surface transportation systems, the aviation system is not bound by a network of rigid links. With decentralized airport control and a historically undefined aviation system perspective, it is no surprise that the State's role has been minimized as well as underfinanced to ensure Washington's aviation system is developed in a way that will meet current and long-range air transportation needs. What can the State do to see that Washington's airports provide residents and visitors with the appropriate type and amount of access to the regional, state, national, and international air transportation system?

The WSDOT Aviation Division succeeds at many functions as an advocate for aviation, such as producing informative publications, overseeing periodic airport facility and pavement condition inspections, administering an airport aid grant program to fund limited airport capital, and managing various maintenance, safety and planning projects. The state also operates several small airports in remote locations that were acquired for emergency use. Comparable organizations in other states provide similar functions. In fact, compared to other states, WSDOT Aviation has a higher level of authority concerning land use compatibility protection, being given specific responsibilities in the Growth Management Act. However, WSDOT Aviation research has found that several other states are more effective at implementing system-wide airport development policies.

In spite of its many positive contributions to aviation in Washington, the Aviation Division's current role in airport development is limited to providing some technical assistance to airport owners and implementing a relatively small grant program for planning and improvements at publicly owned airports.

The State, usually with FAA assistance, funds individual airport plans and continuous statewide system planning. Currently, development planning for Washington's airports is "bottom-up"--defined by individual airports--although subject to State and Federal restrictions and influenced by State and Federal funding programs. Individual airport plans sometimes reflect only the owner's vision for the airport, which may entail unrealistic growth or may prohibit growth where it needs accommodation. Each airport plan produces a forecast of aviation activity that may or may not adequately consider other airports in the service area, airport users outside the airport owner's jurisdiction, and the airport's role within the aviation system. Planned facility development sometimes focuses too much on the short-term needs of current airport tenants.

Without subrogating individual airport owners' rights to develop their facilities, how can the State be more effective at ensuring there will be a viable network of airports to provide the

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capacity and geographic coverage needed in the state? Possible strategies to strengthen the Aviation Division's role in airport system development have been identified below.

Strategies to Address State Role

Strategy 1 - Improve Effectiveness of Current Staff and Activity

The Aviation Division could improve the effectiveness of its current functions without an increase in staffing or funding by eliminating some time-consuming activities and by focusing more on activities that implement system-wide goals.

For example, the airport aid program provides grants as small as $2,500, a value possibly exceeded by the administrative time spent by Aviation Division staff and airport sponsors. In addition, grants are sometimes issued three times in a two-year period; reducing grant issuance to once a year would reduce administrative time without hurting program effectiveness. As funds are available and the cost effectiveness is proven, the Division could automate more of its current activities. The Division might also eliminate or reduce less effective programs and activities. Time and money saved from such largely administrative improvements could be spent collaborating more with airport owners, airport consultants, the FAA, and RTPOs to ensure their plans are consistent with statewide plans and policies. Better collaboration might be accomplished through workshops, joint planning conferences, more coordination calls and meetings, ad hoc and standing committees, and similar efforts. Dividing the state into regions for some committees and collaborative efforts may be cost effective.

To determine airport aid grants, the Division could set priorities that implement statewide system needs, specifically directing funds and effort at projects that improve system performance according to the classification system and match FAA grants for needed capacity enhancements.

Airport aid grant funds might also be used more cost-effectively through the establishment of programs focused on certain needs. An example would be a program for obstruction surveying that contracts with a limited number of well-qualified surveying firms. In addition to ad hoc technical assistance to airport sponsors as needed, the Division could develop programs for technical assistance, such as environmental best practices, to ensure sponsors receive high quality, well researched, and documented information about timely issues.

Strategy 2 - Take a More Active Role in Planning Airport Improvements

With some increase in staffing and travel funds, the Aviation Division could be more proactive in planning airport improvements. In addition to the strategies in #1, the Division could reach out to airport owners, airport consultants, the FAA, RTPOs, and airlines to implement projects important to the system. For many reasons, the Division should become more involved in the planning activities of these other organizations. Smaller communities are often unfamiliar with aviation issues and their airport managers serve multiple functions that hinder them from developing airport expertise. Larger communities sometimes lack motivation to consider system issues if they are politically controversial. Some airport consultants focus more on short-term,

airport-specific projects than long-term system planning. Some of the RTPOs lack a full understanding of aviation issues since they are more focused on surface transportation. The FAA's planning for the national airport system (the NPIAS Report to Congress) comes from individual airports--a bottom-up process that is not linked to statewide system planning. In addition, the FAA's airport development focus is limited to less than half the public use airports in Washington. Airlines and other private entities are often underrepresented in system-wide airport development. Their shorter-term, profit-oriented, business-competitive perspective needs to be respected by the governmental entities involved in airport operation and development, since airports are truly public-private partnerships.

The Division could implement an online airport capital improvement program whereby airport sponsors would submit their desired short-term improvement projects with costs and justification. The information could be shared with the FAA to facilitate their capital project planning, linked to the airport information database and grant documents, and capable of automating funding priorities consistent with statewide system objectives. The Aviation Division could participate in and require regular airport plan updates to justify the capital improvement projects and as a condition to receiving airport aid grants. Aviation forecasts in the state aviation system plan could be used to assess the validity of individual plan forecasts used to justify capital projects.

Strategy 3 - Be More Involved in Building and Operating Airports

The Aviation Division could not only take a more active role in planning airport improvements, as in Strategy #2, but also in building and operating airports. Increases in both staffing and funding would be required.

In a situation where a new airport is needed, where an airport cannot be expanded as needed, or where closure threatens a needed airport, the State could facilitate a change in ownership or management. The change might be a transfer from private to public ownership, privatization of a public airport, an innovative public-private partnership, or formation of a multi-jurisdictional airport owner (authority). The State might encourage municipalities to acquire multiple airports so that they can be managed as a system. The State could sponsor and fund the site selection and environmental assessment for a new airport or major airport expansion, buffering local elected officials from controversy. The State might even construct a new airport, and, if no local sponsor could be found, operate the airport until the airport is established and more attractive to a local sponsor.

Strategy 4 - Become a Block Grant State to Increase Substantially the Control and Amount of Airport Improvement Funding

If the State of Washington were to become a block grant state, the State could take on the responsibility of administering the FAA's Airport Improvement Program (AIP). The AIP program for nonprimary airports within Washington has totaled nearly $20 million per year, considerably more than the approximately $1.3 million annually available for state grants.

(About 80% of total AIP funding, for primary commercial service airports, would be excluded from block grant control.)

With the control of state apportionment and discretionary AIP funding, the State could implement improvements that advance system-wide goals much more effectively. The State might also administer a program pooling nonprimary entitlements (up to $150,000 per year per airport) to fund large improvement projects at a smaller number of individual airports each year. Each airport sponsor contributing to this "entitlement bank" would need assurance that it would have its turn for a project and would not lose its funds.

In spite of greater State control with block grant status, local airport sponsors would not be forced to accept projects they oppose, and the State must operate within the framework of FAA regulations and guidance. AIP funds would be limited to NPIAS airports, but the State could determine which airports belong in the NPIAS.

The FAA must approve the state's entry into the block grant program, and a slot in the program must be available. Additional WSDOT Aviation Division staffing would be needed to administer the larger program and to ensure that airports comply with their grant assurances. The Division staff would need more engineering and environmental expertise to take on new responsibilities. Compliance enforcement would require staff to perform airport inspections, review leases, rates, and charges, and similar activities.

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KEY ISSUE 2: CAPACITY CONSTRAINTS

Discussion of Issue

A. Significant Capacity Constraints Expected By 2030

The primary issue identified in Phase II of LATS was the need to address the capacity shortfall in the state airport system expected by 2030. Unconstrained demand forecasts through 2030 were developed in Phase II and compared to existing airport capacity across the State, in order to identify capacity constraints at a local, regional, and statewide basis. Capacity measures that were examined included airfield (runway) capacity, terminal capacity, and aircraft storage capacity. A discussion of the capacity issues facing Washington is presented below, together with an overview of potential strategies the State can employ to ensure that actions consistent with the Council's capacity goals for the statewide system are taken.

Airfield Capacity

Airfield capacity, which is the ability of an airport's runway system to accommodate operations (landings and take-offs), is the most critical capacity measure for the statewide system. The analyses of the forecast demand levels compared to the capacity revealed that 12 airports will experience airfield capacity constraints prior to 2030. These 12 airports, presented in Table 1 on the following page, will be operating above 60% of their airfield capacity in 2030, the threshold at which the FAA requires that further planning be initiated. Of the 12 constrained airports, only four airports were forecast to exceed 100% of their airfield capacity in 2030. These four critical airports include: Seattle-Tacoma International, Boeing Field, Harvey Field and Kenmore Air Harbor. It should be noted that recent trends at Seattle-Tacoma indicate that, due to higher passenger load factors and an "upgauging" of aircraft size, the timing in which the airport reaches its capacity limits will be extended, potentially beyond 2030. Nevertheless, the airport is still expected to be approaching its capacity limits during the study timeframe, and strategies need to be developed to accommodate future growth in underlying demand.

As shown in Table 1, nine of the twelve capacity constrained airports – including the four airports that will exceed capacity by 2030 – are located within the Puget Sound region. Addressing airfield capacity at airports within the Puget Sound region is critical and will require the most immediate response.

Passenger Terminal Capacity

The capability of state commercial service airports to accommodate projected future passenger activity was also evaluated. The need for additional passenger facilities was driven by the level of peak hour passenger activity and not the overall annual volume of passengers. Analyses in LATS determined that six airports are either currently or expected to exceed their peak hour passenger capacity by 2030. These six airports are listed in Table 1.

