Renton Municipal Airport

Development Study

Presented by: W&H Pacific

In association with:

RENTON

AHEAD OF THE CURVE

RENTON MUNICIPAL AIRPORT

AIRPORT DEVELOPMENT STUDY

CITY OF RENTON

Prepared for: THE CITY OF RENTON

Prepared by: W&H Pacific in association with Elesco and ASCG

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This Executive Summary of the Renton Municipal Airport Development Study is organized as follows:

Two reports are appended to the Executive Summary:

Market Demand Report

Development Method Options Report

The purpose of the Renton Municipal Airport Development Study is to perform a market study to identify the aviation market sectors best suited to the airport, to analyze public vs. private investment options for airport re-development, and to make policy recommendations to the City of Renton regarding airport development.

POLICY RECOMMENDATIONS FOR CONSIDERATION

1. Recommended Revised Vision Statement for Renton Municipal Airport:

The vision of Renton Municipal Airport is to be:

a. The provider of safe, efficient, and customer-friendly general aviation facilities and services;

b. The airport of choice for corporate aviation in Renton, the Kent Valley, and cities on the eastern shore of Lake Washington;

c. A major economic engine for the City of Renton.

2. Recommended Policy Change for Airport Activity Mix:

Retain current mix of aircraft and activities on the airport and increase Renton's market share of based jet and jet operations and air taxi/air charter by:

a. Directing Airport staff to pursue technical solutions to create an all-weather runway;

b. Pursue the development of an executive jet center with appropriate services as market opportunities appear, and;

c. Encourage the development of hangars on the airport capable of storing light and medium piston and turbine aircraft.

3. Recommended Policy Change for Airport Activity Mix:

Seek to attract aircraft production, aircraft retrofitting, aviation education and other maintenance and repair services as market opportunities appear to add employment at the Airport.

4. Recommended Policy Change for Airport Activity Mix:

Accept proposals for scheduled seaplane operations from the City of Renton.

5. Recommended New Policy for Airport Development:

Encourage the development of a Fixed Based Operator on the old restaurant property that will accommodate:

a. A permanent home for U.S. Customs and Border Protection;
b. A passenger waiting area with a 'Northwest' motif/design;
c. Public access to the shoreline during normal business hours, and;
d. Necessary services for the flying public.

6. Recommended Policy Change for Airport Development:

In addition to ground leases and rental of existing buildings at the airport, the City should also consider public investment in desired facilities, contract facility operation, and other fiscally sound methods of facility development and operation that would further the realization of the City's vision for the Airport.

7. New Policy for Marketing the Airport:

Develop and implement a plan to market the airport as an economic asset for the City of Renton.

8. Recommended New Policy for Airport Development:

Evaluate the development of a new restaurant at the site of the Chamber of Commerce building as the lease expires.

BACKGROUND

For sixty years, Renton Airport, in conjunction with The Boeing Company, has created wealth for Renton, King, and Pierce County residents. However, as Boeing downsizes its "footprint" on the Airport, new opportunities will arise to use the facility to help the local economy create additional wealth.

In 2002, the City finalized the development of a "Business Plan" for the Airport. The Renton Municipal Airport Business Plan, December 5, 2002, (Business Plan) provided many useful tools for the operation and management of the Airport. However, the Business Plan did not provide a vision for the Airport's future that would turn the downsizing of Boeing into an economic benefit for the community. The vision also did not position the Airport to maximize public benefit from the Airport's role within the metropolitan system of airports. The Business Plan contained a "no action" vision and "no change" development policy that proposed:

1. Monitor the effects of terrorism on air traffic;
2. Continue the current mix of activities;
3. Focus new growth on meeting the needs of the Puget Sound Region's light aircraft activities;
4. Continue the practice of leasing land for tenant facility development.

Compared to most airports of its size, Renton is "land poor" meaning that there is not a lot of property that can be developed. Therefore, it is critical that the City makes sound decisions as to what types of aviation uses are attracted to the Airport. If the City elects to pursue the "no change" vision and focuses all of the new growth to accommodating the needs of the Puget Sound Region's light aircraft activities, Airport staff will mainly pursue the development of small hangars to accommodate storage needs for these aircraft. However, the "opportunity cost" of implementing that vision will mean that the individual aircraft owner will benefit greatly from convenient storage and access to his or her aircraft, but the public will forgo future employment opportunities and increased transportation options.

The Airport has an obligation in helping to continue to create wealth for the people of Renton. Similar to having a "balanced personal investment portfolio", seeking a balance of aviation related uses at the Airport is key to maximizing the public benefit from its Airport. The Market Demand Report discusses aviation markets that the City can seek to attract to establish a solid balance of uses at the Airport.

Market Demand Report

Analyses of the aviation market and investment options for airport development have indicated that the City of Renton would benefit by adopting a new, forward-thinking vision for the Airport and consider taking a more active role in the re-development of airport land.

The Market Demand Report recommends that the City take actions to increase its share of light and medium business jet traffic – the highest growth area of general aviation. Attracting a larger market share of the jet fleet to Renton would produce greater revenues for on-field Fixed Base Operators (FBOs) than just servicing the single-engine piston market. Each visit by a transient corporate jet brings an estimated $1,300 of revenue to the FBO who sells fuel and provides other services. In contrast, each single engine piston aircraft visit accounts for about one-tenth of that revenue (fuel sales and tie-down fee). Higher revenues to operators would provide long-term opportunities for the City to generate higher incomes from ground leases and/or income from revenue participation provisions in those leases. It would also generate higher levels of employment to provide the expanded services required by the jet fleet. More business jet traffic would mean more affluent visitors to Renton and a business-jet friendly airport would help attract businesses to Renton and the east side of Lake Washington.

The Airport's current share of the business jet market in the Seattle area is about one percent. The Market Demand Report indicates that the obtainable share is 10-20 percent of the business jet activity in the Seattle area if Renton chooses to pursue that market segment. At this time, however, the Airport lacks basic facilities and services needed to attract business aviation, both permanently based, as well as transient. This 10-20 percent market share would not be obtainable until facilities and services are improved, but could be obtained within ten years and maintained for the long-term future.

The Market Demand Report also indicates that Renton employment could benefit by attracting aircraft production, aircraft retrofitting, aviation education and other maintenance/repair services to the Airport. The Airport is also well situated to accommodate seaplane air-taxi service and attract the high end vacation traveler.

If the City decides to develop certain market segments at the Airport, several steps will need to be undertaken. On the following page, a "Policy Decision Tree" was developed to summarize specific actions that will be needed to pursue certain market segments.

Table 1, the Market Sector Analysis, grades the market segments by criteria extracted from the 2002 Airport Business Plan, specifically:

- Should the City Target the Markets;
- Economic Benefits to the Community;
- Perceived Noise Impacts;
- Market Feasibility;
- City Investment in Facilities.

The Explanatory Notes at the end of the Executive Summary provide more detail about the Market Sector Analysis.

Policy Decision Tree

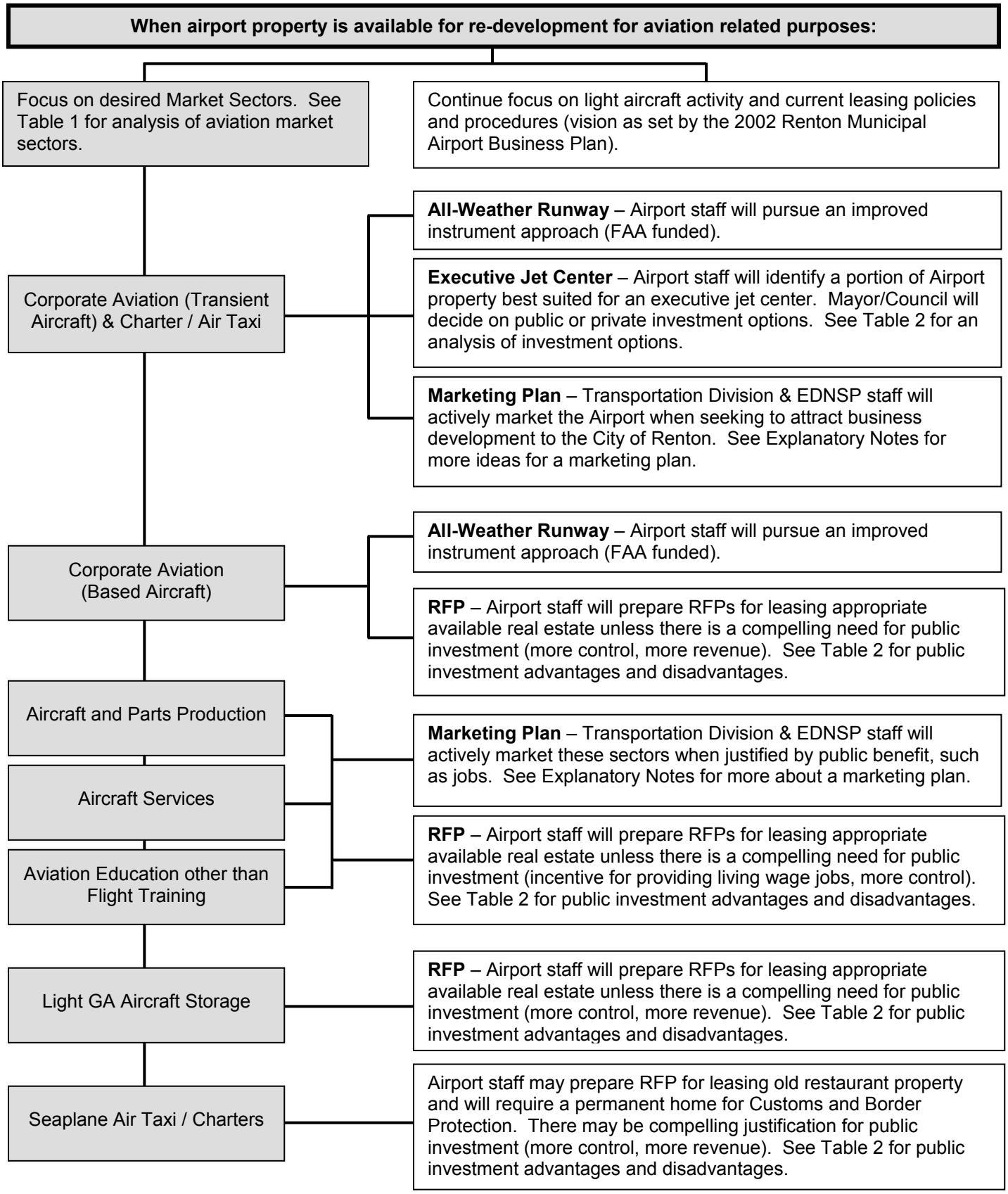

Table 1: Market Sector Analysis

Market Sector	City Marketing Target?	Economic Benefit to Community	Perceived Noise Impact	Market Feasibility	City Investment in Facilities?
Corporate Aviation (Transient Aircraft) & Charter/Air Taxi	Highly Recommended for Targeted Marketing	High	Moderate	Moderate to High*	Recommended for City's control of future & for long term revenue potential
Corporate Aviation (Based Aircraft)	Marketing Recommended	Low to Moderate	Moderate	Moderate	Not necessary, unless for control or revenue
Aircraft and Parts Production	Marketing Recommended	High	Low	Low to Moderate	Possibly, as incentive
Aircraft Services	Marketing Recommended	Moderate to High	Low	Moderate	Possibly, as incentive
Aviation Education other than Flight Training	Marketing Recommended	High	Low	Low to Moderate	Possibly, as incentive
Light GA Aircraft Storage	Marketing not Required	Low	Moderate	High	Not necessary, unless for control or revenue
Seaplane Air Taxi/Charter	Marketing Not Required	Moderate	Moderate	High	Not necessary, unless for control or revenue
Air Cargo	Marketing Not Recommended	Moderate to High	High	Low	Not Recommended
Flight Training	Marketing Not Required	Low	High	High	Not Recommended

*Demand will be higher if the instrument approach can be improved to allow the Airport's use in lower visibility weather.

Development Methods Options Report

The second purpose of the Airport Development Study was to analyze public vs. private investment options for airport re-development. A case study approach evaluated three options for developing one parcel at the Airport and discussed the impacts of such development on the Airport's budget. Three scenarios were:

1. Ground Lease with Private Capital Investment
2. Facility Lease with Public Capital Investment
3. Contract Operation with Public Capital Investment

The results of the case study analysis indicated that City should not be limited to ground leases and rental of existing buildings at the airport, but should also consider public investment in desired facilities, contract facility operation, and other fiscally sound methods of facility development and operation. Table 2 on the following page summarizes the advantages and disadvantages of public verses private investment in Airport development.

Table 2: Public vs. Private Investment in Airport Development

PUBLIC INVESTMENT	
ADVANTAGES	**DISADVANTAGES**
MORE CITY CONTROL HIGHER POTENTIAL FINANCIAL RETURN	HIGHER FINANCIAL RISK
The public Airport sponsor can obtain lower cost financing than a private entity.	Funds or bonding capacity used at the Airport are not available for other investments that have public benefit. Revenue in excess of the bond payment is restricted to aviation use.
The sponsor does not have to pay ad-valorem taxes, as a private entity would.	The Airport may not be able to retain its financial self-sufficiency.
The sponsor has more control over the development than if it were a private investment. Retaining a high level of control over the Airport helps ensure public access is maintained and public policy is implemented, facilitates using the Airport as an economic development tool for the community (e.g., prioritizing jobs over profit), and makes it easier to control the quality and type of facilities available.	Risk is associated with any development, and public bodies are less likely to assume financial risk than private developers. The sponsor risks default by the tenant or an inability to find a tenant. As events such as 9/11 have shown, the aviation industry can be subject to severe economic stress.
If done efficiently, the project cost is lower because the profit and "middleman" are cut out.	Project financing and implementation is usually slower than with private investment.
Tenants are not required to make a large capital investment.	In addition to the capital costs, the Airport sponsor more often has maintenance and operating costs and responsibilities than private development on a ground lease. Staffing levels and the required skills may be hard to provide.
PRIVATE INVESTMENT	
ADVANTAGES	**DISADVANTAGES**
LOWER FINANCIAL RISK	LESS CITY CONTROL
Project financing and implementation would most likely be faster.	It requires a significant capital investment by a tenant or speculative developer.
Market viability is surer than with public investment.	Project cost is higher than with bond financing.
The cost to the public Airport sponsor is negligible. Renton Municipal Airport has existing tenants and others with access to financing who are willing to develop parts of the Airport at no cost to the City.	Enforcement of public policy is harder.
Criticism that it is inappropriate for a public entity to compete with private enterprise is avoided.	

Explanatory Notes

All-Weather Runway. Renton's runway is not useable during poor visibility weather. The current instrument approach to the runway can only be used when visibility is not less than 1 mile. Low visibility conditions—fog, rain, and snow—occur most often in the winter, and are reported to cause frequent wintertime diversions of corporate aircraft from Renton to other airports. Ideally, the airport should have a precision instrument approach--one that offers glide slope (descent) information as well as runway alignment and that allows landing when visibility is limited to ½ mile and the cloud ceiling is as low as 200 feet. Instrument landing systems (ILS) provide precision instrument approaches at most commercial service airports and at busier GA airports. However, providing an ILS at Renton would be very difficult, because the long, straight-in approach needed for an ILS would be obstructed by terrain. Also, the FAA is focused on newer technology—navigation using GPS (Global Positioning System)—and is not installing new ILS equipment. With GPS satellites, WAAS (Wide Area Augmentation System) ground-based augmentation of GPS, and appropriate cockpit equipment, an instrument approach that routes the landing aircraft around terrain is possible. WAAS was activated nationwide in 2004 and the FAA is slowly establishing new WAAS-aided approaches to runways. Detailed technical analysis is needed to determine how much instrument approach improvement is feasible at Renton. The analysis must consider the feasibility of providing an approach lighting system, which allows lower minimums because the pilot can locate the runway easier, and the feasibility of providing the larger cleared areas required for a lower visibility approach. It appears that corporate aviation and air taxi use of the Airport is adversely affected by the instrument approach limitations.

