PORT OF PORTLAND

HIO MASTER PLAN UPDATE

Planning a Shared Future

Planning Advisory Committee Meeting #4
September 12, 2017

HILLSBORO AIRPORT MASTER PLAN UPDATE

Welcome and Meeting Introduction

Jerry Willey, Committee Chair

Anne Pressentin, EnviroIssues

Agenda

- Welcome and Meeting Introduction
- Hillsboro Airport Business Report
- Recap and Wrap Up
- Summer Outreach Summary
- Focus Topic: Facility Requirements
- PAC Activity I
- Break
- Public Comment
- Preview Topic: Alternatives Analysis
- PAC Activity II
- Close Out and Meeting Evaluation

HILLSBORO AIRPORT MASTER PLAN UPDATE

Hillsboro Airport Business Report

Steve Nagy, Port of Portland

Business Report

- Security incident: July 3rd
- Oregon International Airshow: Sept. 22, 23 and 24
- U.S. Ninth Circuit Court decision on Runway 13L/31R

Business Report

- **History**
  - National Environmental Policy Act established 1970
  - Called “Magna Carta” of environmental legislation
  - Established Council on Environmental Quality (CEQ)

- **Goals**
  - Trustee of the environment for future generations
  - Preserve cultural, historic and natural aspects of environment
  - Achieve balance between population and resource area

Business Report

- NEPA is required whenever an agency proposes to take a “major federal action”

- Defined as an action that has the potential for significant impact on human environment

- Typical actions requiring NEPA review:
  - Constructing facilities
  - Awarding federal grant funds

Business Report

- Categorical Exclusion (**CatEx**)
  - Routine actions with known insignificant impacts – (examples: access roads, t-hangars, aprons, existing airfield rehabilitation)
  - No public involvement

- Environmental Assessment (**EA**)
  - Actions with unknown impacts – (examples: new runway, major runway extension)
  - Significant public involvement: workshop/open houses

- Environmental Impact Statements (**EIS**)
  - Actions with significant impacts – (example: new airport)
  - Significant public involvement: scoping, public workshop/open houses, public hearings

