

HIO MASTER PLAN UPDATE

Planning a Shared Future

Planning Advisory Committee Meeting #2
May 4, 2017

HILLSBORO AIRPORT MASTER PLAN UPDATE

Welcome and Introduction

Jerry Willey, Committee Chair

Anne Presentin, Envirolssues

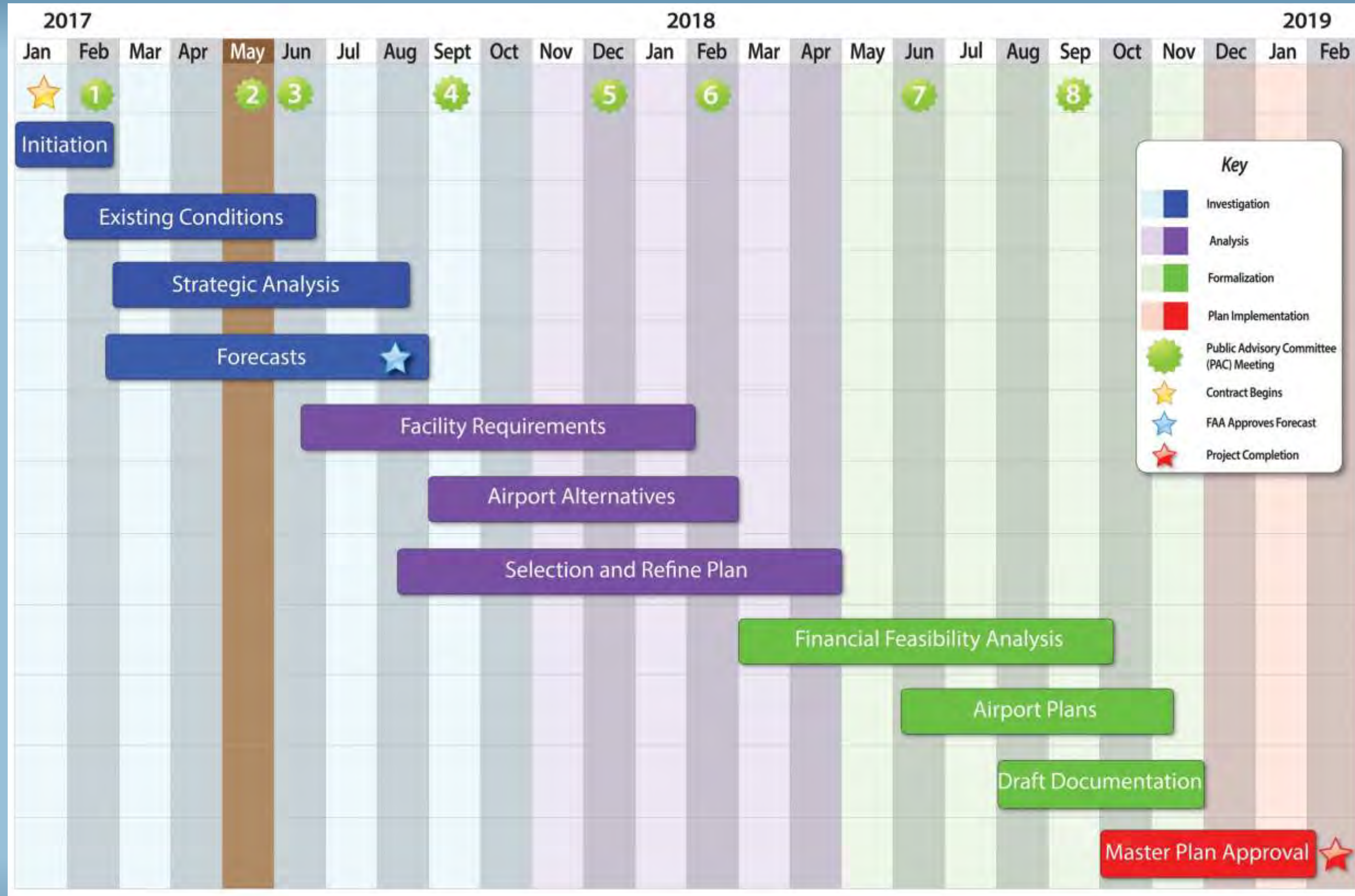


Agenda

- Welcome and Meeting Introduction
 - Process/Schedule/Review of PAC 1
- Hillsboro Airport Business Report
- Focus Topic: Role of the Airport/Strategic Analysis
- Small Group Discussion
- Public Comment
- Draft Community Involvement Plan
- Focus Topic: Inventory
- Preview Topic: Aviation Demand Forecasts
- Close Out and Meeting Evaluation



Project Schedule



HILLSBORO AIRPORT MASTER PLAN UPDATE

Hillsboro Airport Business Report

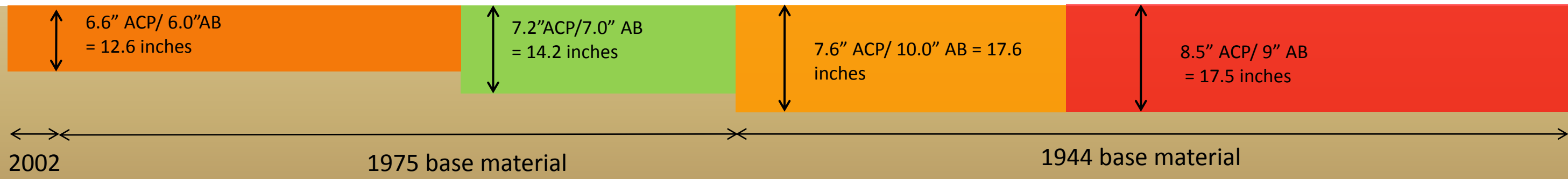
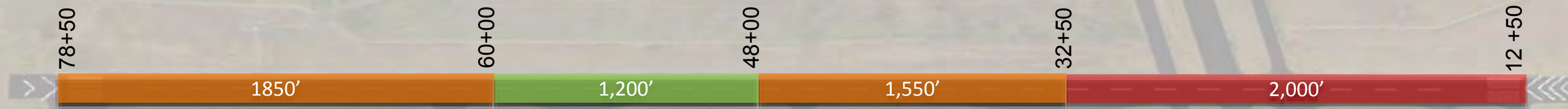
Steve Nagy, Port of Portland



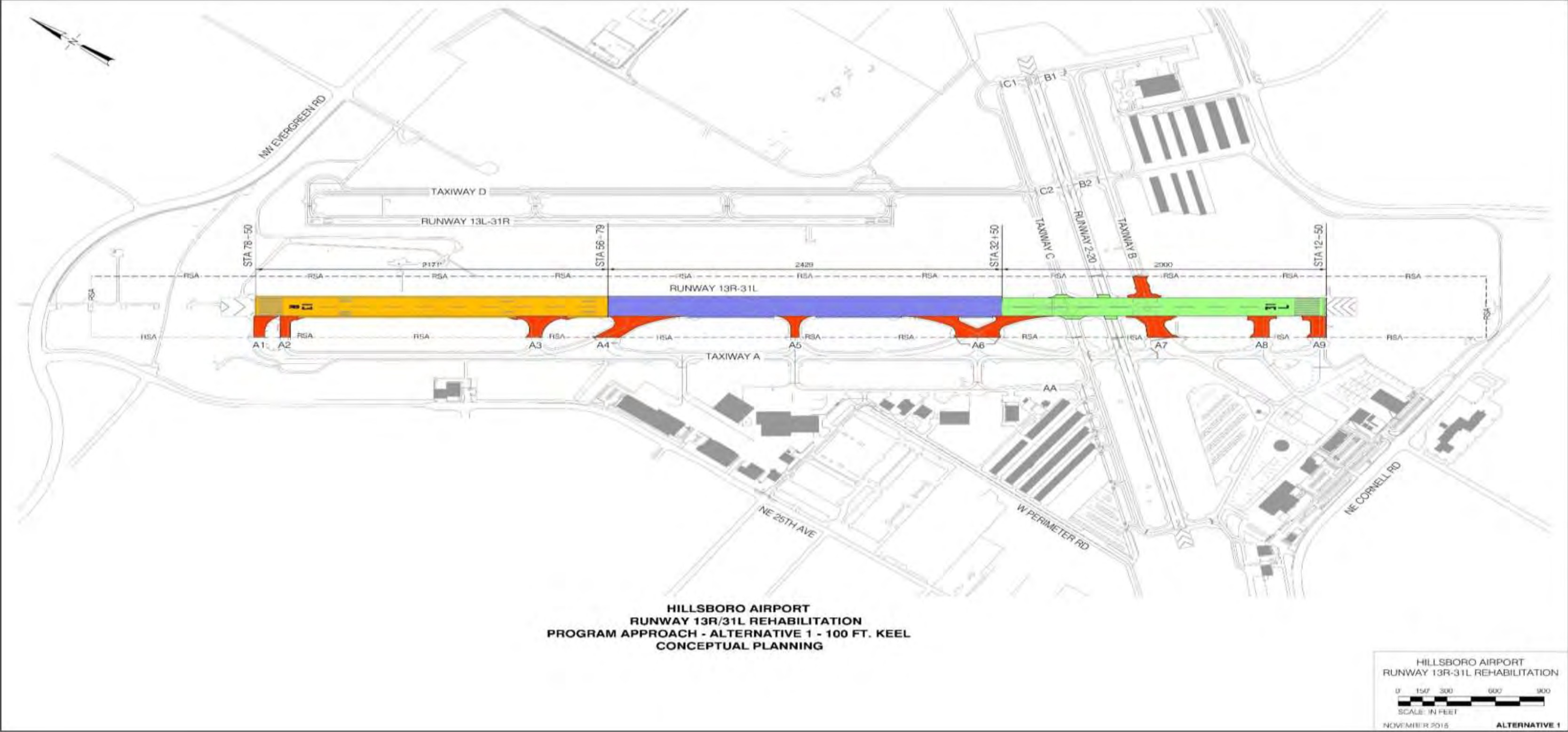
HIO Business Report

- What going on at Hillsboro Airport
- Noise Update
- Air Quality/Unleaded Fuel Update
- Oregon Legislature – Aviation Issues
- Runway 13R/31L Reconstruction Project – 2018, 2019 and 2020
- Runway 13R/31L Runway Safety Area Project – Environmental Assessment (EA) 2018

Runway 13R/31L – Current Composition



Runway 13R/31L – Reconstruction (2018, 2019 and 2020)



Runway 13R – Runway Safety Area (RSA)



HILLSBORO AIRPORT MASTER PLAN UPDATE

Focus Topic: Role of the Airport/Strategic Analysis

Patrick Taylor, Coffman Associates

Dave Nafie, WH Pacific



Role of the Airport/Strategic Analysis

Regulatory Framework

- Airport Classification
- Portland Region Airports
- Airport Certification (CFR Part 139 – Commercial Service)

Air Service Market Analysis

- Cities with Multiple Commercial Service Airports
- Population to Enplanement Comparison
- Commercial Service Potential at Hillsboro
 - Aircraft Types
 - Market Viability/Profitability
 - Small Aircraft Potential
- Air Cargo Potential
- Recommended Future Role of the Airport