City Marketing Target? Under this heading in Table 1, the Corporate Aviation (Transient Aircraft) & Charter/Air Taxi sector is most highly recommended. Marketing efforts for this sector would also reach the Corporate Aviation (Based Aircraft) market. Efforts to attract Aircraft and Parts Production, Large Aircraft Services, and Aviation Education other than Flight Training are also recommended. Marketing efforts for the Seaplane Air-Taxi/Air Charter are unnecessary because the Airport has unique facilities and services for this sector. Air cargo is not a feasible or desirable sector, so marketing it is not recommended. Marketing is not recommended for the Light GA Aircraft Storage and Flight Training sectors because demand is already high, their economic benefit is lower than other sectors, and their perceived noise impact is higher than other sectors.

Economic Benefit to Community. Under this heading in Table 1, the Aircraft and Parts Production sector is rated high because of the large number of living wage jobs it would generate. The Transient Corporate Aviation and Air-Taxi/Charter sector is also rated high; it would provide fewer on-airport jobs than aircraft production, but it would bring affluent visitors to Renton and help attract businesses to Renton and the east side of Lake Washington. Although Renton would derive economic benefit from Light GA Aircraft Storage and from Flight Training, the benefit would be lower than the other sectors.

Executive Jet Center. An executive jet center is a Fixed Base Operation (FBO) that focuses on providing the services and facilities desired by corporate jet operators. Services include everything a traditional FBO provides and more. Examples of the services that might be provided are air charters, fueling, aircraft repair and maintenance, aircraft parking and hangaring, aircraft rental, aircraft and parts sales, pilot shop, crew lounge, flight planning, flight instruction, catering, passenger lounge, conference facilities, rental cars, limousine service, and ground support services such as cleaning, deicing, towing, etc.

City Investment in Facilities? Under this heading in Table 1, public investment is recommended for a new executive jet center. Analysis in the Development Method Options Report appended to this Executive Summary indicates public investment in an executive jet center would have a higher financial return than a ground lease. The City would have more control of the image, facilities, and services at the Airport and could establish a larger, higher quality facility than now exists. The executive jet center, which would include passenger lounges and similar amenities, would become the facility that users identify as the "Airport." The jet center would function like the anchor store at a shopping center, setting the stage for the Airport's redevelopment into a more modern, diversified, GA reliever airport. The City might also

consider investing in a facility, such as for aircraft or parts production, which would generate a large number of highly skilled, high paying jobs for the community. In such a case, economic development funding might be needed to supplement airport revenue bonds. Other development and re-development at the Airport might best be accomplished through private investment on land leases. However, development guidance could be established to ensure efficient use of the limited land and development compatible with the City's updated vision for the Airport. Corporations and individuals wanting to lease land for hangar development could be restricted to predetermined arrangements of facilities and parking that would accommodate more aircraft per acre than would likely occur if the land were developed according to individual preferences. Aesthetic guidelines might be imposed on the private development to upgrade the Airport's appearance. Demand for aircraft hangars in the region is high, so the City should not need to invest in them, unless, on a case-by-case basis, the financial circumstances are favorable or there is another compelling reason to do so.

General Aviation (GA). According to the Aircraft Owners and Pilots Association, GA is "all civilian flying except scheduled passenger airlines. General Aviation includes flying as diverse as overnight package delivery and a weekend visit back home; as different as emergency medical evacuation and inspection trips to remote construction sites; as complementary as aerial application to keep crops healthy and airborne law enforcement to keep the peace…An estimated 65% of general aviation flights are conducted for business and public services that need transportation more flexible than the airlines can offer." (www.aopa.org /special /newsroom /overview.html)

Market Feasibility? Under this heading in Table 1, Light GA Aircraft Storage, Seaplane Air Charter/Air-Taxi, and Flight Training are rated high because they have demonstrated demand at the Airport. There appears to be no demand for air cargo activity at present. Certainly, the downsizing of Boeing's aircraft production does not indicate a feasible market for large aircraft production. However, there is seaplane research and development in progress at the Airport now—in the form of the "Gweduck," an experimental, twin-engine flying-boat style amphibian of composite construction reminiscent of the Grumman Widgeon. If the Gweduck advances to the certification and production stage, Renton will likely be a candidate site for production facilities. Opportunities associated with microjets and other new aircraft types and technologies also exist. No large aircraft services or aviation education institutions have expressed interest in establishing at the Airport, although national and regional information indicates opportunities in these sectors.

Market Sector Analysis. The City can encourage desired aviation activity through marketing efforts and public investment in facilities for the desired activity.[1] The Market Demand Report appended to this Executive Summary analyzes market demand for eight sectors of the aviation market. It recommends increasing Renton's market share of based jets and jet operations and its air-taxi and air charter operations. Air cargo is not recommended as a business Renton should pursue.

The Airport's strengths for the market sectors are as follows:

- The location in an urban area with a large population is a strength for almost all the market sectors. Being located near major corporate headquarters and branches of major national and international companies is especially important to the corporate aviation market sector. The Airport's proximity to the rapidly growing eastside business region, including the Boeing re-development site in Renton, is an advantage. The Airport's easy access to I-405 results in reduced travel time to the eastside compared to Boeing Field or Paine Field, which is important for serving corporate, air-taxi/air charter, and other general aviation users on the eastside. Good highway access is also important to air cargo and to aircraft/parts production businesses that rely on truck traffic.
- The Will Rogers - Wiley Post Memorial Seaplane Base at the north end of Renton Municipal Airport is the only publicly-owned seaplane base in the Central Puget Sound Region. The

[1] Discouraging undesired aviation activity is ill-advised. The City is required by the original airport conveyance and by federal grant assurances to operate an airport open to the flying public with no restrictions on legal aviation activities or types of aircraft, except for those restrictions necessitated by physical airfield constraints or safety. The City cannot legally grant exclusive rights to any aviation business or discriminate unfairly among aviation businesses.

runway, combined with the seaplane base, offers both water operations and land operations for amphibious aircraft and is one of the only Airports in the lower forty-eight states where aircraft can swap seaplane floats for wheels.

- The load-bearing strength of Renton Municipal Airport's runway is unusual for a general aviation airport. For many airports seeking to serve corporate aviation, runway strength is a major constraint. This runway can handle aircraft weighing up to 340,000 pounds--adequate for all but the heaviest wide-body commercial and military aircraft.
- The U.S. Customs & Border Protection (CBP) service at Renton Airport is associated with seaplane operations, which includes many charter and other flights from Canada. CBP could also be an attraction for international wheeled aircraft flights.
- The air traffic control tower at the Airport is an advantage for corporate, air-taxi/charter, and air cargo operations, although not a requirement.
- Renton Airport has other facilities and services that are attractive to various aviation market sectors, such as fuel sales, aircraft maintenance and repair, other FBO services, aircraft parking area secured by fencing, and the aircraft rescue and firefighting services provided by Boeing. Except for the aircraft rescue and firefighting service, these facilities and services are not listed as strengths because they are common to most general aviation airports. Aircraft rescue and firefighting capability is attractive to, but not required by, any of the listed market sectors.

Renton Airport has three major weaknesses for the market sectors analyzed:

- Lack of a precision instrument approach is a fatal flaw for air cargo and a significant disadvantage for the corporate aviation and air taxi/charter sectors, although not for seaplane charters that typically operate only in visual weather.
- The runway length of 5,000 feet is a very significant flaw for air cargo aircraft that operate heavily loaded and need more length. The runway is short for some models of heavy jets and for other aircraft on occasion, if they are carrying very heavy fuel loads or payloads, if the runway is slippery, or if it is a very hot summer day. However, a representative of Netjets, which has the lion's share of the fractional ownership market and a fleet of 500 business aircraft, has stated that Renton's runway is long enough for any airplane in their fleet.
- Lack of an executive jet center discourages corporate jet traffic and air-taxi/charters in high performance aircraft.

Marketing Plan. The City should begin identifying the airport as a community asset that will help attract business to Renton. To attract the desired aviation market sectors to the airport, the City needs to develop and implement an airport marketing plan. Marketing infrastructure might include a steering committee with representatives of the City's Economic Development department, airport staff, and airport tenants. Marketing tools might include brochures outlining the airport's selling points, exhibits for trade shows, and real estate-type fact sheets for available property. The City might solicit corporate aviation activity as part of its outreach to new businesses. Marketing cooperatively with the airport's FBOs might be a successful strategy. In addition to contacting existing and potential businesses about corporate aviation, the marketing plan might include outreach to aircraft/parts production, large aircraft service providers, and aviation education institutions. Airport staff could meet regularly with the staff of King County International Airport (Boeing Field) and Auburn Municipal Airport, which are the closest GA reliever airports. The purpose of the meetings would be to discuss relative roles and prospective tenants, and to avoid competing against each other for the same market opportunities. The City's new vision for the airport should be communicated to the FAA, WSDOT Aviation Division, and the Puget Sound Regional Council, so these entities can adjust the role of the airport in future system planning efforts.

A marketing plan should identify obstacles to fulfilling the Airport's new vision:

- For example, while the City has taken recent steps to update or establish leasing policies, Airport rules and regulations, minimum standards, and rates and charges, additional document updating is needed. The important documents that control development and activity at the Airport are the Airport Master Plan and Airport Layout Plan, which were based on the assumption of a substantial and continued Boeing presence on the Field.

- The properties returning to the City from Boeing need inspection, not only to identify condition, but also to identify assets for potential new businesses at the Airport.
- The Boeing auto parking area at the southeast side of the airport is limiting large aircraft movement to Ace Aviation. The City might be well advised to negotiate with Boeing to relocate the parking lot before the lease expires.
- As new facility development, leasing agreement, and management options are explored, the City should communicate regularly with the FAA, to avoid grant assurance compliance problems.
- Regular communication with existing tenants and airport users is also a good idea, as changes in City attitudes and actions at the Airport may foster anxiety and inhibit cooperation.

Perceived Noise Impact. Under this heading in Table 1, the ratings are based on reported community perception, not scientific analysis of noise exposure. Light GA Aircraft Storage and Flight Training are rated high for perceived noise impact. These market sectors produce much more aircraft traffic than other market sectors. Neighbors reportedly object to the repetitious noise and duration of flight training. Air cargo, due to the nighttime operation that is customary with this business, is also rated high for perceived noise impact.

RFP. To ensure the Airport has qualified tenants and commercial operators and to help prevent unfair discrimination, the City has the option to issue Requests for Proposals (RFP) for ground leases, building leases, and services.

Vision Statement. The Business Plan recommended the following for City Council resolution:

"Renton Municipal Airport will continue to be a General Aviation Reliever airport serving as a quality aerial gateway between the City and a diverse aviation system in and beyond metropolitan Seattle. The City of Renton is the airport sponsor and is dedicated to working in partnership with aviators, residents and aviation-related businesses.

It will meet its Federal obligations to maintain a safe, secure, and viable airport by adopting airport zoning regulations consistent with the State of Washington RCW 36.70A.510 General Aviation Airport-Siting of Incompatible Uses to protect the airport from encroachment, require airport compatible land use, and to minimize noise impacts on new developments surrounding the airport.

The noise and safety impacts of current transient and local operations on the existing surrounding neighborhoods will be mitigated by the voluntary noise abatement procedures developed by the airport tenants and users, and through continued exploration of other avenues to control present and future noise, including a compliance response system addressing individual noise and safety incidents.

The City's forecasts of operations at the Airport anticipate a mix of activity on the field over the next 20 years that is similar to today's, contained within the airport's current physical dimensions. The City's development and operational plans for the airport will support that forecast. As the airport sponsor, the City's goals are to fulfill its federal legal obligations and maintain aviation business prosperity, full occupancy and financial self-sufficiency while simultaneously taking all available actions to reduce current noise and minimize noise growth through a process of developing measurements and standards.

- Maintaining up-to-date documents for Leasing Policy, Airport Procedures, Minimum Standards for Aeronautical Service Providers and Airport Rules and Regulations. The City will apply those requirements in a transparent and evenhanded fashion to all airport users so that the context for all activities and communications is clear to all involved;
- Providing first-class amenities and services that enhance the image and business climate of the City; and
- Adopting and implementing aesthetic standards for the airport, developing systems of management accountability and maintaining mechanisms for community involvement and advice to the Council."

RENTON MUNICIPAL AIRPORT DEVELOPMENT STUDY

MARKET DEMAND REPORT

Contents

This report assesses future potentials for revenue-generating development at the Renton Municipal Airport (Airport), including the Will Rogers – Wiley Post Memorial Seaplane Base. Starting with existing uses and revenues in November 2004, it looks forward to the year 2020 and examines opportunities to enhance the value of the airport to the City of Renton and its citizens. It analyzes future patterns and trends in the aviation industry to determine what changes are likely to occur, assesses Renton's ability to capture market share and/or recruit new types of aviation activities, and provides an analysis of impacts and trade-offs of alternative development scenarios. The report examines ways to leverage the airport as an economic asset to create family-wage jobs in Renton rather than just increase air traffic. This discussion is intended to assist policy makers at the City of Renton to steer the future development of the airport to support the City's overall economic development goals.

The context of this assessment is the projection of overall patterns and trends of aviation activity in the Puget Sound region. This involves examining Renton Airport's regional position in the competitive environment of multiple general aviation airports. In 2001, the Puget Sound Regional Council published the Regional Airport System Plan (RASP) as a Modal Component of *Destination 2030,* the Metropolitan Transportation Plan for the Central Puget Sound Region. A revised update of the RASP was published in August 2004. Those documents were reviewed for this current report and are referenced frequently. The Washington State Aviation Division's Airport System Plan and database of aviation activity and the 2001 Draft Airport Master Plan for

King County International/Boeing Field (Boeing Field) were also consulted for regional information. Several of the business owners currently operating at the Airport were interviewed to determine capacity and needs to serve additional aviation markets. In addition, national market trends were analyzed, especially projected changes in the general aviation fleet mix. Those changes will determine the components of demand for aviation services, not just overall volumes of aircraft. The national forecasts were used to estimate changes in the demand for airport services in the Puget Sound region and at the Renton Municipal airport.

The Market Demand Report recommends that the Airport take actions to increase its share of business jets--the highest growth area of general aviation. Because it is impractical to lengthen the runway and increase other FAA-required clearance areas for larger, faster aircraft, the targeted market should be light and medium jets with wingspans less than 79 feet and approach speeds lower than 121 knots. Crucial to increasing the business jet market is the need to improve the existing instrument approaches to allow landing in lower visibility weather. Also needed are better, larger facilities for executive jet services. The Airport's share of the business jet market in the Seattle area is about 1%. This report estimates that the obtainable share is between 10% and 20%.

The Airport is also well positioned to gain market share of seaplane air taxi activity in the Puget Sound Region. An improvement in FBO facilities, passenger waiting area and amenities and U.S. Customs office would facilitate the Airport increasing its market share.

Other sectors of the aviation market recommended for Renton are aircraft production (best sector for employment), aircraft retrofitting and other maintenance/repair services, and aviation education such as for aircraft maintenance technicians and air traffic controllers.

Part 1: Inventory

Sheet 1 presents a bird's eye view of Renton Municipal Airport. The Renton Municipal Airport Business Plan, prepared in December 2002, contained a detailed examination of current uses of the Renton Airport. Some of the information it cited was taken from the 1997 Master Plan Update. Relevant data from the 2002 report are summarized here, along with some additional information that was obtained from on-site inspections and from the City of Renton.

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SHEET
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PLOT DATE: 11/24/04
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1. Renton Municipal Airport comprises ±168 acres. The runway and taxiway areas, along with other public areas, comprise approximately 111 acres of the total. The balance of the airport property, ±57.4 acres, is City owned property either currently leased or available for lease. That property is the focus of this report as it represents the land asset that the City can use to generate leasehold revenues.