HILLSBORO AIRPORT MASTER PLAN UPDATE

Recap and Wrap Up: Inventory, Role of the Airport, and Forecasts

Dave Nafie, WH Pacific

Key Project Phases

Foundation

2005 Master Plan

2/17

Investigation

- Existing Conditions
- Strategic Analysis/Role
- Forecasts

1

8/17

Analysis

- Facility Requirements
- Airport Alternatives
- Costs
- Preferred Alternative

2

6/18

Formalization

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

3

2/19

Plan

Implementation

- Follow-on Studies
- Ongoing Community Engagement
- Development

Special Areas of Interest

Seismic

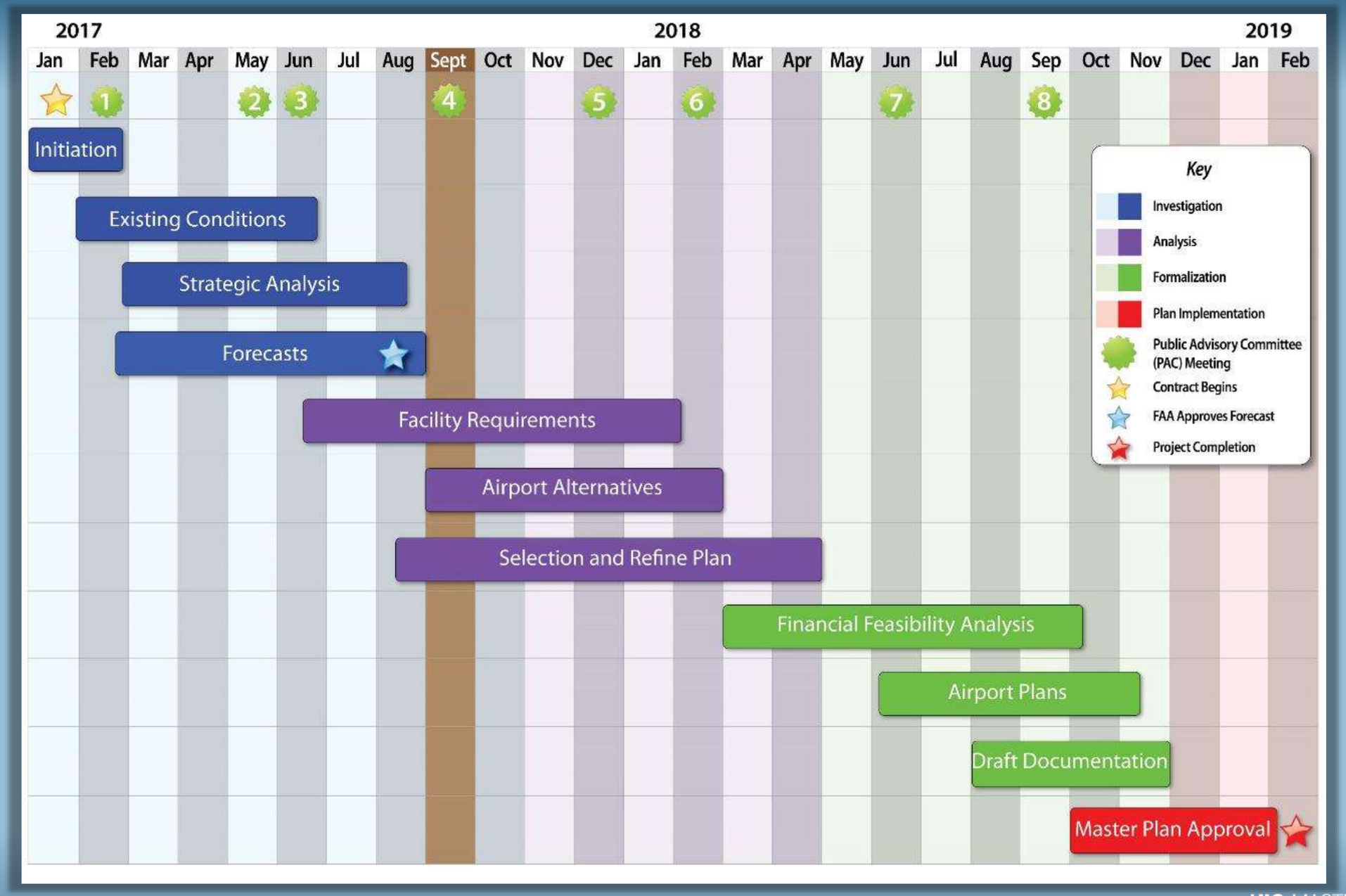
Stormwater

Community Access

Noise/Air Quality

Focused Site Planning

Project Schedule



Inventory Summary

- First airport on this site established in 1928.
- In 1966, Port of Portland assumed management of the airport.
- Currently, the airport land is approximately 963 acres.
- 3 Runways, with Runway 13R-31L at 6,600’ long.
- Excellent instrument approaches: ILS to Rwy 13R with ½-mile minimums.
- Mix of hangars: T-hangars, box/executive, conventional.
- Baseline activity and financial data.
- Baseline environmental data.

Role of the Airport Summary

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

Forecast Summary: Update

	2016	2021	2026	2036	CAGR	Total
BASED AIRCRAFT						
PAC Meeting #3	326	350	370	410	1.15%	84
Forecast Supplement	354	375	395	445	1.15%	91
Change	+28	+25	+25	+35		+7
OPERATIONS						
PAC Meeting #3	197,763	208,600	221,100	247,400	1.13%	49,637
Forecast Supplement	197,763	208,100	220,600	247,700	1.13%	49,937
Change	-	-500*	-500*	+300		+300

*The decrease in operations while based aircraft increased, is due to a lower starting number of operations per aircraft (2016 operations/2016 based aircraft).

- Forecast revision due to confirmation of 28 additional based aircraft. 326 v. 354.
- Itinerant operations changed slightly as a result.
- Forecasts submitted to FAA on 7/13/17.

Critical Aircraft Summary

- Aircraft types currently operating at the airport shown to the right.
- The highlighted box indicates the largest and most demanding aircraft exceeding the 500 operations threshold.
- Design standards for **D-III** aircraft weighing less than 150,000 pounds apply.
- Representative design aircraft is the Gulfstream-650.

