APPENDIX D: SH&E FORECAST OF OPERATIONS FOR 2007

Portland Part 150 Update

Prepared for:

City of Portland

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OVERVIEW

As part of the effort to conduct a Part 150 Update of Portland International Jetport's Noise Compatibility Plan, SH&E was retained under subcontract to HMMH to develop a five-year forecast of aircraft operations. This forecast for the year 2007 was prepared for an analysis of aircraft noise impacts, and it provides a foundation for the analysis of the future impacts of various noise abatement alternatives. This report documents the forecast development effort and summarizes the assumptions underlying the activity projections.

In preparing this forecast, SH&E has analyzed current trends in aviation at both the local and national levels. The events of September 11th have had profound impacts on the aviation industry, and these impacts have been considered to ensure that the future activity projections reflect these fundamental shifts. The plans of the carriers operating at Portland have also been considered, both in terms of aircraft orders and in terms of likely carrier strategies at Portland itself.

The 2007 forecast considers four distinct categories of operations:

- Scheduled air carrier or air taxi operations;
- Cargo operations;
- Charter operations; and
- General aviation (GA) operations.

The forecast of scheduled operations is a top-down projection that first considers the growth in scheduled passenger activity. Historic passenger trends are examined, and the impacts of September 11th are analyzed in greater detail. Based on this analysis, a five-year forecast of commercial passenger activity is developed. Historic load factors are also examined, and load factor projections are then used to translate the five-year commercial passenger forecast into a forecast of seats.

The second phase of the scheduled operations forecast considers the fleet mix at Portland. Once again, historic trends are examined, most notably the recent increases in regional jet activity and the changes in fleet planning since September 11th. By examining these trends and considering the plans of those carriers currently operating at Portland, a forecast of the future scheduled commercial fleet mix is developed. This forecast describes how the projected passengers are likely to be served, and provides the fleet level detail required for noise impact modeling.

In developing the projections of nonscheduled activity, cargo, charter, and GA operations are evaluated separately. For cargo operators, the current operations and fleet plans of Portland cargo carriers are considered. Recent GA activity statistics are examined to identify whether the impacts of September 11th have influenced operations at Portand. Historic trends in charter activity are also examined to assess the role of charters at Portland and how that role has changed over time. Finally, the non-scheduled and scheduled forecasts are combined, and are converted into a forecast of average day operations that can be used in the noise modeling effort. This forecast includes a breakdown of daytime and nighttime arrival and departure operations by INM type to provide the necessary input for the noise impact modeling.

SCHEDULED PASSENGER FORECASTS

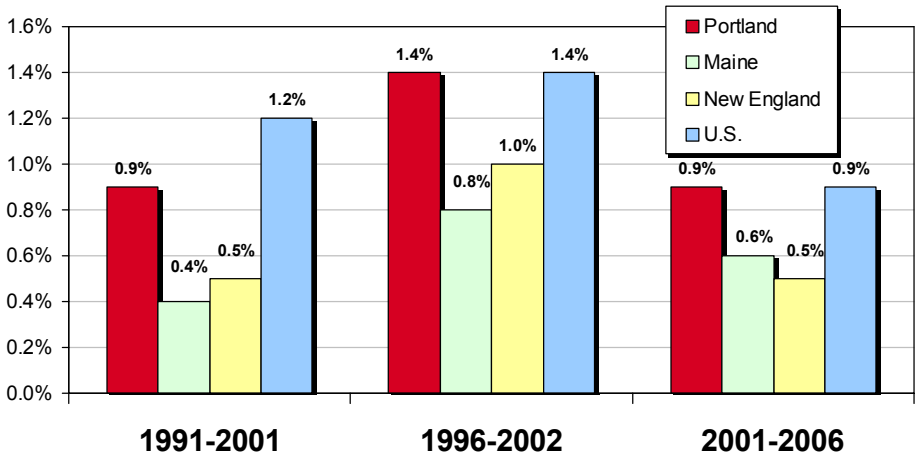
The scheduled passenger services offered by air carriers are driven by the demand for those services, so a forecast of Portland passenger demand is developed before attempting to forecast operations.

Socioeconomic Characteristics

Passenger demand at an airport is driven primarily by socioeconomic factors. Areas experiencing rapid growth in population or income levels are much more likely to experience growth in air travel compared to areas with slower population and income growth. Exhibit 1 compares the historic and forecast population growth in Portland with that of the state, the region, and the country.

Exhibit 1

Historic and Projected Population Growth

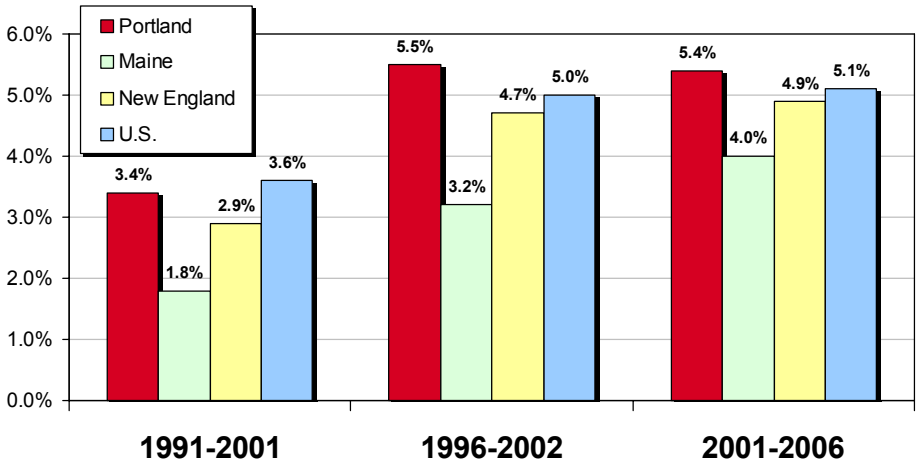


Source: Sales & Marketing Management

Over the past ten years, Portland's population has been growing faster than the populations of Maine and New England, but slower than the population of the US as a whole. In the most recent five-year period, Portland's population growth has matched that of the nation. This trend is expected to continue into the future.

Exhibit 2

Historic and Projected Income Growth



Source: Sales & Marketing Management

Exhibit 2 compares the growth in Portland income with the growth of the state, the region, and the nation. Over the past ten years, Portland has been growing faster than Maine and New England, but slower than the nation. Over the past five years, Portland has been growing faster than Maine, New England, and the US. This higher growth is projected to continue in the future.

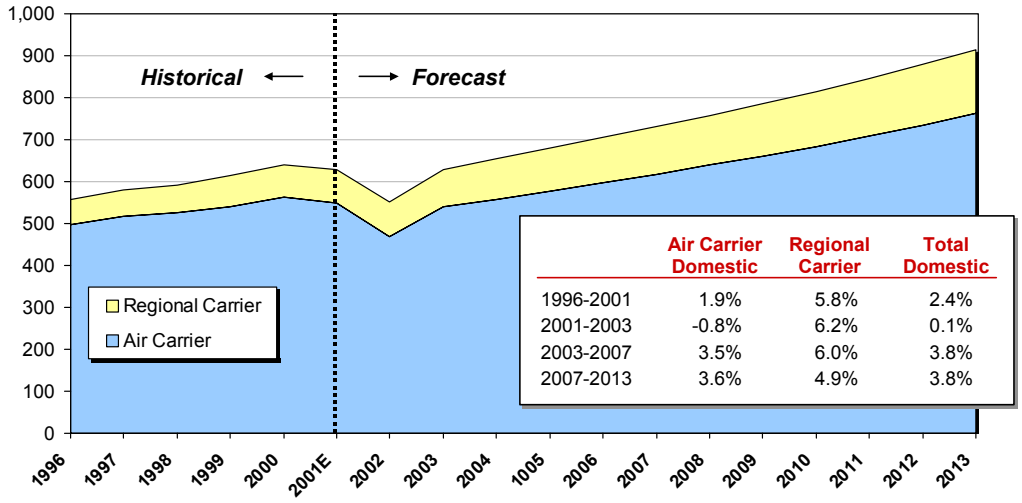
Overall, Portland's population and income have been growing at a rate similar to or slightly faster than the US as a whole. As this trend is expected to continue into the future, it is reasonable to expect that air travel growth in the region will be similar to or slightly faster than national projections.