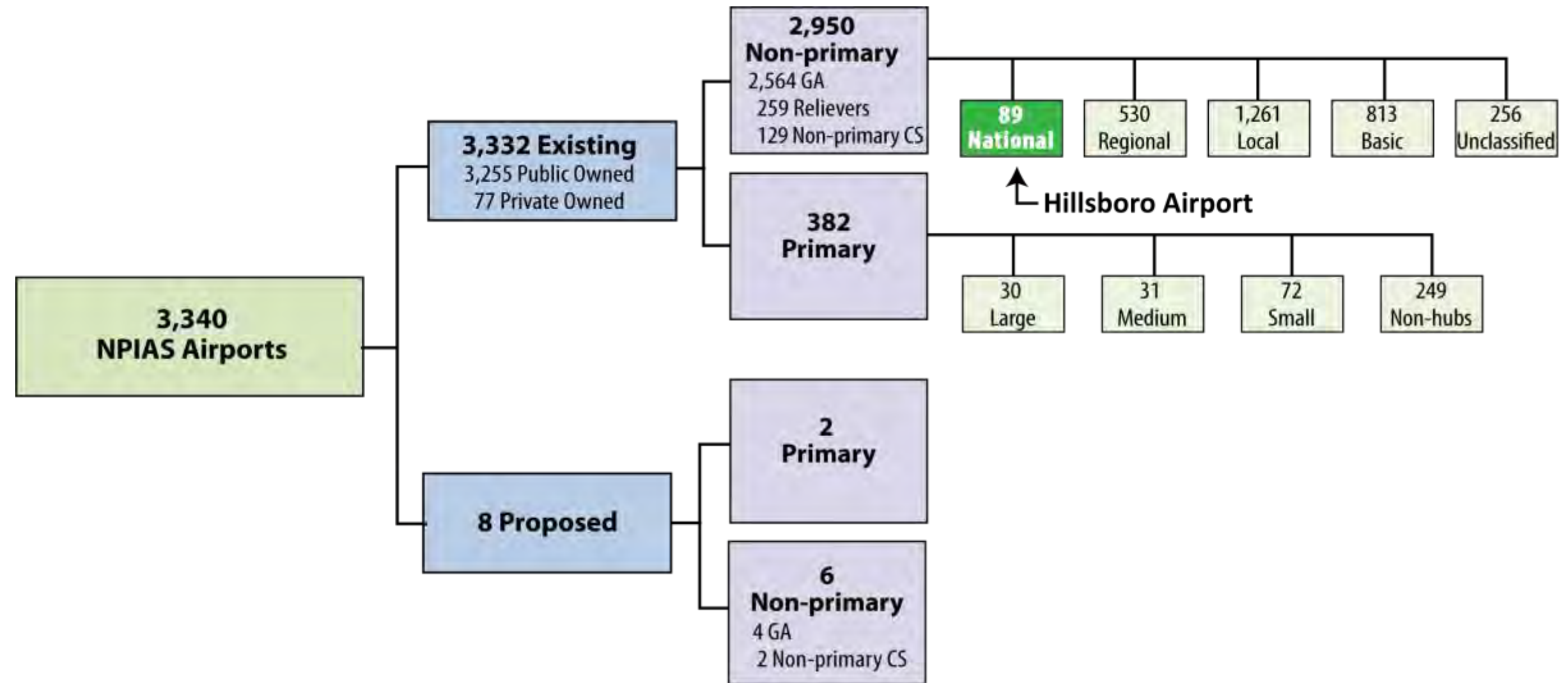
Future Role Options

1. **General Aviation/Reliever: Existing role.**
2. **General Aviation/Reliever/Commuter with less than 10 passenger seats:** Existing role plus limited commercial service. Part 139 commercial airport operating certificate not required.
3. **General Aviation/Reliever/Commercial Service** with more than 10 passenger seats: Existing role plus commercial service. Part 139 commercial airport operating certificate required.
4. **General Aviation/Reliever/Air Cargo:** Existing role plus air cargo by aircraft with greater than 7,500 lb. payload capacity. Part 139 commercial airport operating certificate required.



National Airport System Composition

19,536 Airports
 - 5,136 public
 - 14,400 private



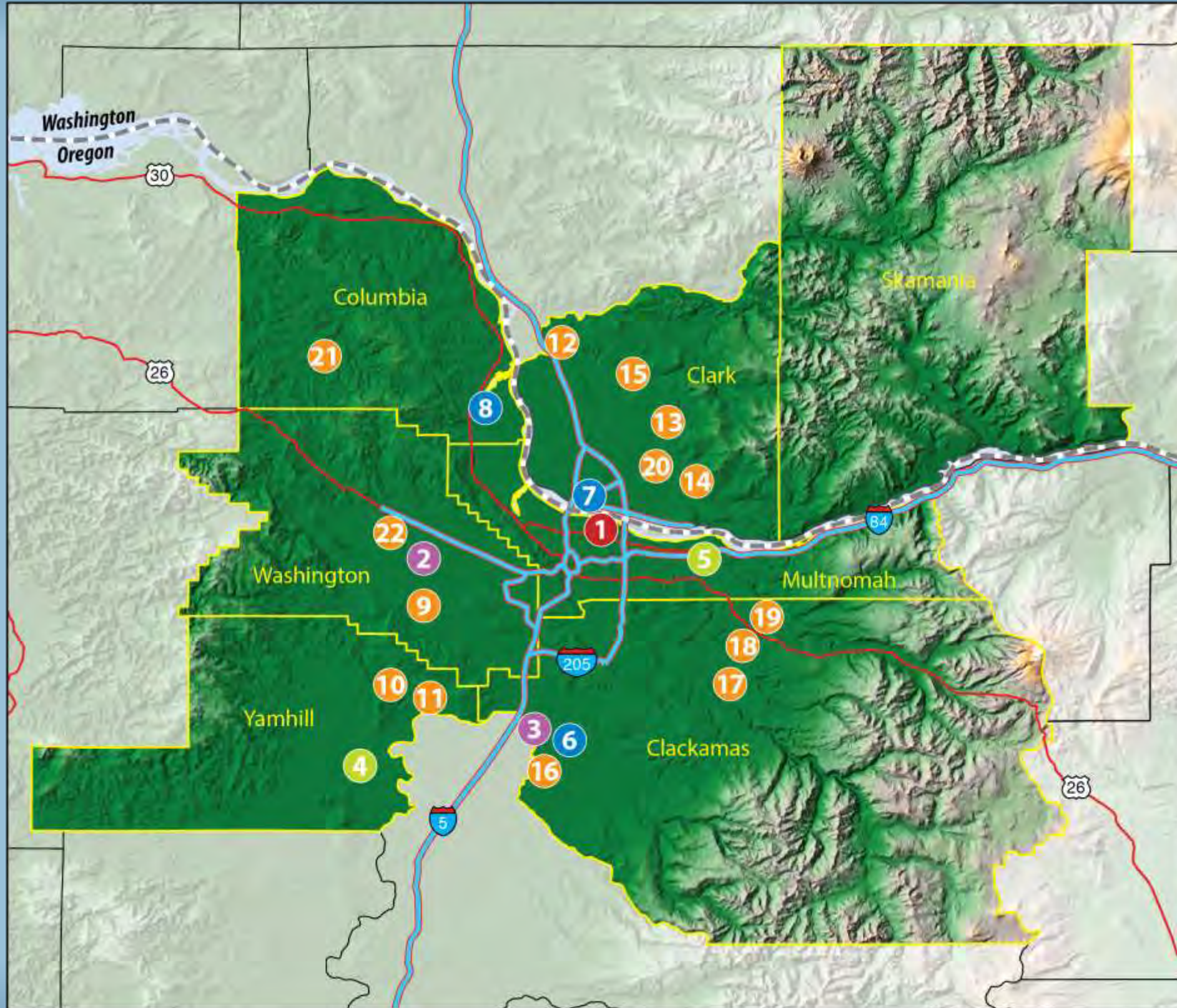
- Hillsboro is 1 of 2 Reliever General Aviation airports in Oregon (Troutdale)
- Hillsboro is 1 of 2 National General Aviation airport in Oregon (Aurora)
- Hillsboro has been the busiest airport in Oregon for 2 of the last 5 years (PDX)

Oregon Department of Aviation Classifications

Category	Type	Number	Example
Category 1	Commercial Service	8	PDX, Redmond, Eugene
Category 2	Urban GA	10	Hillsboro, Troutdale, Corvallis
Category 3	Regional GA	13	Columbia Gorge, Roseburg
Category 4	Local GA	27	Albany, Mulino
Category 5	RAES (Remote Access/Emergency Service)	38	Arlington, Chiloquin, Sandy River



Public Use Airports in the Region



PUBLIC USE AIRPORTS (by FAA NPIAS Role)	
1	Portland International Airport - CS
2	Portland Hillsboro Airport - National
3	Aurora State Airport - National
4	McMinnville Municipal Airport - Regional
5	Portland-Troutdale Airport - Regional
6	Mulino State Airport - Local
7	Pearson Field Airport - Local
8	Scappoose Industrial Airport - Local
9	Stark's Twin Oaks Airpark - N/A
10	Chehalem Airpark - N/A
11	Sportsman Airpark - N/A
12	Woodland State Airport - N/A
13	Cedars North Airpark - N/A
14	Grove Field - N/A
15	Goheen Airport - N/A
16	Lenhardt Airpark - N/A
17	Valley View Airport - N/A
18	Country Squire Airpark - N/A
19	Sandy River Airport - N/A
20	Fly for Fun Airport - N/A
21	Vernonia Airfield - N/A
22	Skyport Airport - N/A

FAA NPIAS Role Key	
● (Red)	Commercial Service (CS)
● (Purple)	Natioanal
● (Green)	Regional
● (Blue)	Local
● (Orange)	Not Applicable (N/A)

Area Airport Capabilities



Airport Identifier	Airport Name	State	Longest Runway	# of Runways	Based Aircraft	Annual Operations	ATCT	IAP/ Precision	Federal Role ¹
PDX	Portland Int'l	OR	11,000'	3	78	220,000	Yes	Yes/Yes	CS (Large Hub)
HIO	Hillsboro	OR	6,600'	3	248	200,000	Yes	Yes/Yes	GA Reliever (National)
UAO	Aurora State	WA	5,004'	1	429	95,000	Yes	Yes/No	GA (National)
MMV	McMinnville	OR	5,420'	2	111	64,000	No	Yes/Yes	GA (Regional)
TTD	Troutdale	OR	5,399'	1	121	105,000	Yes	Yes/No	GA Reliever (Regional)
4S9	Mulino	WA	3,425'	1	59	21,000	Yes	No/No	GA (Local)
VUO	Pearson Field	WA	3,275'	1	139	53,000	No	Yes/No	GA (Local)
SPB	Scappoose	OR	5,100'	1	128	60,000	No	Yes/No	GA (Local)

¹ National Plan of Integrated Airport Systems

GA - General Aviation; CS - Commercial Service

Source: www.airnav.com

- HIO is the most capable general aviation airport in the region.



Part 139 Commercial Service Airport Requirements

- Fund, staff, and equip Airport Rescue and Fire Fighting (ARFF)
 - Approximately \$1 million per year
- Daily self inspection
- Extensive employee and tenant training:
 - Ground vehicle operations
 - Fueling training
 - Security training
 - Emergency training
 - Movement and safety area training
- Extensive security requirements
 - Badging
- Extensive record keeping
 - Airport Certification Manual
 - Maintain records up to 3 years



Commercial Activity Without Part 139 Certification

- Scheduled air carriers using aircraft with nine (9) or fewer passenger seats.
- Air cargo carriers using aircraft with a payload capacity less than 7,500 pounds.
- On demand air carriers using aircraft (charters) with 30 or fewer passenger seats and a payload capacity of less than 7,500 pounds.
- Commuter operations with non-turbojet aircraft that have a seating capacity of nine or fewer passenger seats and a payload capacity of less than 7,500 pounds.



Companies Operating 9-seat Passenger Aircraft

Company	Aircraft	Seats	Locations
 Air Choice One	Cessna Caravan 208	9	Midwest, MO, IL, IA, MN, WI
 KENMORE AIR <small>Flying the Pacific Northwest Since 1948</small>	Cessna Caravan 208	9	Seattle, NW Washington
 Cape Air <small>We're your wings.</small>	Cessna 402	9	Northeast, Midwest, Montana, Caribbean
	Tecnam P2012 Traveller	9	
 BOUTIQUE AIR	Pilatus PC-12	9	Southwest, South, Mountain, CA, OR, NY, MD
 SOUTHERN AIRWAYS EXPRESS	Cessna Caravan 208	9	South, NY, PA, MD, DC
	Piper PA-31 Chieftain	9	
 MOKULELE AIRLINES	Cessna Caravan 208	9	California, Hawaii
 CONTOUR	Bae Jetstream 31	9	MS, TN
 SURFAIR*	Pilatus PC-12	9	California

*Subscription on-demand service

Source: Corporate websites as of April 2016

Commercial Service Considerations

QUESTIONS TO BE ANSWERED

- Under what circumstances would commercial service make sense?
- What is the threshold for consideration of a second commercial airport?
- What are the limitations at Hillsboro for commercial service?
- Is there demand for commercial service from Hillsboro?
- Is greater Portland big enough to support a second commercial service airport?
- What is the competitive landscape for commercial service?
- What is the market viability for commercial service?
- What is the air cargo potential?
- What examples are there of new secondary commercial service airports?