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Table 1: Capacity Constrained Airports

Capacity Component	Airports with Constraints
Aircraft Operations	• Boeing Field/King County International (BFI) • Harvey Field • Kenmore Air Harbor, Inc. • Seattle-Tacoma International (SEA) • Arlington Municipal • Auburn Municipal • Snohomosh County/Paine Field • Crest Airpark • Friday Harbor • Spokane International • Olympia
Passenger Facilities	• Anacortes • Kenmore Air Harbor, Inc. • Kenmore Air Harbor SPB • Orcas Island • Seattle-Tacoma International • Tri-Cities
Aircraft Storage & Parking	• Blaine Municipal • Boeing Field/King County Int'l • Cashmere Dryden • Chelan Municipal • Colville Municipal • Crest Airpark • Cross Winds • Davenport Municipal • Felts Field • Firstair Field • Forks Municipal • Goheen Field • Goldendale Municipal • Kenmore Air Harbor Inc. • Lost River Resort • Lynden Municipal • Methow Valley • Orcas Island • Packwood • Pearson Field • Port of Whitman Business Air Center • Pullman/Moscow Regional • Renton Municipal • Sanderson Field • Seattle-Tacoma International • Seattle Seaplane Base • Sequim Valley • Shady Acres • Sky Harbor • Sunnyside Municipal • Swanson Field • Tonasket Municipal • Twisp Municipal • Vashon Municipal • Western Airpark • Whidbey Airpark • Wilbur Municipal • Willapa Harbor • Woodland State

Although most of the land based airports that are expected to experience passenger terminal constraints have recognized this potential issue and have included solutions within their published master plans, it is necessary to ensure that these expansion plans match the demand levels forecast and not simply the demand levels desired.

Difficulties airports face in expanding terminal capacity include the following:

- Community resistance to airport expansion can be vehement and airports can have difficulty getting approval for terminal expansion projects.

- Communities that are resistant to airport commercial service can seek to control the activity by controlling the size of the terminal that is permitted, causing buildings to be undersized.
- Passenger terminal expansion is only partially eligible for Federal or State funding. The bulk of terminal building work must be financed by the airport sponsor or the airlines. Because FAA rules specify that pavement projects must have priority in funding, many airport terminal projects are either financially infeasible or must be postponed until "more important projects "are complete.

Aircraft Storage Capacity

For the LATS Phase II Technical Report, aircraft storage capacity and demand was determined for both based and transient aircraft and for both outside and inside storage (tiedown aprons and hangars). Demand for inside storage is much greater than demand for outside storage, due to the better protection from weather and security for aircraft. There is little existing unused hangar capacity in the state, since hangars can be generally built to meet short-term demand quickly. Consequently, the capacity analysis for aircraft storage considered not only existing and planned aircraft storage, but also the capacity of undeveloped land for constructing more aircraft storage.

Table 1 lists airports that cannot accommodate the aircraft storage needed by 2030. The 2030 need was calculated using the based aircraft forecast plus 25% for transient aircraft. The cost to build the additional aircraft aprons and hangars needed by 2030 has been estimated at $530 million. Much of the hangar construction at Washington's airports has been privately funded on ground leases. Airport owners have also funded hangar construction. Public airport owners sometimes finance hangar construction by issuing revenue bonds that are paid back with rental income from the hangars. With few exceptions, hangar construction is not currently funded by federal or state airport improvement grants. Federal grants can fund tiedown aprons, if they are not exclusive use or revenue producing.

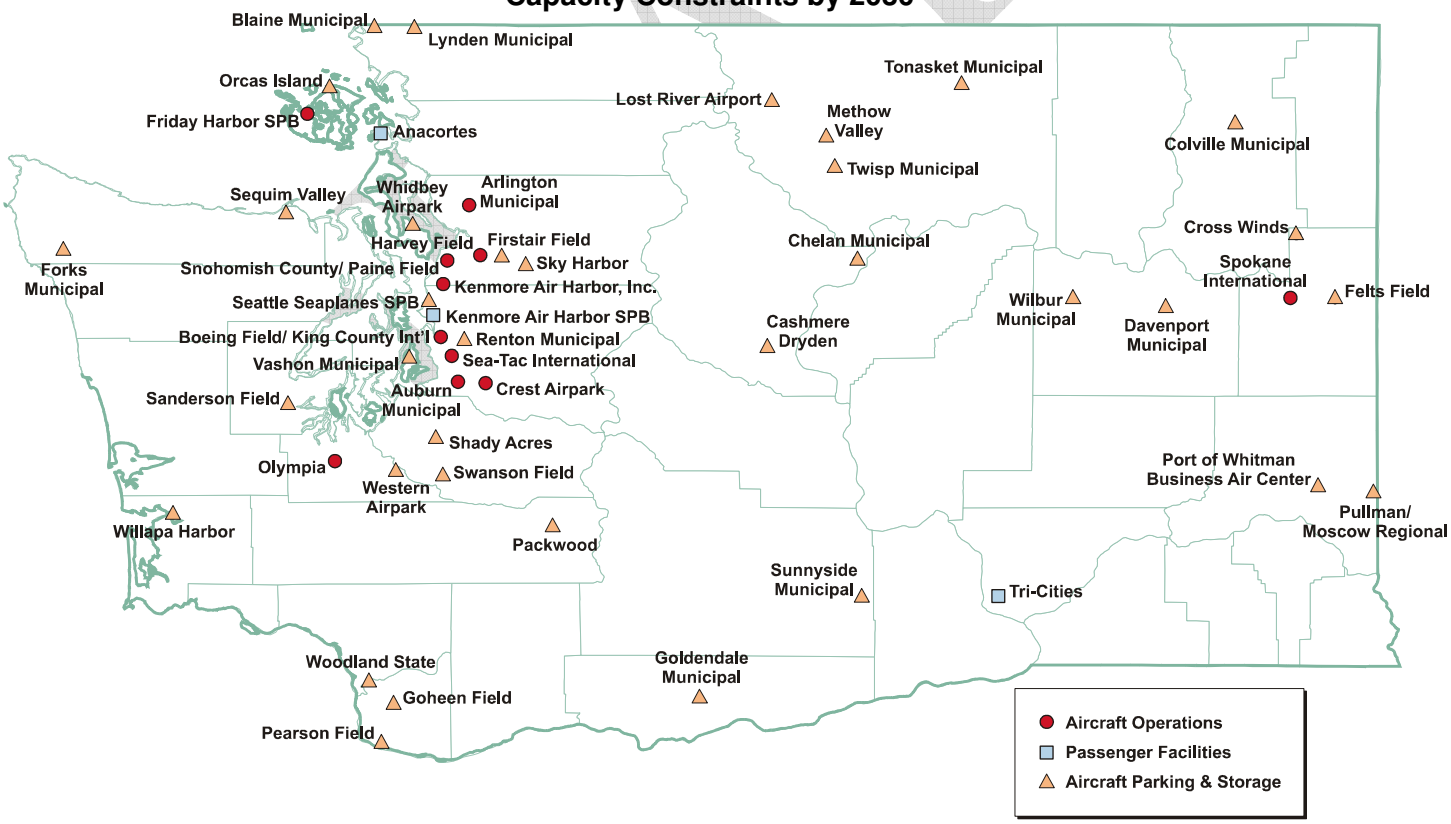
At most airports in the state, providing sufficient aircraft storage to meet demand is not an issue needing State action. Most individual airport master plans project future demand and site additional aircraft storage, then airport owners or private entities build hangars when actual demand makes them economically feasible. Nevertheless, there are some issues related to hangar construction at some locations:

- Privately owned airports provide significant amounts of aircraft storage capacity. The closure of a privately owned airport would increase the demand for aircraft storage at another airport. The Southwest and Puget Sound Regions are particularly vulnerable.
- Some private entities are reluctant to fund hangars at publicly owned airports. Obtaining bank financing can be difficult because the buildings are on leased land and revert to the airport owner after 20 years or so. In some places, permits are difficult to obtain from local governments. Some airports lack a standard, streamlined process for leasing land, which discourages investors and potential tenants. Many airports have raw land available that has not been "subdivided"; raw land may be too costly to

develop where there is challenging terrain, no existing taxiway or road access, or utilities are remote.

- Because financial self-sufficiency is a struggle for many GA airports, public airport owners may have difficulty funding the construction and maintenance of hangar buildings. The local government may prefer to use bonding capacity for other infrastructure improvements, as hangars may be perceived as having limited public benefit.
- Airport owners in areas of high demand, such as the Puget Sound Region, may elect to use undeveloped airport land for purposes other than aircraft storage that could generate more jobs and revenue. Because of higher revenue potential, they may prefer to develop hangars for larger, higher performance aircraft than for the small, piston-driven aircraft that comprise the majority of demand. In either example, the airport's capacity for storing aircraft would be lessened.
- Airport owners who want to convert unused aprons to hangars, to match capacity with demand better, may find they must repay grant funding that was used to build or improve the apron.

Figure 3: Washington Airports Expected to Experience Capacity Constraints by 2030



Note: Sea-Tac International and Kenmore Air Harbor Inc. are also constrained in both Passenger Facilities and Aircraft Storage; Boeing Field, Crest Airpark and Orcas Island are also constrained in Aircraft Storage

B. Potential Loss of Private Airports

There are a total of 138 airports open to the public in the state, with 30 of these (22 percent) being privately owned. These airports provide capacity for more than 3,000,000 annual aircraft operations. In addition to the capacity contribution, each of these airports offers other distinct and unique contributions to the system. These 30 private airports are listed in Table 2 along with a summary of the features of each airport and a statement of the unique contributions that each makes to the system.