2. The Renton Airport supports the Boeing 737 assembly plant adjacent to the airport on the east side of the Cedar River (the last Boeing 757 was rolled out in October 2004). According to the 2002 Business Plan, Boeing was leasing 23.7 acres from the City at that time for its various facilities including parking, aircraft aprons, and several other support operations. Boeing has been steadily reducing and/or vacating its leases on the City-owned airport property, primarily on the west side of the runway. Boeing is now leasing 18.8 acres on the airport. Currently, Boeing has leases that run to the year 2010. In 2005, the City will initiate lease negotiations with the Boeing Company to draft a new lease, which will end in either 2015 or 2020. However, the existing Boeing leased area on the east side of the airport will be reduced from its current size in order to reduce the disruption to the airport at such time as the Boeing Company permanently exits the airport.

3. All of the other tenants on the airport leased a combined total of 21.7 acres of land. Those leases were due to expire between 2002 and the year 2020, with some of them on a month-to-month rental. Leases include a large amount of relatively low-end revenue uses (outside tie-downs, T-hangars, other storage space), as well as employment-generating activities such as fixed base operators (FBOs), aircraft maintenance facilities, and aircraft manufacturing.

4. Chapter 3 of the 2002 Business Plan included a map showing the locations of those leased areas, descriptions of the tenants and their primary activities, and a table that showed the square footage leased along with other pertinent data. Readers are encouraged to review that document to obtain a full profile of the uses at the airport in 2002. The uses listed in that report included:

    - Fuel sales
    - Flight instruction

- Private business/corporate flying
- Private recreational flying
- Rental or owned outside tie-downs
- Rental or owned hangars
- Aircraft rentals
- Aircraft sales
- Charter/air taxi
- Aircraft maintenance and repair
- Aircraft or parts manufacturing
- Specialty services
- Sub-lease office space

Included in the public areas are an airport control tower and the airport offices of the City of Renton.

Several changes have taken place since the 2002 Business Plan was produced.

- Boeing has vacated 191,214 square feet leased from the City on the west side of the airport. This 4.4-acre site, known as Ramp B, is now available for reuse and/or redevelopment.

- A new FBO, called AirO, is being developed on the west side of the airport with a pilots' lounge, fuel services, and other amenities.

- Some older buildings are being torn down and upgraded utilities are being extended to those sites to support more modern facilities.

The leased properties' configurations are not very efficient from a land use perspective, especially on the southeast corner of the Airport. Aprons and access roads are constrained by neighboring uses, especially the Boeing parking lot on the old Boeing Fuel Farm site that curtails access to Ace Aviation. This has a negative impact on the marketability of some of the properties and limits the type and size of aircraft that can be maintained by Ace Aviation.

As redevelopment opportunities are identified, it will be beneficial to configure the sites for their highest levels of utilization and attendant revenues. There are currently four areas that are vacant and could be developed for new uses:

1. The old restaurant site at the northwest corner of the airport adjacent to the seaplane base. This parcel is 1.9 acres in size and is a former restaurant site. It offers spectacular views of Lake Washington north toward Mercer Island, Seattle, Bellevue and Mount Baker. One option would be to combine the site with property leased by NW Seaplanes to develop a combination U.S. Customs facility[2], passenger and crew waiting lounges, small restaurant, and other FBO services for seaplanes. An adjacent trailer park could offer a larger site for development of a hotel or other facility if it could be acquired and/or packaged with the airport property site. This would provide more flexible options for the City in what is developed there. The area provides a public setting for seaplane viewing and for the Wiley Post/Will Rogers memorial. Any development there should respect the site's historical significance as a seaplane base and the aesthetic and environmental amenities of the site.

2. The former Boeing avionics building on the west side of the airport. Known as Parcel 820 in the City's inventory, the total size of the site is 1.77 acres. The building should be torn down and replaced with a facility that will make better use of the parcel.

3. The vacant land immediately south of the AirO facility, identified as the 770 Parcel. The site is approximately 1.4 acres in size and could be used for a variety of uses.

4. Ramp B site, mentioned above, has a rectangular configuration and offers good redevelopment potential. The B-Ramp parcel could be utilized better if it were redeveloped in conjunction with the parcel in the southwest corner of the airport, currently leased by Bruce Leven, and partly subleased to Pro-Flight Aviation.

All of these sites have "airside" access, meaning that aircraft can directly access these properties. Except for the restaurant site, the other three sites are all within the existing security fencing around the perimeter of the airport.

[2] U.S. Customs clearance is required for seaplane traffic from Canada. Customs personnel are now housed at the site in a temporary building.

In addition, there may be other properties that could be converted to higher uses as leases expire. For example, the Cedar River Hangars will require removal of some units for environmental remediation purposes and it may be worth considering replacing all of the units at that time. More modern hangars could be developed for higher-value aircraft, producing higher revenues for the City.

There is also the possibility that the City could investigate continuation of the relationship and connectivity of the parcel of land known as Apron D, when the Boeing Company vacates the site. Apron D is located on the east side of the Cedar River and connected to the airport by the south Boeing bridge. The Boeing Company uses Apron D for aircraft completions and final inspections. No maps were obtained for this site but it appears to be about 7 acres in size and its configuration is square. With its airside access, this site could accommodate a variety of aviation-related uses including an aircraft manufacturing facility or completion center, if and when the Boeing Company no longer needs this real estate for preflight of commercial aircraft. Federal grant funds could be used to acquire the parcel. Apron D is slated for private development under the current North Renton Redevelopment Plan and the City presently has no plans or funds to purchase this site.

The City also owns the site that is leased to the Renton Chamber of Commerce, located on the west hill above the airport on Rainier Avenue. That site is an excellent location for a restaurant with pedestrian access to the perimeter fence. This parcel has superb access to drive-by traffic, a fair-sized parking lot that could be extended to the south, and overlooks the Airport and the City with views of Lake Washington, the Cascades, and Mount Rainier. This site has historically attracted large numbers of people during the day who enjoy watching the aircraft come and go from the Airport.

All of these on-airport sites are served by utilities and the west side perimeter road. The only constraints on aviation-related development are those imposed by Federal Aviation Regulations and Federal Aviation Administration (FAA) design standards that limit building heights and provide setback requirements.

Part 2. How the Airport is used

The Boeing operations at Renton provide the community with a large number of well-paying jobs and the infusion of substantial amounts of capital into the local and regional economy.

Because the airport is essential to that operation, it can be stated that the airport is a significant asset to the City and surrounding areas.

Other than the current Boeing operations, the Renton Municipal Airport is classified as one of five general aviation reliever airports in the RASP. According to that Plan, the purpose of reliever airports is to provide suitable facilities to shift general aviation traffic away from Seattle-Tacoma International Airport (SeaTac).

The forecasts in the 2001 RASP and the 2004 update represent what is expected to happen to the airport if the historic trends on the airport are projected into the future. According to those documents, Renton Airport had 240 based aircraft and 100,710 operations in 1998. Those numbers were expected to grow to 278 based aircraft and 109,482 operations in 2020. The RASP stated that there would be a need for four new outside tie-down spaces and 35 new hangars over the 22-year period. If nothing else happened at the airport, that new demand could be accommodated on only a small portion of the land that will be available as Boeing downsizes. The RASP estimated the need for 4.6 acres to accommodate these new tie-downs and hangars. The area estimated for each hangar, 5,400 square feet, is more than twice what a light, single engine piston aircraft needs, and would be adequate for many corporate jets.

In 1998, the 240 aircraft based at Renton consisted of the following types:

Single engine	217
Multi-engine	21
Turbine	0
Rotorcraft	2
Other	0

The “other” category includes ultralight aircraft, balloons, gliders, etc.

The total based capacity of the airport was rated at 255 aircraft, only 15 more than were currently based there. This did not take into account the availability of additional land that has since been vacated by the Boeing Company.

The other four designated reliever airports are King County International (Boeing Field) and Auburn Airport in King County, and Paine Field and Harvey Field in Snohomish County. Their respective statistics for based aircraft and operations compared to Renton are shown in Table 1.

Table 1: 1998 Based Aircraft and Projections to 2020

Airport	1998 Based Aircraft	2020 Based Aircraft	1998 Operations	2020 Operations
Auburn	238	276	172,000	186,982
Boeing Field	443	514	345,120	375,182
Harvey Field	360	476	140,700	171,924
Paine Field	483	639	192,612	235,356
Renton	240	278	100,710	109,482

The most significant finding in this table is that while the number of based aircraft was expected to increase, Renton's *share* of aviation activity among the five reliever airports was predicted to decline from 13.6% in 1998 to 12.7% in 2020. During the same period, Renton's share of total aircraft operations was expected to fall from 10.6% in 1998 to 10.1% in 2020.

This prediction represented the pattern of historical trends and the assumption that Renton Municipal Airport would be constrained by lack of available land to accommodate greater growth. It was essentially a "no action" scenario that did not include the development opportunities cited in Part 1. In addition, the RASP called for adding two or three new reliever airports – Arlington, Bremerton and/or Tacoma Narrows – which would absorb some of the future aviation growth in the region.

The City of Renton is in a position to change its assigned scenario by redeveloping portions of the airport to higher-value uses and by upgrading the kinds of aviation activities occurring on the airport.

To get a total picture, the Will Rogers – Wiley Post Memorial Seaplane Base needs to be added to these figures. The 2001 RASP reported there were 45 aircraft based at this facility in 1998, which also represented its existing total aircraft capacity. That number was expected to grow to 52 by the year 2020, requiring 0.9 additional acres of land for aircraft storage. There were 2,387 operations at the seaplane base in 1998, with a projection of 2,595 operations in 2020.

By comparison, Kenmore Air Harbor had 79 based aircraft in 1998 with 40,000 operations. In 2020, those figures were expected to grow to 92 based aircraft and 43,484 operations. The Lake Union Seaplane Base had no based aircraft, but was expected to see an increase in operations from 30,500 in 1998 to 33,157 in 2020. Operational growth was projected at 8.7% over the 22-year period for all three seaplane bases.

The RASP did not include the seaplane base as part of the reliever airport function of Renton Municipal Airport because it does not shift aircraft operations away from SeaTac. However, the seaplane base at Renton *is the only publicly-owned seaplane base in the Central Puget Sound region*. The runway, combined with the seaplane base, offers both water operations and land operations for amphibious aircraft and is the only airport in the lower forty-eight states where aircraft can swap seaplane floats for wheels. Regularly scheduled charter flights are available between Renton and several destinations in the San Juan Islands, Gulf Islands, and several fishing outposts in Canada during the summer months.

When the seaplane base aircraft and operations are added to those of Renton Municipal Airport, the total numbers in 1998 and projections to 2020 are as shown in Table 2.

Table 2: 1998 Based Aircraft at Renton Municipal + Seaplane Base, with Forecasts to 2020

	1998 Based Aircraft	2020 Based Aircraft	1998 Operations	2020 Operations
Renton Airport (Wheeled Aircraft Only)	240	278	100,710	109,482
Will Rogers – Wiley Post Seaplane Base	45	52	2,387	2,595
Total	295	330	103,097	112,077

Even with these added numbers, the RASP "no-action" scenario would have Renton Airport operating at the lowest level of the five reliever airports in the Puget Sound region.

Types of Operations

The 2001 RASP also provided a breakdown of types of operations at the airports in the Puget Sound Region in 1998, both for wheeled aircraft and for seaplanes. The data showed the

figures for the five reliever airports and for the three seaplane bases in King County that appear in Table 3.

Table 3: Types of Aircraft Operations, 1998

	General Aviation Operations			Air Carrier, Commuter & Military Ops.	Total Annual Operations
	Local Operations	Itinerant Operations	Air Taxi Operations		
Auburn Municipal	65,565	98,339	7,996	100	172,000
Boeing Field	120,259	166,674	44,279	13,908	345,120
Harvey Field	44,352	93,223	1,879	1,246	140,700
Paine Field	99,418	84,125	3,508	5,561	192,612
Renton	62,591	36,704	980	435	100,710
Kenmore Air Harbor	7,200	800	8,000	24,000	40,000
Lake Union	7,500	2,500	20,500	0	30,500
Will Rogers/Wiley Post	1,737	650	0	0	2,387

Renton had the lowest ratio of itinerant-to-local operations among the five reliever airports at 0.6:1. Paine Field was the only other airport that had fewer itinerant than local operations, with its ratio at 0.85:1. This indicates that Renton was not seen as a destination airport for transient aircraft to the same extent as the other reliever airports in the Puget Sound Region.

Among the three seaplane bases, Will Rogers/Wiley Post had the highest ratio of itinerant-to-local operations, but showed no activity in air taxi or air carrier/commuter operations. This may not be entirely accurate, as charter services have been provided at the seaplane base for several years. In any case, these figures confirm the low market share of the seaplane base at Renton Airport in all categories of activity.

Without Boeing, existing conditions indicate that the airport will continue to provide aviation services that benefit the community but on a much smaller level. Most of the aircraft based and operating there are single engine, piston planes which require storage space (tie-downs or hangars), fuel, and maintenance. These are not “value added” functions in the same manner as aircraft assembly. The facilities and operations that do add value are a relatively small proportion of the business at the Renton Airport.

Unless there are specific actions to change the historic trends, it is probable that the Renton Airport will continue to support primarily the lower end of the aviation market.

The low level of growth predicted for the Renton Airport by the RASP is largely based on assumptions about land capacity constraints and historic trends regarding the type and intensity of aviation use at the airport. For example, the airfield has historically been configured to support commercial aircraft production. This single-use dominance of the airfield resulted in the underdevelopment of other aviation related businesses on the airport that could have developed the turbine aircraft market. As a result, the trend has been that the airport has supported the lower end of the aviation market such as recreational uses.

However, those constraints will lessen as more of the leased Boeing land becomes available. This will give the City the opportunity to change the character of the airport toward more high end, higher value uses.

Part 3. Market opportunities

If the historical trends cited in the RASP are not changed, then the projections in the size of the based fleet, the mix of aircraft types, and the number of operations at Renton Airport could be handled by the existing FBOs, including the new AirO facility. The current fleet is predominantly single engine, piston aircraft that can be serviced by mechanics at those FBOs. Part 3 looks at other potential market opportunities over and above these basic aircraft services.

There are eight primary categories of general aviation airport uses that require “airside” land, i.e., land that has direct access to the taxiway and runway environment and needs to be inside the security fence. These are termed “aviation dependent” activities as opposed to activities that are aviation-oriented or aviation-related. The latter group would include companies that manufacture aviation products that are shipped to customers rather than installed at the site.

The eight aviation dependent activities are:

1. **Light aircraft storage (tie-downs and hangars) and operations.** Many of these aircraft are owned by individuals or groups and are used primarily for recreational purposes and/or personal business travel. Except for the Boeing operations, most of the existing uses at the Renton Airport fit into this category, including the Boeing Flying

Club, and are currently supported by the FBOs on the field.

2. **Corporate fleet basing, including fractional ownership fleets.** Corporate fleets consist of one or more aircraft that are owned by corporations and are used for business travel. There is also a growing market of shared equity aircraft whereby companies and/or individuals purchase a fractional share of the aircraft which entitles them to an equivalent percentage of time in use. These fleets are usually managed by an independent operator that also maintains the aircraft and charges the costs according to the shares.

3. **Corporate transient operations**. In addition to based aircraft, facilities to provide services to transient corporate aircraft require airside access. There are several national companies that operate executive jet centers at major commercial service and reliever airports, providing a range of services that are tailored to the needs of business travelers, their aircraft and their pilots. These may be the same FBOs that manage corporate fleet basing or shared ownership fleets.

4. **Air taxi and air charter operations**. Renton Airport already offers air taxi and charter operations from the seaplane base. Market demand for these services is increasing nationally, especially for services that offer an alternative to commercial airline travel. These are used by companies and individuals that do not want to own aircraft or buy into a shared equity, but still need to transport business personnel to smaller airports or on controlled schedules.

5. **Air cargo**. This category includes large-aircraft cargo operators as well as companies that transport products in twin-engine piston aircraft. Depending on the volume of cargo and frequency of flights, on-field requirements can range from hangar-warehouses as large as several hundred thousand square feet down to small storage buildings to transfer cargo between the aircraft and trucks.