Cities with Multiple Commercial Service Airport



- Average MSA passengers: 62.6 million
- Those cities closest in population to the Portland MSA each had more visitors in 2016 and a major attraction.
 - Portland: 9 million visitors
 - Las Vegas: 43 million visitors – Las Vegas Strip
 - Orlando: 66 million visitors – Theme Parks
 - Tampa: 22 million visitors – Beaches/Theme Parks

City	Airport Name	MSA Population 2016 ¹	Total Passengers (FAA)
Portland, OR*	Portland International	2,411,688	16,680,504
Chicago, IL	Chicago O'Hare Int'l	9,656,264	72,611,336
	Chicago Midway		21,661,700
Dallas/Ft. Worth, TX	Dallas-Ft. Worth Int'l	7,202,994	63,179,678
	Dallas Love		14,081,900
Houston, TX	Bush Intercontinental	6,727,085	41,191,762
	Houston Hobby		11,875,980
Las Angeles, CA	Los Angeles Int'l	13,442,966	72,702,544
	John Wayne- Orange Co.		9,890,418
	Long Beach		2,441,874
	Bob Hope - Burbank		3,947,794
Las Vegas, NV	McCarran Int'l	2,138,330	43,715,386
	Boulder City		987,048
	Henderson		107,102
	North Las Vegas		30,868
Miami, FL	Miami Int'l	6,085,027	41,972,698
	Fort Lauderdale Int'l		26,123,264
New York, NY	John F. Kennedy Int'l	20,271,891	55,564,738
	Newark Liberty Int'l (NJ)		37,369,636
	La Guardia		28,639,848
Orlando, FL	Orlando Int'l	2,403,021	37,519,876
	Orlando Sanford		2,418,764
Phoenix, AZ	Phoenix Sky Harbor	4,650,110	42,703,008
	Phoenix-Mesa Gateway		1,332,374
San Francisco, CA	San Francisco Int'l	4,663,635	48,381,120
	Oakland Int'l		11,013,374
Seattle, WA	Seattle-Tacoma Int'l	3,765,621	40,297,960
	Boeing Field/King County Int'l		37,890
Tampa, FL	Tampa Int'l	2,990,492	18,300,916
	St. Pete-Clearwater Int'l		1,639,948

¹ 2016 Complete Economic and Demographic Data Source (CEDDS), Woods and Poole Economics

*For comparison

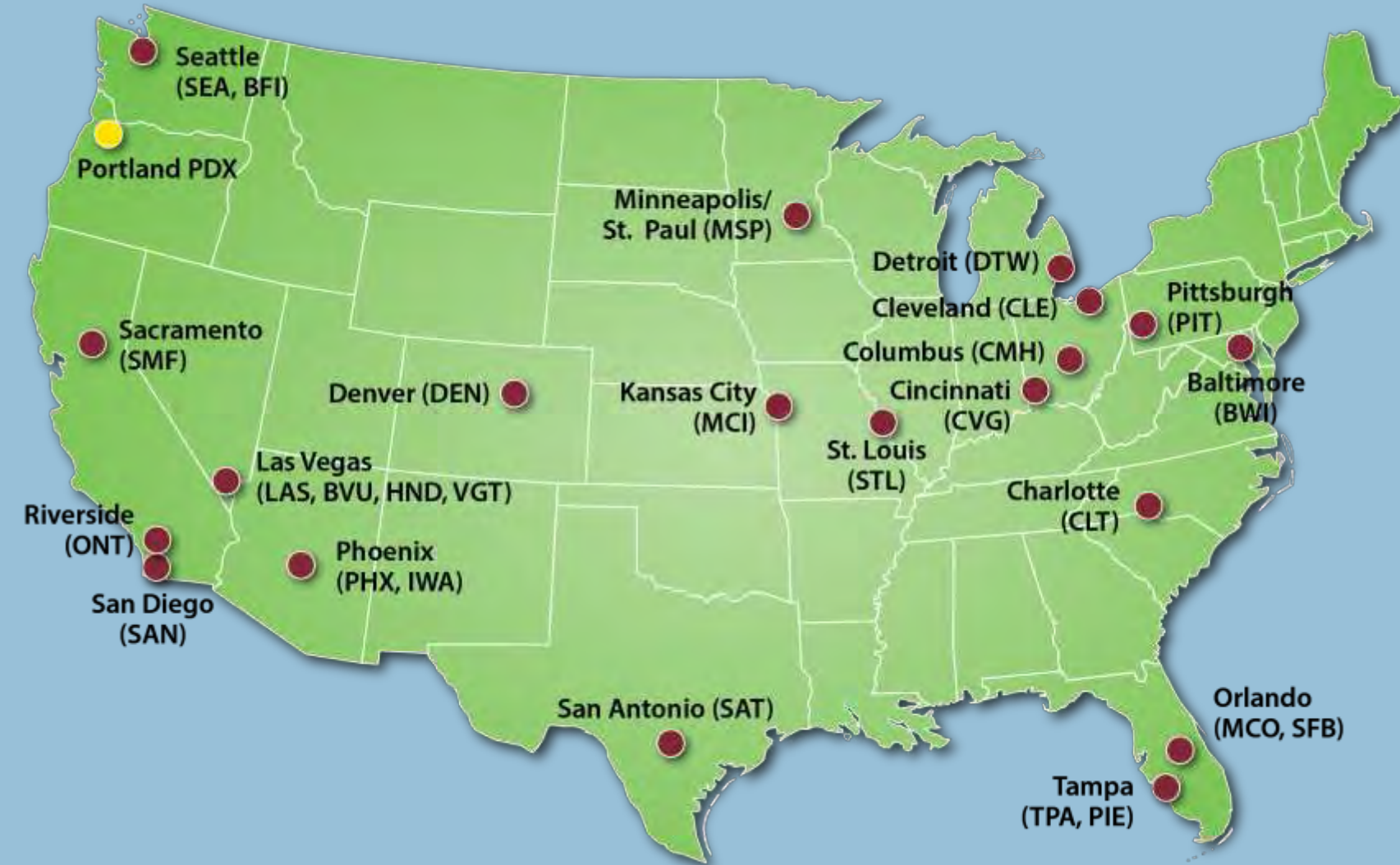
MSA – Metropolitan Statistical Area

Population to Number of Airports Comparison



MSA LOCATION	Population (2016) ¹	Airport(s)	Total Passengers (2015)	Notes
Indianapolis, IN	2,008,405	Indianapolis Int'l	7,779,134	1 CS Airport
Columbus, OH	2,037,388	John Glenn Columbus Int'l	6,624,992	1 CS Airport
Cleveland, OH	2,059,123	Cleveland Hopkins Int'l	7,833,844	1 CS Airport
Kansas City, MO	2,111,103	Kansas City Int'l	10,270,254	1 CS Airport
Las Vegas, NV	2,138,330	McCarran Int'l	43,715,386	4 CS Airport Tourist Attraction
		Boulder City	987,048	
		Henderson	107,102	
		North Las Vegas	30,868	
Cincinnati, OH	2,177,982	Cincinnati/N. Kentucky Int'l	6,109,982	1 CS Airport
Sacramento	2,297,396	Sacramento Int'l	9,429,458	1 CS Airport
Pittsburgh, PA	2,350,912	Pittsburgh Int'l	7,781,362	1 CS Airport
Orlando, FL	2,403,021	Orlando Int'l	37,519,876	2 CS Airports Tourist Attraction
		Orlando Sanford	2,418,764	
San Antonio, TX	2,408,226	San Antonio Int'l	8,182,868	1 CS Airport
Portland, OR	2,411,688	Portland Int'l	16,680,504	1 CS Airport
Charlotte, NC	2,460,857	Charlotte Douglas Int'l	43,826,332	1 CS Airport
Denver, CO	2,791,755	Denver Int'l	52,560,086	1 CS Airport
Baltimore, MD	2,835,912	Baltimore Washington Int'l	23,477,690	Serves Washington DC
St. Louis, MO	2,828,355	St. Louis Lambert Int'l	12,478,496	1 CS Airport
Tampa, FL	2,990,492	Tampa Int'l	18,300,916	2 CS Airports Tourist Attraction
		St. Pete-Clearwater Int'l	1,639,948	
San Diego, CA	3,335,405	San Diego Int'l	19,971,526	1 CS Airport
Minn.-St. Paul, MN	3,568,940	Minneapolis - St. Paul Int'l	35,268,546	1 CS Airport
Seattle, WA	3,765,621	Seattle-Tacoma Int'l	40,297,960	2 CS Airports Serves Remote Locations
		Boeing Field/King County Int'l	37,890	
Detroit, MI	4,295,214	Detroit Metro Int'l	32,511,040	1 CS Airport
Riverside, CA	4,592,365	Ontario Int'l	4,179,602	1 CS Airport

MSA - Metropolitan Statistical Area; CS - Commercial Service
¹Woods & Poole CEDDS
²FAA Enplanement Data



Other than those cities with a unique attraction, cities with similar populations to Portland have one commercial service airport.

Threshold for Commercial Service

- 2015 Passengers (FAA):
 - Seattle: 40.2 million
 - Portland: 16.6 million
- 2040 Passengers (FAA):
 - Seattle: 73.2 million
 - Portland: 29.8 million
- Paine Field in Everett has long been considered for commercial service.
- Paine Field is a Part 139 certificated airport.
- Home to Boeing manufacturing (Large aircraft already).
- 9,000' long heavy duty runway.
- Two gate passenger terminal building ground breaking in 2017.





Hillsboro Airfield Capabilities/Limitations

- Runway 13R-31L Length - 6,600' x 150'
- Runway 13R-31L Strength
 - 50,000 lbs. (Single Wheel Gear)
 - 70,000 lbs. (Dual Wheel Gear)
 - 110,000 lbs. (Double Dual Gear)



Representative Narrow Body Air Carrier Aircraft

	Aircraft	Gross Weight (lbs.)
	Airbus A320-200	169,800
	Airbus A321-100	187,400
	Boeing 737-700	154,500
	Boeing 737-800	174,200
	Boeing MD-88	149,500
	Bombardier CRJ200 (LR)	53,000
	Bombardier CRJ700 (ER)	75,000
	Bombardier CRJ900 (ER)	82,500
	Embraer ERJ 135 LR	44,092
	Embraer ERJ 140 LR	44,517
	Embraer ERJ 145	45,415
	Embraer ERJ 170 LR	82,012
	Embraer ERJ 175 LR	85,958
	Embraer ERJ 190 LR	109,129
	Embraer ERJ 195 LR	110,209

- All can operate at Hillsboro.
- Frequent operations by heavier aircraft will shorten the life of the pavement.
- Aircraft in **BOLD** are unrestricted.
- All others are weight restricted to some degree.

Representative Turboprop Air Carrier Aircraft

	Aircraft	Gross Weight (lbs.)	# Seats
	Pilatus PC-12	9,920	9
	Cessna 208B Grand Caravan	8,750	9
	King Air 350	15,000	9
	ATR 42-500	41,005	48
	ATR 72-500	48,500	68
	Bombardier Q200	36,300	37-39
	Bombardier Q300	43,000	50-56
	Bombardier Q400	65,200	68-78
	Embraer EMB-120	26,433	30
	Beechcraft 1900C	16,600	19
	Beechcraft 1900D	17,120	19
	Saab 340	29,000	30-37
	Saab 2000	50,265	50-58

- All can operate unrestricted at Hillsboro.
- Those with more than nine passenger seats require Part 139 airport certification.
- Aircraft in **BOLD** can be used in commercial service today.

Airline Factors

Adequate Facilities

- Terminal
- Gate/Apron Space

Community Support

- Potential Subsidies/Grants
- Political support

Market Viability/Profitability

- Destinations, Flight times, Fares
- Aircraft Usage
- Competition with PDX



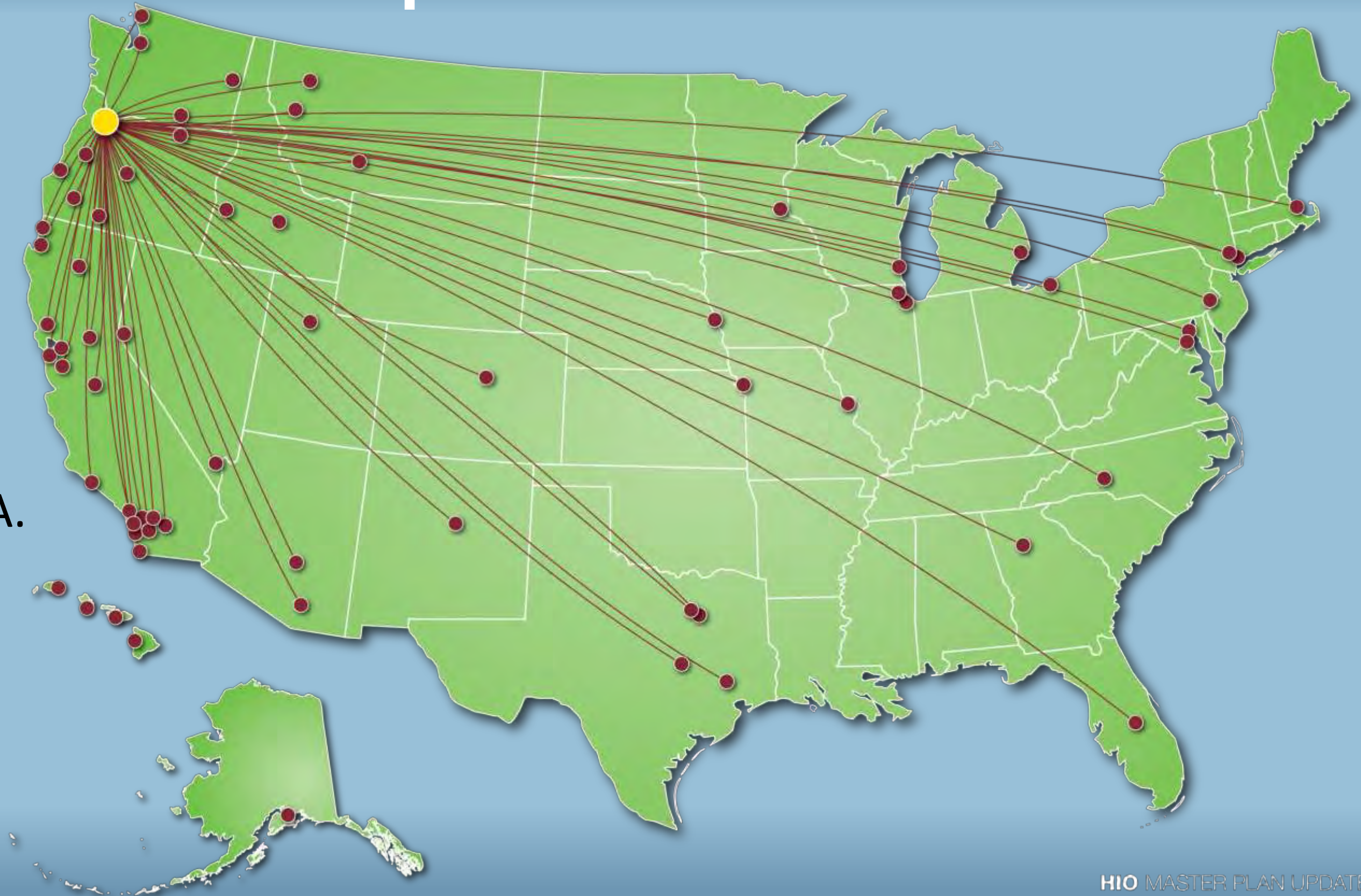
PDX Destinations and Estimated Departures