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Table 2: Private Airports within the Washington State System

Airport	Classification	Location	Annual Capacity	Comment
American Lake SPB	Seaplane Base	Tacoma	230,000	Provides the only seaplane access in Tacoma area
Camano Island Airfield	Community Service	Stanwood	172,000	Only airport serving the community of Stanwood
Cedars North Airpark	Community Service	Battle Ground	172,500	Provides vital capacity for Southwest Washington where public airports are scarce
Crest Airpark	Community Service	Kent	240,000	Provides vital GA capacity in Puget Sound Region
Crosswinds Airport	Community Service	Clayton	120,750	Only airport serving the community of Clayton
Desert Aire Airport	Community Service	Mattawa	230,000	Only airport serving the community of Mattawa
DeVere Field	Community Service	Cle Elum	172,500	Only airport serving the community of Cle Elum
Elma Municipal	Community Service	Elma	120,750	Only airport serving the community of Elma
Firstair Field	Community Service	Monroe	150,000	Provides vital GA capacity in Puget Sound Region
Floathaven SPB	Seaplane Base	Bellingham	230,000	Provides seaplane access in Bellingham
Fly For Fun	Community Service	Vancouver	230,000	Provides vital capacity for Southwest Washington where public airports are scarce
Goheen Field	Community Service	Battle Ground	172,500	Provides vital capacity for Southwest Washington where public airports are scarce
Harvey Field	Regional Service	Snohomish	230,000	Significant factor in general aviation in thePuget Sound Region. Serves as a designated reliever for Seattle-Tacoma International Airport
Hillcrest Airport	Community Service	Goldendale	172,500	Only airport serving the community of Goldendale
Hoskins Field	Community Service	Olympia	172,500	Provides services that support Olympia
Kenmore Air Harbor, Inc	Commercial Seaplane Base	Seattle	230,000	Provides vital capacity in Puget Sound Region and is a primary factor in the commercial seaplane sector
Kenmore Air Harbor,SPB	Commercial Seaplane Base	Seattle	230,000	Provides vital capacity in Puget Sound Region and is a primary factor in the commercial seaplane sector
Lost River Resort	Community Service	Mazama	120,750	Only airport serving the community of Mazama
Martin Field	Community Service	College Place	120,750	Only airport serving the community of College Place
Mead Flying Service	Community Service	Mead	120,750	Important part of the Spokane system
Point Roberts Airpark	Community Service	Point Roberts	172,500	Only airport serving the relatively remote community of Point Roberts
R&K Skyranch	Community Service	Rochester	172,500	Only airport serving the community of Rochester
Roche Harbor SPB	Seaplane Base	Roche Harbor	230,000	Provides seaplane access to an island community
Rosario SPB	Seaplane Base	Rosario	230,000	Provides seaplane access to an island community
Seattle Seaplanes SPB	Seaplane Base	Seattle	230,000	Provides seaplane access and capacity in the Puget Sound region
Sequim Valley	Community Service	Sequim	172,500	Serves as alternate landing site for Kenmore Air flights to Port Angeles
Shady Acres	Community Service	Spanaway	120,750	Provides vital GA capacity in Puget Sound Region
Sky Harbor Airport	Community Service	Sultan	105,000	Provides vital GA capacity in Puget Sound Region
Spanaway Airpark	Community Service	Spanaway	140,000	Provides vital GA capacity in Puget Sound Region
Wes Lupin	Community Service	Oak Harbor	172,500	Only airport serving the community of Oak Harbor. Serves as a commercial service airport
Western Airpark	Community Service	Yelm	172,500	Only airport serving the community of Yelm
Whidbey Airpark	Community Service	Langley	172,500	Only airport serving the community of Langley
Total Private Airports	**30**		**5,556,500**	

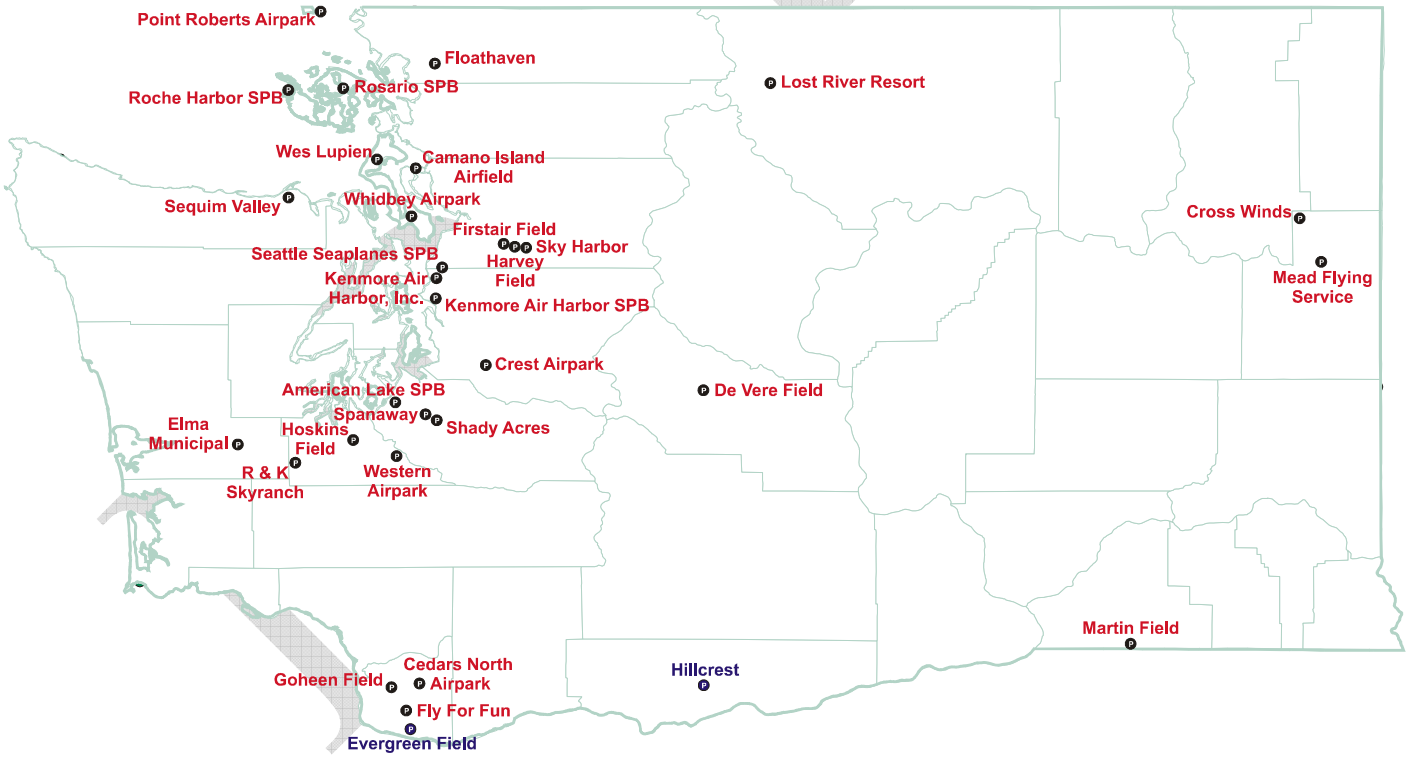
Analyses show that many of these private airports, especially those located in the Puget Sound Region and Southwest Washington, represent a vital contribution to the State's Aviation System. Without these facilities, airfield constraints within the Puget Sound would be even more critical since private airports contribute capacity for more than 1,000,000 annual operations in this region. Private airports are equally important in Southwest Washington where the closure of any of the private airports would further depreciate capacity in an area where publically owned facilities do not supply adequate capacity. Finally, examining the other private airports reveals

that they serve several other prominent roles including providing airport access to remote communities and providing for pilot training, emergency medical as well as other aviation related activities that would not be available otherwise.

A final system contribution that private airports make is in the area of seaplane facilities. Without private facilities there would be only one seaplane base in the Puget Sound Region (Wiley Post, co-located with the Renton Municipal Airport) which is an area with more than 300,000 annual seaplane operations.

Each of these private airports is vulnerable to the possibility of closure. Given the important contribution that this private capacity provides to the state's system, it is important that actions be considered to allow private airports to continue to provide service, while remaining economically viable. In most cases private airports are not eligible for either Federal or State funding and are subject to State and local real estate taxes.

Figure 4: Privately Owned/Public Used Airports in Washington



Note: Evergreen Field was closed in 2006; Hillcrest converted to private use in 2006

Strategies to Address Capacity Constraints Through 2030

The following strategies address the expected constraints expected in airfield capacity, passenger terminal capacity and aircraft storage capacity at Washington airports through 2030, the planning horizon covered in the study.

In terms of airfield capacity, although LATS identified 12 airports that would experience capacity deficiencies through 2030, only four of these airports expect future demand to exceed capacity. The other eight airports will have operations levels that exceed 60% of their recognized capacity, causing them to initiate planning efforts to ensure that the issue is being addressed. In the application of strategies to the airfield capacity constraints issue, we will focus the discussion on those airports where demand exceeds capacity before 2030.