FAA Forecasts

In March 2002, FAA produced its *FAA Aerospace Forecasts, FY2002-2013* (see Exhibit 3). These forecasts include an assessment of the impacts of September 11th, with the FAA projecting a continued decline in activity through the end of 2002 and a strong recovery in 2003.

Exhibit 3

FAA Forecast of US Passenger Enplanements



	Air Carrier Domestic	Regional Carrier	Total Domestic
1996-2001	1.9%	5.8%	2.4%
2001-2003	-0.8%	6.2%	0.1%
2003-2007	3.5%	6.0%	3.8%
2007-2013	3.6%	4.9%	3.8%

Source: FAA, Aerospace Forecasts, March 2002

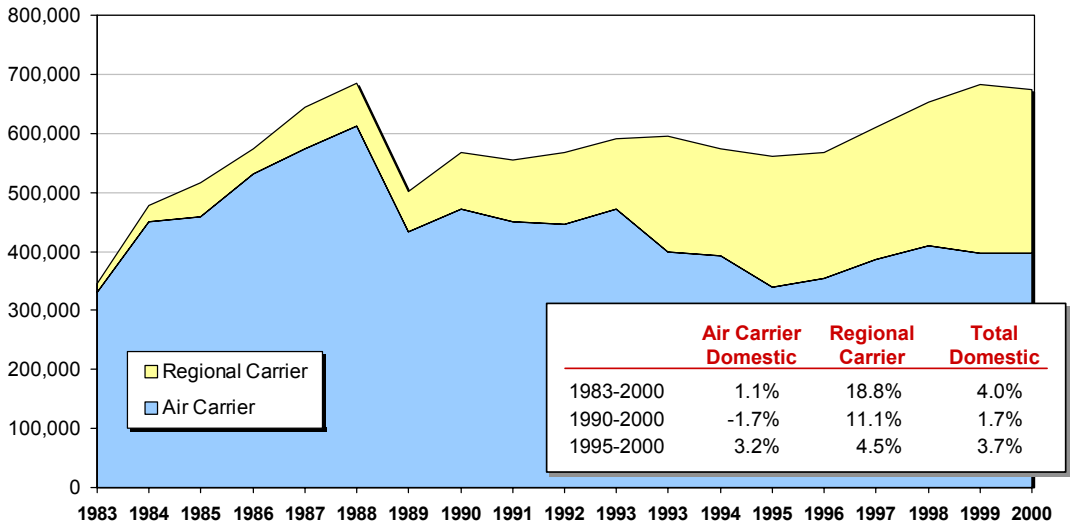
Since the FAA forecasts were developed in March 2002, passenger activity has continued to languish, as has the U.S. economy. Since the economic forecasts underlying the FAA projections assumed an economic recovery beginning in early to mid-2002, the forecast recovery in passenger enplanements will likely be delayed given current national economic conditions.

Historic Growth in Passengers

Exhibit 4 presents the historic growth in passenger enplanements at Portland. Scheduled passenger activity accelerated dramatically throughout much of the 80's, as carriers increased service to Portland during a period of strong economic growth. While Delta had carried the majority of Portland passengers through the early-80's, US Airways, United, and People Express (later Continental) all added significant levels of service in the mid- to late-80's. After a large drop in 1989 as Continental moved towards Chapter 11 (this service was partially restored in 1990), passenger levels stabilized as the economy entered a recession. Since then, passenger growth at Portland has been relatively stable.

Exhibit 4

Historic Annual Scheduled Enplanements at Portland (1983-2001)



	Air Carrier Domestic	Regional Carrier	Total Domestic
1983-2000	1.1%	18.8%	4.0%
1990-2000	-1.7%	11.1%	1.7%
1995-2000	3.2%	4.5%	3.7%

Source: Airport Records, DOT Form 41, Schedule T3, and Part 298/C.

An examination of growth rates shows that over the long term, passenger enplanements at Portland have grown at approximately four percent annually. Between 1990 and 2000, this growth was slower, with a decline in air carrier passengers offset by a large increase in regional airline passengers. This resulted in a slower passenger growth rate of approximately 1.7 percent annually. More recently, passengers grew by 3.7 percent annually from 1995 to 2000, with regional airline passengers growing faster than air carrier passengers.

Impacts of September 11th

The terrorist attacks of September 11th, 2001, have had a profound impact on airport operations, and commercial airline traffic in particular. While new security requirements have increased trip times and trip costs, the traveling public lost some confidence in the safety of the aviation system, resulting in reduced passenger levels. Equally important, poor economic conditions that were exacerbated by the events of September 11th have also acted to depress passenger demand. Nevertheless, historic passenger growth is expected to resume as confidence is restored, security processing is improved, and the economy strengthens. Airlines have reduced schedules to compensate for this lower demand, but the state of the economy and the financial state of the air carriers have resulted in an industry in transition. In this continually changing environment, it is difficult to predict the actions carriers will take; however, it is instructive to look at the changes that have occurred already.

On a national basis, total domestic enplanements are down approximately nine percent compared to the prior year (see Exhibit 5). While the industry has recovered somewhat when compared to the severe cuts immediately after September 11th, passengers have not yet returned to the levels that existed prior to the attacks. In addition, another phenomenon is taking place. While there was a move towards regional jet aircraft prior to September 11th, this trend has accelerated since then, as airlines try to match capacity with lower demand by using smaller regional jets. As evidence of this trend, while air carrier

enplanements are down approximately twelve percent (YTD August 2002 vs. YTD August 2001), regional airline enplanements have actually increased by eight percent.

Exhibit 5

Estimated US Domestic Enplanements (YTD August 2001 and 2002)

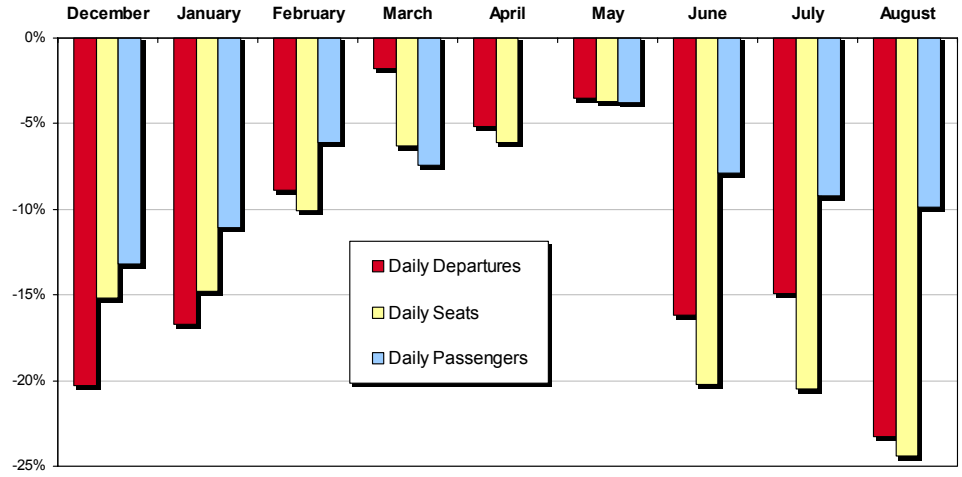
	Enplanements (000)		
YTD August	Air Carrier	Regional	Total
2001	364,274	52,533	416,807
2002	322,495	56,800	379,295
Change	(11.5%)	8.1%	(9.0%)

Notes:
Air Carrier includes all domestic enplanements by ATA airlines.
Regional enplanements estimated based on 1Q '02 vs 1Q '01 from RAA, extrapolated to 8-month figure

Exhibit 6 presents the change in passengers, operations, and seats at Portland on a month-by-month basis, providing an assessment of the changes at Portland compared to prior year activity. While there is some fluctuation, an examination of departures and seats shows that airline schedules were nearly recovered to prior year levels by May 2002. However, airlines at Portland have traditionally increased scheduled activity during the summer months, but did not do so in the summer of 2002. As a result, daily seats and departures in August 2002 were twenty-three to twenty-four percent below August 2001 levels.