Airline	Destinations	Approximate Daily Departures	Aircraft
 AIR CANADA	3 (Canada)	4	All Major
 Alaska Airlines	55 (Inc. Hawaii, Mexico)	103	All B737, ERJ175, CRJ700, Q400
 American Airlines	6 (ORD, CTL, DFW, LAX, PHL, PHX)	9	All Major
 BOUTIQUE AIR	Pendleton, OR	2	PC-12, King Air 350
 Condor	Frankfurt Germany	1	A320, A321, B757, B767
 DELTA	11 (Inc. Japan, Hawaii, Amsterdam)	18	All Major
 FRONTIER	4 (ORD, CLE, DEN, PHX)	3	A319, A320, A321
 HAWAIIAN AIRLINES	Hawaii (HNL)	1	A330, B767
 ICELANDAIR	Iceland	1	B757, B767
 jetBlue	4 (ANC, BOS, LGB, JFK)	2	A320, A321, ERJ190
 PenAir <small>THE SPIRIT OF ALASKA</small>	5 - Klamath Falls, Eureka, Crescent City, North Bend, Redding	8	Saab 340B, Saab 2000
 Southwest	19	37	All B737
 spirit airlines	3 (DFW, LAS, LAX)	2	A319, A320, A321
 sun country airlines	1 (MSP)	1	B737-7, B737-8
 UNITED	6 (ORD, DEN, IAH, EWR, SFO, IAD)	10	All Major
 virgin america	SFO	2	A319, A320
 volaris	Mexico	1	A319, A320, A321
Approximate Total		205	

Non-Stop Destinations as of March 2016

Portland International Airport

- 17 Airlines
- 66 Domestic Destinations
- 10 International Destinations
- PDX needs support from the entire MSA.



Market Viability/Profitability



O&D Rank	City/Region	PDX Enplanements	Range (mi.)	ERJ 145	Saab 340B	Caravan 208B
				50-seat	30-seat	9-seat
				Market Capture	Market Capture	Market Capture
1	Los Angeles	927,090	834	4.72%	NA	0.85%
2	San Francisco Bay	755,380	550	5.80%	3.48%	1.04%
3	Las Vegas	332,580	762	13.17%	7.90%	2.37%
4	Phoenix	287,080	1,009	15.26%	NA	NA
5	Chicago Area	240,810	1,733	NA	NA	NA
6	San Diego	240,800	933	18.19%	NA	3.27%
7	Denver	240,030	989	18.25%	NA	3.28%
8	New York	222,490	2,446	NA	NA	NA
9	Sacramento	196,160	492	22.33%	13.40%	4.02%
10	Dallas	165,390	1,613	NA	NA	NA
11	Salt Lake City	153,990	628	28.44%	17.07%	5.12%
12	Seattle	145,000	129	30.21%	18.12%	5.44%
13	Washington D.C.	140,870	2,343	NA	NA	NA
14	Boston	126,930	2,529	NA	NA	NA
15	Minneapolis	123,050	1,421	35.60%	NA	NA
16	Honolulu	111,010	2,601	NA	NA	NA
17	Boise	105,200	343	41.63%	24.98%	7.49%
18	Atlanta	99,520	2,167	NA	NA	NA
19	Orlando	87,850	2,529	NA	NA	NA
20	Spokane	87,620	278	49.99%	29.99%	9.00%

Assumptions:

ERJ 145: 50-seats, 1,220 mile range, 43,000 enplanements needed for viability
 Saab 340B: 30-seats, 850 mile range, 26,280 enplanements needed for viability
 Caravan 208B: 9-seats, 1,100 mile range, 7,884 enplanements needed for viability

- Three flights per day
- 80% load factor
- Focus on destinations with the most passengers (Top 20 Destinations)
- SeaPort Airlines: A cautionary tale



Market Viability Summary

- Not likely to be a carrier currently operating at PDX
- Small aircraft (less than nine seats) for the foreseeable future due to runway (length, strength) and airport (not Part 139) factors
- A carrier may consider alternate destinations that PDX does not serve
- Market reach limited to western states
- Possibly a new type of service like SurfAir (subscription service)
- Airlines consider financial incentives, community support, facilities, etc...
- Klamath Falls renewed service took unified community support
- New routes (International) for PDX took unified community/business support

Air Cargo Potential

Types of Air Cargo Operators

- Integrated express operators (FedEx, UPS)
- All-cargo carriers (DHL, Empire Air, Ameriflight)
- Commercial service airlines (belly freight)
- Ad-hoc cargo charter carriers (charters)

Westside Freight Access and Logistics Analysis

- Runway and other design limitations
- Lack of cargo loading infrastructure and equipment
- No integrator or consolidator presence at HIO
- Capital cost of aircraft for new service.

PDX Air Cargo

- Volume is declining
- Consolidation hub
- Established operators
- Established infrastructure
- Available development space
- Available truck staging



Integrated Cargo Air Carriers and All-Cargo Airlines

Aircraft	Example Operator	Gross Weight (lbs.)	Cargo Capacity (lbs.)	FAA Takeoff Length (ft.)	FAA Landing Length (ft.)	Range (miles)
Narrow and Wide Body Cargo Aircraft						
A310-300F	FedEx	361,600	28,650	7,400	4,950	5,200
A300-600F	FedEx, UPS	375,900	120,800	7,400	4,900	2,650
Boeing 767-300F	FedEx, DHL	412,000	118,300	9,300	5,600	3,255
Boeing 757-200SF	FedEx, DHL	255,000	72,210	7,750	4,950	3,140
Boeing DC-10-30F	FedEx	580,000	171,130	10,700	6,320	3,780
Boeing MD-11F	FedEx	630,500	192,030	10,000	7,600	4,120
Boeing 747-200F	UPS, DHL, Cathay	833,000	242,800	10,900	6,930	3,615
Turboprop Aircraft						
ATR 42-300F/-320F	Empire Air	27,100	11,332	4,280	4,220	978
ATR 72-200F	Empire Air	48,500	16,755	4,954	3,970	1,105
EMB120RTF	Ameriflight	26,433	8,157	5,105	4,527	935
Beechcraft 1900	Ameriflight	17,600	5,880	3,800	2,413	1,498
SA227 Metroliner	Ameriflight	16,500	5,000	5,503	4,609	1,266
Cessna 208B Cargo	Empire Air, FedEx	8,750	4,070	2,420	1,795	1,086

Bold: Capable of operating at HIO currently

Source: Aviation Week

Summary: Role of the Airport/Strategic Analysis

Regulatory Framework

- Airport Classification: **National General Aviation Reliever**
- Portland Region Airports: **HIO capability not easily replaced**
- Airport Certification (Part 139): **Not HIO currently, implementation challenges**

Air Service Market Analysis

- Cities with Multiple Commercial Service Airports: **Unique attraction**
- Population to Enplanement Comparison: **Seattle is closest comparison**
- Commercial Service Potential at Hillsboro
 - Aircraft Types: **<9 seats**
 - Market Viability/Profitability: **Difficult and competitive environment**
 - Small Aircraft Potential: **Unserved markets or specialty service (SurfAir)**
- Air Cargo Potential: **Not in the near term**

Future Role Options/Recommendation

1. **General Aviation/Reliever: Recommended to Maintain this Role**
2. General Aviation/Reliever/Commuter with less than 10 passenger seats
3. General Aviation/Reliever/Commercial Service
4. General Aviation/Reliever/Air Cargo



Small Group Discussion



Let's Take a 10 Minute Break



HILLSBORO AIRPORT MASTER PLAN UPDATE

Public Comment Period

Anne Pressentin, EnviroIssues/Facilitator



HILLSBORO AIRPORT MASTER PLAN UPDATE

Draft Community Involvement Plan

Seth Baker, Envirolssues



Guiding Principles

- People who are affected by a decision should be involved in the decision making process (IAP2* core value)
- Be inclusive - Give all stakeholders an equitable opportunity to become involved
- Meet people where they are



Community Involvement Plan

Plan inputs:

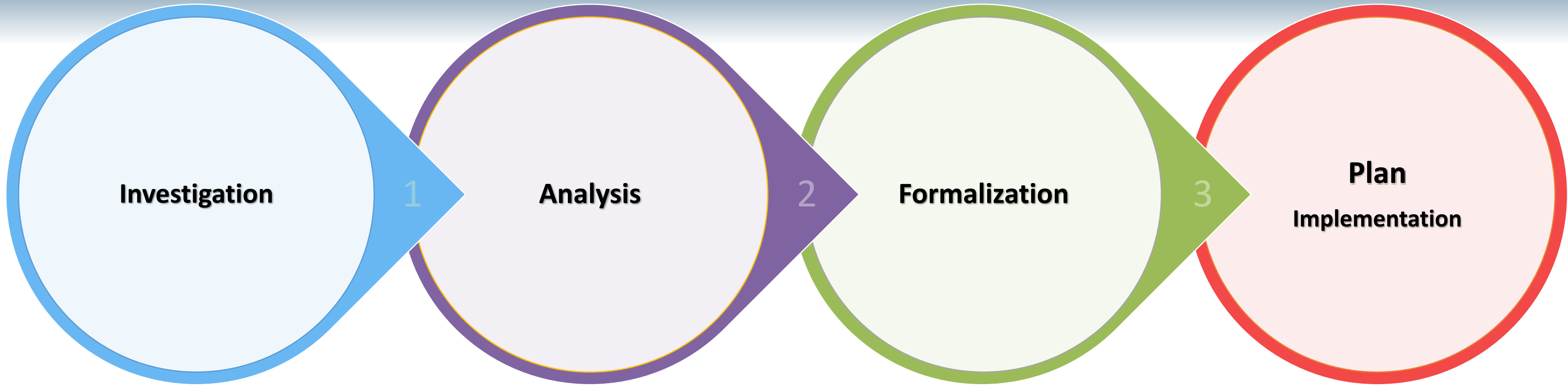
- Project staff workshop
- Interviews
- Demographic information within five-mile radius of Hillsboro Airport
- Input from Hillsboro Airport Roundtable Exchange



Community Involvement Goal

- The Port of Portland will work directly with community stakeholders throughout the master plan process to ensure concerns and aspirations are consistently understood and considered in the planning process.
- To work toward this goal, the Port of Portland will involve stakeholders to ensure their input is directly reflected in alternatives developed and report back on how community involvement influenced the decision.