A-I

- Beech Baron 55
- **Beech Bonanza**
- Cessna 150
- Cessna 172
- Cessna Citation Mustang
- Eclipse 500/550
- Piper Archer
- Piper Seneca

B-I

- Beech Baron 58
- Beech King Air A90/100
- Cessna 402
- **Cessna 421**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I (525)

B-II

- Super King Air 200
- Cessna 441
- DHC Twin Otter
- Super King Air 350
- Beech 1900
- Citation Excel (560), Sovereign (680)
- Falcon 50, 900, 2000
- **Citation Bravo (550)**
- Embraer 120

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 72
- ATP

C-I, D-I

- Beech 400
- **Lear** 31, **35,** 45, 60
- Israeli Westwind

C-II, D-II

- **Cessna Citation X (750)**
- Gulfstream 100, 200,300
- Challenger 300/600
- ERJ-135, 140, 145
- CRJ-200/700
- Embraer Regional Jet
- Lockheed JetStar
- Hawker 800

C-III, D-III *less than 150,000 lbs.*

- ERJ-170
- CRJ 705, 900
- Falcon 7X
- **Gulfstream 500**, 550, 650
- Global Express, Global 5000
- Q-400

C-III, D-III *over 150,000 lbs.*

- ERJ-90
- Boeing Business Jet
- B-727
- **B-737**-300, **700,** 800
- MD-80, DC-9
- A319, A320

C-IV, D-IV

- **B-757**
- B-767
- C-130 Hercules
- DC-8-70
- MD-11

D-V

- **B-747-400**
- B-777
- B-787
- A-330, A-340

Design Aircraft

HILLSBORO AIRPORT MASTER PLAN UPDATE

Summer Outreach Summary

Seth Baker, EnviroIssues

Summer Outreach Summary

Events attended

- Celebrate Hillsboro (July 15)
- Orenco Station Farmers Market (Aug. 20)
- Hillsboro Downtown Farmers Market (Aug. 19 and Aug. 26)