Exhibit 6

Changes in Monthly Activity at Portland vs. Prior Year (Dec 2001 - Aug 2002)

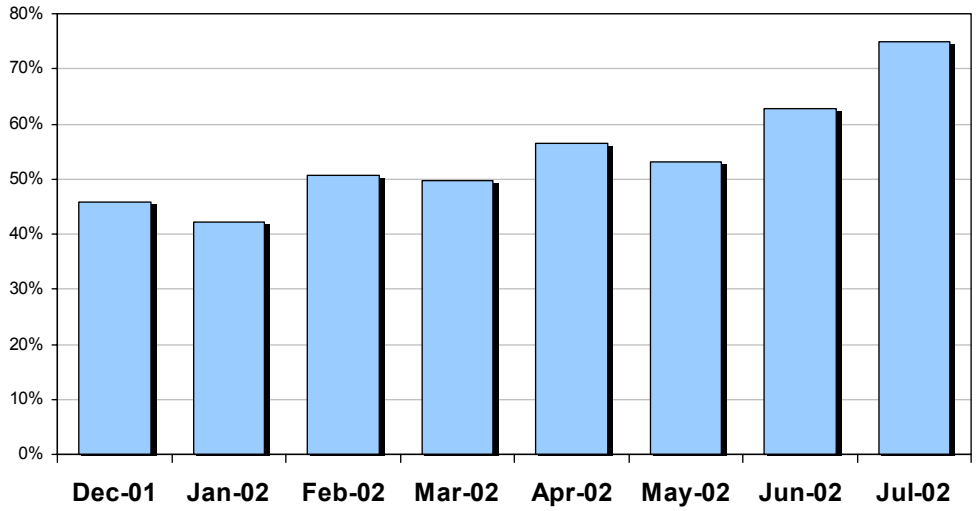


Source: OAG Schedule Tapes, Airport Data

An examination of passenger levels provides more information. By April and May of 2002, passengers had nearly recovered to 2001 levels. However, as airlines did not increase their seats flown during the summer months, passenger loads did not increase as much as they had in prior years. As a result, August 2002 passenger loads were ten percent below August 2001 levels. This indicates a reluctance on the part of airlines to increase schedules prematurely. Airlines are taking a conservative approach to adding capacity in an effort to ensure higher load factors and more profitable flights. This is demonstrated by an examination of Portland load factors on a monthly basis, which have increased steadily and have recovered to pre-September 11th levels. (see Exhibit 7).

Exhibit 7

Estimated Monthly Load Factors at Portland (December 2001 – July 2002)



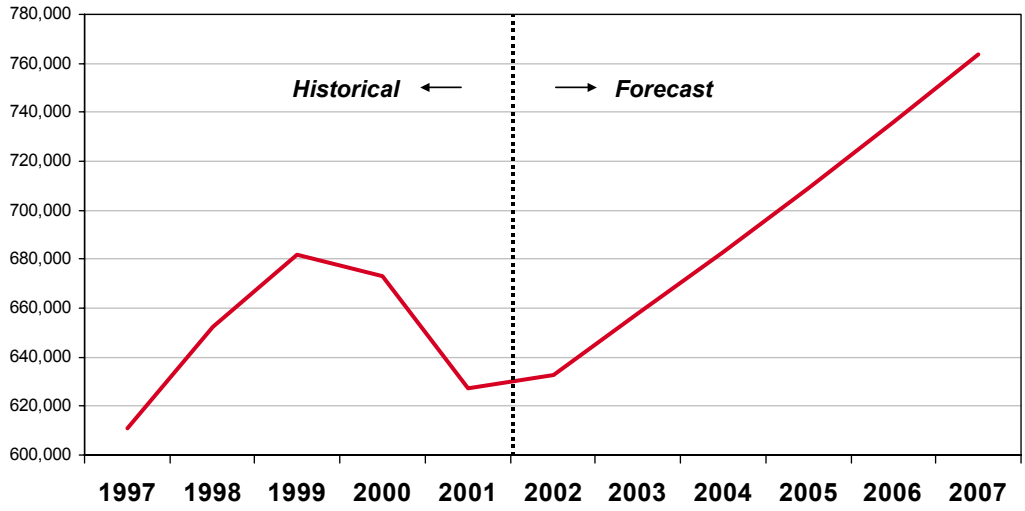
Source: Airport Records, OAG Schedule Tapes

Passenger Projections

In August 2002, Portland passengers were down ten percent while seats were down twenty-four percent (compared to August 2001). While airlines have made additional schedule changes since then, preliminary schedules for November 2002 show that seats are still down by approximately eighteen percent compared to November 2000. This is consistent with a scenario where airlines continue to add scheduled service slowly as they build back towards pre-September 11th passenger levels. Given this evidence of slow schedule and passenger recovery, it is projected that passenger levels in December 2002 will trail December 2000 levels by approximately seven percent and that it will be another full year before passengers recover to the levels experienced before September 11th. This represents a CY 2003 increase of four percent compared to CY 2002 levels, even though CY 2003 passenger levels still lag CY 2000 levels by approximately two percent (see Exhibit 8).

Exhibit 8

Forecast Scheduled Passenger Enplanements at Portland (1997 – 2007)



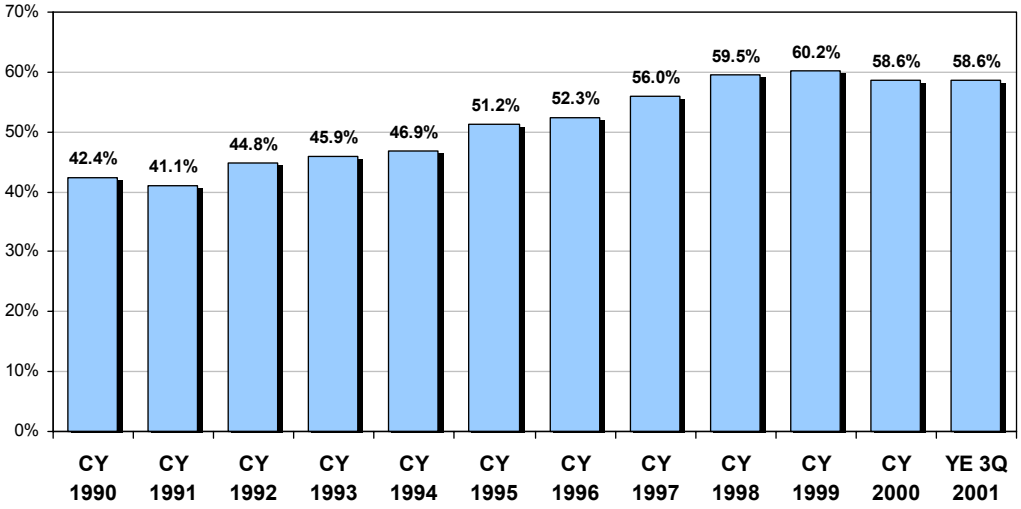
Beyond 2003, it is projected that passenger growth will continue at 3.8 percent. This is the national growth rate projected by the FAA for domestic enplanements from 2003 through 2007. Given that population and income for Portland are projected to grow at or slightly faster than the national rates, this is a reasonable assumption. While the national projection of 3.8 percent growth may seem aggressive in light of the ten-year historic growth rate of 1.7 percent (1990-2000), it should be noted passenger enplanements at Portland grew by 3.7 percent annually from 1995 to 2000, during a period when the introduction of low-fare Southwest Airlines service at Manchester likely diverted some traffic away from Portland.