6. **Aircraft retrofitting services (maintenance and repair, overhaul, modifications and painting, completion centers, interiors, avionics)**. This category covers the wide range of services that are provided to existing aircraft, including new aircraft that need to be completed to meet customer specifications.

7. **Aviation education**. Pilot training is currently offered at Renton Municipal Airport, but mostly for light aircraft. Other types of aviation education include aircraft and engine maintenance, air traffic control, logistics and dispatch training, and college training for aviation careers. Not all of these require airside access, but proximity to an airport is an advantage.

8. **Aircraft and parts production**. As the Boeing Company reduces its presence at Renton Municipal Airport, there may be opportunities to recruit other companies that manufacture aircraft components or whole airframes. The Puget Sound area is home to several small companies making experimental aircraft, including one at Renton, and there is a growing fleet of certificated aircraft being manufactured at smaller airports throughout the country.

All of these uses presently exist in the Puget Sound region, with many of them concentrated at Boeing Field and/or Paine Field. As these markets grow, the City of Renton could position itself to attract those parts of the aviation industry that are most compatible with the airport's resources and the economic development interests of the City.

Capturing Market Share

Renton could expand its uses at the airport by capturing a larger market share of those activities that are currently going to Boeing Field and/or Paine Field. The focus here is on capturing a share of the growth of those activities rather than trying to shift existing businesses from those airports to Renton.

Based Aircraft by Type

The 2001 RASP provided a breakdown of based aircraft by type for the year 1998 (Table 4). The 2004 update did not contain more recent data.

Table 4: 1998 Aircraft Mix at Puget Sound Reliever Airports (Wheeled Aircraft Only)

Airport	Single Engine	Multi-Engine	Turbo Jet	Rotor Craft	Other Aircraft	Total Based Aircraft	Ops per Based Aircraft
Auburn Municipal	228	9	0	1	0	238	723
Boeing Field	283	104	38	31	0	456	757
Harvey Field	325	8	0	16	7	356	395
Paine Field	415	47	13	10	2	487	396
Renton Municipal	217	21	0	2	0	240	420
Reliever Airport Total	1,468	189	51	60	9	1,777	536
System Total	3,129	265	73	71	82	3,620	576

Of the five reliever airports in the region, the 1998 data gave Renton Municipal Airport the following shares of the fleet:

Single Engine	14.8%
Multi-Engine	11.1%
Turbo Jet	0.0%
Rotorcraft	3.3%
Other	0.0%

Renton has increased its number of based aircraft and has changed its mix of aircraft types since the 1998 figures were published. In November 2004, a count of aircraft based at Renton showed the following numbers by types of aircraft:

Single Engine	247
Multi-Engine	6
Turbo Jet	1
Rotorcraft	9
Total	263

In the RASP, the only forecasts of based aircraft by type are by county rather than by airport. The 2001 RASP provided the following figures for based aircraft in the four counties of the Puget Sound Region, along with forecasts by type of aircraft to the year 2020 (Table 5).

Table 5: Forecast of Future Fleet Mix by Type, 1985 – 2020

	Forecast Future Fleet – PSRC Region				
	1985	1990	1998	2010	2020
Single engine	3,075	2,957	3,098	3,357	3,551
Multi-engine	297	266	265	294	311
Jet	50	51	73	122	178
Helicopter	88	43	71	102	133
Other	41	125	113	204	266
Totals	3,551	3,442	3,620	4,079	4,439

The total based fleet was projected to grow by 25.0% from 1985 to 2020. Table 6 shows the projected percentage changes in the fleet mix and growth of each aircraft type. These apply to wheeled aircraft only as similar data are not available for seaplanes.

Table 6: Projected Changes in Puget Sound Region Fleet Mix: 1985 - 2020

Aircraft Type	**1985 Fleet Mix**	**2020 Fleet Mix**	**Growth in Aircraft 1985-2020**
Single Engine	86.6%	80.0%	15.5%
Multi-Engine	8.4%	7.0%	4.7%
Turbojet	1.4%	4.0%	256.0%
Helicopter	2.5%	3.0%	51.1%
Other	1.2%	6.0%	548.8%
Total of All Aircraft	3,551	4,439	25.0%

The number of jet aircraft is expected to grow by nearly 260%. Both the single-engine and multi-engine components are expected to decline in market share because of their much lower rates of growth. The “other” category includes the new classification of Light Sport Aircraft that is currently being formulated by the FAA. Its high percentage of forecast growth was based on its low starting point.

Overview of Strategies to Develop Higher-End Markets

Following is an overview of the strategies for increasing market share and/or recruiting new business operations to the Renton Airport.

1. Increase Renton's market share of based jets and jet operations

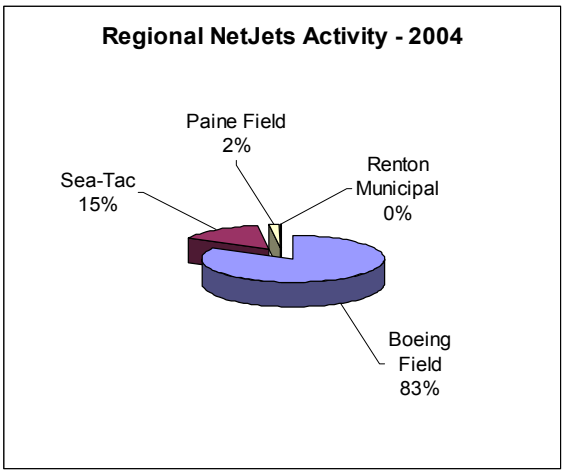
This strategy includes basing more of the corporate jet fleet at Renton and garnering a larger market share of transient jet traffic.

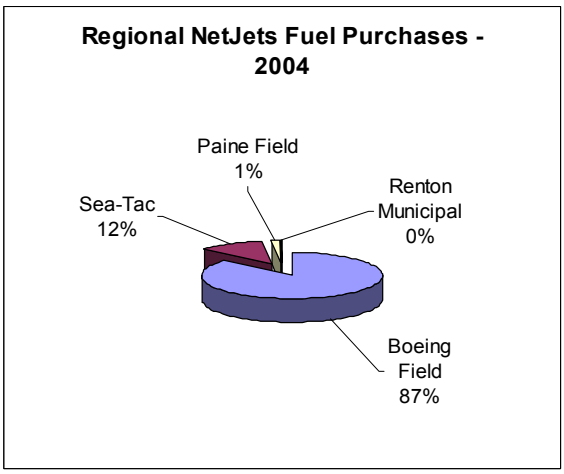
Data from the RASP (1998) and Washington Aviation Division (2000 and 2002) indicate the following number and distribution of jets based at Seattle Tacoma International and its reliever airports.

	1998	2000	2002
Total Based Jets	54	48	131*
Boeing Field	70%	78%	84%
Paine Field	24%	16%	13%
Renton Municipal	0%	0%	1%
Sea Tac	6%	6%	2%

**The 2002 data for Boeing Field indicate 110 jet aircraft, which likely includes many that are not corporate jets.*

Comprehensive statistics on GA jet aircraft operations are not available. However, data provided by NetJets conveys a sense of the distribution of business jet traffic in the Seattle area. In 2004, NetJets recorded 3,851 transactions (7,702 aircraft operations) and purchased 1,157,600 gallons of fuel at four Seattle area airports:





NetJets recorded 12 transactions (24 aircraft operations) and 2,300 gallons of fuel purchased at Renton Municipal Airport in 2004.

Boeing Field dominates both the based and transient GA jet market in Seattle. The draft Airport Master Plan for Boeing Field indicates that in 1997, the airport had 31,131 GA business jet operations and 2,881 air taxi business jet operations.

The FAA's latest national aviation forecasts were published in March 2004. Through 2015, the active general aviation and air taxi fleet is projected to increase at 1.3% annually, with hours flown increasing at a slightly higher rate (1.6%). Turbine (jet) aircraft and hours flown are projected to grow at much higher rates (Table 7).

Table 7: Average Annual Growth Rates for Turbine GA and Air Taxi Aircraft

	2002-2005	2005-2010	2010-2015
Fleet	2.6%	5.9%	5.3%
Hours Flown	2.5%	8.0%	6.3%

Source: FAA-APO-04-1

FAA-APO-04-1, *FAA Aerospace Forecasts Fiscal Years 2004-2015*, states that the business/corporate segment continues to offer the greatest potential for GA growth; fractional ownership activity has been increasing, with flight hours up 3.8% in 2003. Business use of GA is projected to expand more rapidly than that for personal and sport use. The business/corporate side of GA should continue to benefit from safety concerns for corporate

staff, increased processing times for airline travel, and the bonus depreciation provision of the President's economic stimulus package that should help stimulate jet sales.

The private aircraft and engine manufacturers also predict strong growth in the turbine-powered fleet. At the September 2004 annual meeting of the National Business Aviation Association (NBAA), the Rolls-Royce Corporation predicted that more than 500 business jets will be delivered in 2004, on par with 2003 levels. The company's latest business jet forecast, which covers the market through 2023, states that "virtually all of the key market driver indicators have turned positive and are trending up".

A company spokesperson said that economic indicators, coupled with a reduced inventory of viable used aircraft and the growth of fractional companies, support the forecast. The Rolls-Royce forecast shows the need for 23,000 aircraft with a delivery value of $284 billion for micro-jets through business liners. The company predicts 8,000 micro-jet deliveries through 2023 and 15,000 deliveries of traditional business jets during that period. (Micro-jets generally have four - six seat capacity.)

These projections are consistent with the predicted patterns of fleet mix published by the Puget Sound Regional Council. Forecasts for the four-county area were 4.1% average annual growth in jets. The large projected increase in jet aircraft based in the region offers one way for Renton to capture additional market share. That would require jet aircraft support capabilities that are available in only limited supply at the present time.

Why this would benefit Renton?

Attracting a larger market share of the jet fleet to Renton would produce greater revenues for on-field FBOs than just servicing the single-engine piston market. Higher revenues to operators would provide long-term opportunities for the City to generate higher incomes from ground leases and/or income from revenue participation provisions in those leases. It would also generate higher levels of employment to provide the expanded services required by the jet fleet.

For example, according to the owners of Pro-Flight Aviation, Inc., servicing a single transient corporate jet aircraft can produce $1,200 - $1,400 in fuel sales, several car rentals, plus catering

services that support local businesses. The total economic impact from a single jet can be many times higher than the impact from servicing a 4-passenger, single-engine piston airplane flying into Renton, which would consist primarily of about $100 in fuel sales.

What are the advantages of Renton to this market?

Renton's advantages for attracting share of this market include:

- Proximity to the rapidly growing eastside business region which includes the Boeing redevelopment site in Renton.
- Less air traffic congestion than at Boeing Field, cited by the RASP as a factor in diverting air traffic to other reliever airports in the region.
- Available ramp space for aircraft parking, sometimes limited at Boeing Field according to some current operators.
- Access to I-405 freeway system resulting in reduced travel time to the eastside compared to Boeing Field or Paine Field.

What is required to capture this market?

Marketing is needed to begin to capture a greater share of the market. Renton's FBOs have marketed the airport to business aircraft owners, but the City has not; in fact, the City has a reputation for actively discouraging business aviation in the past.

Besides marketing efforts, some improvements in facilities and services could make the airport more attractive to business aviation, keeping in mind that business aircraft owners use airports conveniently located for the origin or destination of their trips. Excellent facilities and services will not overcome a location undesirable for business aviation. On the other hand, a business aviation-friendly airport is another asset for attracting new companies to a community.

Desirable Facilities and Services for Business Aviation

As of January 2004, 139 companies in Washington were members of the National Business Aviation Association (NBAA). The NBBA has published desirable airport characteristics for

business aviation, both based and transient. Renton Municipal Airport has most of the desirable characteristics desirable for business aviation.

Table 8 indicates how the airport's facilities and services are aligned with what is attractive to business aviation, according to the NBAA. As shown, Renton Municipal's deficiencies for meeting the minimum needs of business aircraft are the lack of an approach lighting system (ODALS) and a slightly shorter runway length than desirable for heavy jets.

It may be imprudent for Renton to try to serve the faster, heavier jets that need longer runways and are better served at Boeing Field, where the runway is twice as long as Renton's. Upgrading Renton to serve Aircraft Approach Category C[3] (approach speeds up to 141 knots) would require 1,400 feet more runway safety area length, which would not be feasible to add and impractical to provide by using declared distances. Additional threshold displacement and declared distances would reduce the useable runway length until it would be adequate for small piston aircraft only. Consequently, it would be most reasonable for Renton to serve the business aircraft in Airport Reference Code[3] (ARC) B-II or in a less demanding ARC. These include the Aerospatiale SN-601 Corvette, Cessna Citation (500, 501 I/SP, 525, 525A, 550, 551, 552, 560 Ultra, Encore, and Excel), Dassault Falcon (10, 20, 2000, 50, 900), Raytheon/Hawker 125-800, Learjet 28/29, Mitsubishi MU-300 Diamond, Raytheon 390 Premier, and Sabreliner 40. Renton's runway length and airfield geometry is more than adequate for microjet aircraft now under development, such as the Eclipse 500, Cessna Mustang, Adam A-700, Safire Jet, Avocet ProJet, Beechcraft Baron 58, and Piper Malibu Mirage.

Other needs for the "optimum" criteria are for the control tower to operate 24 hours a day, a full approach lighting system (such as MALSR), a precision instrument approach, a qualified weather observer, security similar to major airlines, and a certified repair station for jet aircraft. Renton Airport currently meets or exceeds most of the minimum criteria for light and medium jets so meeting the "optimum" criteria can be deferred as part of a long-term development plan.

[3] The Aircraft Approach Category and the Airplane Design Group of the most demanding aircraft that regularly uses an airport make up the Airport Reference Code. The ARC is an FAA coding system that determines how the airport is designed and what FAA design standards are used. An airport designed for a Piper Cub (ARC A-I) would take less room than one designed for a Boeing 747 (ARC D-V). An airport with ARC B-II is designed for aircraft with an approach speed less than 121 knots and wingspan under 79 feet.

Table 8: **Business Aviation Requirements to Attract Corporate Jets**

	Optimum		Minimum		Renton Municipal Airport	
Runways*	Dimensions (ft.)*	Weight Capacity (lbs)	Dimensions (ft.)*	Weight Capacity (lbs)	Dimensions (ft.)*	Weight Capacity (lbs)
Heavy Jet	6,500 x 150	95,000	5,500 x 100	75,000	5,379 x 200	340,000 Dual Tandem Wheel
Medium Jet	5,500 x 100	50,000	5,000 x 75	40,000	5,029 useable length displaced threshold	130,000 Dual Wheel
Light Jet / Turboprop	4,500 x 75	25,000	4,000 x 60	15,000		100,000 Single Wheel
Airport Configuration	Meet FAA airport design standards Taxiways for all runways Stabilized overruns on longest runway 200 x 300 ft. ramp area minimum		Runup areas at all runway ends Adequate ramp for maneuvering / parking		Meets standards for Airport Reference Code (ARC) B-II** Full parallel taxiway & adequate exit taxiways Safety area OK for ARC B-II Yes	
ATC Tower	24 hours		None		Less than 24 hours	
Lighting	Full approach light system		Runway End Identifier Lights (REIL) or Omnidirectional Approach Lighting System (ODALS)		REIL both ends, no approach lighting systems	
	High intensity runway lights		Medium intensity runway lights		Medium intensity runway lights recently reconstructed to allow easing upgrading to high intensity	
	Visual glideslope indictor on all runways		Visual glideslope on instrument runway Pilot controlled lights		Visual glideslope indictor (PAPI) on both runways Pilot controlled lights	
Instrument Approach	Precision		Localizer (LOC) or GPS		NDB and GPS (1 mi. visibility minimum for Category A & B)	
Weather Reporting	Qualified Observer		AWOS-2		ASOS	
Communications	Air Traffic Control (ATC) tower		ATC Remote Controlled Outlet		ATC tower	
Services	Full -service Fixed Base Operator*** Transient hangar space FAR Part 107**** type security		Enclosed passenger waiting area Fuel/tiedowns Elementary security Telephone		Full-service FBOs with waiting areas Fuel, tiedowns, transient hangars Better than elementary security (fenced and Boeing security)	
Maintenance	FAR Part 145 Repair Station		None		Aircraft maintenance, but not jet maintenance	
Amenities	Nearby: Hotel/motel Restaurant		Distant: Hotel/motel Vending machines		Nearby: Hotel/motel Restaurant	

Deficiencies at Renton Municipal Airport

*Runway lengths at standard 59 degrees & sea level. Actual runway lengths will vary. According to NetJets, 5,000 feet (at sea level) is adequate for their fleet of 500+ business jets, except for very long-haul trips.
**Aircraft with approach speeds less than 121 knots and wingspans up to 79 feet.
***Staffed 24/7, fuel, passenger and crew lounge, rental cars, shuttle/crew car, vending machine
****Now TSR Part 1542

Probably the most effective improvement for business aviation at Renton would be a better instrument approach, which would probably require an approach lighting system. Renton currently only has what are called "non-precision" approach procedures that do not provide course guidance as accurately as the Instrument Landing Systems (ILS) that are available at Boeing Field and Paine Field. It is unlikely that an ILS system can be deployed at Renton, because of the proximity of buildings to the runway, Mercer Island terrain obstructions in the long, straight-in approach, and the FAA's reluctance to install new ILS equipment. An ILS normally allows landing aircraft to descend to a minimum altitude of 200 feet above the touchdown zone in conditions of low clouds and reduced visibility.