Key public input opportunities



- Existing Conditions
- Strategic Analysis/Role
- Forecasts

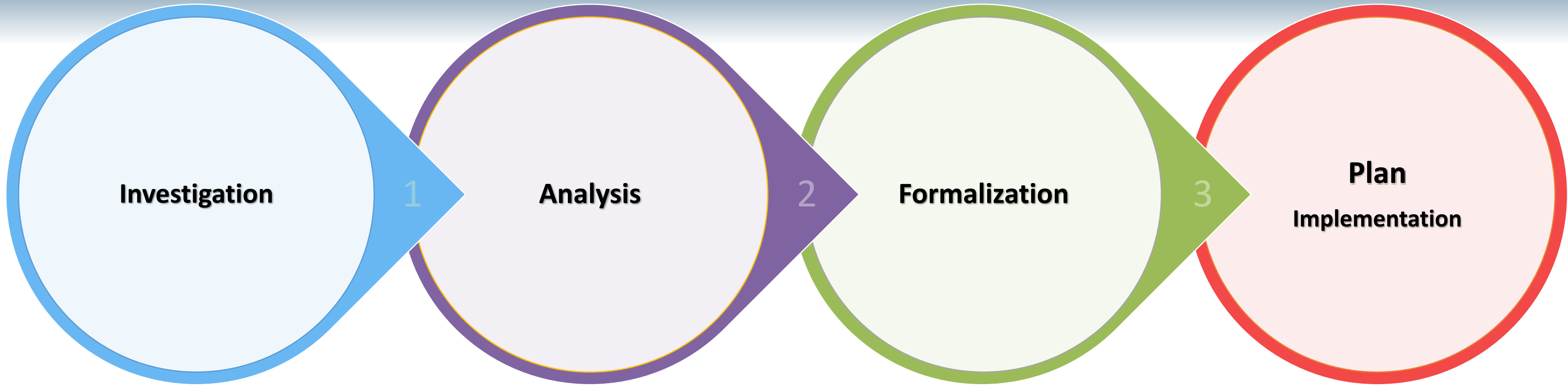
- Facility Requirements
- Airport Alternatives
- Costs
- Preferred Alternative
- Ongoing Community Involvement Plan

- Airport Layout Plan
- Capital Investment Plan
- Port Commission Approval
- FAA Submittal

- Follow-on Studies
- Ongoing Community Involvement
- Development

Special Areas of Interest

Key public input opportunities



- Existing Conditions
- • **Strategic Analysis/Role**
- Forecasts

- Facility Requirements
- Airport Alternatives
- Costs
- • **Preferred Alternative**
- • **Ongoing Community Involvement Plan**

- Airport Layout Plan
- Capital Investment Plan
- Port Commission Approval
- FAA Submittal

- Follow-on Studies
- • **Ongoing Community Involvement**
- Development

Special Areas of Interest

PAC-suggested Outreach/Engagement Tools

- Hillsboro Air Fair and Air Show
- Celebrate Hillsboro
- Farmers markets – Downtown Hillsboro and Orenco Station
- Partner communications (newsletters, emails) to amplify messages
- Direct mailers
- Random sample polling
- Social media
- Use incentives for survey participation
- Outreach to neighborhoods and community planning organizations
- Outreach to youth in classrooms and scout troops
- Centro Cultural de Washington County

Recommended Engagement Tools

Share Information

- Emails
- Partner channels
- Project website
- Fact sheet
- Traveling display
- Translate key materials

Collect Input

- Stakeholder briefings
- Public surveys
- Online open house
- Tabling at outreach events
- Comment summaries

Bring People Together

- PAC meetings
- Joint outreach events
- Public workshops
 - Interpreters

Inclusive Engagement Considerations

Consideration	Tools
Accessibility	<ul style="list-style-type: none">● Select venues that are familiar to stakeholders● Host events at venues that are ADA accessible● Host events at venues that are near transit stops● Provide assistive hearing devices at presentations● Allow children to attend outreach events
Language	<ul style="list-style-type: none">● Translate project materials in appropriate languages● Provide interpreters at important community involvement activities
Culture	<ul style="list-style-type: none">● Partner with culturally specific groups to host events for key stakeholders
Time	<ul style="list-style-type: none">● Attend events that are commonly frequented by key stakeholders● Post project materials and meeting summaries online for people unable to attend

Questions for PAC Input

- How does the draft plan match your expectations?
- What community organizations or businesses could best help us communicate information and spread the word about the project?
- Which events and community organizations could help host engagement activities?
- How can you personally help implement the community involvement plan?
- Any other thoughts or ideas?

HILLSBORO AIRPORT MASTER PLAN UPDATE

Focus Topic: Inventory

Patrick Taylor, Coffman Associates

Dave Nafie, WH Pacific



Airport History and Setting

- Current site has been an airport since 1925.
- City acquires airport in 1935.
- During WWII Federal Government made investments in the airport and planned to operate it as an auxiliary airfield to the Portland Air Base.
- In 1945, the airport returned to City control.
- In 1966, Port of Portland assumed control of the airport.
- Currently, the airport land is approximately 963 acres.
- Airport has grown with the community.

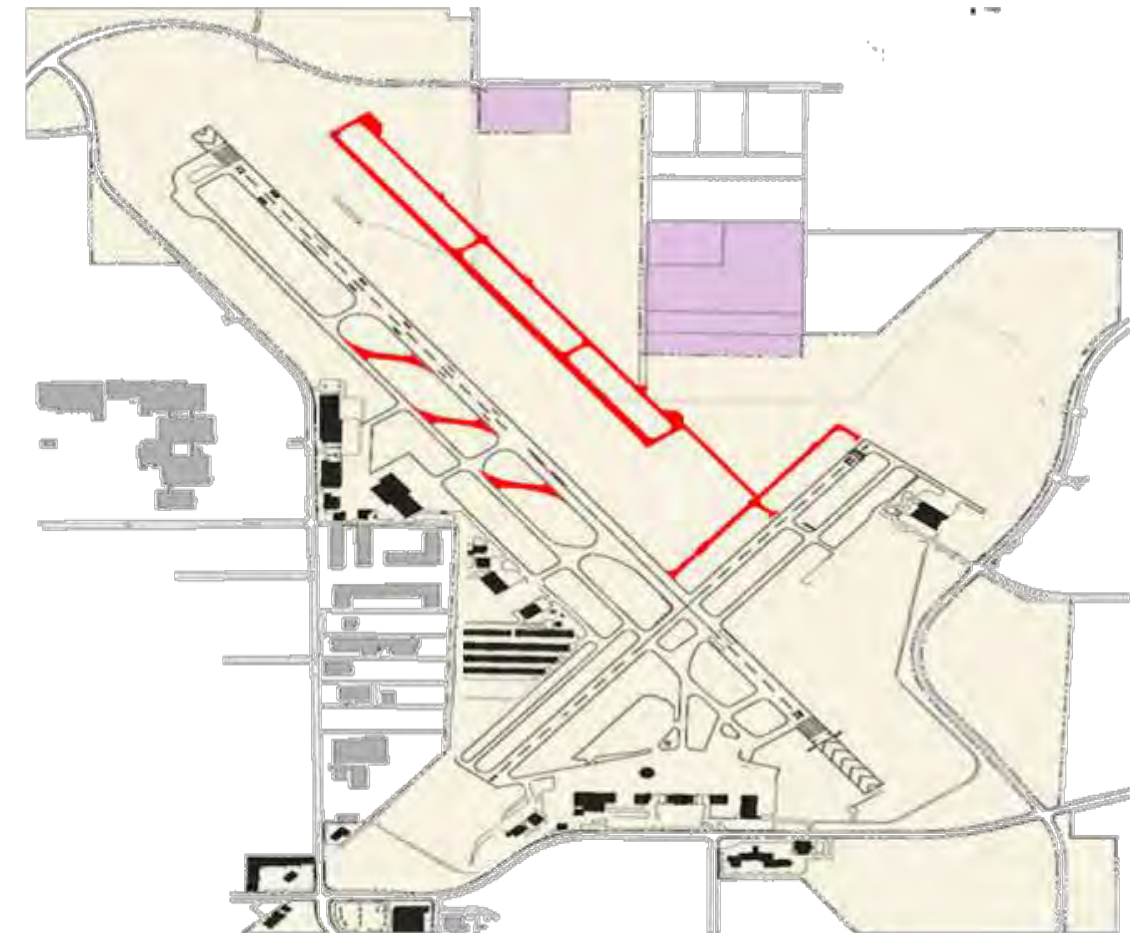


Investments at Hillsboro Since 2004

- \$84.4 million invested in capital improvements
- \$39.0 million from FAA grants
- \$4.0 million from *ConnectOregon*
- Additional funds from Oregon Department of Aviation
- Many millions of private investments

Major Projects

- Parallel Runway
- Pavement Preservation
- New Taxiways
- Runway 2-20 Improvements
- Equipment: mowers, sweepers, generators.
- Property Acquisition



Existing Airside Facilities



LEGEND

- Airport Property Line
- Runway Protection Zone (RPZ)
- HS Hot Spot

PAPI - Precision Approach Path Indicator
 MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights



Photo: Google Earth 7/24/2016

Instrument Approach Data

Runway 13R:

- 200' Cloud Ceiling and ½-mile Visibility

Runway 31L:

- 200' Cloud Ceiling and 1¼-mile Visibility

All Other Runways are Visual:

- 1,000' Cloud Ceilings and 3-mile Visibility

- The capability of the instrument approaches has a direct impact on businesses and economic development.



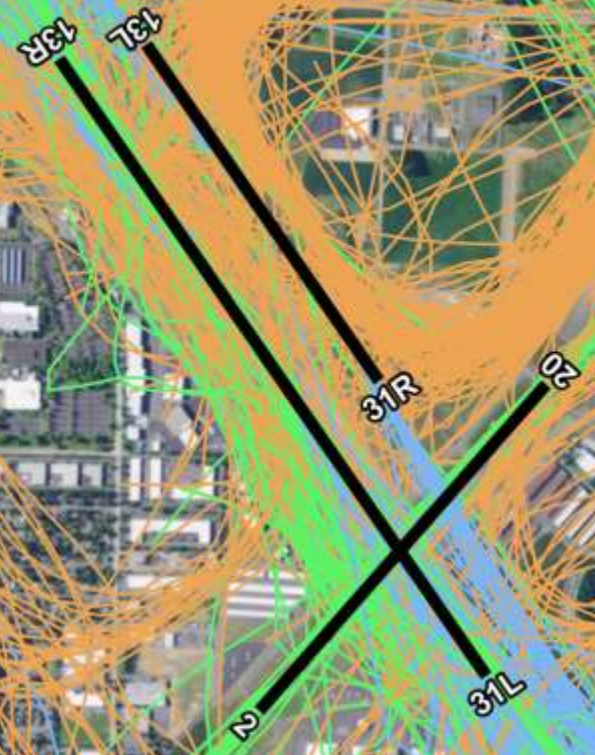
HIO Radar Flight Tracks

- Used in noise analysis
 - Aviation Environmental Design Tool (AEDT)
- Helps to understand operations by type

Legend

- Helicopter Radar Flight Tracks
- Itinerant Radar Flight Tracks
- Local Radar Flight Tracks

0 2,000
1" = 2,000' NORTH



Northeast and Southeast Landside Facilities



KEY		
Building No.	Description	Square Feet (Approx.)
3845	Hillsboro Aviation	43,800
4223	Nike Hangar	32,400
4297	Ochoco Hangar	30,400
3999	Storage Management Systems	See Map
4226	Storage Management Systems	See Map
4141	Storage Management Systems	See Map

Northwest and Southwest Landside Facilities



KEY		
Building No.	Description	Square Feet (Approx.)
2146	Premier Jets	4,800
2140	Premier Jets (office)	--
2166	Premier Jets	11,500
2210	Global Aviation	24,600
2250A	Global Aviation	55,000
2250B	Global Aviation	35,300
2052	Aero Air	32,400
2050	Aero Air	64,500
2030	Lorentz Bruun	4,600
2020	Lorentz Bruun	7,800
2010	Soliton	6,400
3121	SASK Hangar	18,000
3115	Teufel Nursery	10,100
3117	Electrical Vault	--
3119	ATCT	--
2955	Tower Park/Fliteline Condos	See Map
1040	HIO Maintenance and Operations	--
2995	Austin Point Aviation	4,900
3005	Premier Jets/Museum	--
3301	Multi-use Hangar	36,500
3301A	Sheep's Pen	8,700
3425	Fuel Station (Mushroom)	--
3417	HIO Maintenance	--
3355	Terminal (2-story)	24,400
3443	Hillsboro Academy	8,800
3565	Hillsboro Aviation	27,500

LEGEND
 --- Airport Property Line



Photo: Google Earth 7/24/2015

HIO Parking Summary



HIO Parking Summary			
User	Count	Additional space (sqft)	Notes
Intel	209	24,000	Lot south of Cornell, east of BHG Hotel (~45 spots)
Hertz	119	13,790	Supplemental parking
Hillsboro Aero Academy	0	26,000	Area south of the flight school (~100 spots)
Avis	20		
EAN	7		
Permit	30		Issued to tenants with leases through a leasing program.
2 Hour	41		
Open Parking	34		These are non-designated spots where airport users often park.
Total designated spots	460		
Total supplemental parking		63,790	

- The parking facilities accommodate approximately 460 parking spots currently, not including the additional space provided to Hertz, Hillsboro Aero Academy and Intel on psf basis.
- Additional sqft allocated for parking leases total up to approximately 64,000 sqft.
- This parking allocation does not include any parking that occurs inside the airfield fence.
- Intel has indicated that ideally they would like to have an additional 50-75 spots currently, bringing their desired amount to approximately 300-325 spots in total.