Load Factor

An analysis of load factor information allows the scheduled passenger enplanement forecast to be translated into seats. As shown in Exhibit 9, load factors in Portland domestic markets steadily increased from 1990 through 1998. Between 1998 and the third quarter of 2001, load factors stabilized, reaching a level of 58.6 percent for the twelve months ending 3rd quarter 2001. While Portland load factors dropped immediately after September 11th, they have already recovered as passengers have increased faster than scheduled seats (refer to Exhibit 8). As a conservative assumption, it is projected that Portland load factors will continue at the pre-September 11th level of 58.6 percent throughout the forecast period, resulting in a forecast of 2.6 million annual scheduled seats for the year 2007.

Exhibit 9

Load Factors in Domestic Portland Markets (CY 1990 – YE 3Q 2001)



Source: US DOT, T100 Database

SCHEDULED PASSENGER FLEET MIX

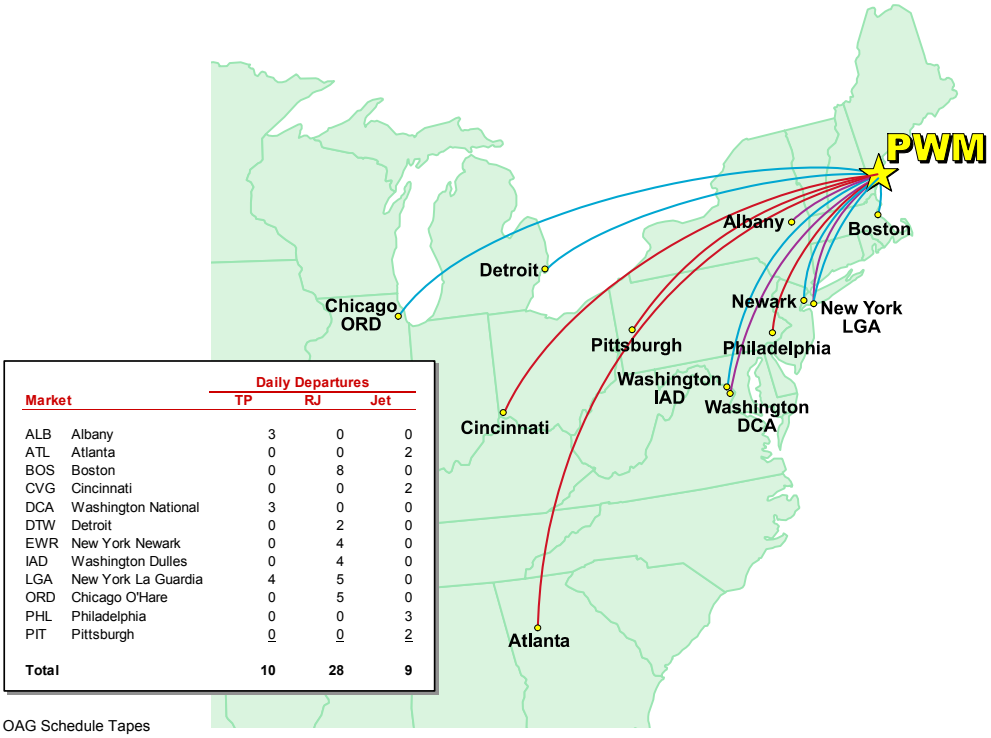
In order to develop a forecast fleet mix for 2007, it is important to understand the characteristics of the services offered at Portland. The carriers serving the airport, the destinations served, and the aircraft used to provide the service are continually being adjusted to market conditions. While services have changed significantly in recent months, historic trends help explain why these changes have occurred.

Current Services at Portland

As shown in Exhibit 10, carriers currently provide a range of services from Portland. Mainline narrowbody jets are used to feed hub markets, with US Airways feeding its Pittsburgh and Philadelphia hub operations and Delta serving its Cincinnatti and Atlanta hubs. Turboprops are used to serve the Continental Connection/CommutAir mini-hub in Albany, and turboprops are also providing US Airways Express point-to-point service to LaGuardia and Washington National. Regional jets provide the majority of service at Portland. They are used to feed hubs (American Eagle to Chicago, Continental Express to Newark, Northwest Airlink to Detroit, and United Express to Chicago), and they also provide point-to-point services to Boston (Delta Connection and American Eagle), LaGuardia (Delta Connection and American Eagle), and Washington Dulles (United Express).

Exhibit 10

Nonstop Destinations Served from Portland (November 2002)



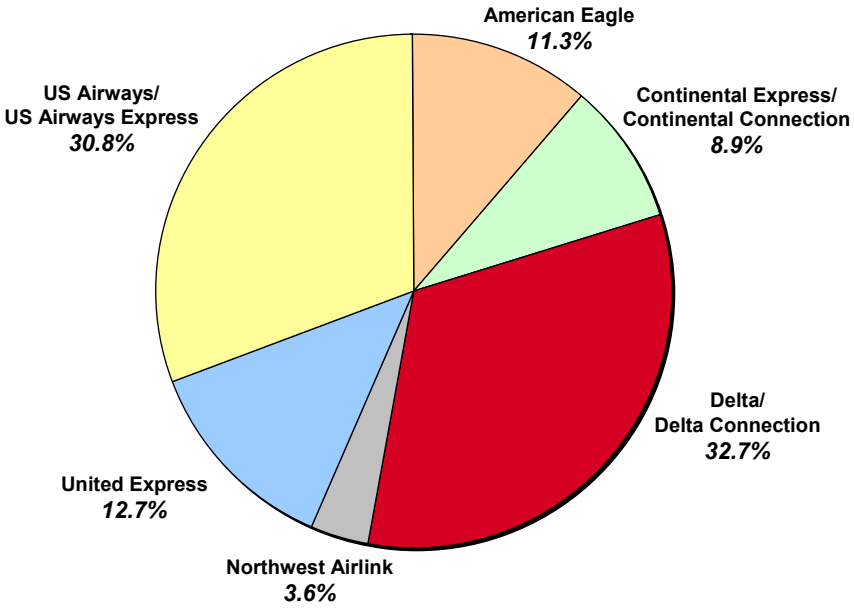
Market		Daily Departures TP	RJ	Jet
ALB	Albany	3	0	0
ATL	Atlanta	0	0	2
BOS	Boston	0	8	0
CVG	Cincinnati	0	0	2
DCA	Washington National	3	0	0
DTW	Detroit	0	2	0
EWR	New York Newark	0	4	0
IAD	Washington Dulles	0	4	0
LGA	New York La Guardia	4	5	0
ORD	Chicago O'Hare	0	5	0
PHL	Philadelphia	0	0	3
PIT	Pittsburgh	0	0	2
Total		**10**	**28**	**9**

Source: OAG Schedule Tapes

No single carrier dominates the Portland market area. Exhibit 11 presents carrier market share in terms of seats flown in November 2002. Delta and US Airways each provide nearly a third of the seats, and are the only carriers currently offering mainline jet service. United Express and American Eagle carry thirteen percent and eleven percent of the seats, respectively, while Continental Express/Continental Connection and Northwest Airlink represent nine percent and four percent of scheduled seats. Given that seven different carrier families and even more regional affiliates provide service from Portland, the fleet plans of all of these carriers are considered in developing the future fleet mix projections for Portland.