Strategy One – Let the Market Decide

This scenario assumes that WSDOT Aviation will make no changes in their current mission, which is to take no specific action to manage or address future capacity relative to increasing demand levels. Under this scenario WSDOT will continue to focus on matching FAA AIP grants and preserving the existing airport system, primarily through grants for airfield pavement projects at public airports. Private airports, while recognized as vital to the health of the system, are not currently eligible for either Federal or State grants. Growth in capacity will rely on the local airport sponsors and the private market. The market will operate freely and be the primary determinant of where demand is experienced. Projects required to provide increased system capacity will result from individual airport and local community decisions and actions, potentially with FAA participation and support. Under this scenario there is no assurance that system capacity will accommodate system demand. Clearly this scenario will fail to meet the policies articulated by the Governor's Council.

<u>Airfield Capacity</u>

Under scenario one SEA will continue to serve as the State's primary air carrier airport but as demand levels exceed the airport's capacity, customer service levels will decline and operating costs will increase. This will lead the airlines to reduce scheduled service and/or increase the size of the aircraft serving SEA. The airlines will also examine other nearby airports such as Boeing Field, Paine Field, Olympia, Bremerton and Bellingham as alternative locations for service increases. Ultimately the airlines will select an alternative airport for commercial service that is as close to the population (and customer) centers as possible, and the local airport sponsors and communities will need to respond to the demand within the limits of their capabilities. This shifting of activity is likely to have a "cascade effect" as high-end activity at the designated airport pushes lower end, more price sensitive users to airports that are either regional service classification or that are further from the population centers. The consequences to the private pilots and owners of small aircraft will include the need to relocate to Renton, Thun Field, Tacoma Narrows (which may require upgrades), travel further to access their aircraft, use an airport that is not fully their choice and increase the cost of ownership and operations.

At Boeing Field the consequences of the State taking no action will be that although BFI will continue to serve the community with limited commercial service, corporate general aviation and air cargo the delay levels and operating costs will increase and demand will shift to the closest alternate airport(s) with available capacity. These include Renton Municipal, Auburn Municipal, Paine Field, Bremerton National (via ferry) and Thun Field. This movement will follow a "cascading effect" as high-end activity such as corporate general aviation and air cargo activity can be expected to remain at BFI but private aircraft owners who operate lower end general aviation aircraft and who are more price sensitive will be pushed to outlying airports within the region. All decisions as to which aircraft continue to use BFI will be made by King County who will respond within the limits of their capabilities.

At Harvey Field the impacts will be less severe as the type of demand experience at this airport is more "exportable, meaning that other airports within the region are capable of handling the overflow from Harvey. The airports that are likely to attract this overflow include Arlington Municipal, Firstair, Paine Field and Skagit Regional. Because Harvey Field is home to mostly small single engine sport aviation, the likelihood that these users would migrate to Paine Field is low but that airport does have an active GA community and the higher end users from Harvey may consider such a move. Also, as the Harvey traffic moves, two of the likely new home airports, Arlington and Paine Field will be experience capacity issues of their own. Both are expected to be over 60 percent of their capacity before Harvey Field requires relief. Harvey will continue to serve community but the airports current configuration is less than optimal and the efficiency of operations could be improved. Since the airport plays such a vital role in the Puget Sound region, assuring continued and improved facilities is important, but the cost of these impacts will increase in future years. As a privately-owned and operated facility, Harvey Field could experience difficulty improving the airport to handle future demand levels since they are not presently eligible for State Grants-in-Aid for airport improvements. As a reliever airport they are however eligible for Federal grants' under the AIP Program and a master plan was recently completed that maps out a 20-year plan for improving the airport to meet FAA and State criteria.

At the Kenmore Air Harbor SPB the impacts of operations exceeding capacity may be less severe than for the land based airports. As a Seaplane base this facility is highly specialized and measuring the annual capacity of a seaplane facility is much more speculative that it is for land based airports. Under any scenario Kenmore Air Harbor Inc. will continue to serve the community offering passenger service as well as aircraft storage and docking for privately owned seaplanes. As privately owned public seaplane base it primarily serves Kenmore Air's operations or those by aircraft based at Kenmore Air. If they are unable to establish additional capacity seaplane access to the facilities would be reduced with a reduction operations activity. If this happens, service levels will decline since the SPB is the only one currently serving downtown Seattle and operating costs will increase. This facility serves a unique purpose within the State's system providing service to more passengers than several of the land-based commercial service airports within the State.

Other Capacity

Under this Scenario, the State would take no action in terms of addressing either passenger terminal or aircraft storage constraints. Expansion of the passenger terminal would remain the responsibility of the airports and airlines. The State would continue to leave the expansion of aircraft storage up to individual airports and their tenants

Strategy Two - Institute Technological and Management Solutions

Under Strategy Two, the State will work within the limits of its authority to influence or manage capacity relative to available demand. The State will promote the use of existing system-wide resources to address capacity short-falls - including (1) taking an active role in the implementation of NextGen technology within the State, and (2) encouraging the implementation of other demand management techniques that allow for better and more efficient use of available airport capacity.

The Next Generation Airport Transportation System (NextGen) is an interagency collaboration between the FAA and private industry, and consists of an array of new technologies planned for incorporation into a completely new air traffic control system to replace the current system over the next 20 years. The vision of NexGen is to modernize aviation to support greater capacity and less congestion. NexGen encompasses advances in automation information systems, communications, navigation, surveillance, and weather. Procedures that may contribute to increased runway capacity at congested commercial airports include:

- Precision approach techniques combined with wake turbulence management
- Ability to sequence aircraft closer together
- Ability to use closely spaced parallel runways in good or bad weather
- Better timing and sequencing of arriving and departing aircraft

While NextGen technologies may improve the capacity of any given airport, benefits to individual airports will vary according to each airport's unique runway layout and local procedural needs. The complete deployment of the NextGen system will have a substantial impact on airport and airspace capacity nationwide.

Demand management refers to actions taken by airport proprietors, the FAA, or individual airlines to better match aircraft arrival and departure rates with airport capacity. Typical strategies include:

- Slot controls - limiting the number of flights at an airport over a specified period of time, usually on an hourly basis
- Congestion/peak period pricing - encouraging airlines to reduce the number of flights on a daily, hourly, or other basis
- Aircraft size requirements or pricing incentives that encourage airlines to use aircraft with more seats
- Airline load factor requirements - increasing airline load factors

Airfield Capacity

Under this Scenario SEA will continue to serve as the community's primary air carrier airport. The impacts of NextGen technologies on the physical capacity of Seattle's three-runway system have yet to be determined, but to the extent that NextGen procedures are capable of increasing the maximum flow rates of arriving and/or departing aircraft at the airport, this would increase the airport's annual operating capacity and extend the time frame during which Seattle could continue to fully accommodate forecast activity.

In addition to NextGen, demand management techniques will also need to be considered. The techniques that have been explored in other regions with capacity constrained airports include the encouragement of more efficient use of the available capacity through the use of "off-peak" scheduling combined with an increase the average seating capacity of the aircraft being used at the airport. Both techniques offer the potential for more passengers to be accommodated without an increase in overall flight operations and with a reduction in the corresponding levels of delay.

The amended Airports Rates and Charges Policy of the US DOT specifically enables congested airports to implement demand management programs such as peak period pricing. The potential benefits of demand management policies at Seattle will depend on the future degree of hourly peaking and mix of large and small aircraft at the airport. Under favorable conditions, demand management approaches may allow incremental improvements to airport efficiency and effective capacity at SEA, and, similar to NextGen, extend the period in which the airport can continue to fully accommodate underlying demand.

The second concept, providing financial incentives to increase aircraft seating capacity through changes in the airport landing fee structure, could lead to reductions to service to smaller communities where passenger demand levels will not support service by larger aircraft. This could further deteriorate service to small communities within the State. Even with implementation of strategies such as these, certain components of demand, such as air cargo and business aviation activity could relocate to the closest alternate facilities with available capacity or lower costs, triggering the "cascade effect" as high-end activity pushes low end, more price sensitive users to outlying airports.

It should be considered that as congestion and delays build at SEA, some airlines may react by reducing scheduled service and potentially relocating services to suitable alternate facilities, if available (Paine Field, Olympia, Bellingham, Bremerton).

Boeing Field, under Scenario Two will continue to serve the community. Again, due to the location of surrounding airports and the limited airfield system, capacity is unlikely to be substantially increased by either NextGen techniques or the realignment of statewide airspace. Demand management here will likely include encouragement of off-peak usage as well as a gradual increase in overall rentals and use charges that will encourage usage by larger aircraft serving corporate aviation and air cargo with private owners of smaller aircraft being "priced out" of the airport. As service level decline and operating costs increase, demand will likely relocate to the closest alternate facilities with available capacity. The likely "cascade effect" will leave high-end activity at BFI while pushing low end, more price sensitive users to outlying airports.

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At Harvey Field the ability to apply demand management techniques will be limited. The primary use of this airport is from general aviation single engine piston aircraft, there is little ability to improve the situation using "off-peak" pricing. However, as activity levels increase so will the need for additional hangar storage which is addressed later in this section.

As the privately owned public-facility seaplane base Kenmore Air Harbor SPB primarily serves Kenmore Air, the only demand management tool available would be to limit public based aircraft in order to reduce operations activity and free-up capacity for the commercial operator.

Other Capacity

Under this Scenario, passenger terminal capacity issues and aircraft storage capacity issues would also be addressed with the use of demand management strategies.

WSDOT Aviation would encourage the following demand management strategies related to passenger terminal capacity:

- Encourage off-peak scheduling practices at airports to more effectively utilize capacity throughout the day.
- Participate more actively in individual airport planning and community comprehensive plans to promote a regional perspective to passenger service and better define terminal needs.
- Collaborate with the FAA to determine how to allow airports to fund critically needed terminal expansions using AIP funding without violating grant assurances.