By comparison, the RNAV (Area Navigation) Runway 15 approach has a minimum descent altitude (MDA) of 760 feet and the NDB (Nondirectional Beacon) Runway 15 approach has an MDA of 860 feet. These minimum altitudes mean that the pilot must have the "runway environment" in sight to make a safe landing from that altitude. The alternative is a missed approach and a deviation to another airport. The minimum altitudes for both approaches increase to 900 feet if wind conditions require a circling approach for a landing on Runway 33. These higher MDA requirements may mean that a jet approaching Renton will not have the runway visible upon reaching the MDA and will have to divert to Boeing Field or another airport with ILS capability.

Operators of Pro-Flight Aviation have estimated that during the winter, a transient jet planning to come to Renton has to divert to Boeing Field or another airport due to poor weather between four and seven times per month. There is no data available on the number of transient jets that successfully land at Renton during the winter months, so the percentage of diversions can not be measured. The reliability that a better instrument approach would provide is probably even more important for based aircraft than for transient aircraft.

This problem may be solved when a new Global Positioning System (GPS) approach is implemented at Renton that includes the Wide Area Augmentation System (WAAS), which provides vertical guidance as well as horizontal guidance. The approach is flown similar to an ILS, but the navigational guidance comes from satellite systems in tandem with ground-based equipment. Landing minimums under that system are designed to be as low as 250 feet above the touchdown zone, compared to 200 feet with most ILS approaches. Detailed technical study

is needed to determine the feasibility of improving the instrument approaches to the Airport. Any improvement in the current approaches will help Renton capture greater market share of the corporate jet activity in the Puget Sound region.

Approach lighting and instrument approaches are associated deficiencies. Federal Aviation Regulations (FARs) include visual recognition of the approach lighting system as qualifying for seeing the "runway environment". At night or in a foggy condition, it may be much easier to see these lights than to see the runway. Approach lighting helps provide lower instrument approach minimums.

Fractional ownership is the highest growth segment of the corporate jet market. NetJets owns and manages a fleet of about 500 business jets with more customers than all other fractional ownership programs combined. NetJets, Inc. was contacted about the facilities and services at Renton Municipal. NetJets is not using Renton Airport much because aircraft owners are not requesting to go to the airport. NetJets will use an airport lacking a control tower, firefighting capability, instrument approaches, and maintenance capability if the aircraft owner wants to go to the airport and it has a safe airfield that is adequate for the specific aircraft. NetJets' database shows an approval of Renton for their Hawker 1000. The database contains no negative notes about service at the airport, no weight bearing issues (NetJet's largest aircraft is the 737), and the runway length is adequate for their fleet, except perhaps for an international, heavily loaded flight. NetJets often uses Boeing Field and he noted that the aircraft parking area at Boeing Field is only marginally adequate. The presence of U.S. Customs at Renton could make it an attractive fuel stop for some of NetJets' international flights. NetJets has guidelines for FBOs and offers quarterly training for FBOs.

Part of the requirements to capture a larger share of the business or corporate jet market will be to provide customer services usually found in an executive jet center. This can probably be achieved by expanding the existing Fixed Base Operators (FBOs) that currently provide services to the general aviation market at Renton. With an expansion of the market, the manager of the Aerodyne facility also indicated that they might get into this business.
The requirements for an executive jet center are significantly greater than those for light general aviation aircraft. The list below shows the services offered by Galvin Flying Service at Boeing Field to attract corporate aircraft to its facility there.

Pilot Amenities

- Private Sleep Room with Shower
- Comfortable Pilots Lounge
- Video Library
- Satellite TV
- WSI Weather Planning
- Flight Data Center
- Complimentary Crew Cars

Passenger Amenities

- Professional Red Carpet Service by Concierge
- On-Site Rental Cars
- Ramp-side Pick-up and Drop-off
- Comfortable Lounge with Telephone
- Private Conference Rooms

Corporate Amenities

- Staffed 24 hours, 7 Days per Week
- 2 Person Minimum for All Aircraft Movement
- NATA Safety-First Certified Line Service Technicians
- 12 minute Quick Turns
- Complimentary Interior Cleaning
- Complimentary Coffee, Ice, and Newspapers
- Metered Anti-ice
- Heated and Secure Hangars

Concierge Services

- Northwest's Best Custom Catering
- Discounted Hotel Reservations
- Dinner & Entertainment Reservations
- Local Event Information
- Complimentary Fax & Word Processing

Most executive jet centers also offer aircraft maintenance capabilities certified to FAA standards for both based aircraft and transient jet aircraft.

Potential Costs/Benefits

A GPS-WAAS instrument approach and an approach lighting system would qualify for FAA funding, but the total costs and the portion of costs borne by the City of Renton need to be determined after detailed technical analysis.

Costs for developing a jet-service capable FBO would normally be the responsibility of the operator, although the City may want to negotiate terms that will enable the operator to provide all of the services described above as an incentive to expedite the process.

In terms of benefits, the business jet market has been projected to grow from approximately 73 business jet aircraft in the Puget Sound area in 1998 to 178 in 2020. That represents an addition of 105 jet aircraft in a period of 22 years. Because of land capacity constraints at Boeing Field, it is reasonable to expect that Renton could attract up to 20% of that growth, especially in the light-to-medium jet sectors that comprise the largest part of the market. Adding 20+ based jet aircraft to Renton Municipal would offer the benefits of:

1. Increased employment and revenue from hangaring and servicing the based aircraft.
2. Increased transient jet traffic to take advantage of the enhanced capabilities
3. Increased appeal of Renton generally as a location for firms that use jet aircraft

An estimated 45,000[4] corporate jet aircraft operations (takeoffs and landings) occur annually at Sea Tac and the airports designated as general aviation relievers for Sea Tac. Estimated market shares[5] are as follows: 80% at Boeing Field, 15% at Sea Tac, 5% at Paine Field, and less than 1% at Renton Municipal Airport.

With Renton Municipal Airport's close location to Sea Tac and to employment centers in Renton, the Kent Valley, and the east side of Lake Washington, it can be conservatively estimated that the Airport should have at least 10% of the Seattle corporate jet market and possibly 20%. Based on the current market size, 10% would be 4,500 annual aircraft

[4] This is a rough estimate based on the number of corporate jet operations at Boeing Field from that airport's master plan and the assumption that Boeing Field has 80% of the market, consistent with NetJets' Seattle area transaction data for 2004.
[5] These are rough estimates based on NetJets' Seattle area transaction data for 2004.

operations, or 2,250 aircraft visits. By 2020, the Seattle area is projected to have between 90,000 and 120,000 corporate jet operations[6]. Each visit by a transient corporate jet brings an estimated $1,300[7] of revenue to the FBO who sells fuel and provides other services. In contrast, each single engine piston aircraft visit accounts for about one-tenth of that revenue (fuel sales and tie-down fee). Consequently, obtaining a 10% market share of Seattle's corporate jet operations would bring about $3 million in annual revenue to the FBO, using the current estimate level of traffic. That number would grow along with the growth in jet traffic over time and would be higher if a larger market share, possibly 20%, was obtained.

Employment increases and other secondary economic benefits would result as Renton Airport converts from a recreational airport to a business jet airport.

2. Increase air taxi and air charter operations

Air taxi and commuter operations are projected by the FAA to grow from 11,305,200 in 2003 to 15,290,100 in 2014, for an annual average growth rate of 2.8% over the 11-year period. The FAA attributes this growth primarily to the convenience of air taxi and commuter travel versus the commercial airlines.

On-demand air charter provides companies with instant access to business aviation aircraft. Many customers are new to air charter. According to the *Air Charter Guide*, charter activity in the United States increased by 30 percent in 2001, particularly after September 11. Despite that activity, the number of aircraft decreased in total, due to a drop-off in the number of piston aircraft. However, the number of jets has increased substantially. Charter activity experienced its seasonal slowdown at the end of 2002, which was made worse by the anemic economy and uncertainty about war. The FAA's forecast published in March 2004 noted that the number of charter passengers fell 6.7% in 2003; however, this decline was less than the 18.3% decline in passengers on domestic scheduled airline flights in 2003.

[6] 90,000 operations would be achieved by 2020 at a 4.1% annual growth rate, similar to the growth project for based jet aircraft in the RASP. 120,000 operations in 2020 would result from 4.8% annual growth, which is consistent with the FAA's March 2004 forecasts for hours flown in general aviation and air taxi jet aircraft.
[7] Based upon interview with Pro-Flight and estimated fuel bill for NetJets' Seattle area transactions in 2004.

The *Air Charter Guide* believes that one of the most significant trends is the imminent entry of on-demand, commercial, charter services into the mainstream of online travel procurement. As retail and corporate buyers have improved access to peruse and purchase charter services online, charter will grow and continue to act as the entry level engagement for all types of general aviation.

According to the 2001 RASP, Renton Airport had only 1.7% of the air taxi market and 2.0% of the air charter/commuter market in the Puget Sound area in 1998. None of these operations were shown as originating at the Will Rogers/Wiley Post Seaplane Base. However, the seaplane base is currently generating most of that business, at least on a seasonal basis, with flights to/from the San Juan Islands and fishing camps in British Columbia.

According to the owners of NW Seaplanes, this business could be expanded to capture at least 10% of the total market at Renton. That would add more than 5,200 air taxi and air charter/commuter operations to the Renton seaplane base using 1998 figures. The main requirements cited are (1) a fully capable FBO; (2) additional terminal facilities to incorporate the US Customs personnel as well as rest rooms and waiting areas; and (3) additional dock space.

That level of business would approximately triple the current number of seaplane operations at Renton. There are presently noise issues associated with seaplane operations, so expanding those operations would have to recognize and deal with those issues. These are currently being addressed by Kenmore Air Harbor and NW Seaplanes through conversion of piston engines to turbines, restricting schedules to daylight hours, and working with neighbors to mitigate complaints before they arise.

3. Air cargo

Renton Airport does not currently have a role in the region's air cargo traffic. The RASP classifies Boeing Field and SeaTac as the region's air cargo airports. In 2000, Boeing Field and SeaTac Airport processed nearly 1.3 billion pounds of air cargo, with about 22% processed at Boeing Field and 78% at SeaTac.

These figures are expected to grow substantially over the next several years, as shown by the forecasts below taken from the 2001 RASP:

	2000	2005	2010	2015	2019
Boeing Field	143,425	194,540	243,595	305,000	N/A
Sea-Tac Int'l	501,597	683,100	805,200	N/A	1,057,100
Total:	**645,022**	**877,640**	**1,048,795**		

Despite the predicted growth in this market, it is not recommended that Renton try to establish this business at its airport, for three reasons:

- The runway is too short for cargo aircraft that are typically heavily loaded, traveling long distances, and need maximum takeoff distance.

- It is unlikely that the Airport could ever have an instrument approach with visibility minimums as low as Sea Tac or Boeing Field. Airport closures due to poor visibility weather are especially damaging for cargo operators. Not only is the air cargo business highly time-sensitive, it is less able to tolerate diversion to another airport than a passenger airline because the cargo operator does not have the personnel, equipment, or facilities needed to handle cargo at the diversion airport.

- A major part of the air cargo business is transacted at night. It is probable that this activity would encounter considerable opposition from neighboring residential areas, especially those that are classified as being in the noise sensitive zone.

4. Aircraft retrofitting services

This could be a natural market for the Renton Airport, especially because of the availability of a highly skilled workforce with training in this field. With the growth of the corporate jet fleet, there is a growing demand for aircraft completion centers to equip those aircraft to customer specifications. For example, Bombardier of Canada has an aircraft completion center in Tucson, Arizona, and a completion center for Piaggio Aircraft is located in Lincoln, Nebraska, and operated by Duncan Aircraft.

Another part of this market is for aircraft that are being taken off commercial flight status and modified for export to foreign carriers. In many instances, these aircraft are converted from passenger to freight configurations.

5. Aviation training and education

In order to replace the living wage jobs disappearing with Boeing, the City might consider attracting an aviation-related educational facility. In addition to the education that would increase students' earning potential, an educational facility would provide quality teaching and administrative jobs.

A. Flight Instruction

The aviation education areas that Renton might specifically encourage do not include flight training. Renton Municipal Airport is now the site of one flight training operations with a few private flying clubs that provide instruction to their own members. Transient aircraft also use Renton for training, since it is a relatively low activity airport with an air traffic control tower. Flight instruction is a common service of a Fixed Base Operator and is likely to remain at Renton Municipal for many years to come. However, as the regional airspace gets busier in the future, there may be a trend for flight training to migrate to airports located in less congested airspace.

B. Air Traffic Controllers

The FAA hired many of today's air traffic controllers to replace those President Reagan fired in 1981. Many of them are approaching 56, the mandatory retirement age. By 2010, half the 15,000 controllers now on the job will leave the workforce. Besides replacements, the FAA needs to hire 2,000 additional controllers by 2010 just because of the increase in air traffic.[8] According to the National Air Traffic Controllers Association (NATCA), the FAA has

[8] GAO-02-591, United States General Accounting Office: Air traffic Control, FAA Needs to Better Prepare for Impending Wave of Controller Attrition, June 2002.

acknowledged the looming staffing crisis, but is woefully behind in hiring replacements. Through May, the FAA had hired only one controller in 2004.

Colleges providing an education in air traffic control are few in number and none are located in Washington or the adjoining states. If not part of the armed forces, people wanting to be controllers attend one of the 14 colleges recognized by FAA that give degrees in aviation with an emphasis in air traffic control. Ten of the 14 schools are located east of the Mississippi and two are in the Midwest. The two in the western part of the country are in Anchorage, Alaska, (University of Alaska) and Walnut, California (Mount San Antonio College). Following successful completion of these programs and hiring by the FAA, employees attend the FAA Academy in Oklahoma City for 12 weeks of training. It takes at least three years and up to five years to train a controller to the point of being certified.

Most (90%) civilian controllers are federal employees of the FAA. Controllers earn high pay and have good benefits. Median annual earnings of air traffic controllers in 2002 were $91,600. The average annual salary, excluding overtime, for controllers employed by the FAA was $95,700 in 2002. Disregarding the replacement crisis, employment is expected to grow about as fast as the average through 2012.[9]

The outlook for controller jobs may be less positive if more air traffic control operations are privatized. As of August 2003, 219 airports had privatized air traffic control towers. Contract towers pay less and employ fewer people than FAA towers with comparable workloads. Improvements and changes to air traffic control equipment and procedures ("free flight," for example) may reduce controller workload. On the other hand, the proliferation of GPS approaches at U.S. airports that were previously used for visual (uncontrolled) operations only may create more work for air traffic controllers.