Exhibit 11

Share of November 2002 Seats by Carrier



Source: OAG Schedule Tapes

Carrier Fleet Plans

Exhibit 12 presents a profile of the current fleet operating at Portland. The regional jets operated by each carrier are less than five years old on average, and each carrier has additional RJs on order. This indicates that RJs will represent a significant portion of Portland service in the foreseeable future. In contrast, there are no outstanding turboprop or jet orders for the aircraft types serving Portland, and some of these aircraft, such as the Boeing 737-300s operated by US Airways, will be nearing retirement age by 2007. It is likely that turboprops will therefore represent a declining share of forecast operations, and it is possible that some of the existing jet operations in Boeing 737-300s and MD-80s will be replaced by newer aircraft types.

Exhibit 12

Fleet Profile for Portland (November 2002)

ber 2002

Carrier	Aircraft Name	Code	Aircraft Seats	Nov 02 Depts	Mkts Served	Aircraft in Service	Average Age	Total Orders
American Eagle	Embraer RJ135	ER3	37	6	BOS,LGA	40	2.1	0
American Eagle	Embraer RJ140	ERD	44	2	ORD	34	0.6	105
Continental Connection/CommutAir	Beech 1900	BE1	19	3	ALB	27	4.4	0
Continental Express	Embraer RJ145	ERJ	50	3	EWR	136	2.4	4
Continental Express	Embraer RJ135	ER3	37	1	EWR	30	1.9	0
Delta	MD80	M80	142	4	ATL,CVG	120	12.1	0
Delta Connection/ACA Jet	Fairchild 328 Jet	FRJ	32	1	BOS	33	1.4	0
Delta Connection/Comair	Canadair Regional Jet	CRJ	50	6	BOS,LGA	112	4.4	28
Northwest Airlink/Pinnacle	Canadair Regional Jet	CRJ	50	2	DTW	45	1.1	9
United Express/Atlantic Coast	Canadair Regional Jet	CRJ	50	7	IAD,ORD	68	2.2	53
US Airways	Boeing 737-300	733	128	5	PHL,PIT	78	15.2	0
US Airways Express/Colgan	Beech 1900	BE1	19	1	LGA	8	12.1	0
US Airways Express/Colgan	SAAB 340	SF3	34	3	LGA	6	10.8	0
US Airways Express/PSA	Dornier 328	D38	30	3	DCA	32	7	0

Source: OAG Schedule Tapes, AvSoft ACAS

Exhibit 13 summarizes the overall fleet plans of the carriers serving Portland. It is likely that 70-seat regional jets will begin serving Portland as an intermediate step to mainline jet service, and both American Eagle and Delta Connection /Comair have a number of Canadair CRJ-700s on order. While Continental Connection/CommutAir has no plans to shift away from 19-seat Beech 1900s, the plans of US Airways are less clear. The existing US Airways Express carriers at Portland, Colgan Air and PSA Airlines, have no current RJ orders. Nevertheless, US Airways intends to substantially increase its RJ operations, and several US Airways Express carriers, such as Chautauqua, have RJ fleets that are expanding. While some level of turboprop services will likely remain in Portland, the LaGuardia and Washington National markets currently served by US Airways Express turboprops are potential markets for regional jets as their role within the US Airways fleet grows.

Exhibit 13

Fleet Plans of Portland Carriers

Carrier	Aircraft Name	Code	Aircraft Seats	Aircraft in Service	Average Age	Total Orders
American Eagle	Embraer RJ135	ER3	37	40	2.1	0
American Eagle	Embraer RJ140	ERD	44	34	0.6	105
American Eagle	Embraer RJ145	ER4	50	56	3.2	0
American Eagle	ATR 72	AT7	72	25	8.6	0
American Eagle	ATR 42	ATR	47	8	11.3	0
American Eagle	Saab 340	SF3	33	78	10.3	0
American Eagle	CRJ-70	CR7	70	5	0.5	20
Continental Connection/CommutAir	Beech 1900	BE1	19	27	4.4	0
Continental Express	Embraer RJ145	ERJ	50	128	2.4	12
Continental Express	Embraer RJ145-XR	ERJ	50	0	0.0	75
Continental Express	Embraer RJ135	ER3	37	30	1.9	0
Continental Express	ATR 42	ATR	47	24	12.4	0
Delta	MD80	M80	142	120	12.1	0
Delta	Boeing 727-200	72S	148	33	23.3	0
Delta	Boeing 737-300	733	128	18	15.8	0
Delta	Boeing 737-800	738	154	68	1.8	61
Delta	Boeing 757	757	187	121	10.9	0
Delta	Boeing 767-300	763	218	87	9.5	0
Delta	Boeing 767-400	764	287	20	1.4	0
Delta	Boeing 767-200	767	204	12	19.2	0
Delta	Boeing 777	777	277	8	2.5	5
Delta	MD11	M11	314	15	8.6	0
Delta	MD90	M90	152	16	6.8	0
Delta Connection/ACA Jet	Fairchild 328 Jet	FRJ	32	33	1.4	0
Delta Connection/Comair	CRJ	CRJ	50	112	4.4	28
Delta Connection/Comair	CRJ-70	CR7	70	2	0.2	25
Northwest Airlink/Pinnacle	CRJ	CRJ	50	45	1.1	9
Northwest Airlink/Pinnacle	CRJ-44	CRJ	44	8	0.2	67
Northwest Airlink/Pinnacle	Saab 340	SF3	33	13	14.0	0
United Express/Atlantic Coast	CRJ	CRJ	50	68	2.2	53
United Express/Atlantic Coast	Jetstream 41	J41	29	30	7.5	0
US Airways	Boeing 737-300	733	128	78	15.2	0
US Airways	Airbus 319	319	120	58	2.5	3
US Airways	Airbus 320	320	142	16	2.3	21
US Airways	Airbus 321	321	169	28	1.1	13
US Airways	Airbus 330-300	333	266	9	1.9	1
US Airways	Boeing 737-400	734	146	48	12.5	0
US Airways	Boeing 757	757	186	21	11.8	0
US Airways	Boeing 767	767	210	11	13.2	0
US Airways Express/Colgan	Beech 1900	BE1	19	8	12.1	0
US Airways Express/Colgan	Saab 340	SF3	34	6	10.8	0
US Airways Express/PSA	Dornier 328	D38	30	32	7.0	0

In terms of jet services, newer aircraft, such as the Boeing 737-800 and the Airbus A320 are entering the fleets of US Airways and Delta, and may replace some of the existing mainline jet operations by older US Airways 737-300s and Delta MD-80s. When Northwest, Continental, and United offered mainline