The State could employ the following demand management strategies to solve some of the aircraft storage issues:

- Participate more actively in individual airport planning and community comprehensive plans to promote a regional perspective.
- Fund and participate in regional planning studies that bring constrained and alternative airports together in the planning process.
- Collaborate with the FAA to determine how to convert unused aprons to needed hangars without violating grant assurances.

Strategy Three - Promote Use of Alternative Airports

Strategy Three is intended to balance the State aviation system through redistribution of demand to those airports that have the capability to accommodate the increased activity levels. Airports with available capacity will be encouraged to absorb excess demand from nearby airports that are at or over capacity. Alternate system airports with the capability to expand to increase capacity will be encouraged to do so even when this requires that facilities be upgraded to meet a higher state classification.

Airfield Capacity

Airports with 2030 operations capacity potentially available as alternate facilities to Seattle Tacoma International and Boeing Field/King County International Airport are listed in Tables 3

and 4. This listing considers those airports that are within reasonable distance (60 minutes) from the population centers that they serve (the Seattle area) and that can either provide facilities or have existing facilitie3s capable of accommodating the demand. The listing of an airport is not a guarantee that it is capable of providing the full range of facilities and services equivalent to those found at the capacity constrained airport – in fact most fall far short. Some airports such as Renton Municipal, while having reserve operations capacity, have other limitations such as the inability to accommodate additional based aircraft. As noted earlier, many airports do not meet all the performance objectives identified for their state classification. While it is true that many airports are functioning at their designated state classification in spite of deficiencies relative to the performance objectives, it is expected that long-term, deterioration would occur in the airport's quality of service.

Table 3: Seattle-Tacoma International Airport Alternatives

Alternate Facilities	State Classification	Distance (miles)	2030 Reserve Ops Capacity	2030% Capacity
Renton Municipal[1]	Regional Service	7	105,663	54%
Snohomish Co./Paine Field	Regional Service	28	116,435	63%
Bremerton (via ferry)	Regional Service	31	121,500	49%
Olympia	Regional Service	60	59,215	74%
Nearby Alternate Airports - Operations Capacity Available			**402,813**	
Bellingham International	*Commercial Service*	*106*	*102,903*	*55%*

Note: [1] Airport has aircraft parking and storage limitations in 2030.

Table 4: Boeing Field/King County International Airport Alternatives

Alternate Facilities	State Classification	Distance (miles)	2030 Reserve Ops Capacity	2030% Capacity
Renton Municipal [1]	Regional Service	7	105,663	54%
Auburn Municipal [1]	Regional Service	21	61,051	74%
Snohomish Co./Paine Field	Regional Service	28	116,435	63%
Bremerton National (via ferry)	Regional Service	31	121,500	49%
Pierce Co./Thun Field	Local Community >10	34	140,341	34%
Tacoma Narrows	Regional Service	36	112,903	53%
Arlington	Regional Service	48	42,792	84%
Jefferson Co. Int'l (via ferry)	Local Community >10	57	172,845	25%
Olympia	Regional Service	60	59,215	74%
Nearby Alternate Airports - Operations Capacity Available			**932,745**	
Bellingham International	*Commercial Service*	*97*	*102,903*	*55%*

Note: [1] Airport has aircraft parking and storage limitations in 2030.

As is apparent from the information contained in the tables, there is sufficient reserve operations capacity at nearby airports to absorb the 2030 shortfalls at Seattle-Tacoma International and Boeing Field/King County International Airport. However, none of the operations would be able to migrate to equivalent facilities. The nearest Commercial Service airport with operations

capacity in 2030 is Bellingham International Airport – approximately 100 miles north of the Seattle area. The alternative airports listed in the figures have been selected solely on their reserve operations capacity, proximity, and the highest classification available, not on their capability to meet Commercial Service Airport performance objectives. However, with the exception of accommodating scheduled passenger service, the performance objectives for Regional Service Airports are identical to those of Commercial Service Airports. Furthermore, only some segments of the operations activity may be able to relocate to the alternate airport. For example, while recreational/sport aviation could relocate from Boeing Field/King County International to Tacoma Narrows, the air cargo and scheduled passenger activity clearly could or would not.

Harvey Field, which is privately owned, is the only Regional Service airport forecast to experience operations capacity constraints by 2030. Currently this airport is operating with a runway less than 1,900 feet and less then the 60 foot width requirements. The airport facility does not meet current standards and this will significantly affect the growth of the airport and may hinder its ability to accept more capacity in the future.

Table 5: Harvey Field Airport Alternatives

Alternate Facilities	State Classification	Distance (miles)	2030 Reserve Ops Capacity	2030% Capacity
Snohomish Co./Paine Field	Regional Service	10	116,435	63%
Arlington	Regional Service	20	42,792	84%
Whidbey Airpark (via ferry)[1]	Recreation/Remote	28	165,389	4%
Renton Municipal[1]	Regional Service	34	105,663	54%
Skagit Regional	Regional Service	47	185,374	31%
Wes Lupien	Local Community <10	53	156,100	10%
Bremerton (via ferry)	Recreation/Remote	54	121,500	49%
Auburn Municipal[1]	Recreation/Remote	59	61,051	74%
Jefferson Co. Int'l (via ferry)	Community Local >10	59	172,845	25%
Nearby Alternate Airports - Operations Capacity Available			**1,127,149**	

Note: [1] Airport has aircraft parking and storage limitations in 2030.

Other Capacity

WSDOT Aviation could employ the following strategies to promote the use of alternative airports for passenger terminal services:

- Make the airports eligible for grants for terminal improvements
- Provide incentives for the use of alternative airports for providing passenger services through changing funding priorities for state airport aid grants.
- Increase funding for the state grant program to help fund terminal construction at alternative airports.
- Establish a low interest, revolving loan program for terminal construction.

WSDOT Aviation could employ the following strategies to promote the use of alternative airports for aircraft storage:

- Make the airports more attractive to aircraft owners through federally funded airport improvements. If they are not already eligible for federal grant funding, facilitate the alternative airports' inclusion in the NPIAS. Help more privately owned public use airports be designated relievers in order to be eligible for federal grant funding. FAA grants cannot be used for revenue-generating projects like hangars unless all needed airfield improvements have been made, however, apron and taxiway projects are eligible for federal funding and can facilitate hangar projects.
- Provide incentives for the use of alternative airports through funding priorities for state airport aid grants.
- Increase funding for the state grant program to help fund hangar construction or supporting infrastructure at alternative airports.
- Facilitate, promote, and help fund the establishment of aircraft service businesses and fueling facilities at alternative airports if needed, in order to attract aircraft owners.
- Establish a low interest, revolving loan program for hangar construction. Both public and private owners of public use airports could be eligible, and priority could be given to alternative airports.
- Partner with a T-hangar manufacturer and fund hangar construction. High volume and tax exempt status would lower costs. The State could help fund the program by subletting the hangars to airport owners or private entities.

Strategy Four - Expand Constrained Airports

Strategy Four explores the potential to accommodate future demand at capacity constrained airports by expansion of the airport facilities. The underlying premise in this scenario is that capacity should be provided at the airport where the demand occurs, and that no effort should be made to balance the system or redistribute demand. Where an airport sponsor shows unwillingness or extreme difficulty in implementing expansion projects, the State might encourage other surrounding airports to change their system classification, transfer ownership to a different, potentially multi-jurisdictional sponsor, or even take on ownership of the airport.

<u>Airfield Capacity</u>

At SEA expansion of the airport is not feasible without a new fourth runway which is nearly impossible due to the physical limitations of the area surrounding the airport. To add another runway would require a large amount of land acquisition and residential relocation in addition to the site preparation and development costs. Considering the cost of the third runway, it is not unreasonable to assume that any new runway at SEA would cost at least $4 billion and could not be operational for at least 15 to 20 years. In addition, the Port of Seattle has publicly committed to no further runway expansions and has stood with this policy.

At Boeing Field it is not feasible to increase capacity without new runway development and the constrained site would require that an extensive land acquisition and facility relocation program

be included as part of the effort. This would require that either I-5 or the BNSF Railroad be relocated if the expansion is to the east, or Boeing facilities be moved if expansion is to the west. Either decision will lead to a project that will cost in excess of $3 Billion and take more than 15 years to show benefit. Strong community opposition is likely.

At Harvey Field there is a program being considered to improve the airport's facilities to serve the dual purpose of increasing capacity and meeting minimum standards for a regional service airport. This plan is in compliance with this scenario. The unknown factor in this analysis is whether it will result in an inflow of private aircraft to Harvey as Boeing Field becomes more crowded and rental rates increase and the small GA aircraft are displaced.

At Kenmore expansion is not an issue. Given the nature of the seaplane base, additional capacity is easier to gain than it is at land based airports.

Other Capacity

For passenger terminals and aircraft storage, some of the tools from previous strategies are applicable, namely proactive participation by WSDOT Aviation Division in airport and community planning, and setting grant priorities that favor terminal expansion and aircraft storage projects. To encourage airport owners to provide either adequate terminal space at small airports or hangars for small aircraft, the State might subsidize airports or pay for development rights to account for the difference between the relatively low revenue obtained from either small terminals or small aircraft hangers and potentially higher revenue from alternative uses.

Strategy Five - Examine the Possibility of Constructing New Airports

Under Strategy Five, the State would work to promote development of one or more new airports, as needed to address long-term demand. Given that capacity constraints are anticipated at general aviation as well as commercial air carrier airports, both types of aviation activity must be addressed by any new facilities. The expected lead time in developing any new airports will require that existing State system airports would still need to expand in the interim period to keep pace with demand. Any new airports should be sized to meet long-term demand extending well beyond the 2030 horizon of this study.