C. Aircraft Maintenance Technicians

Aircraft and avionics equipment mechanics and service technicians service, inspect, and repair planes. Many specialize, working on the airframe (the body of the aircraft), the powerplant

[9] U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2540, Occupational Outlook Handbook, 2004-05 Edition.

(engines), or avionics (navigation and communication equipment and other parts that depend on electronics). Some specialize in scheduled maintenance required by the FAA.

From 2002 to 2012, the projection of job growth is 10.1% for all aviation installation, maintenance, and repair occupations: 21.1% for first-line supervisors, 6.6% for avionics technicians, and 7.9% for aircraft mechanics and service technicians. The median annual earnings of aircraft mechanics and service technicians were $48,050 in 2002, higher than any other air transportation occupation category except airline pilots, copilots, and flight engineers. "Opportunities should be excellent for aircraft and avionics equipment mechanics and service technicians. The likelihood of fewer entrants from the military and a larger number of retirements indicates excellent opportunities for students just beginning technician training."[10] A May 2003 survey by Aircraft Maintenance Technology magazine found average hourly wage rates for certified non-management employees to range from $19.17 for an airframe and powerplant mechanic to $29.54 for a repair specialist.

In 2000, the U.S. aviation industry employed 137,000 mechanics and the federal government reported a chronic need for 6,000 to 12,000 more. After 9/11, there were aircraft mechanics laid off from major airlines, but the demand has picked up again. "Companies…nationwide are on the hunt for trained aircraft mechanics as the airline industry rebounds from its economic slump."[11] Many aircraft mechanics are retiring, having started their careers in the 1970s. Many were trained by the military during the Vietnam War. When the aviation industry went through an economic slump in the late 1980s and early 1990s, aviation schools turned out fewer mechanics, and with government budget cutbacks, so did the military.

In addition to the need to replace retiring mechanics, demand is fueled by growth in aircraft production, particularly general aviation aircraft since the GA Revitalization Act of 1994 and the phenomenon of fractional business aircraft ownership. Although many airliners were retired to desert storage after 9/11, there has been strong growth in smaller commercial aircraft such as regional jets. The FAA projects higher growth in hours flown than in numbers of active aircraft, which will increase aviation maintenance workloads. New and improved avionics in commercial and general aviation aircraft are also adding to the need for aviation maintenance technicians.

[10] U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2541, The 2004-05 Career Guide to Industries.
[11] David Wichner, Arizona Daily Star, "Jobs aplenty, good pay", May 9, 2004.

According to the FAA, there are three ways to become a certified power plant or aircraft mechanic:

- Attend one of the 170 FAR Part 147 Aviation Maintenance Technician Schools nationwide for 12-24 months.
- Work at a certified repair station or FBO under the supervision of a certified mechanic for 18 months for each certificate or 30 months for both.
- Get equivalent training and experience in the armed services.

6. Aircraft and parts production

The Renton area offers one of the best labor markets in the region for skilled workers in aviation and aerospace trades. As Boeing ramps down its production over the next several years, which labor force can be used as a resource to attract other companies that manufacture aircraft and parts.

There is no specific way of identifying what companies might be recruited to Renton. They could include companies that subcontract to Boeing for new aircraft such as the Boeing 7E7 aircraft. They could also be companies that supply Boeing's aerospace and defense divisions rather than commercial aircraft.

Recruiting Boeing subcontractors will require working closely with the company to identify who those companies are as well as their locational requirements. Many of those firms will not require airside access but would still be good tenants for the Renton Airport. Apron D would be a logical location for those kinds of firms if it becomes available for annexation to the Airport and is not used for a large aircraft service center.

Part 4. Economic impacts of the alternative uses

Each of the alternative uses for airport properties at Renton will have different economic impacts on the City. While it is beyond the scope of this market report to try to estimate potential

employment for each of those uses, the following information on comparative wages may be useful in guiding the City's policies on which types of activities it wants to actively encourage.

The figures shown in Table 9 were obtained from Workforce Washington, using the NAICS definitions provided by the US Department of Commerce. They show the 2003 average employment, total wages, and average wages for each primary aviation category.

Table 9: Comparative Wages paid in Washington Aviation Industries, 2003

NAICS	Description	2003 Average Employment	2003 Total Wages	2003 Average Wages
336411	Aircraft Manufacturing	57,879	$4,436,902,832	$76,658
336412	Aircraft Engine & Engine Parts Mfg.	181	$9,872,493	$54,544
336413	Other Aircraft Parts & Equipment	6,636	$308,012,847	$46,394
488119	Airport Operations	1,540	$33,204,849	$21,562
488190	Other Support Activities, Air Transport	1,081	$39,932,738	$36,941

It is evident that there are significant wage differences, especially between the "Airport Operations" category and the "Aircraft Manufacturing" category.

In a hypothetical example, an aircraft parts manufacturing facility sited on four acres with 30% site coverage would be about 50,000 square feet in size. At an average manufacturing density of 500 square feet per employee, this would accommodate a maximum of 100 employees. At an average wage of $46,394 per year, the income generated from that facility would be about $4,639,400 per year.

On the other hand, an FBO requires substantial land area for aircraft parking and maneuvering, so the same four-acre site might have less building coverage, say 15% or 26,000 square feet of building space. Allocating 800 square feet per employee because of inside hangar space requirements, especially for aircraft maintenance, it would accommodate only 32 employees. If the average wage is $36,941 annually, this would produce annual revenue of $1,182,112 per year.

Many assumptions can be made about how the jobs would be split by category but these rough comparisons indicate how these impacts can be estimated. Other factors need to be included

to determine full economic impacts, such as rents paid to the City and secondary spending among other businesses in Renton.

Part 5. Implementation steps and timetable

Based on the research and analysis, as well as the feedback from interviews, the following recommendations are provided for the future management of the Renton Municipal Airport.

1. The initial focus should be on land planning to protect areas that can be used for large hangars for corporate jet aircraft along with the required support operations. Ramp B offers an immediate opportunity because of its size, configuration, and open access to the taxiway and runway system. Other areas of the airport may also be suitable when Boeing leases expire or they can be acquired by the City of Renton. It may also be possible to expand some of the existing FBO and hangar operations on the field to accommodate this use.

   The land planning can also address the inefficiencies in current land use, especially the restricted taxiway areas at the southeast end of the airport. An optimum future land plan should be developed that will guide both short-term and long-term airport development. As much as possible, this should be incorporated into the renegotiations of the Boeing leases to remove some of the current impediments to expanding airport capabilities.

   In any case, the first and highest priority will be to plan the airport properties for these higher end uses before they become saturated with low-end uses such as small aircraft tie-downs and T-hangars.

2. An equally high priority needs to be placed on obtaining a better instrument approach that will meet the requirements of the corporate jet market. Because an ILS is not feasible at Renton, which means a low-altitude GPS WAAS approach to a ceiling or MDA as low as 250 feet. If a 250-foot MDA is feasible, it will be only 50-feet higher than the ILS minimum approaches to Boeing Field, but sufficient to satisfy the requirements of most jet aircraft operators. This appears to be the most important hurdle to overcome in attracting corporate jet traffic. Without an improved approach, the historical trend scenario of

predominant use by small, single-engine piston aircraft is likely to guide the future of the Renton Airport.

3. At such time as an improved instrument approach is implemented, then measures should be taken to ensure that the services would be available to accommodate corporate jet aircraft. At a minimum, these will include at least one large hangar for storing corporate jet aircraft out of the weather. Ideally, that facility will also provide some maintenance capabilities as well as pilot amenities and services. Several of the current FBOs and/or hangar operators said they would be willing to invest in such a facility once the approach issues are resolved.

4. Plans should be made for improved fueling capabilities, including self-fueling operations for light aircraft and for 24/7 service. This would most likely be a cardlock pump providing both 100LL avgas and Jet A fuels. The location of the facility needs to be planned carefully to ensure good aviation access without interfering with taxiways and ramp areas.

5. As the instrument approach, hangars, and fueling capabilities are being developed and their capabilities are confirmed, the City needs to market the airport for corporate aviation uses. The marketing efforts need to focus on repositioning Renton Municipal Airport as a primary gateway for corporate users in the Kent Valley and markets on the east side of Lake Washington.

6. For longer-term airport development, it is recommended that the relationship and connectivity of Apron D to the airport be evaluated to determine whether the parcel can be used as an aircraft manufacturing facility, or a completion or modification center, once Boeing vacates the site.

A possible ten-year timetable of events required to implement these steps is shown below:

	Year									
	1	2	3	4	5	6	7	8	9	
Plan Airport for future uses										
Begin reconfiguring Airport for new uses										
Obtain a GPS WAAS approach										
Develop corporate hangar and service facilities										
Market Renton Airport for new uses										
Evaluation/Study of Apron D opportunities*										

* when determined appropriate

Part 6. Interviews with aviation businesses

Several of the operators of existing businesses at the Renton Airport were interviewed for this project. They were asked to identify potential opportunities for the airport and for their businesses, as well as the needs and issues that will need to be addressed by the City of Renton to capitalize on those opportunities. NetJets, the leader in the fractional jet ownership program, was also interviewed for the same purpose. The interviews are presented here to reinforce the findings of the research and analysis, but also to provide a local perspective by those who are currently involved in operations at the Airport.

Interview with Michael Rice, Hangar Operations Manager, Aerodyne Aviation

Mr. Rice believes there is great opportunity for basing and servicing corporate jet aircraft at Renton. He said he gets calls "all the time" from owners who want to base at Renton and/or fly into Renton for quick access to the east side of Lake Washington and the Seattle Metropolitan Area.

There are two primary requirements to make this happen: (1) improved instrument approach capabilities, and (2) better facilities and services designed for this market.

Renton will not be able to handle all corporate aircraft because of the relatively short runway length compared to Boeing Field. It can handle aircraft the size of Challengers and Falcons but is too short to allow aircraft such as Lear 55s and G200s to take off with full fuel. He has had a couple of owners of these types of aircraft interested in using Renton Airport but they backed off

when they found that they could not fill the fuel tanks and meet the runway takeoff distance requirements.

Still, he believes there is sufficient demand from owners of other types of jet aircraft to warrant the investment in improved facilities. At the time of the major earthquake several years ago, there were 30 corporate jet aircraft parked at Renton including seven at the Aerodyne facility. This demonstrates the ability of the airport to handle these types of aircraft.

Better fueling is a major requirement, especially a self-serve fuel facility that can be operated on a 24/7 basis. It has to be located without interfering with ramp movements. Existing fuel services need to be improved in order to attract the users who want on-demand service.

Aerodyne would be willing to build a corporate jet hangar if the approach issue is resolved and if the City actively promotes attracting corporate jet business. He would prefer to let the private sector develop the hangar facilities and manage them on leased land. He thinks that would provide the best level of services to the customers that, in turn, would make Renton more competitive with Boeing Field. The key issue is how they can negotiate with the City to get the land they need and build the facilities. Long-term land leases would be required.

Ramp B would be an excellent location for a corporate jet center. While it is closer to the residential areas on the west side of the field, the airport's relations with its neighbors have gotten a lot better over the past few years.

He agrees that the airport could support higher uses such as a completion or modification center, as well as additional aviation-related manufacturing.

A final observation was that the City needs to move quickly to position itself in this market to avoid losing customers to other airports.

Interview with Diane and Bernie Paholke, Owners of Pro-Flight Aviation, Inc.

Diane Paholke began by saying the market for jet traffic at Renton was not as great as some believed, but then said if the City would let them, they would greatly expand/consolidate their

presence at Renton for corporate jets. They would like to expand facilities so they could perform jet maintenance and have more hangar space for overnight airplane storage. They would double their number of employees, from 15 to 30 (living wage jobs). The market is there, but everyone should realize that the jet business would grow gradually, not overnight.

Limitations to jet traffic at Renton:

- An instrument approach with lower visibility minimums is needed. That rainy day, they had a jet decide not to land at Renton. That meant the loss of $1200-$1400 in jet fuel sales and the rental of four cars. During the winter, 4 – 7 times per month, jets planning to come have to divert to another airport due to poor weather. When that happens, Pro-Flight has to quickly arrange for catering and limos at the other airport.
- The 5,000' runway length is too short for some aircraft.
- Better water and snow removal from the runway by the Airport is needed.
- Lack of a jet maintenance facility discourages some customers. Having a jet maintenance facility at the airport increases the confidence factor for jet operators and allows aircraft maintenance to occur when aircraft while waiting for its passengers.

Since the City used to discourage jet traffic at the airport, they have had to market themselves. Their target is businesses on the east side of the metro area, where it is faster to get to/from Renton than Boeing Field, because of traffic congestion on the highways.

The key to the corporate jet market is customer service. They guarantee getting the passenger from the plane to the road within 3 minutes. They have the lav cart, catering, on-site rental cars (Enterprise and Hertz), limo service, weather service, pilot lounge (sleeping/showers), 20+ services that corporate aviation might request (e.g., dishwashing, gift shopping, laundry), security "clearance" (personnel cleared for greeting VIPs), and ground support equipment (not deicing capability). They have the equipment, personnel, and procedures that Net Jet specifies for its preferred vendors, although they have not taken NetJet's training. "NetJets likes Pro-Flight."

They thought the City doesn't realize that an aviation business like theirs has a very low profit margin. The City does not realize how much of an asset a corporate-friendly airport is for economic development (new business establishment). Some of their corporate customers are the major business enterprises in Renton.

When asked, they commented that better directional signage is needed to the airport, particularly from the east. (That route avoids some road congestion, which is why customers use Renton.) However, they did not see this as discouraging business—more importantly, customers need to know that Renton is ready to provide the facilities, services, and customer focus that corporate aviation wants.

They felt the noise issue had been put to rest through advisory committee work and flight pattern/procedure changes for noise abatement. They thought jet traffic would not lead to more noise complaints.

When asked about the flight school, they said business has been steady and didn't really decline after 9/11. Flight training activity depends on clear weather. They did not perceive of any problems with congested airspace that might discourage training activity in the future.

Interview with Dave Wunsch, AirO Aviation

He started off by saying that the key to any business expansion at Renton was to get a good instrument approach, agreeing that an ILS system was not practical and a GPS WAAS system would be the best substitute. He felt that most of the business jet market would come from Boeing Field, with some transfer of the existing fleet but also a larger share of future growth. He said that corporate jet aircraft represented the future for the Renton Airport.

In the past, local operators would fly an instrument approach into Boeing Field to let down below the clouds, then break off and "scud run" over to Renton. Boeing Field controllers do not like pilots to do that and it is not a practical solution for promoting the airport to corporate pilots.

Certain aircraft will always go to Boeing Field because the runway at Renton does not allow them to take off with full fuel loads. However, there are many companies in the Kent Valley that have contacted him about basing aircraft at Renton or using it for itinerant operations. It will be important to attract the based aircraft as they require more long term services and pump more money into the local economy.

He also feels there is an opportunity for more of the high-end helicopter operations at Renton Airport. He has talked with several of the news organizations that base their helicopters at Boeing Field and two of them are considering relocating to Renton. One of the main requirements will be to have good self-serve fueling capabilities.

AirO uses helicopters for film crews, powerline wire pulling, fire work, and fish & game operations. Having more helicopters based at Renton would increase revenues to the airport.

A major requirement will be to build a corporate jet hangar. AirO would consider doing that if the approach issue is resolved and the market opens as a result. Asked whether the City should build a hangar or leave it to the private sector, he said they could "go either way". What is important is the service.

He raised an issue of whether the building setbacks on some of the newer facilities are sufficient to allow a precision approach to Renton. He cited specifically the building used by NW Seaplanes at the north end of the field. This needs to be reviewed as part of the process of trying to get a GPS WAAS approach.

Interview with Kurt Boswell, Ace Aviation

Ace Aviation would like to expand into higher-end business but is constrained by the location of the building and the configuration of the ramp area, especially the intrusion of the fence for the Boeing Parking lot into the area in front of their facility. He said they serviced a Pilatus PC 12 turboprop aircraft and were able to get only 1 ½ feet of clearance from each wing. He would like to tear down the existing building and build a more modern facility to service Learjets, Citations and other larger aircraft but needs to resolve the access issues. Instead, he has had to downsize because of the constraints on his operations.