Historic and Forecast Socioeconomic Data



Year	Population ²	Employment (Non-farm) ²	Households ²	Income (PCPI) ³
2000	1,927,881	973,230	746,625	\$37,407
2010	2,226,009	968,830	857,379	\$39,087
2011 ¹	2,248,834	993,756	865,041	\$40,178
2012 ¹	2,271,894	1,019,323	872,771	\$41,366
2013 ¹	2,295,190	1,045,548	880,571	\$40,921
2014 ¹	2,318,725	1,072,448	888,440	\$41,973
2015	2,342,501	1,100,040	896,379	\$42,658
2016 ¹	2,376,813	1,124,544	912,674	\$43,266
CAGR 2000-2016	1.32%	0.91%	1.26%	0.91%
2020	2,519,163	1,228,140	980,872	\$45,679
2025	2,671,777	1,311,570	1,055,978	\$48,733
2030	2,814,058	1,399,790	1,125,755	\$51,560
2035	2,937,885	1,484,460	1,187,311	\$54,046
2040	3,052,078	1,571,290	1,244,034	\$56,459
CAGR 2016-2040	1.05%	1.40%	1.30%	1.12%

¹Interpolated figures for population, employment, and households

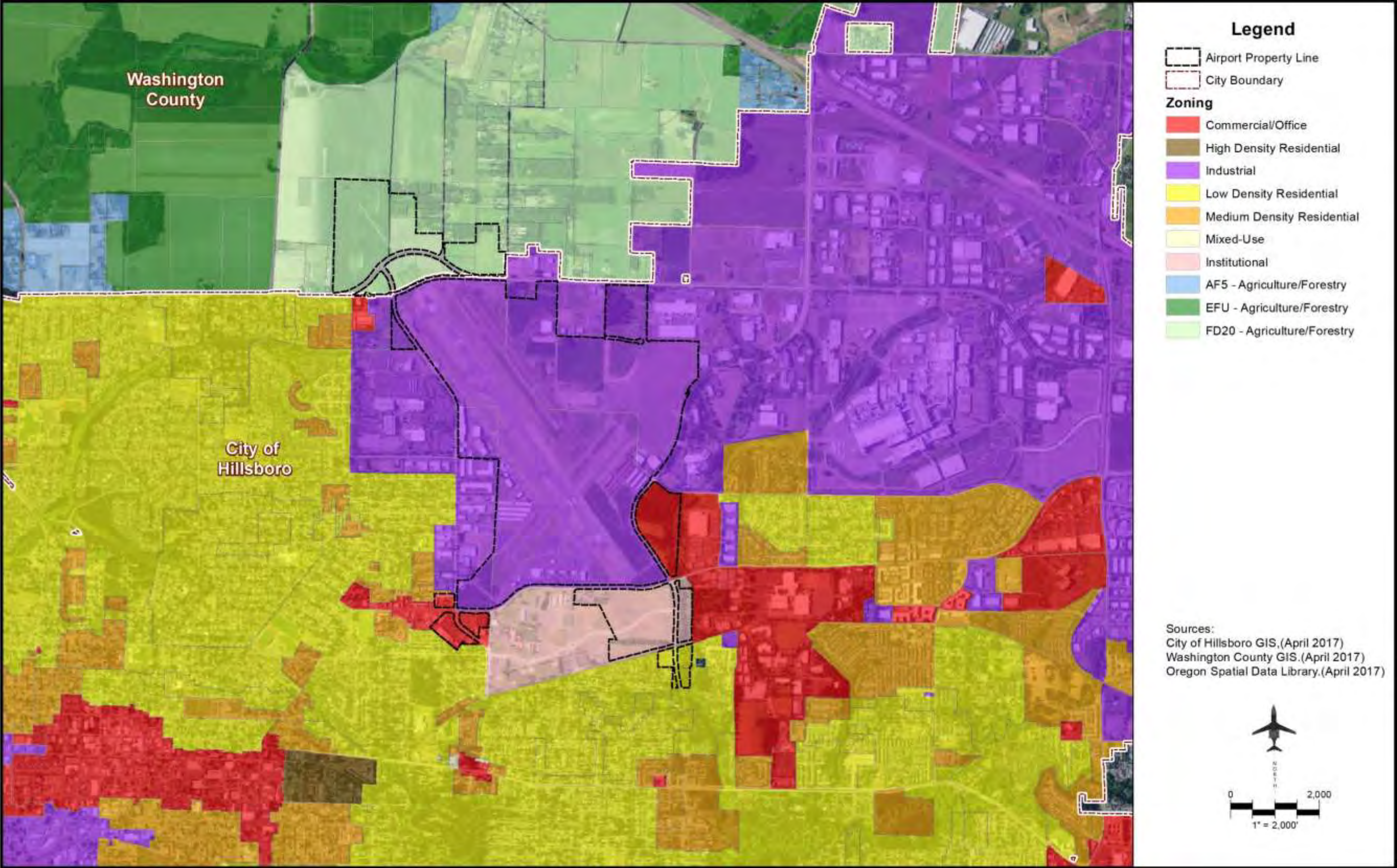
²Metro Research Center (2014 update)

³Woods & Poole Economics

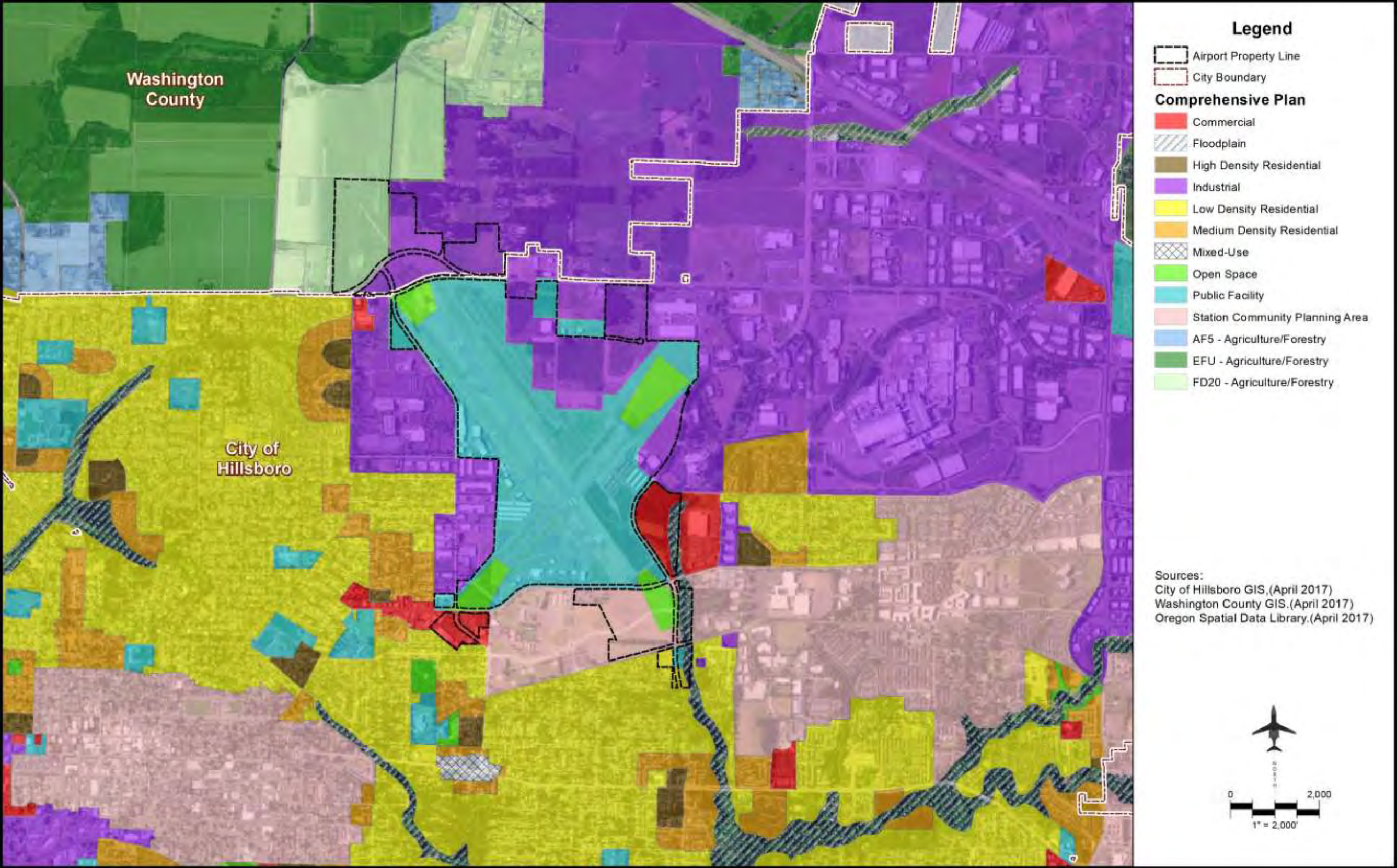
CAGR: Compound Annual Growth Rate

PCPI: Per Capita Personal Income

Existing Zoning Map



Comprehensive Land Use Plan



Financial

CATEGORY	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16
TOTAL REVENUE	\$2,624,664	\$2,764,226	\$2,746,347	\$3,128,988	\$3,108,260
TOTAL EXPENSES	\$2,211,655	\$2,043,689	\$2,519,136	\$2,716,178	\$2,533,451
Net Operating Income	\$413,009	\$720,537	\$227,211	\$412,810	\$574,809
CAPITAL INVESTMENTS					
Investments	\$6,183,688	\$3,239,178	\$6,679,804	\$13,714,189	\$3,334,195
Less: Grants	\$3,572,429	\$2,151,301	\$1,419,676	\$6,285,078	\$1,864,152
Net Capital Investments	\$2,611,259	\$1,087,877	\$5,260,128	\$7,429,111	\$1,470,043
TOTAL CASH FLOW	(\$2,198,250)	(\$367,340)	(\$5,032,917)	(\$7,016,301)	(\$895,234)

Environmentally Sensitive Areas

Airport has extensive existing surveys:

- Recent wetland delineations covering majority of footprint
- Extensive delineated wetlands through airport in vegetated areas around runways, taxiways, fields, and hangars.
- Recent natural resources inventories covering recently acquired parcels
- Ongoing Streaked Horned Lark and avian surveys



Environmentally Sensitive Areas

Sensitive Areas on HIO property

- Wetland Drainage in Northwest end of runway (Photo A)
 - Pending Environmental Assessment (EA) for runway safety area improvements
 - Ongoing hydrology monitoring
- Solar World Parcels
 - High quality forested upland and wetland habitat with wooded area (Photo B)
 - Additional upland oak area southwest of parcels (Photo C)
- Brookwood Parkway Woodland (Photo D)
 - Adjacent to Dawson Creek – contains upland woods, riparian wetland, and wetland drainages
 - Some selective logging of trees conducted in past to remove hazards for take-off/landing clearance