To meet airport capacity objectives, the State would employ the tactics in Strategies Two or Three, plus encourage the development of one or more new airports. This strategy could be used to address several statewide issues including the commercial capacity for the Puget Sound Region, the lack of public general aviation airport facilities in Southwest Washington, and the general aviation service gap that exists in Northeastern portion of the state.

Constructing a new commercial service airport in the Puget Sound Region (or close enough to the population centers to adequately serve the region) would be difficult but not impossible. Several factors would need to be overcome prior to instituting such a program;

1. A planning and development sponsor would need to be selected. This entity would need to be a public agency with some ability to tax and raise capital. It would also need to be

able to sustain an effort for up to 15 years with what could be expected to be vigorous opposition.

2. Siting, designing, securing environmental clearances and constructing a new commercial service airport is likely to be a 15 year process requiring development of at least 1,200 acres of land with costs of at least $5 billion.
3. Any new airport site would involve a restructuring of the surface access system to accommodate the traffic levels that would "follow" airport development.
4. A new commercial service airport at a new site would spur changes to land use patterns including new

While constructing a new general aviation airport in Southwest Washington or Northeast Washington would appear to be simpler on the surface, many of the same issues would be factors in development. While the time involved and overall costs would be less, public sponsorship and acceptance would still need to be addressed.

Strategies to Address Potential Loss of Private Airports

As private airports provide significant capacity to the state system, especially in the Puget Sound Region and Southwest Washington, it is important to consider strategies for ensuring their long-term viability. Potential strategies include:

Strategy 1 – Revise Airport Development Grant Eligibility

Under this strategy, the State would use funding to ensure that endangered private use airports remain operational. The State could revise the eligibility requirements for State grants to allow private airports to receive funds, providing private airport operators of the airports with more funding for investment in airport maintenance, expansion and continued operation. These grants could be subject to the airport owner's acceptance of provisions that assure the state that their investment is serving the needs of the state.

Strategy 2 - State Ownership of Endangered Private Airports

When it is recognized that a private airport is in danger of closing, the State would reserve the right to purchase and operate that airport in order for it to remain in service to the system.

Strategy three is currently available to WSDOT but decisions are generally made on a case-by-case basis. Under this strategy the State would seek to become the buyer with first right of refusal for any private airport that was in danger. This would assure the airport owner that the State was committed to the continued functioning of the facility and would allow the State to avoid losing private airports due to rising land values.

Strategy 3 - New legislations to buy development rights from private airports

This strategy would allow the State to buy development rights from endangered private airports to prevent private airports from converting to alternative uses.

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Strategy 4 - New legislation to reduce the tax burden on airports.

The State would introduce legislation allowing private airports relief from tax burdens. Given the importance of these private airports, the State could benefit long-term by deferring current revenue and financial benefits in order to continue to have the benefits of the airport's capacity.

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KEY ISSUE 3: MEETING PERFORMANCE OBJECTIVES

Discussion of Issue

One of the issues identified in the LATS Phase II Technical Report was the need to bring airports across the state into compliance with performance objectives appropriate for their roles. The airport classification system was formulated to identify the role of each airport in the state system and to understand the types of facilities and services necessary at each. The classification system allows the measuring of system performance by determining how much of the system meets certain performance objectives. The performance objectives include operational factors, such as pavement preservation and safety standards, up-to-date planning documents, land use compatibility protection, minimum airfield facilities, and services such as fuel sales and aircraft maintenance. Identifying where airports do not meet performance objectives also identifies needs that are significant to the system. The airport classification system with its related performance objectives determines the type of aviation that the airport system needs to serve, instead of the amount of aviation activity that the airport system needs to serve, which is the aim of the capacity analysis.

The WSDOT Aviation Division now has a baseline understanding of system performance, can target resources to airports and areas of deficient performance, and can then measure its success by evaluating system performance periodically in the future. Bringing all public use airports into compliance with the performance objectives would cost approximately $600 million[1], or $30 million per year if done over a 20-year period. Currently, the amount of funding available to target Washington's airport performance deficiencies is an estimated $11 million per year, consisting of $9.4 million in FAA grants, $1.3 million in State grants, and $0.3 million in Local match for grants. Based on the WSDOT Aviation 07-09 budget, the typical annual distribution of state grants is for 36 projects awarded to 20 airports,[2] with funds distributed as follows:

- Pavement projects - $.8 million
- Safety projects - $.2 million
- Maintenance, security, and planning projects -$.3 million

[1] A 20% contingency is included for land acquisition and environmental mitigation, which could vary widely from airport to airport and project to project. Less than 5% of the $600 million total is for privately owned airports. Only one privately owned airport, Harvey Field, is eligible for FAA grants and none of the privately owned airports is eligible for State airport improvement grants.

[2] The program is actually biennial, with two to three rounds of grants in a two-year period. All grant-funded projects must be completed before the end of the biennium.

In addition to problems related to the funding shortfall, the State grant program for airport aid has some legal and administrative restrictions. The most significant restrictions are 1) the limitation of a single grant to $250,000 maximum, 2) the requirement that the project must be completed before the end of the biennial funding authorization period, and 3) privately owned airports cannot receive grants. Removing or loosening these restrictions might improve the effectiveness of the State airport aid grant program. Another improvement to program effectiveness would be the development of assurances that airport sponsors must sign in order to receive a grant, similar to the assurances required for AIP grants.

Three strategies the State might use to improve the performance of the aviation system have been identified. Assumptions applicable to these strategies are listed below:

- FAA Airport Improvement Program (AIP) grant funds will continue at current levels ($95.3 million per year, the average for the years 2003 through 2008).
- About $9.4 million of AIP funding every year will help fix deficiencies identified by the state classification system.
- The number of airports eligible to receive AIP grants will remain the same (65) for the next 20 years.
- Local sponsors will contribute about 2% of the cost of fixing performance objectives.
- Neither costs nor funding amounts are escalated in the future.

Strategies to Address Meeting Performance Objectives

Strategy 1 - Redistribute State Grant Funding

This strategy assumes no change in the amount of WSDOT Aviation Division funding, but changes the distribution of funds to be more targeted to performance objectives. With preservation and safety as the top two investment guidelines within the Washington Transportation Plan, most of the funds would continue to be spent on airfield pavement projects. However, the Aviation Division would prioritize runway pavement projects over less safety-critical taxiway and apron projects. In addition, the Division would limit funds to the justified number of runways and the justified length and width of those runways.[3]

Each year the WSDOT Aviation Division might help meet other important performance objectives by funding a limited number safety projects, such as runway safety areas and survey/obstruction removal projects to bring obstacle free zones and threshold siting surfaces

[3] Justification refers to FAA guidance. A runway's justified length, width, and strength depends upon what is required for the most demanding aircraft regularly using the airport. Crosswind runways are justified if the primary runway has less than 95% crosswind coverage. At a few Washington airports, additional runways are needed to provide the capacity for aircraft operations needed to meet demand. Some airports in Washington have more runways, or have runways that are longer or wider than justified.

into compliance.[4] Obstruction removal would also help implement NextGen technology by enabling more airports to have instrument approaches.

The WSDOT Division could have a more cost effective program that is more targeted on performance objectives by taking one of more of the following actions:

- Do not to help match an AIP grant unless the project fixes a performance deficiency or otherwise advances system-wide goals.
- Raise the maximum individual grant amount from $250,000 to allow larger projects if necessary.
- Change the project completion deadline so that the second year of biennial grants are not as restricted as they are now, allowing the completion of larger projects.
- Establish grant assurances for recipients of state airport aid grants, which would promote aviation system policies.
- Vary the matching proportions for grant funds based on available funding levels, the priority of performance objectives, and airport classification.
- Establish funding priorities that consider airport significance. For example, a land use compatibility project for a Regional Service Airport might be a higher priority than a land use compatibility project for a Local Service Airport. Another example would be to use the number of aircraft operations to prioritize runway safety area projects.

The amount of state grant funding for airport improvements would remain approximately $1.3 million per year. Considering the contribution of AIP grants and local sponsor funding, this would provide only about one-third of the funding needed to meet performance objectives over 20 years. The following exemplifies how state airport aid funds might be distributed each year:

- Runway Preservation - $.4 million (2 projects for non-NPIAS airports, match for 5 NPIAS airports)
- Runway Safety Area - $.4 million (1 project for non-NPIAS airport, match for 3 NPIAS airports)
- Survey/Obstruction Removal - $.2 million (2 projects)
- Planning, land use compatibility, other non-construction projects (e.g., grant assurances) - $.3 million (3 projects)

Strategy 2 - Improve System Performance through Higher Levels of Funding and More Assertive Tactics

WSDOT Aviation Division would obtain more funding for its grant program and work more assertively to improve the performance of the system. A portion of grant funds would still be dedicated to runway pavement preservation and to bringing a certain number of runway safety

[4] These two FAA-defined imaginary surfaces around runways vary according to the type of approach available to the runway. Instrument approaches require larger and lower obstacle-free imaginary surfaces than visual approaches. Sometimes thresholds are displaced to bring the threshold siting surface into compliance, which reduces usable runway length. Objects penetrating the obstacle free zone or the threshold siting surface can prevent a runway from having an instrument approach or from having a better instrument approach.

areas, obstacle free zones, and threshold siting surfaces into compliance each year. The State would also establish grant assurances for recipients of airport improvement funds and make other improvements to the airport aid grant program, as in the previous strategy.