He said that aircraft are presently coming over to Renton and finding that there are not adequate services. Especially needed are maintenance and fueling services.

He pointed out that corporate pilots frequently pick which airport they will use in a metropolitan area and they want "red carpet" services, not hanging around in a dilapidated old building. He believes there is huge potential if the right kinds of facilities and services can be provided.

If a good land development plan can be provided that removes the constraints, his goal is to create the architectural plan for new buildings that will provide the kind of facility he needs. He stressed that the ability to move aircraft around safely is very important.

Regarding who should build and manage the facilities, he believes the private sector should do it. He said that it would be tough for the City to manage larger hangars or condominium hangars, in part because of liability issues. These operations require full-time oversight on a 24/7 basis. If the City does construct and manage hangars, they might charge a fee that would cover the costs of these full-time services.

The airport would be improved if a long-term plan is made to tear down all of the old "junk" and replace it with more modern facilities. The Renton Airport does not have the image of a modern executive jet center and needs to develop that. He said that Galvin Flying Services at BFI does about $20 million per year and that brings a lot of money into the community.

He feels that an emphasis on corporate jet traffic will actually improve relations with neighbors because of the enhanced sound suppression systems being used on modern jet aircraft, especially as they move from Stage 3 engines to Stage 4 engines. He said the Stage 4 engines do not make enough noise to be heard over the freeway traffic.

Interview with Al Ball, Airport Specialist with NetJets

NetJets has a fleet of about 500 business jets and more customers than all other fractional ownership programs combined.

NetJets is not using Renton Airport much because their customers are not requesting to go to the airport. NetJets' database shows an old approval for their Hawker 1000. There are no negative notes about service at the airport, no weight bearing issues (their largest aircraft is the 737), and runway length is adequate for their fleet, except perhaps for an international, heavily loaded flight. They would use the airport at night if the Visual Approach Slope Indicators

(VASIs) are operational. The lack of a precision approach would not keep them from using the airport if a customer lives or works nearby. A control tower and firefighting capability are other features that are nice, but would not keep them from using an airport if lacking.

They go to Boeing Field often and have noticed times when aircraft parking capacity there was marginal. Several times he repeated that the number one reason for not using the airport is that customers have not requested going there, but he noted some things they like:

- With Customs there, Renton might be used as a fuel stop from overseas origin.
- They get maintenance done at the appropriate aircraft service centers (such as Cessna), but might use local mechanics for minor work such as a light bulb change.
- Hangar storage.
- Branded fueler, indicating some standards are met for QA and training. They contract through Mercury a lot.
- A "showcase" FBO facility is not important because the owners aren't there often. However, it is good to:
    - Have an aircraft parking plan
    - Transport passengers efficiently to and from the plane
    - Have attentive line service people
    - Clean restrooms
    - Tasteful, comfortable waiting area for about 18 people
    - Decent façade
    - Commercial refrigerator (for temperature control and keep away from employee nibbling)
    - Crew area separate from FBO employees
- They require safety cones for aircraft to protect from dings
- Line service training is important—towing, aircraft movement areas, wing-walkers, marshallers

They have FBO standards and provide quarterly training to FBOs to explain their standards, their scheduling system, etc.

Other information:

- Their 500 airplanes are continually out-based (not based at a particular location), although there is more NetJet aircraft density at the maintenance bases than at other locations.
- They will buy microjets like the Eclipse if they can make money from them. They are considering them for training (pilots with lower hours) and to get into airports with short runways.
- Every year they buy 6-8 aircraft per jet manufacturer, although they have a multi-year order for 100 Hawker XP aircraft. They have ordered the Citation CJ3, but are waiting for certification.
- Their minimum runway length is 3500' for Citation Ultras. The Ultra fleet is getting old. Microjets might be a good substitute.
- They put 1,000 hours per year on their aircraft, about five times what a normal operator would.
- The Marquis program (Marquis card with as few as 20 hours a year) is their biggest customer now.
- In February, FAR Part 91K will come out. It will allow charter operators to use 80% of runway length instead of 60% of runway length (Part 135). The idea is to level the field between charter operators and fractional ownership programs.
- NetJets spends about $50-70 million in charters annually, mostly around Thanksgiving when they don't have enough aircraft in the fleet to serve their customers.

Interview with Shane Carlson, NW Seaplanes

The first part of the discussion focused on the existing seaplane operations at Will Rogers/Wiley Post Memorial Seaplane Base. He observed that there had been a fairly active business of air charter and air taxi operations prior to 2001, with published scheduled flights to the San Juan Islands operated by Sound Flight. At one time there were 14 aircraft operating in this market. Sound Flight has since cut back and the number of aircraft has declined. However, he said that this market appears to be coming back.

NW Seaplanes operates five Beaver aircraft, mostly flying customers to/from fishing camps in British Columbia during a two-month season. About 90% of their business is international, so they make use of the US Customs facilities at the airport.

He feels that there is an opportunity to attract increased market share to Renton, with 10% or more being attainable. Renton offers a better location to serve the growing industrial and residential areas of the south and east sides of the Puget Sound area than either Lake Union or Kenmore Air Harbor.

The major issue is dealing with the noise complaints. When they are operating their air charters, their planes all tend to leave at once. They typically receive a sustained level of complaints during that period. Mitigating the noise complaints will be a major factor in expanding the business at Renton.

When asked about the option of only using turbine-powered aircraft to reduce noise, he said the costs would not be justified by the returns. He cited the cost to overhaul a piston engine on a Beaver as being $25,000 while the cost to overhaul a turbine engine on the same airplane is $200,000. However, changing the engine does not increase the number of seats or the load capacities so there would be no revenue gains to the operator.

He also said there needs to be a quality FBO on the field to service seaplanes if Renton is to attract an increased share of the air commuter business. He said there are many people who live on the islands or the Olympic Peninsula who fly to the Seattle area on Monday mornings and return home on Fridays who would use Renton if those services were available.

In discussing the suitability of developing the old restaurant site into a seaplane terminal with a restaurant, he cited stringent setback requirements as making the site too small to be practical. He said that combining that site with some of the land leased by NW seaplanes could create a suitable site. He stated that a suitable facility would combine a terminal with the US Customs operations, with rest rooms, a waiting area, and possibly a small restaurant.

He said that the biggest question is how much the City would be willing to support expansion of the seaplane operations at Will Rogers/Wiley Post. Without elaborating, he said that there would need to be ways to reduce the risk for investing in expansion of the facilities and the operations.

Interview with Todd Banks, Kenmore Air Harbor

Kenmore Air Harbor has its major seaplane base at the north end of Lake Washington. At Renton, they have a maintenance hangar and rebuild planes, mostly Beavers, for selected customers such as John Nils Nordstrom. They also install avionics and are interested in building this business at Renton as a full-service avionics shop for all customers. They are especially looking at conversions to glass panels as a mainline business. The firm currently has about 170 employees, although some of these are seasonal.

Kenmore Air Harbor also owns EDO Floats. While the floats are made in China, they are shipped to Seattle and installed on aircraft at Renton and the north Lake Washington facility.

Todd said that there is great potential to develop a seaplane base at Renton. He said there are as many potential customers for the south end of Lake Washington as there are for the north, where Kenmore Air Harbor is located. A seaplane base at Renton would shift some existing customers, but would also create new business from new customers.

The primary services required are people to handle the aircraft, getting them into and out of the water. There needs to be some specialized equipment for seaplane handling in addition to just a ramp. Kenmore would expand its maintenance operations if a viable seaplane base were built and additional aircraft were based there.

To address the noise issues at Kenmore Air Harbor, the firm has maintained a community outreach program to involve their neighbors in decisions. A major factor in gaining their support (or lack of opposition) was scheduling departures and arrivals during hours that were acceptable to them:

Weekday departures – not earlier than 7:30 a.m.
Weekend departures – not earlier than 8:30 a.m.

The latest evening arrivals are all scheduled between 8:00 p.m. and 9:00 p.m.

The firm is converting to all turbine aircraft for its air charter and scheduled air taxi operations. They are using 10-passenger turbine Otters for many of their routes, and have already converted two of their Beaver aircraft to turbine engines, which has allowed them to add two

extra seats. He said that they have worked with the FAA to obtain a time-between-overhauls (TBO) of 6,000 hours on the turbine-powered aircraft compared to only 1,600 on the piston-powered aircraft. That difference, plus the higher passengers loads, makes the costs of turbine aircraft virtually the same as those for piston aircraft.

The turbine aircraft are significantly quieter and produce far fewer noise complaints than the piston aircraft.

In concluding remarks, he said that the Renton Airport has the capability to develop similar to Hillsboro Airport in Oregon or Skagit County Airport in Washington, with a strong cluster of general aviation service facilities along with industrial plants that use aircraft in their businesses. While the airport is currently underutilized, it could be a much more vibrant component of the Puget Sound aviation economy.

Interview with Clyde Carlson, NW Seaplanes/San Juan Airlines

NW Seaplanes is affiliated with San Juan Airlines, a scheduled carrier that provides services from several Puget Sound airports such as Boeing Field, Bellingham, and Anacortes to the San Juan Islands and other destinations in the Northwest. They currently carry about 50,000 passengers per year from all their departure points. While they have authority to operate out of Renton, they are not using Renton as a base at this time. They are very interested in establishing a base at Renton if the right kinds of facilities can be built.

Their Renton facility services the San Juan Airlines planes and does some rebuilding/ conversion of seaplanes. The firm has about 50 employees.

In discussing opportunities for the old restaurant site, he said that the site is too small to stand alone after the setback requirements are met. He would be interested in combining a lease on that property with his existing adjacent lease to create a larger site. This could accommodate a terminal facility, with customs, as well as a maintenance hangar and one or two leased hangars to other tenants. There could also be a small “airport café” that would attract fly-in business as well as general customers who want to see the seaplane action.

NW Seaplanes would be interested in developing the site and operating the FBO, leasing space to Kenmore Air Harbor for their operations; or, they would be willing to lease space from Kenmore if they were to build the facility and operate the FBO. He said that either option would be acceptable, subject to terms that would make it financially viable.

He ran through some numbers to indicate the economic benefits to the City of Renton from this kind of operation. He said the cities where they have base operations currently receive a combined $1 million per year from the FAA and from passenger facility charges (PFCs). Major portions of their capital investments have also been financed by FAA grants. He believes that Renton would qualify both for grant funding and for fee-based revenues. At the present time, he said that Renton benefits from "thousands of people" who stay overnight in Renton prior to catching flights out of Boeing Field.

In regard to noise issues, they follow a plan similar to Kenmore Air Harbor, with no departures before 7:00 a.m. on weekdays and 8:00 a.m. on weekends. Their latest arrivals are scheduled for 8:00 p.m. on weekdays and 9:00 p.m. on weekends. They only operate charter flights to/from fishing camps in British Columbia out of Renton during about a two month season.

NW Seaplanes is already converting their Beaver aircraft to turbines, in part for noise reduction. On their piston aircraft, they have been installing wing vortex generators (VGs) and making other modifications to reduce noise. He thinks they can mitigate the issues by working closely with their neighbors, similar to what Kenmore has done.

He would be receptive to an arrangement whereby the City builds an FBO and terminal facility and leases the whole package either to NW Seaplanes or Kenmore. He said the advantages would be lower cost of money, but, more importantly, ability to get FAA financing. He would like to work with the City to make something happen in the near future.

RENTON MUNICIPAL AIRPORT DEVELOPMENT STUDY

DEVELOPMENT METHOD OPTIONS REPORT

This report discusses the investment options for redeveloping Renton Municipal Airport. First, it presents a financial evaluation of three options for developing one parcel at the airport and then discusses the impact of such development on the airport budget. Although maximizing revenue to the airport sponsor (the City of Renton) is very important, there are other criteria for deciding on a development method. This report lists the advantages and disadvantages of public vs. private investment. The report concludes with lessons learned from other airports' development experience and a description of development restrictions applicable to Renton Municipal Airport.

Comparative Financial Evaluation

Any specific development that the City might consider undertaking with public funds would need a thorough financial feasibility analysis. However, a rough analysis of a potential development that the City might undertaken is presented here. The type of facility analyzed was a "jet center" Fixed Base Operator (FBO). The jet center scenario was chosen because the Market Demand Report recommended focusing on corporate aviation and the airport lacks a first-class jet center to serve corporate aviation. The 4.4-acre Ramp B area was considered for the analysis because it is the largest parcel currently available. Three scenarios were analyzed for developing the Ramp B area:

1. Ground Lease with Private Capital Investment
2. Facility Lease with Public Capital Investment
3. Contract Operation with Public Capital Investment

All three scenarios include the following:

- The development analyzed is a jet center (60,000 square foot building covering about 30% of the land). This size is probably the maximum that might be considered for the site.
- The analysis does not include costs for site improvements.
- The scenarios examine a 20-year time period.

Scenario 1 approaches development in the manner it occurs now, with the City leasing land for a private entity to develop. The City could issue a Request for Proposal (RFP) with specific qualifications for the responding business, such as services, equipment, staffing, building uses, and minimum building size. These qualifications would be consistent with but more detailed and restrictive than the airport's Minimum Standards for Commercial Service Providers, since the goal is to provide a first-class executive jet center.

With Scenario 2, the City builds the FBO facility and issues an RFP for a tenant, with specific requirements for the business' services, equipment, and staffing to ensure operation of a first-class jet center.

With Scenario 3, the City develops the FBO facility and contracts with an operator rather than leasing to a tenant. The City's contract fee would be a share of the operator's gross revenue. The City would also issue an RFP similar to Scenario 2.

Table 1 shows the results of the financial analysis. Scenario 3 provides the highest net revenue to the City over a 20-year period, while Scenario 2 provides the highest net revenue at the end of 10 years. For the first two years, Scenario 1 provides the highest net revenue, but over a longer period of time, Scenario 1 provides the least amount of revenue to the City. As might be expected, Scenario 1 also provides the lowest financial risk.

Table 1: Net Revenue to the City ($) – Three Scenarios for Developing Ramp B

Time Period	Scenario 1 Ground Lease Private Investment	Scenario 2 Facility Lease Public Investment	Scenario 3 Contract Operation Public Investment
Year 1	31,550	18,975	-16,400
Year 2	32,497	26,606	-3,830
Year 3	33,472	34,466	9,417
Year 4	34,476	42,452	23,377
Year 5	35,510	50,901	38,086
Year 6	36,575	49,490	53,584
Year 7	37,673	68,337	69,911
Year 8	38,803	77,449	87,110
Year 9	39,967	86,835	105,229
Year 10	41,166	96,502	124,312
10-yr Cumulative	361,689	552,013	490,794
Year 20	55,324	210,649	382,030
20-yr Cumulative	847,769	1,708,959	3,041,791

Scenario 1 – Ground Lease with Private Capital Investment

Assumptions specific to Scenario 1 are as follows:

- The lease is based on 50% of the total ground area (4.4 acres), representing 30% for the building footprint and 20% for the apron.
- The lease rate is $.33 per square foot with an annual Consumer Price Index (CPI) escalation, which is the current ground lease rate at the airport.
- The annual CPI escalation is assumed to be 3%.

The annual revenue for the City would be $31,550 the first year, growing to $55,324 in the 20th year. Under a straight ground lease with the above assumptions, the Ramp B site would produce $361,689 in cumulative revenues over a 10-year period and $847,769 over a 20-year period.

The advantage of this scenario is that there would be low costs and low risk to the City. After the costs of preparing the site, all revenues would be net to the City. Another advantage to this scenario is that the City will not have to increase current staffing levels or otherwise modify the management structure of the airport.

A disadvantage to this scenario is that the City will have less control on the lessee with a long-term lease and a reduced ability to use the airport to further City objectives.