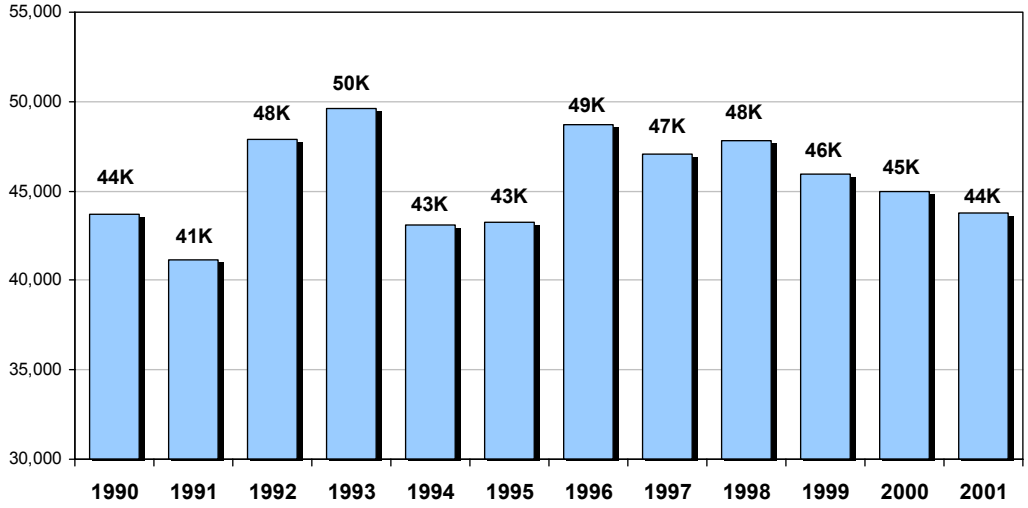
jet services from Portland, they flew DC-9-30s, 737-700s, and 737-500s, respectively. If these carriers resume mainline jet services at Portland, they are likely to do so in similar-sized aircraft. This is reflected in the five-year activity forecast.

Historic Trends at Portland

While aircraft orders provide an indication of the overall fleet mix trends, the shifts are even more apparent when historic trends are considered. As shown in Exhibit 14, scheduled passenger operations at the airport have fluctuated between 41,000 and 50,000 annually since 1990. Given that passenger levels and load factors did not fluctuate as much and exhibited steady growth over the period, it is clear that there were major changes in the service patterns at Portland.

Exhibit 14

Annual Scheduled Operations at Portland Airport (1990 – 2001)



Source: OAG via BACK Associates

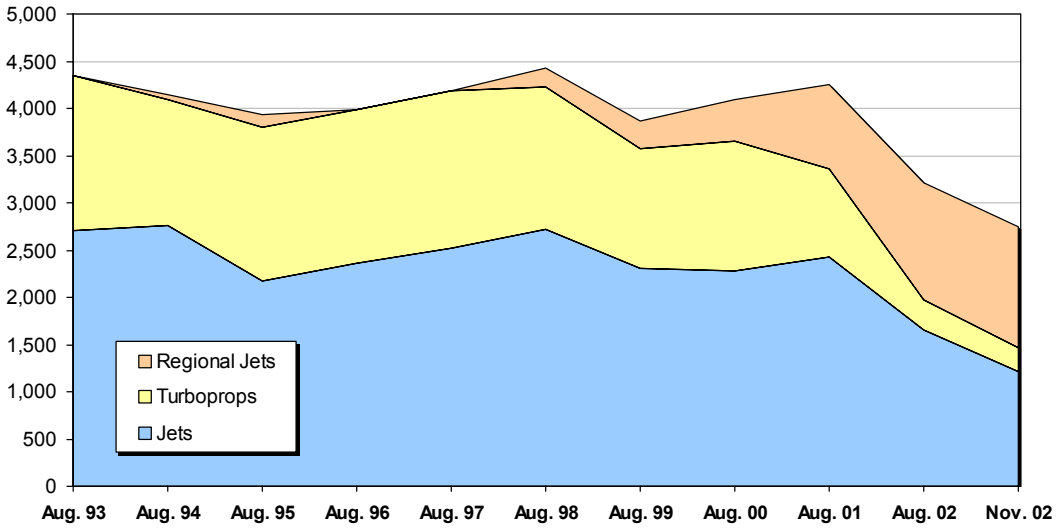
Many smaller turboprop markets that received turboprop service from Portland as little as five years ago – Augusta, Bangor, and Hartford – no longer receive service. Larger turboprop markets, such as Boston – which used to be served with twenty to thirty daily departures – are now served with eight daily regional jet departures. Regional jets have also replaced mainline jet services. Mainline jets used to serve Chicago, Detroit, and Newark from Portland, but now RJs are used to provide this hub feed. This trend towards regional jets is even more apparent when historic seat shares are considered.

Exhibit 15 shows how the share of seats carried by mainline jets, regional jets, and turboprops has shifted over time. Turboprops once carried over forty percent of the scheduled seats at Portland, but today, they represent less than ten percent of scheduled seats. Similarly, while mainline jets peaked at two-thirds of scheduled seats, they represent less than half of November 2002 scheduled seats. These declining turboprop and mainline jet shares indicate the dramatic shift towards regional jets. While these 30- to 50-seat jets represented only eleven percent of the seats as recently as August 2000, they now make up nearly fifty percent of the scheduled seats at Portland.

Exhibit 15

Share of Seats at Portland by Aircraft Category (1993 – 2002)

Projected Fleet Mix for Scheduled Operations



Source: OAG Schedule Tapes

The forecast 2007 scheduled fleet mix is driven by an assignment of seat shares by aircraft class (see Exhibit 16). The key assumptions used to determine the seat shares are described below:

- Turboprop shares are projected to decline further over the next five years, as regional jet services expand and the aircraft continue to replace turboprops in suitable markets such as LaGuardia or Washington National.
- Mainline jets have represented a declining share of seats as regional jets provide hub feed. It is projected that the share of seats carried by mainline jets will decline slightly further. Existing mainline services will be maintained, and some service may even return in markets such as Chicago, Detroit, and Newark. However, it is likely that RJ services will also continue to expand in these markets as carriers add RJ frequency rather than provide infrequent mainline jet service.
- Regional jets are projected to represent an increased share of scheduled seats, as they continue to replace both turboprop and mainline jet services. As 70-seat regional jets

enter carrier fleets, it is expected that some of these aircraft will be operated at Portland, particularly in markets that cannot sustain mainline jet operations at a reasonable level of frequency.

Exhibit 16

Historic and Forecast Seat Shares at Portland by Aircraft Class

Aircraft Class	Share of Departing Seats				
	Aug. 00	Aug. 01	Aug. 02	Nov. 02	CY 2007
Turboprops					
19 Seats and Under	3.5%	5.8%	4.1%	2.8%	2.1%
20-35 Seats	17.5%	8.5%	5.9%	6.9%	2.6%
35-50 Seats	10.9%	7.7%	0.0%	0.0%	0.0%
Over 50 Seats	1.8%	0.0%	0.0%	0.0%	0.0%
Subtotal	33.7%	22.0%	10.0%	9.6%	4.7%
Regional Jets					
All	10.7%	20.9%	38.6%	46.5%	54.3%
Jets					
Under 100 Seats	0.0%	1.8%	0.0%	0.0%	0.0%
100 Seats and Over	55.6%	55.3%	51.4%	43.9%	41.3%
Subtotal	55.6%	57.2%	51.4%	43.9%	41.3%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: OAG Schedule Tapes

Given the forecast seat shares described above and the 2.6 million total annual seats forecast for 2007, the number of average day seats by class was determined, and then translated into operations. Exhibit 17 summarizes the forecast of scheduled operations for 2007 and compares it to the August 2002 and November 2002 schedules as well as the 2002 base year operations compiled by HMMH. Turboprop departures are projected to decline, while jet departures are expected to rebound slightly from current levels. Regional jet operations are projected to increase further, and RJ aircraft size is also expected to increase as 70-seat aircraft enter carrier fleets.