In addition, the State would tackle fixing multiple deficiencies at a limited number of airports, coordinating with the FAA on those airports that are in the NPIAS. For example, if an airport lacks an instrument approach and should have one to meet a performance objective for its classification, the project for that airport would include any lighting, parallel taxiway, weather reporting, obstruction removal, updated planning, land use compatibility protection, and other improvements that might be associated with the instrument approach.

To focus spending where it is most needed, the State might exclude Commercial Service airports that have at least 10,000 annual passenger enplanements and receive $1 million primary entitlement funds from the FAA. Recreation or Remote airports, except those acquired by the State to be available for emergency access and landings, and Seaplane Bases might also be excluded from funding because the benefit of improving them would be more limited than other airport classifications. In addition, to focus spending on where it is most needed, airports located in economically depressed areas would be provided a higher priority than airports of the same classification and similar need.

In addition to project funding, the State might take one or more of the following actions to improve system performance:

- Change the classifications of airports to improve performance objective compliance. For example, a Local Service airport in the same service area as a Community Service airport might be improved to meet Community Service airport objectives more cost effectively or with lower environmental impact. In this case, the Local Service airport would be reclassified Community Service and the Community Service airport reclassified Local Service.
- Encourage the FAA to make NPIAS additions and deletions that would focus funding on the airports most willing and capable to meet the performance objectives.
- Change legislation to allow privately owned airports to receive grant funds, reduce the tax burden on private airport owners, purchase development rights from private airport owners, or encourage the transfer of privately owned airports to public entities.
- Where an airport sponsor shows unwillingness or extreme difficulty in meeting performance objectives, the State might encourage transfer to a different or a multi-jurisdictional sponsor, or even take on ownership of the airport.

State grants totaling $5 million per year for 20 years, supplemented by AIP grants and local sponsor funding, would provide about half the funding needed to meet all performance objectives. However, if primary Commercial Service Airports, Recreation or Remote Airports, and Seaplane Bases were excluded, virtually all the performance deficiencies at other airport classifications could be fixed. The following is an example for the annual distribution of funds in the early years of the 20-year program:

- Runway Preservation - $.4 million (2 projects for non-NPIAS airports, match for 5 NPIAS airports)

- Runway Safety Area - $.4 million (1 project for non-NPIAS airport, match for 3 NPIAS airports)
- Survey/Obstruction Removal - $.5 million (5 projects)
- Comprehensive Upgrades (instrument approach, weather reporting, taxiway, lighting, as needed) - $3.2 million (higher than normal match for 6 NPIAS airports)
- Planning, land use compatibility, other non-construction projects (e.g., grant assurances, legislative and regulatory initiatives) - $.5 million (5 projects)

As objectives are met in these areas, the Aviation Division could refocus priorities on other performance objectives, such as runway length.

Strategy 3 - Initiate a Comprehensive Program for 100% Compliance with Performance Objectives

This assumes WSDOT Aviation has even higher levels of state grant funding and gains more control over how federal AIP funding is spent, through closer collaboration with the FAA or by becoming a block grant state with the authority to administer the AIP. Along with more grant funding, many of the non-cost strategies previously mentioned should also be employed, such as grant assurances and raising the maximum individual grant amount.

With higher funding, the State could then develop an airport aid program that more comprehensively addresses all the state classification system performance objectives. Over time, the Aviation Division would adjust priorities, classifications, and performance objectives as needed to optimize system performance. An example of initial funding priorities might be as follows:

1. Pavement preservation of justified runways
2. Runway safety area for justified runways
3. Obstacle free zone and threshold siting surface surveying and obstruction removal
4. Taxiway preservation for taxiways that serve primary and justified crosswind runways
5. Instrument approaches at any Commercial Service or Regional Service airports that have none, at Community Service airports west of the Cascades, and Community Service airports east of the Cascades that are remote from other airports with instrument approaches. Include the lighting upgrades, weather reporting, parallel taxiways, obstruction removal, runway extensions, plan updating, and land use compatibility protections needed for these approaches.
6. Lengthen runways that are less than 75% of objective
7. Apron preservation for the justified size of apron
8. Remaining needs except fuel and maintenance service

The reason the State might not fund projects related to fuel sales or aircraft maintenance is because these are revenue generating and can be economically feasible for airport owners or tenants to construct. However, the State could facilitate theses projects by establishing a low interest revolving loan program for bulk fuel storage, sponsor-owned self-service fueling stations, and sponsor-owned aircraft maintenance facilities. The loan program could be

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expanded to fund other types of projects for privately owned public use airports that are not eligible for state grants.

The following is an example for the distribution of funds each year to carry out the previously identified priorities if $10 million in annual state grant funding were available to supplement federal grants and local matches. The following excludes funding the revolving loan program.

- Runway Preservation - $.5 million (3 projects for non-NPIAS airports, match for 5 NPIAS airports)
- Runway Safety Area - $.5 million (1 project for non-NPIAS airport, match for 5 NPIAS airports)
- Survey/Obstruction Removal - $.5 million (5 projects)
- Taxiway Preservation - $.5 million (3 projects for non-NPIAS airports, match for 5 NPIAS airports)
- High Priority Instrument Approaches (including weather, taxiway, lighting) - $3.2 million (higher than normal match for 6 NPIAS airports)
- Runway Extensions - $2 million (2 projects for non-NPIAS airports, match for 5 NPIAS airports)
- Apron Preservation - $.4 million (3 projects for non-NPIAS, match for 4 NPIAS airports)
- Remaining Objectives - $1.9 million (15 projects for non-NPIAS airports, match for 10 NPIAS airports)
- Planning, land use compatibility, other non-construction projects (e.g., grant assurances, legislative and regulatory initiatives) - $.5 million (5 projects)

Since project costs vary considerably, the list above shows only a rough approximation of the projects that could be accomplished. WSDOT Aviation would need to change priorities as needs change. For example, runway safety area deficiencies should all be fixed well before the end of the 20-year period, freeing up funds to apply towards remedying less safety-critical performance deficiencies.

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KEY ISSUE 4: LAND USE COMPATIBILITY

Discussion of Issue

The encroachment of incompatible land uses upon Washington State airports diminishes their ability to function as an essential public facility*, and over time*, in many cases, ultimately leads to operational impacts and closure. In an effort to preserve the State's aviation system, WSDOT Aviation has identified four major concerns related to incompatible land uses: height hazard, safety, noise, and land use. The consequences of unchecked encroachment on the State's aviation facilities include:

- Degrading airport operations- Incompatible development can significantly increase the operational cost of an airport by producing complaints, litigation, and changes in established approach, departure, and en route procedures. These changes can cost an airport millions and can make commercial service cost prohibitive.
- Impeded airport expansion- Almost all transportation systems must expand to meet the growing demand of populace, but contrary land uses, once established, make it almost impossible for an airport to expand to accommodate traffic growth. In addition to accommodating traffic growth, airport expansion may be required by changes in the aircraft fleet using the airport, in weather and navigation technology, or in FAA safety standards.
- Hampered economic development- Airports are valuable transportation assets and economic engines, which promote business and commerce. They are crucial to a community's economic competitiveness on a local, state, and global level. Incompatible development reduces the airport's contribution to the community and hampers their ability to move people and goods efficiently.

Washington has a history of legislation and programs promoting compatible land use around airports:

- In 1945, Washington State passed RCW 14.12.020 allowing local jurisdictions to adopt zoning controls to protect critical airspace from buildings, structures, or other airspace obstructions.
- In 1990-1991, Washington State adopted the Growth Management Act (GMA). Under provisions of this act, cities and counties that comprehensively planned were required to inventory their air transportation assets. GMA also identified airports as essential public facilities. Jurisdictions were required to develop siting processes for essential public facilities and could not prohibit them in their comprehensive plans or development regulations.
- In 1996, Senate Bill 6422 amended the 1990-1991 Growth Management Act and the State's Planning Enabling Legislation requiring every county, city, or town, (including ones not fully planning under the GMA) to adopt comprehensive plan

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policies and development regulations that discourage the siting of incompatible land uses adjacent to public use airports.

- The GMA also requires jurisdictions to consult with airport owners, managers, private airport operators, general aviation pilots, ports, and WSDOT Aviation Division prior to amending comprehensive plans and regulations.
- The GMA charged the WSDOT Aviation Division with providing technical assistance on land use compatibility. Through the Airport Land Use Compatibility Program, WSDOT Aviation provides information and research to decision makers and advocates for the preservation of Washington's public use airports.

In spite of a history of legislation, funding, planning, and WSDOT Aviation technical assistance aimed at promoting compatible land use around airports, incompatible land uses is a major threat for airports within Washington State. Evidence that the problem is growing can be found throughout the state and the nation. Where airports were once located miles from dense urban areas decades of growth has slowly pushed development towards airports, often times taking advantage of expanded surface transportation and utility improvements.

The LATS Phase II Technical Report analyzed five performance objectives related to land use compatibility protection, based on conditions in 2005. The results confirmed land use compatibility protection is deficient for all types and sizes of airports, in violation of GMA requirements:

- Only 33% of the state's public use airports met the objective for having compatible land use policies in the local jurisdiction's comprehensive plan. The highest compliance (50%) was for the Commercial Service Airport classification and the lowest compliance (21%) was for Local Service Airports.
- Only 47% of the airports met the objective for appropriate zoning of the airport, *i.e.*, a zoning designation such as Airport, Industrial, or Public Use. Commercial Service Airports had the highest compliance (81%). None of the Seaplane Bases met this objective, because water areas are not zoned. The Recreation or Remote Airport classification showed the next lowest compliance with this objective (21%).
- Statewide compliance was higher (62%) for the objective of runway protection zone control, but still too low. Runway protection zones are located at the ends of runways where land use should be controlled for the protection of people and property on the ground and to prevent activities that could cause aircraft accidents. Compliance with this objective was highest for Seaplane Bases (88%) and lowest for Local Service Airports (45%).
- Although the importance of height hazard control has been recognized for more than 60 years, only 53% of the public use airports are protected by zoning that regulates height hazards or by regulations that prohibit penetrations of imaginary surfaces defined in the federal aviation regulation known as Part 77. Compliance is high for Commercial Service and Regional Service Airports, 94% and 95% respectively, but none of the Seaplane Bases is protected by height hazard control. Only 39% of the Recreation or Remote Airports have height hazard control.