Scenario 2 – Facility Lease with Public Capital Investment

Assumptions for Scenario 2 are as follows:

- The City would construct a 60,000 square foot hangar (120 feet by 500 feet) and lease it to an FBO for an executive jet center.
- The building cost would be $2.7 million ($45 per square foot).
- The City's cost of money would be 6%.
- With a 20-year amortization period, the annual amortization cost would be $235,400 per year.
- Land rent would be included in the building amortization.
- The total cost to the lessee would be the building amortization plus a return of 6% to the City on the value of the land.
- Lease rate would be $254,375 in the first year ($235,400 + $18,975 as 6% return on value of land), which equals $4.24 per square foot per year for building area.
- A 3% CPI increase would be built into total lease rate.

Table 2 presents the gross revenue the City would receive from the facility lease and the net revenue after the bond payment.

Table 2: Scenario 2 - City Revenue ($) for Ramp B Development

Time Period	Revenue from Lease	Net Revenue
Year 1	254,375	18,975
Year 2	262,006	26,606
Year 3	269,866	34,466
Year 4	277,962	42,452
Year 5	286,301	50,901
Year 6	284,890	49,490
Year 7	303,737	68,337
Year 8	312,849	77,449
Year 9	322,235	86,835
Year 10	331,902	96,502
10-yr Cumulative	2,906,123	552,013
Year 20	446,049	210,649
20-yr.Cumulative	6,416,959	1,708,959

The lease would be triple net (NNN), whereby the tenant would pay all costs for maintenance. The net revenue to the City is shown as being cumulative $552,023 after 10 years and $1,708,959 after 20 years during the last year of bond repayments.

While Scenario 2 produces approximately twice the amount of net revenue as Scenario 1, it involves the risk of loss of revenue if the tenant should fail. It also does not include the costs of developing the site or the costs of the financing, other than interest. A disadvantage of this scenario is that staffing of the Airport Office may need to be increased. An advantage of this scenario is that the City has a greater degree of control over the lessee as a building lease period is typically shorter than a ground lease with no public investment in facilities.

Scenario 3 – Contract Operation with Public Capital Investment

Scenario 3 assumes the City constructs the 60,000 sq. ft. hangar and contracts with an operator rather than leasing the building to a tenant. It assumes the City's contract fee is 10% of the gross revenues, which increase by 5% per year. The operator's first year of gross revenue is assumed to be $3 million. As Table 3 shows, Scenario 3 produces $490,794 in net revenues for the City at the end of Year 10, but this increases to $3,041,791 at the end of Year 20. Under this scenario, the City is benefiting from the 5% increase in revenues while holding the costs of bond amortization constant. Also, costs to the City for operating expenses are held to a 3% annual escalation.

Table 3: Scenario 3 Financial Evaluation for Ramp B Development ($)

Time Period	Gross Revenue	City Gross Revenue	Debt Service	Operating Expenses	City Net Revenue
Year 1	3,000,000	300,000	235,400	81,000	-16,400
Year 2	3,150,000	315,000	235,400	83,430	-3,830
Year 3	3,307,500	330,750	235,400	85,933	9,417
Year 4	3,472,875	347,288	235,400	88,511	23,377
Year 5	3,646,519	364,652	235,400	91,166	38,086
Year 6	3,828,845	382,885	235,400	93,901	53,584
Year 7	4,020,287	402,029	235,400	96,718	69,911
Year 8	4,221,301	422,130	235,400	99,620	87,110
Year 9	4,432,366	443,237	235,400	102,608	105,229
Year 10	4,653,985	465,399	235,400	105,687	124,312
10-yr Cumulative	37,733,678	3,773,368	2,354,000	928,574	490,794
Year 20	7,580,851	758,085	235,400	140,655	382,030
20-yr Cumulative	99,197,864	9,919,786	4,708,000	2,169,995	3,041,791

As with Scenario 2, the major risk is that the operator will default or that the growth of revenues will be less than 5%. However, the assumptions seem reasonable in forecasting gross operating revenues of $4,653,985 in Year 10, considering that Galvin Flight Services at Boeing Field is estimated to do about $20 million per year in business.

Many airports charge FBOs an amount based on their revenue. It is very important from the airport's viewpoint to apply the % fee to gross revenue rather than to net revenue to avoid the circumstance where profit is well hidden by creative accounting. Some airports negotiate a fee with an FBO that has two parts—one part is a flat fee that can escalate with time but is considerably lower than rent, and the other part is a percentage of the FBO's gross revenue.

Impact on Airport Budget

Currently, the airport is a self-contained enterprise fund (402) in the City. The airport is now financially self-sufficient and does not require subsidy from the City's general fund. Based on 2001 information and excluding FAA grants for capital improvements, annual airport revenue is about $778,000--$691,000 from leases, $7,000 from fuel flowage fees, and $80,000 from investment interest. Annual operating expenses total $686,000. The airport fund has a capital reserve of $2 million. It appears likely that the airport fund could support short-term losses on publicly funded development such as Scenario 3. In Scenario 3, the first year's loss to the City was less than $20,000, and by Year 3, there was a net gain.

If the four parcels identified as available in the Market Report were ground-leased, the City would realize nearly $50,000 in net revenue the first year, as shown in Table 4. It appears that a development strategy that combines public development for certain parcels and ground leases for others could ensure that the airport remains financially self-sufficient.

Table 4: Net City Revenue ($) for Ground Leases of Four Available Parcels

Time Period	Parcel 820 77,101 sq. ft.	Parcel 770 47,916 sq. ft.	Ramp B 191,214 sq. ft.	Restaurant Site 82,764 sq. ft.	Total Annual Revenues
Year 1	12,722	7,906	31,550	49,658	49,658
Year 2	13,103	8,143	32,497	51,148	51,148
Year 3	13,496	8,388	33,472	52,683	52,683
Year 4	13,901	8,639	34,476	54,363	54,363
Year 5	14,318	8,898	35,510	55,891	55,891
Year 6	14,748	9,165	36,575	57,568	57,568
Year 7	15,190	9,440	37,673	59,295	59,295
Year 8	15,646	9,724	38,803	61,074	61,074
Year 9	16,115	10,015	39,967	62,906	62,906
Year 10	16,599	10,316	41,166	64,793	64,793
10-yr Cum.	145,840	90,635	361,689	569,378	569,378
20-yr Cum.	341,836	212,444	847,769	1,334,440	1,334,440

Assumptions:

- *Except for the restaurant site, initial annual rental rate is $.33 per square foot per year with annual 3% CPI increases. Assuming the lease rate represents 10% of the land value, this values the land at $3.30 per square foot, which is below market value for commercial/industrial property in Renton but comparable to rates at Boeing and Paine Fields.*
- *The restaurant site is valued higher to represent prime commercial land in the Renton area. At a value of $6 per square foot and a 10% annual return in the lease rate, the property should be leased for $.60 per square foot per year with annual 3% CPI increases.*
- *Parcel 820 requires tearing down the former Boeing Avionics Building and cleaning up the site. Ramp B requires removing Boeing fueling stations and other equipment at the site. These demolition and cleanup costs are unknown and have not been included.*

Note: It is not expected that all these properties will be leased in Year 1. The calculations are intended to show the revenue potential of the properties when they are leased.

Public vs. Private Investment – Advantages and Disadvantages

The primary options for investing in the redevelopment of Renton Municipal Airport are public investment or private investment. A third option, a public/private partnership, maximizes the advantages of the other two options.

Renton Municipal Airport has been developed through both public and private investment. The City has developed infrastructure, such as airfield improvements and roads, while private tenants developed the facilities from which they conduct aviation-related businesses. Some of the utility distribution systems were developed by Boeing, although the City is now extending utilities improvements on portions of the west side of the airport.

There are various public, private, and public/private organizations that could take planning, development, and/or management responsibility for redeveloping Renton Municipal Airport. This report assumes that the City of Renton will continue to own and manage the airport, but may take a more active role in developing and managing airport facilities. Refer to the 2002 Airport Business Plan for more information about airport management options and leasing condition options, such as reversion.

The following lists of advantages and disadvantages of public and private investment at airports were prepared from literature research and interviews with a cross-section of airport sponsors.

Public Investment

Public investment options include using the airport fund's capital reserves or using City general funds. The City could provide matching funds for federal and state grants. The airport receives $150,000 annually as an apportionment (non-primary entitlement) of the Airport Improvement Program (AIP) administered by the FAA. However, landside development for revenue generation is generally ineligible for AIP grants. The City might issue revenue or general obligation bonds. Revenue bonds are repaid with revenue generated by the improvement and are the most likely means for City financing of new development at the airport.

Advantages of using public investment in airport development include:

- The public airport sponsor can obtain lower cost financing than a private entity.
- The sponsor does not have to pay ad valorem taxes, as a private entity would.

- If done efficiently, the project cost is lower because the profit and "middleman" are cut out.
- The sponsor has more control over the development than if it were a private investment. Retaining a high level of control over the airport helps ensure public access is maintained and public policy is implemented, facilitates using the airport as an economic development tool for the community (e.g., prioritizing jobs over profit), and makes it easier to control the quality and type of facilities available.
- Tenants are not required to make a large capital investment.

Disadvantages of using public investment in airport development include:

- Funds or bonding capacity used at the airport are not available for other investments that have public benefit. Revenue in excess of the bond payment is restricted to aviation use.
- The airport may not be able to retain its financial self-sufficiency.
- Risk is associated with any development, and public bodies are less likely to assume financial risk than private developers. The sponsor risks risking default by the tenant or an inability to find a tenant. As events such as 9/11 have shown, the aviation industry can be subject to severe economic stress.
- Project financing and implementation is usually slower than with private investment.
- In addition to the capital costs, the airport sponsor has more maintenance and operating costs and responsibilities than private development on a ground lease.
- If the City developed all of the properties, the City would need to increase current staffing levels at the airport to properly manage this new level of responsibility.
- Criticism that it is inappropriate for a public entity to compete with private enterprise is avoided.

Private Investment

Advantages of using private investment in airport development include:

- Project financing and implementation would most likely be faster.
- Market viability is surer than with public investment.
- The cost to the public airport sponsor is negligible. Renton Municipal Airport has existing tenants and others with access to financing and who are willing to develop parts of the airport at no cost to the City.

Disadvantages of using private investment in airport development include:

- It requires a significant capital investment by a tenant or speculative developer.
- Project cost is higher than with bond financing.
- Enforcement of public policy is harder.
- Reversion clauses and use restrictions peculiar to public airports make financing more difficult to obtain than at off-airport sites.

Lessons Learned from Other Airport Sponsors

At many airports, a combination of development and property management options are employed. For example, Glendale Municipal Airport in Arizona recently developed an 18-acre site with infrastructure for up to 170 hangars. Organizations and individuals lease the land and build their own hangars, with stipulations. At another location on the airport, a private operator developed and manages hangars under a long-term agreement with the airport. Both options appear to be working.

The City of Redmond, Oregon, has bond-financed build-to-suit hangar and office buildings at the USDA Forest Service Redmond Air Center at Roberts Field. According to the airport manager, Carrie Novick, it has worked well. Both buildings have 20-year leases. The hangar cost $1.3 million to build and the City borrowed $1.5 million. The office building cost was the same as the borrowed amount, $1.8 million. Ms. Novick said the City would not make such an investment for a private entity because of concerns about financial default. It would be necessary to retain a contingency of at least one year of bond payments if the tenant were a private entity. A key provision of the lease to the Forest Service is the City's control over structural adaptation and major maintenance. While the tenant agency performs day-to-day janitorial and other maintenance, the City performs all the major work, back charges the tenant, and updates as-built drawings. The City even locks the electrical cabinets in the buildings.

The Renton Municipal Airport Leasing Policy provides for the possibility of offering land to a specific interested party when it is deemed to further development of the airport, instead of issuing an RFP for competition. Clinton County, New York, has learned many lessons from a proposal to redevelop a portion of a closed military base (Plattsbugh ARB) into a public airport.

The County was approached by a developer who offered to make a $230 million investment and promised to create thousands of jobs in return for exclusive development rights for 99 years, 30 years of tax abatement, and other incentives. Although the development company was local, credible, financially stable, and had experience with many large-scale retail developments, it did not have airport development experience or a feasible business plan. The deal fell through. The Chairperson of the County Legislature, James, R. Langley, Jr., recommended the following to airport sponsors who might be solicited by similar redevelopment proposals:

- Get expert and thorough review of proposal documents.
- Question every detail of the proposal, including financing, proposed tenants, and the company's history.
- Request help from the FAA.
- Get all proposals and agreements in writing.
- Retain control. Establish your vision for the airport and issue RFPs and RFQs based on your vision.
- Have the guts to make a decision.
- Keep the media and general public informed.

Currently, Clinton County has submitted letters of inquiry to eight developers/managers for input in how the military airport should be redeveloped.

Development Restrictions

The redevelopment of Renton Municipal Airport is subject to restrictions in a number of documents, reviewed below.

Airport Improvement Program Grant Assurances. When the City receives grant funding from the FAA for capital improvement projects, it must agree to a number of grant assurances for 20 years after the grant is received. Those most relevant to the subject of this report are:

- The sponsor must not unjustly discriminate among users. There are just reasons for discriminating, such as charging different rates because of different property values or different types of use.
- The sponsor must not impose different rates for the similar use of similar facilities.

- The sponsor must not restrict public use of the airport or access to the facility unreasonably. This does not mean fencing off the airfield for safety or security reasons; it refers to limiting the type of aviation activity, except for a valid reason such as limiting aircraft over a certain size or weight because the airfield cannot accommodate them.
- The sponsor cannot grant an exclusive right for the aeronautical use of the airport. For example, a sponsor could not guarantee that a single FBO could monopolize business at the airport. There are airport markets that do not have business for more than one supplier of a certain service. Also, an airport might lack sufficient available land or facilities for a competing business to establish and meet the airport's minimum standards. An airport in that circumstance may need to review the minimum standards to ensure they are not too restrictive or may need to expand or reconfigure the airport to provide space for business competition.

Deed Restrictions. Because the airport was transferred to the City as surplus federal property, it is subject to restrictions similar to grant assurances, but without the 20-year time limit.

Airport Master Plan and Airport Layout Plan. The FAA-approved Airport Layout Plan (ALP) is the document that, among other things, makes airport improvement projects eligible for grant funding. Renton's Airport Master Plan, last updated in 1997, provides the justification for the ALP. The Land Use Plan included in the ALP shows the landside areas of the airport designated for terminal area (the northwest end near the seaplane dock), aircraft manufacturing (those areas leased by Boeing at the time), and general aviation (all other areas outside the airport operations area). The 1997 Airport Master Plan called for the relocation of the majority of Boeing's operations from Apron C on the west side to the southeast corner of the airport. This strategy was devised before Boeing began downsizing and should be revisited. Airport Management has indicated that the FAA has a grant of $150,000 available in FY 2005 for updating the Airport Layout Plan and that work should be underway by Spring 2005.

Airport Business Plan. Completed in 2002, the Airport Business Plan provides a number of recommendations accepted by the Renton Airport Advisory Committee and approved by the City. Several have been implemented, included formulating a leasing document, updating the Minimum Standards and Airport Rules and Regulations, tackling the noise issue, improving the main entrance to the airport, developing a security plan, and improving airport perimeter security. The Business Plan includes a vision for the airport's future that is not entirely

consistent with the Market Demand Report conclusion about the corporate jet market. The vision in the Airport Business Plan is to continue targeting the current aircraft fleet mix and to focus on the private pilot.

Leasing Policies and Leases. The City Council adopted the current Leasing Policy on December 9, 2002. Having such a policy and rigorously applying it protects the City from charges of unjust discrimination or of granting exclusive aeronautical rights. Several clauses in the Leasing Policy refer to development being consistent with the Airport Layout Plan or the Airport Master Plan, underlying the importance of having these documents aligned with current conditions and City objectives.

Rules and Regulations & Minimum Standards for Commercial Service Providers at Renton Municipal Airport. This document was updated in July of 2004, but has not yet been approved by the City Council. It contains many important requirements to ensure safety, high quality aviation services, and compliance with the grant assurances.

State Constitution. Washington State's Constitution requires the City to ensure that it receives fair market value for its property with a prohibition against using the credit of the public sector to aid the private sector. In addition, state law prevents leases longer than 75 years under any leases longer than 75 years under any one lease.