Exhibit 17

Projected Daily Scheduled Departures and Seats by Aircraft Class

Aircraft Class	HMMH Base Avg Day 02	Aug. 02	Nov. 02	2007 Forecast Avg Day 07
Daily Departures				
Turboprops				
19 Seats and Under	7	7	4	4
20-35 Seats	7	6	6	3
35-50 Seats	5	0	0	0
Over 50 Seats	0	0	0	0
Subtotal	18	13	10	7
Regional Jets				
All	24	30	28	42
Jets				
Under 100 Seats	1	0	0	0
100 Seats and Over	13	13	9	11
Subtotal	14	13	9	11
Total	56	56	47	60
Daily Seats				
Turboprops				
19 Seats and Under	124	133	76	76
20-35 Seats	215	189	189	93
35-50 Seats	203	0	0	0
Over 50 Seats	0	0	0	0
Subtotal	543	322	265	169
Regional Jets				
All	1,124	1,240	1,279	1,937
Jets				
Under 100 Seats	94	0	0	0
100 Seats and Over	1,708	1,654	1,208	1,474
Subtotal	1,802	1,654	1,208	1,474
Total	**3,469**	**3,216**	**2,752**	**3,580**

Source: OAG Schedule Tapes

The last step in the scheduled activity forecast is development of a forecast by aircraft type. Based on the carrier orders and options, a portion of the Boeing 737-300s and MD-80s currently serving the airport were replaced by newer 737-800s and Airbus A320s. Similarly, new 70-seat Canadair CRJ-700 operations were incorporated into the RJ mix. The relative numbers of operations by other aircraft types were adjusted based on the seat shares. The forecast scheduled operations by aircraft type are included with non-scheduled activity in Exhibit 22.

NON-SCHEDULED ACTIVITY

Information on non-scheduled activity at Portland is not as readily available as information on scheduled activity, so it is more difficult to analyze local historic trends. Nevertheless, all available information on non-scheduled Portland activity was compiled. This data was supplemented with information on national trends and carrier fleet plans, and information obtained from airport staff.

Cargo

The primary cargo carriers at Portland are Federal Express and Airborne Express, which operate cargo jet services. Federal Express operates ten weekly Boeing 727 roundtrips and Airborne operates five weekly McDonnell Douglas DC-9 roundtrips. These flights generally arrive in the early morning (between 6:00 AM and 7:30 AM) and depart in the evening (between 9:30 PM and 11:00 PM). Both carriers have operated a similar schedule and level of service since 1998. Wiggins Airways and Telford Aviation supplement the jet cargo services with non-jet cargo operations. Wiggins operates Cessna Caravans for Federal Express, and Telford flies Cessnas for UPS. Discussions with airport officials indicate that neither Federal Express nor UPS has plans to expand cargo operations at Portland. In addition, none of the carriers operating at Portland currently have any fleet plans that would result in the replacement of the existing aircraft types operating at the airport. The five-year activity forecast therefore reflects a stable mix of aircraft types and limited growth in the number of cargo operations at Portland (see Exhibit 18).

Exhibit 18

Projected Air Cargo Activity at Portland

Air Carrier	Aircraft Type	Weekly Departures
Jets		
Federal Express	Boeing 727-200	10
Airborne Express	McDonnell Douglas DC9 Freighter	5
Non-Jets		
Wiggins Airways	Cessna Caravan	20
Telford Aviation	Cessna Caravan	9

Source: Airport Data

GA

Exhibit 19 presents the historic GA activity at Portland, separated into local and itinerant operations. Itinerant operations have remained fairly stable at a level between 32,000 annual operations and 39,000 annual operations. In contrast, local operations, which consist primarily of touch-and-go's, have fluctuated between a high of 40,000 annual operations (1997) and a low of 21,000 operations (2000).

Overall, between 1990 and 2000, GA operations at Portland declined by approximately 1.1 percent annually.

Exhibit 19

Historic GA Activity at Portland (1990-2001)

Calendar Year	General Aviation		
	Itinerant	Local	Total
1990	38,836	24,647	63,483
1991	38,102	26,779	64,881
1992	37,593	31,681	69,274
1993	37,375	33,946	71,321
1994	34,649	32,451	67,100
1995	34,311	37,489	71,800
1996	31,715	32,961	64,676
1997	33,417	40,011	73,428
1998	37,320	34,075	71,395
1999	38,371	35,055	73,426
2000	35,453	21,118	56,571
2001	34,704	27,310	62,014
Average Annual Growth			
1990-1995	-2.4%	8.7%	2.5%
1995-2000	0.7%	-10.8%	-4.7%
1990-2000	-0.9%	-1.5%	-1.1%

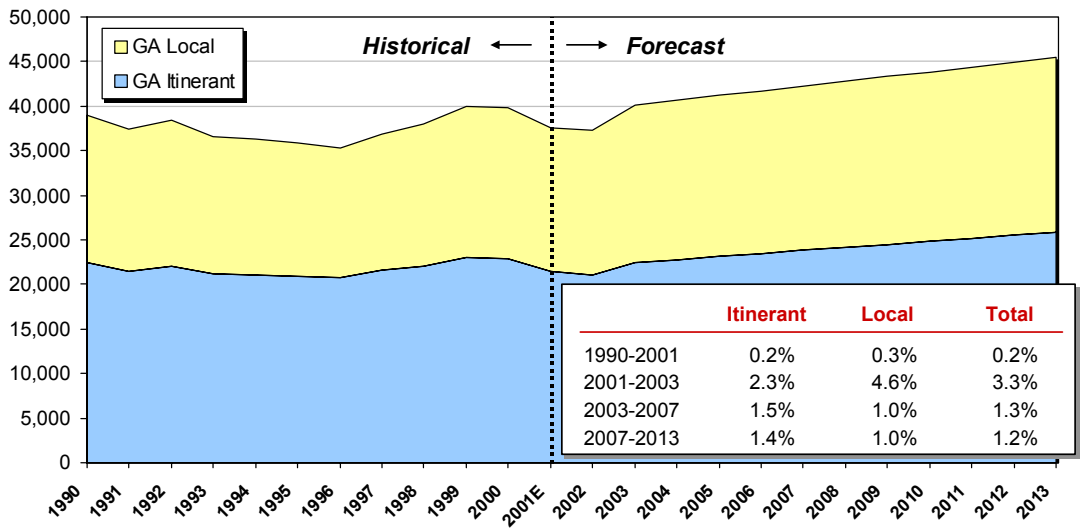
Source: FAA ATADS - Air Traffic Activity Data System

In comparison, Exhibit 20 presents historic and forecast GA operations for the US as a whole. From 1990 to 2001, GA operations increased at a rate of 0.2 percent annually. Between 2003 and 2007, the FAA forecasts that GA operations will grow more rapidly, with itinerant operations increasing by 1.5 percent annually and local operations increasing by 1.0 percent annually. While FAA forecasts a large increase in operations between 2002 and 2003, this is due to an increase in the number of reporting towers in the FAA statistics rather than actual operations growth.

Exhibit 20

FAA Forecast of U.S. General Aviation Operations (000)

p ( ) p



	Itinerant	Local	Total
1990-2001	0.2%	0.3%	0.2%
2001-2003	2.3%	4.6%	3.3%
2003-2007	1.5%	1.0%	1.3%
2007-2013	1.4%	1.0%	1.2%

Source: FAA, Aerospace Forecasts, March 2002.