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- The worst performance was for compatibility control. Statewide, only 22% of public use airports had zoning or development regulations that discourage incompatible development near airports. The best performance was within the Commercial Service Airport classification (50%), and the worst performance was among Recreation or Remote Airports (8%).

Why is it so hard to stem the tide of incompatible land uses encroaching Washington's airports?

- Some local jurisdictions simply do not value their public use airports enough to protect them from encroachment by incompatible land uses. Other land use issues may seem more important, or there may be pressure to develop incompatible land uses for political and economic reasons. Land use decision makers often sacrifice the long-term viability of their airports, knowingly or unknowingly, by their short-term decisions.
- For some local jurisdictions, the problem is that land use compatibility is a complicated issue. The type and location of incompatible uses varies considerably, being dependent on airport location, size, type, number of runways, critical flight path, nearby topography, and similar attributes. Areas of public assembly, structure height, landscaping, population density, residential density, hazardous chemicals, explosives, flammable materials, bird attractants, smoke and dust, glare, and electronic signals are all potentially incompatible with aviation.
- Sometimes community plans and land use decisions are made without the participation of airport managers and aviation enthusiasts. Without their participation, local jurisdictions have an incomplete understanding of airport needs and operational characteristics.
- These problems are exacerbated if the airport and the airport influence area are in different jurisdictions.

What strategies can the State employ to improve land use compatibility around public use airports? Three options are listed below.

Strategies to Address Incompatible Land Use

Strategy 1 - Improve Effectiveness of Current Activities

The Aviation Division's role in land use planning now is one of partnership and advocacy. Without changing its role and with a modest increase in staffing and funding, the Division could improve the effectiveness of its current land use compatibility functions. Among other initiatives, the Division should develop performance measures to assess, over time, how well local governments are protecting their airports from the encroachment of incompatible land uses. The performance measures would also help establish a target or minimum standard that should be achieved when addressing incompatible land uses adjacent to an airport.

The Division could be more involved in the scoping and process of airport master plans and in community comprehensive plans. Many airport master plans and community comprehensive

plans lack the information necessary to make informed decisions on best practices to achieve a balance between airport operations and land uses that may compliment the airport. In addition, planners for local jurisdictions often lack the time, funding, and knowledge to participate actively in airport planning processes. Comprehensive plans may even adopt airport master plans without planners really understanding the off-airport implications of airport development.

The Division could also improve and expand its technical assistance by conducting workshops and preparing training materials for airport sponsors, airport consultants, local planning/zoning staff and commissions, RTPOs, pilots, and others. Additional user-friendly, on-line, and audio-visual training materials might be developed, including a self-help toolkit for local community planners. The Aviation Division could develop or sponsor training programs certified by professional organizations for continuing education credit. Additional collaboration with the FAA, NASAO, TRB, AOPA, colleges, and similar organizations on training and public information materials, methods, procedures, and case studies about land use compatibility could also increase the Division's effectiveness.

The Division could enhance the existing grant procedures that require consistency between comprehensive plans and development regulations by withholding access to grant program funding. The Division could develop grant assurances for airport aid grants, similar to the assurances for the FAA's Airport Improvement Program, which would require the grant recipient to protect land use compatibility around the airport. Such a grant assurance would be a prerequisite for receiving funding and a long-term commitment that, if broken, would require repayment of the grant.

Strategy 2 - Take a More Proactive Role in Land Use Compatibility Protection

The Aviation Division could pursue strategies that go beyond reviewing comprehensive plans and zoning amendments and providing technical assistance and educational outreach. The Division might:

- Identify the publicly and privately owned public use airports where incompatible land use encroachment most severely affects the aviation system and focus funding, educational, and advocacy efforts there.
- In collaboration with the FAA, launch a program to perform land use compliance audits, travelling to airports and their communities to identify existing and future problems.
- Work with the FAA and local governments to support innovative, low cost solutions to future land use problems. An example might be to facilitate land exchanges, where airport land inaccessible to aircraft but suitable for compatible off-airport development is exchanged for off-airport land that will be exposed to high levels of aircraft noise in the future.
- Aggressively review current development permit activity for land use actions within the airport influence area.
- Develop incentives for communities to protect their airports, such as providing them a higher priority for receiving airport aid and other state grants. The State might also

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recognize communities for their success in solving difficult land use problems through an awards program. Such awards would provide positive publicity for the communities and advance understanding of the land use compatibility issue.

Strategy 3 - Enact New, Stronger Legislation

With this strategy, the State would promote the enactment of stronger legislation and regulations to protect airports from incompatible land uses. Possibilities include the following:

- Promote the enactment of stronger legislation to define and prohibit incompatible land uses and promote compatible land use adjacent to airports.
- Impose more severe penalties on local jurisdictions that do not protect their airports.
- Give RTPOs the authority to certify the transportation and land use elements of local comprehensive plans.
- Develop standards discouraging new public schools, daycare centers, and medical facilities from locating adjacent to public use airports. State and federal funds for such projects could be withheld if the location standards are violated.

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KEY ISSUE 5: SMALL COMMUNITY AIR SERVICE

Discussion of Issue

Many of the smaller commercial airports in Washington have lost a substantial amount of scheduled passenger airline service over the past 10-15 years, and six Washington airports have lost all scheduled airline services over this period. Factors contributing to the loss of service at smaller Washington airports include proximity to larger surrounding airports that draw passengers from the natural market areas of the smaller airports, reliance on a single carrier for all or most scheduled services, increases in aircraft size within the fleets of regional airlines that can lead to reductions in flight frequency at smaller airports, and high fuel prices and increasing fare competition at hub airports that have stressed the operating economics of regional carrier feed services from smaller airports.

The trends observed at Washington State's smaller airports are consistent with developments on a national basis. Small communities across the U.S. have lost scheduled airline services as airlines have eliminated the smallest air service markets from their route networks and consolidated services at larger commercial service airports.

In Phase II of LATS, several of Washington State's smaller commercial service airports, including Pullman/Moscow, Walla Walla, and Wenatchee were identified at having some risk of losing scheduled passenger airline services due to the factors identified above. The Essential Air Service Program (EAS) of the U.S. Department of Transportation could act to prevent a total loss of scheduled airline services at those airports of greatest risk. However, even with EAS protection, communities are only guaranteed a minimum level of two daily roundtrips to a designated hub airport, and participating communities have often experienced continuing declines in passenger traffic.

Strategies to Address Small Community Air Service

There are four strategies to address the potential future loss of scheduled airline services at smaller Washington State airports.

Strategy 1 - Rely on Airline Decisions to Determine Future Services

The State would continue to allow market decisions of the airlines to determine the future status of passenger airline service at small Washington airports.

Strategy 2 - Take Proactive Approach to Enhance Viability of Small Community Services Prior to Additional Service Reductions

The State would encourage small communities that currently receive passenger airline service to work actively with their incumbent airline(s) to identity and implement measure to enhance the

probability that services will be sustained over time. Depending on the outcome of these discussions, market analysis and surveys may be recommended by the airlines to determine the potential to attract additional passengers to existing services at small communities. The State could support these efforts by providing funding to individual communities, or by initiating a study designed to address the issues common to multiple small communities.

Strategy 3 - Develop an Aggressive Program of Local, State, and Federal Support to Maintain or Enhance Services at Those Small Communities Most Critical to the State's Air Transportation Network which Exhibit Potential to Attain Self-Sustaining, Economically Viable Air Services

The State would identify those smaller airports that are most important to the scheduled passenger airline network serving Washington State due to their isolation from larger surrounding commercial airports, and determine those airports for which there is a reasonable expectation that economically self-sustaining services could be developed. The State would then develop an aggressive program implemented by the State and local jurisdictions, potentially with Federal support through the Small Community Air Service Development grants, with the intent of maintaining scheduled air services at these small Washington commercial airports. Elements of State/local programs aimed at sustaining small community air services typically include both financial and marketing support to the participating airline(s), and may include outright subsidies or revenue guarantees as well as waivers of airport fees that reduce the operating costs incurred by carriers.

Strategy 4 - Develop an Aggressive Program of Local, State, and Federal Support to Maintain or Enhance Services at All Washington State Small Communities That Currently Receive Scheduled Passenger Airline Services

The State would develop an aggressive program implemented by the State and local jurisdictions, potentially with Federal support through the Small Community Air Service Development grants, with the intent of maintaining scheduled passenger airline services at all smaller Washington commercial airports that currently receive such service.

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ALTERNATIVE PACKAGES

<Insert Introduction>

Alternative One: No Action

<Insert: Status Quo>

Alternative Two: Prioritize and Re-Align

<Insert: Low Intensity>

Alternative Three: Improve System

<Insert: Medium Intensity>

Alternative Four: Expand System

<Insert: High Intensity.

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EVALUATION OF ALTERNATIVES

<To be Inserted>

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PREFERRED ALTERNATIVE

<To be Inserted>

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