Unmanned Aircraft System (UAS) Introduction

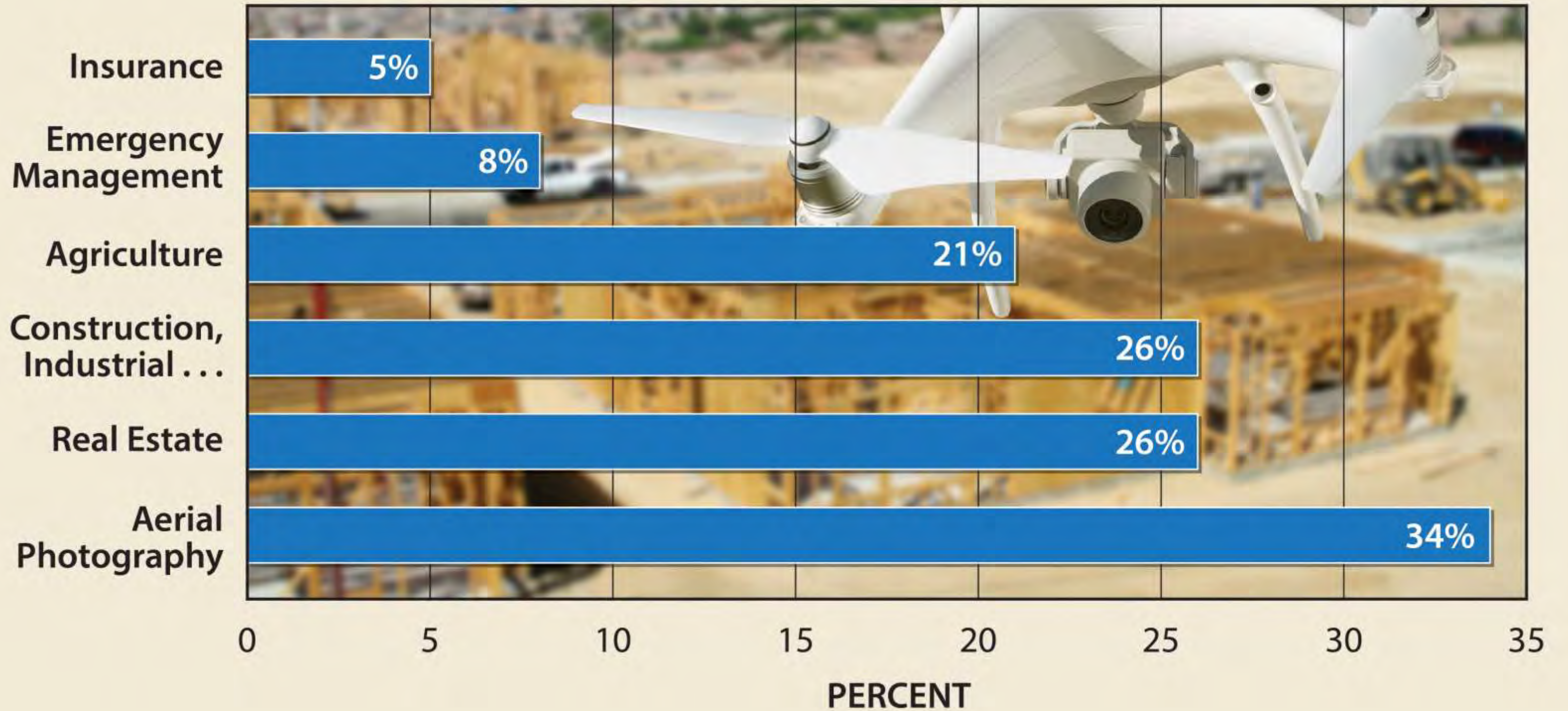
- Hobbyist and Commercial UAS: 0.55 – 55 lbs.
- Within 5 miles, operators must notify both towered and non-towered airports.
- UAS operators must register their UAS.
- Maximum Altitude is 400' (or no higher than a building)
- Airspace Restrictions: Class G – None; Class B, C, D, and E need ATC Approval
- Maintain visual line-of-sight, day-light only (3-mile visibility).
- Max speed of 100 mph
- No hazardous materials
- No operations from a moving vehicle or aircraft
- No operation over persons not participating
- No operations under a covered structure
- No operations inside a covered stationary vehicle
- Any condition, altitude, etc. can be waived but...
FAA reviews waiver requests.

UAS sightings reported by manned aircraft

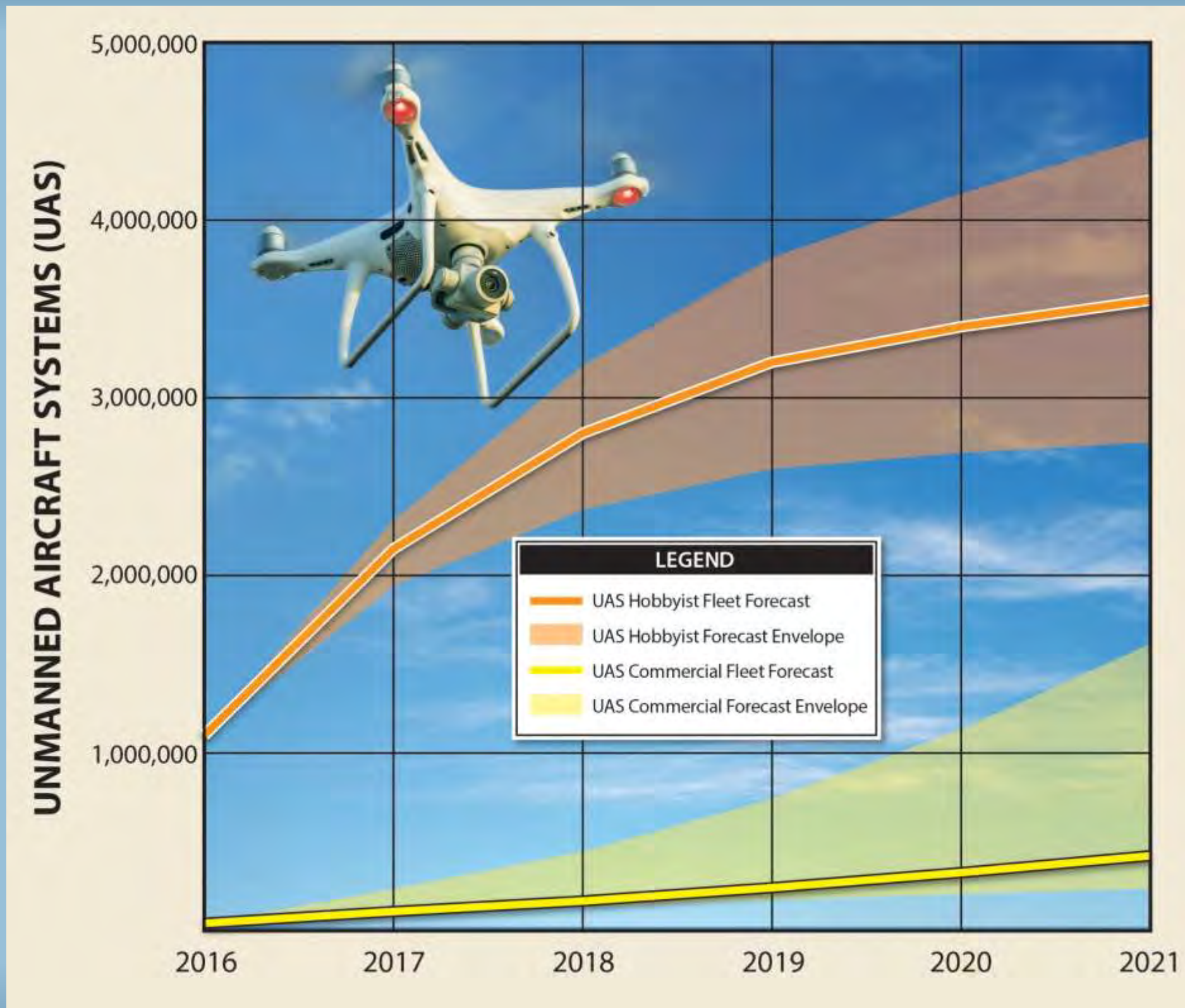
- | | |
|---------------------------------|-------|
| • Nov 2014-Aug 2015 (10 mos.): | 765 |
| • Aug 2015-June 2016 (11 mos.): | 1,393 |



Uses of Commercial UASs



Unmanned Aircraft Systems (UAS) Forecast



Hobbyist Fleet (FAA baseline)

2016: 1.1 million

2021: 3.6 million

CAGR: 22%

Commercial Fleet (FAA baseline)

2016: 42,000

2021: 422,000

CAGR: 47%

- A \$1 billion industry expected to grow to \$20 billion in five years

CAGR: Compounded Annual Growth Rate

HILLSBORO AIRPORT MASTER PLAN UPDATE

Preview Topic: Aviation Demand Forecasts

Patrick Taylor, Coffman Associates

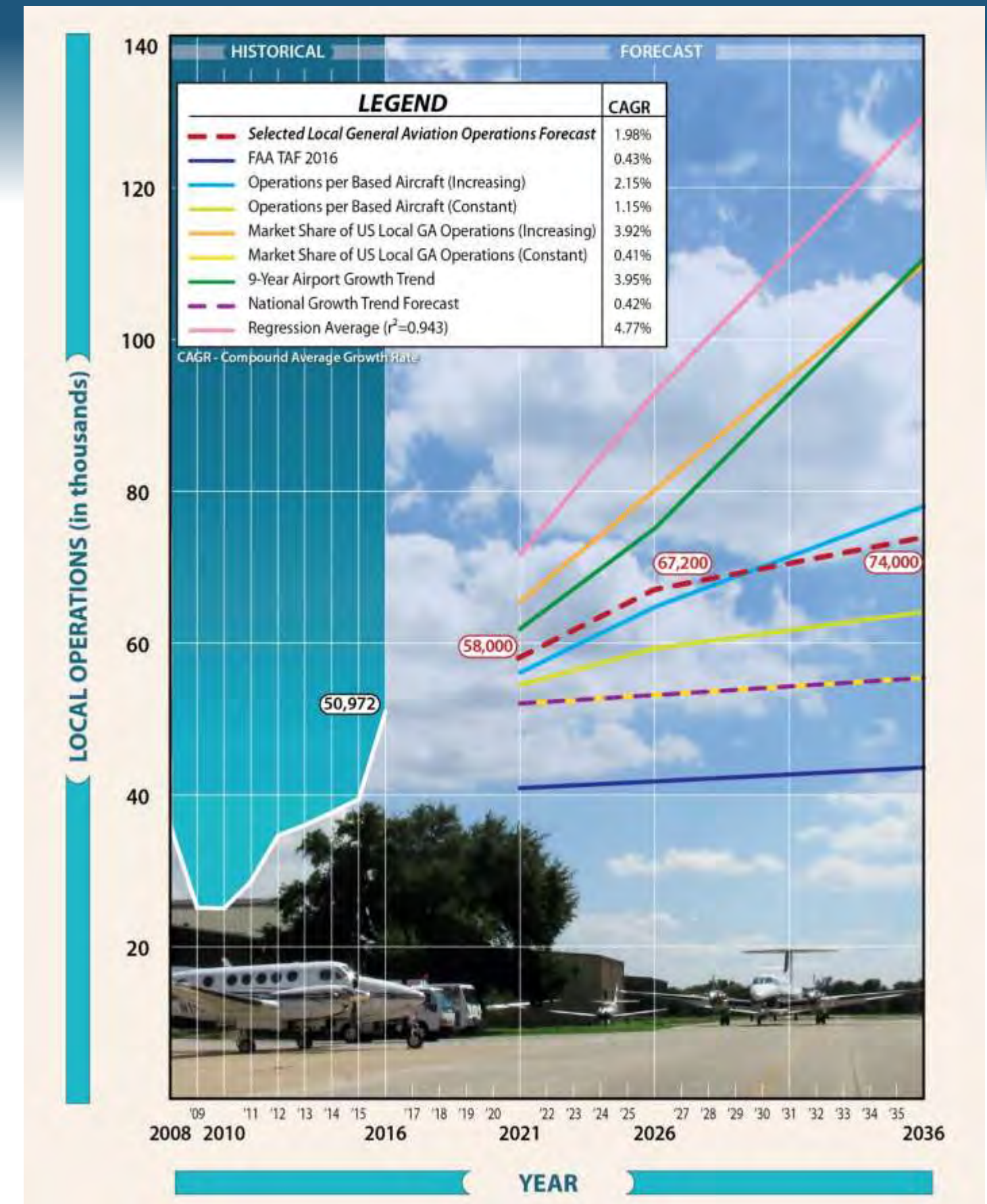


Purpose of Aviation Demand Forecasts

- Forecasts are the basis for effective decisions in airport planning
- The projections are used to determine the need for new or expanded facilities based upon demand
- Forecast Elements for Hillsboro: Based Aircraft, Operations.
- Requires both analytical and judgmental processes
- Approach: Planning envelope leads to a selected forecast
- Methods: Trend-line, correlation, regression, market share, cohort, etc.
- Compare to the FAA Terminal Area Forecast (TAF)
 - Within 10% in 5-year
 - Within 15% in 10-year
- FAA to review and approve the forecasts