One bright spot in the national outlook for general aviation is that the events of September 11th have actually spurred growth in business/corporate jet activity. While this market segment has been growing faster than others in recent years, some airports have experienced substantial increases in corporate jet activity since the terrorist attacks. For example, at Hanscom Airport, a GA reliever for Logan, an increased number of business/corporate travelers are considering business/corporate jets and fractional ownership programs. As a result, GA jet activity at Hanscom is currently forty to sixty percent higher when compared to pre-September 11th levels.

An examination of monthly GA activity statistics indicates that these large increases have not occurred at Portland. Through July 2002, FAA records indicate GA operations have declined by fifteen percent compared to the first seven months of 2001, producing activity levels that more closely resemble those experienced in the year 2000.

Given that GA activity has declined while national activity has increased, it is reasonable to forecast a Portland GA growth rate that is slower than national projections. The 2002 GA fleet mix used in the base year noise modeling analysis includes the following:

- 20,700 touch-and-go's;
- 47,000 GA local and itinerant operations;
- 1,300 helicopter operations; and
- 410 military operations.

Of the GA local and itinerant operations, sixty-one percent are piston aircraft, twenty-two percent are corporate jet aircraft, and seventeen percent are turboprop aircraft. In order to produce a GA fleet mix projection for 2007, separate growth rates are projected for each category of operations.

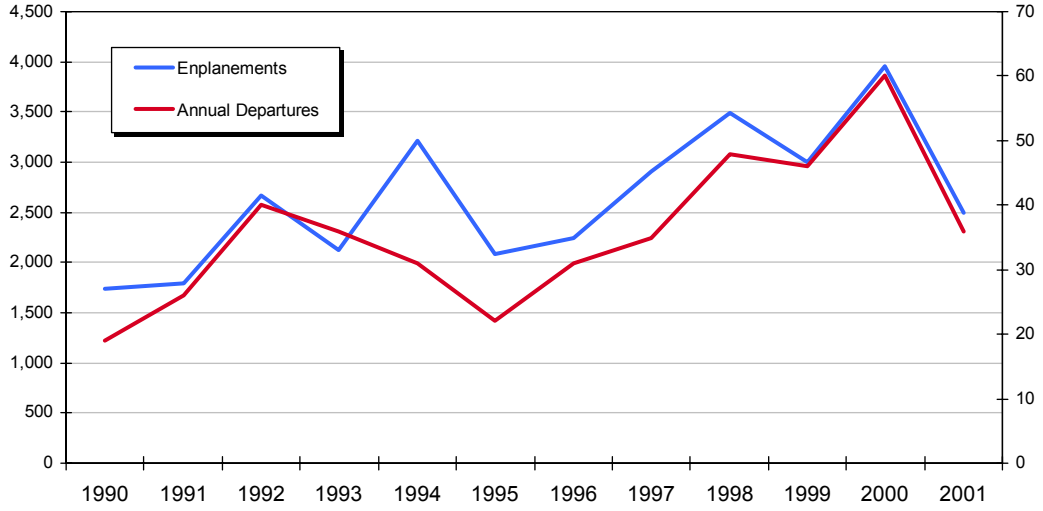
Portland touch-and-go's are forecast to grow at 0.5 percent annually, one-half the FAA's projected rate for local operations. Local and itinerant piston, turboprop, and jet operations are projected to increase at 0.5 percent, 0.4 percent, and 3.1 percent respectively. These represent half of the FAA national forecast growth rates for flight hours of each aircraft type. Helicopter and military operations have been assumed to remain steady at the 2002 base year level throughout the forecast period. For each category of GA operations, the detailed fleet mix by aircraft type developed for the base year from the May 2002 radar sample is maintained.

Charter

Non-scheduled charter activity makes up a very small portion of Portland operations. As shown in Exhibit 21, Portland has historically handled less than 4,000 annual nonscheduled passenger enplanements and sixty or fewer annual nonscheduled departures. Since charter operations have fluctuated historically, it is assumed that in 2007, there will be thirty-six annual charter departures, the average annual level from 1990 to 2001.

Exhibit 21

Nonscheduled Enplanements and Departures from Portland (1990-2001)



Source: US DOT, Form 41

A closer examination of 2001 data shows that three carriers – American Trans Air, Spirit Airlines, and Ryan International – each operated approximately one-third of the nonscheduled Portland departures. Forecast charter operations were therefore distributed evenly among common charter aircraft types used by each carrier – the Boeing 737-800, the McDonnell Douglas MD-80, and the Boeing 737-400. Miami Air, which did not fly at Portland in 2001 but has flown some operations in 2002, also flies the Boeing 737-800.

FORECAST SUMMARY AND DERIVATIVE FORECASTS

Exhibit 22 summarizes the complete 2007 forecast of annual operations by aircraft type. For noise modeling purposes, these types are converted into INM types, and the operations are disaggregated

further into arrival and departure operations and into daytime (7:00 AM to 10:00 PM) and nighttime (10:00 PM to 7:00 AM) operations. Within each aircraft category and class, day/night splits are projected to remain consistent with 2002 base year percentages.

Exhibit 22

2007 Forecast of Annual Portland Operations by Aircraft Type

Scheduled, Cargo, and Charter Aircaft	Annual Operations
Scheduled Air Carrier and Air Taxi	
Turboprop	
Beech 1900	2,920
Dornier 328	730
Saab 340	1,460
Subtotal	*5,110*
Regional Jet	
Canadair CRJ-200	13,432
Canadair CRJ-440	1,460
Canadair CRJ-700	730
Embraer RJ-135	5,110
Embraer RJ-140	5,110
Embraer RJ-145	3,358
Fairchild 328JET	1,460
Subtotal	*30,660*
Jet	
Airbus A320	2,086
Boeing 737-300	2,920
Boeing 737-800	626
McDonnell-Douglas MD-80	2,086
Subtotal	*7,717*
Air Carrier Total	*43,487*
Cargo	
Jet	
Boeing 727-200 Freighter	1,043
McDonnell Douglas DC9 Freighter	521
Subtotal	*1,564*
Piston	
Cessna Caravan	3,024
Subtotal	*3,024*
Cargo Total	*4,589*
Charter	
Jet	
Boeing 737-400	24
Boeing 737-800	24
McDonnell Douglas MD-80	24
Charter Total	*72*
Total Operations - 2007	**99,540**
Touch-and-Go's	
Beech 58 Baron	3,266
Cessna 172 Skyhawk	8,014
Cessna 206 Skywagon	1,935
Cessna 208 Caravan	5,050
Piper PA-32 Saratoga	3,024
Total Touch-and-Go's	**21,289**

General Aviation Aircraft	Annual Operations
GA	
Piston	
Beech 58 Baron	4,989
Cessna 172 Skyhawk	12,241
Cessna 206 Skywagon	2,956
Cessna 208 Caravan	4,614
Piper PA-32 Saratoga	4,619
Subtotal	*29,420*
Turboprop	
Cessna 441 Conquest	1,787
DeHavilland Dash 6	1,825
DeHavilland Dash 8	3,689
Lockheed L-188 Electra	684
Shorts 330	76
Subtotal	*8,062*
Jet	
Cessna Citation III	564
Canadair Challenger	391
Cessna Citation	478
Cessna Citation X	87
Dassault Falcon 20	87
Dassault Falcon 9000	782
Gulfstream G-IIB	87
Gulfstream G-IV	217
Gulfstream G-V	174
IAI 1125 Westwind Astra	130
Learjet 25	912
Learjet 35	4,950
Mitsubishi MU-300 Diamond	3,300
Subtotal	*12,158*
Military	
KC-135 Stratotanker	224
Lockheed C-130 Hercules	186
Subtotal	*410*
Helicopter	
Bell 206L Longranger	1,342
Subtotal	*1,342*
GA Total	*51,392*