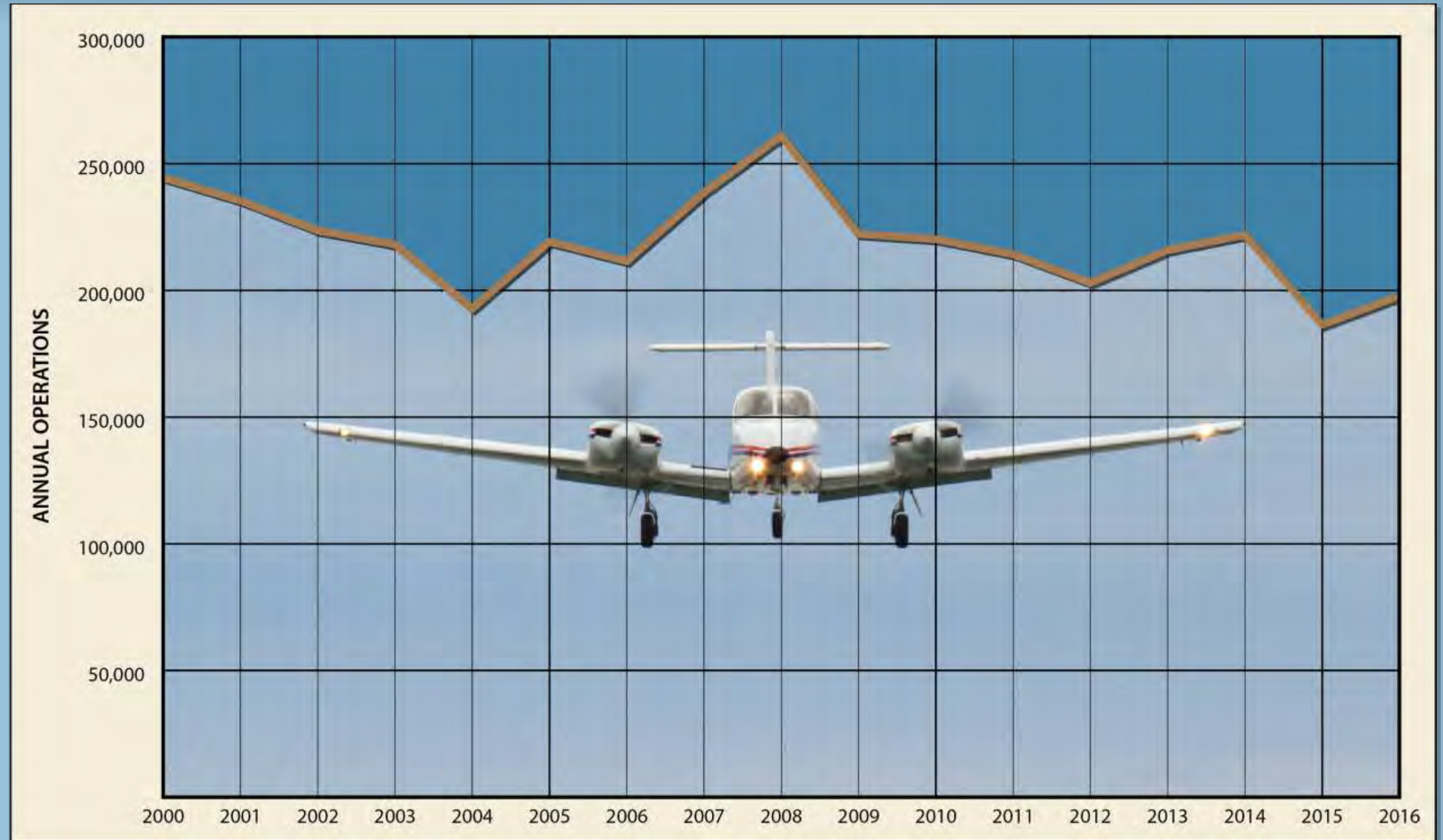
Forecast Inputs

- FAA's annual aerospace forecasts 2017-2037
 - Active general aviation aircraft
 - General aviation operations
 - Active pilots
 - Hours flown
- Socioeconomic data
 - Population, employment, income, etc.
- Aircraft ownership
 - Area registered aircraft
- Historical trends
 - HIO operations
 - HIO based aircraft



Historical Operations at Hillsboro

Year	Total
2000	244,511
2001	235,383
2002	223,589
2003	218,118
2004	192,833
2005	219,227
2006	211,493
2007	238,605
2008	260,957
2009	222,271
2010	220,213
2011	214,243
2012	202,967
2013	215,861
2014	221,932
2015	186,402
2016	197,763



Historic Operations by Type at Hillsboro



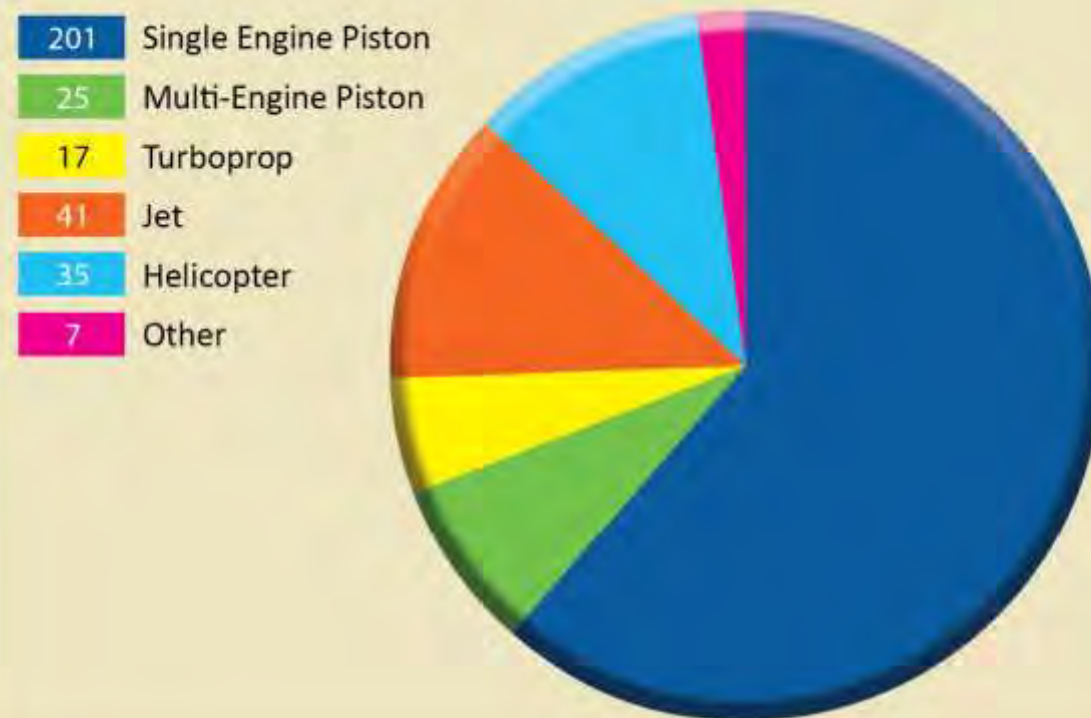
Date	Itinerant					Local			Total Ops
	Air Carrier	Air Taxi	GA	MIL	Total	GA	MIL	Total	
2000	0	7,230	83,201	1,103	91,534	151,645	1,332	152,977	244,511
2001	12	7,931	84,639	873	93,455	141,880	48	141,928	235,383
2002	6	9,078	82,493	426	92,003	131,495	91	131,586	223,589
2003	0	9,386	78,942	450	88,778	129,141	199	129,340	218,118
2004	0	8,287	72,444	834	81,565	111,250	18	111,268	192,833
2005	0	9,689	68,940	227	78,856	140,311	60	140,371	219,227
2006	0	8,773	65,008	262	74,043	137,421	29	137,450	211,493
2007	3	6,571	69,755	219	76,548	162,032	25	162,057	238,605
2008	0	7,615	76,256	268	84,139	176,791	27	176,818	260,957
2009	0	5,749	68,724	295	74,768	147,478	25	147,503	222,271
2010	0	5,738	63,619	176	69,533	149,579	1,101	150,680	220,213
2011	4	6,235	69,770	330	76,339	137,822	82	137,904	214,243
2012	16	6,283	68,696	383	75,378	127,555	34	127,589	202,967
2013	5	3,884	70,187	376	74,452	141,387	22	141,409	215,861
2014	14	4,322	76,453	236	81,025	140,889	18	140,907	221,932
2015	35	4,405	71,144	367	75,951	110,446	5	110,451	186,402
2016	12	4,352	77,778	268	82,410	115,332	21	115,353	197,763

2017 Based Aircraft

Aircraft Type	Number of Aircraft
Single Engine Piston	201
Multi-Engine Piston	25
Turboprop	17
Jet	41
Helicopter	35
Other	7
Total	326

Source: Oregon Department of Aviation

BASED AIRCRAFT FLEET MIX - 2017

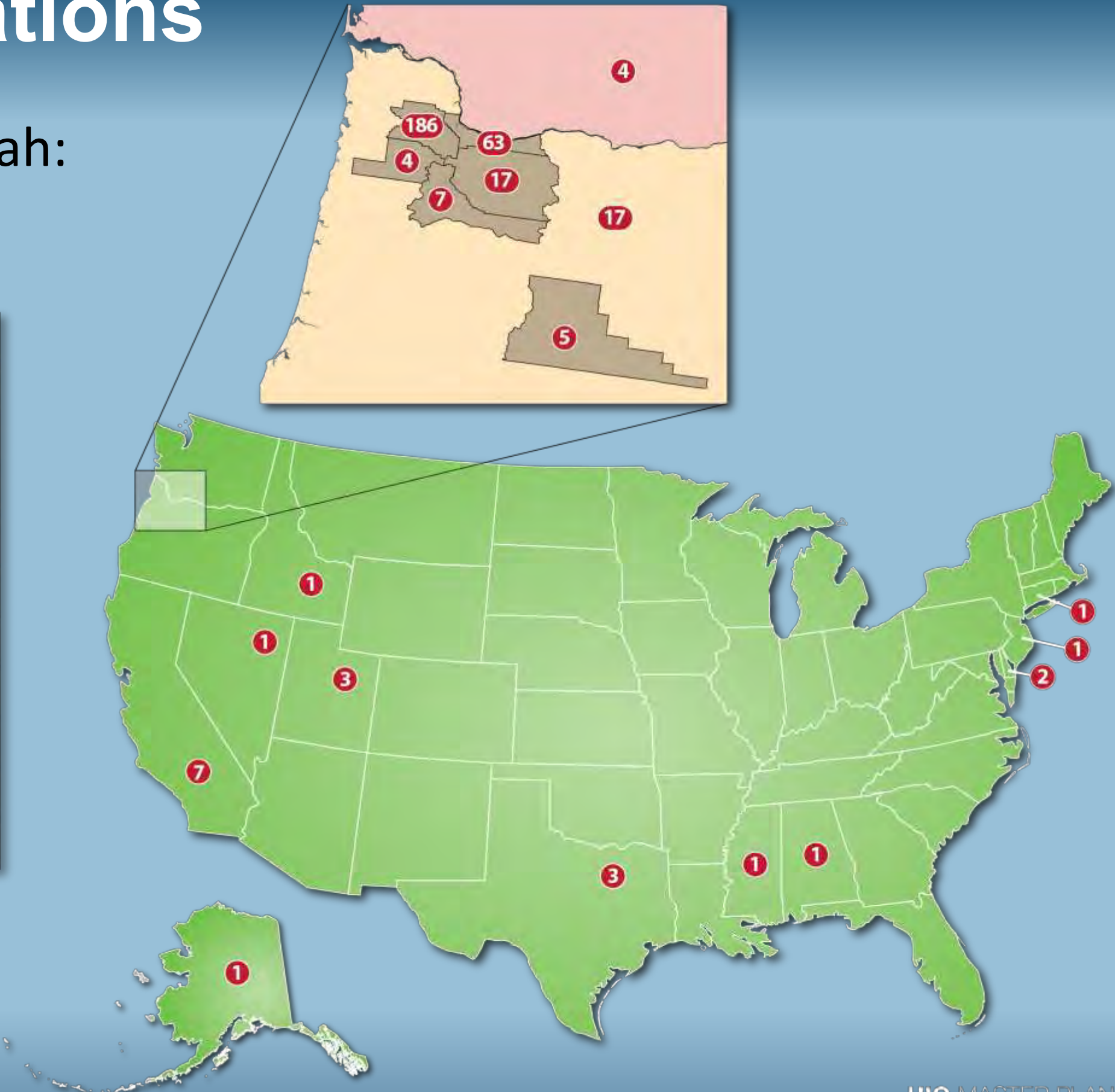


- 326 aircraft based at Hillsboro according to ODA registration records.
- All of these have active registration with the FAA.
- 41 jets including the largest business jets in the national fleet (e.g. Gulfstream V, Global Express).
- Airport maintains design standards triggered by large business jets.
- Of the 41 jets, 35 are registered with FAA in Oregon.

Based Aircraft Locations

- Washington, Clackamas, Multnomah: 82% of based aircraft.

Location	Number of Aircraft
Washington County	186
Multnomah County	63
Clackamas County	17
Marion County	7
Deschutes County	5
Yamhill	4
Other Oregon	17
Other WA State	4
Out of State	23
Total Based Aircraft	326



2017 FAA Terminal Area Forecasts

	2016	2021	2026	2031	2036	AAGR
ITINERANT OPERATIONS						
General Aviation	78,101	87,808	89,133	90,476	91,839	0.81%
Air Taxi	4,352	5,579	7,156	9,171	11,762	5.10%
Military	266	266	266	266	266	0.00%
Air Carrier	14	14	14	14	14	0.00%
Total Itinerant	82,733	93,667	96,569	99,927	103,881	1.14%
LOCAL OPERATIONS						
General Aviation	113,321	114,504	115,371	116,244	117,123	0.17%
Military	7	7	7	7	7	0.00%
Total Local	113,328	114,511	115,378	116,251	117,130	0.17%
Total Operations	196,061	208,178	211,947	216,178	221,011	0.60%
BASED AIRCRAFT						
	256	277	299	324	349	1.56%
AAGR: Average annual growth rate						
Source: FAA Terminal Area Forecast (Jan. 2017)						

HILLSBORO AIRPORT MASTER PLAN UPDATE

Close Out and Meeting Evaluation

Anne Pressentin, Envirolssues