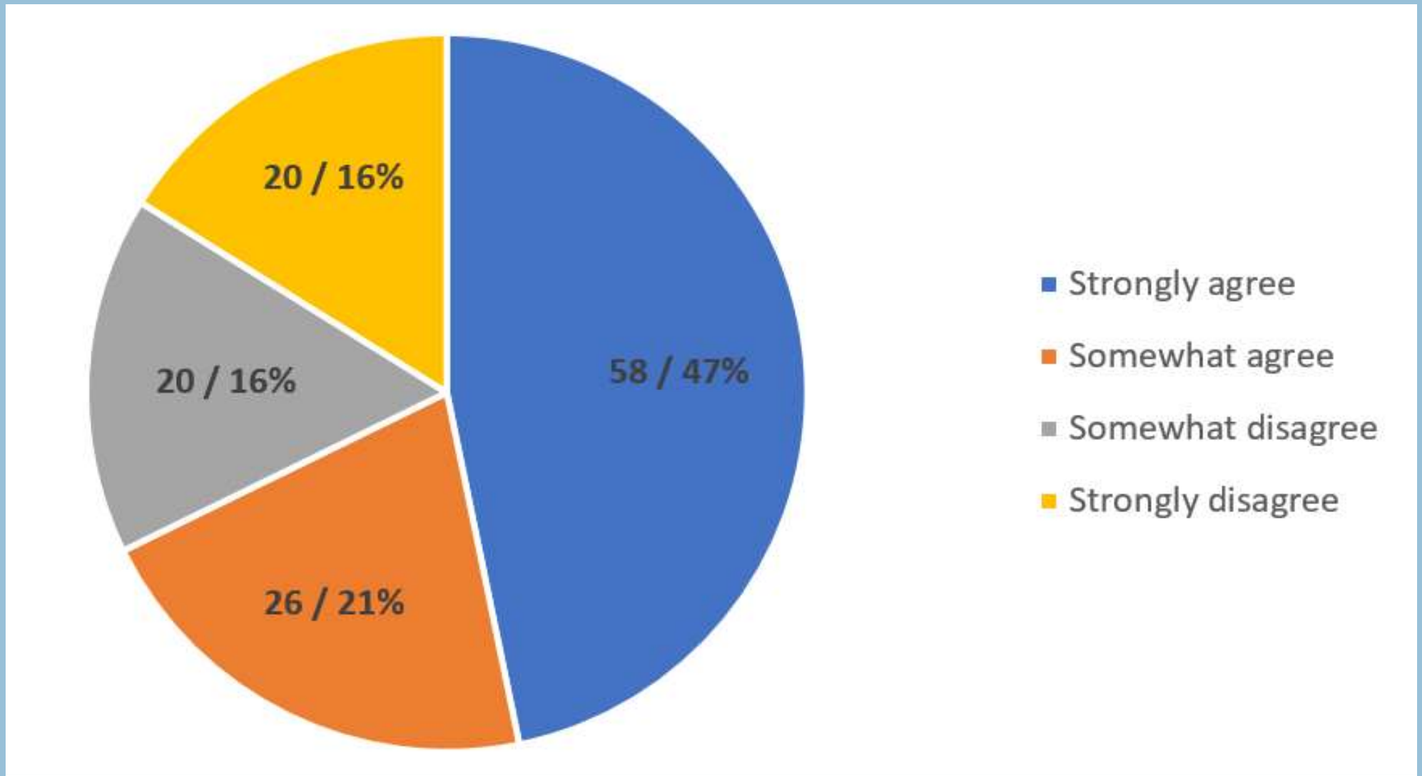
Stakeholder presentation

- Westside Economic Alliance

Online open house (July 18 – Aug. 31)

- Total visitors: 1,994
- Emails collected: 110
- Surveys completed: 124

Survey findings: Level of agreement with the airport role recommendation



- Total completed: 124
- ZIP 97124 submitted more responses than other ZIP codes (51)

Outreach findings

People who think Hillsboro Airport's role should remain the same:

- Continue focus on general aviation
- Noise and air quality issues could increase with growth in airport activity

People who want commercial service at Hillsboro Airport:

- The region seems to be growing quickly and PDX seems congested
- Road congestion makes driving to PDX impractical
- Hillsboro Airport could serve tourist destinations

People who want Hillsboro Airport activity to decrease:

- The airport is, or will become, incompatible with growing residential communities
- Quality of life is negatively affected by noise and air quality issues associated with airport activity

Survey findings: How to integrate Hillsboro Airport with the surrounding community

Community access

- Public areas with views of airport activity
  - Observation deck
  - Restaurants
- Aviation educational facilities
  - Museum
  - Kiosks
- Activities for kids on airport

Community compatibility

- Create benefits for non-aviation users to live near HIO
- Take steps to reduce noise and lead emissions
- Measure noise and air quality and report findings to the public
- Share community feedback heard and how it is acted upon

Community facilities/infrastructure

- Improved bicycle and pedestrian paths around the airport
- Natural areas, dog parks, wildlife habitat
- Improved transit connections between HIO/Fairgrounds and other Hillsboro Communities
- Improved terminal area and add more retail

Airport facilities

- Improve flight training facilities
- Increase car parking capacity
- Improve natural landscaping to beautify airport property
- Do not change HIO

Survey findings: Other ideas for available property

- Maximize property for aviation
- Drop zone for skydiving or training rescue parachutists
- Freight infrastructure for future air cargo service
- Solar panels
- Community gardens
- Conference center
- Race track for go-carts, motorcycles, or other motorsports
- Host "fly-in breakfasts"

HILLSBORO AIRPORT MASTER PLAN UPDATE

Focus Topic: Facility Requirements

Patrick Taylor, Coffman Associates

Planning Horizon Levels

- Translate forecast years into planning horizons:
  - Short Term (years 1-5)
  - Intermediate Term (years 6-10)
  - Long Term (years 11-20)
- Promotes demand-based planning.
- Avoids pursuing projects simply because it’s time.
- Reinforces the need for project justification.

Facility Requirements Categories

- **Demand (Forecast) Generated**: Airfield Capacity, Hangars, Aprons, Runways
- **Design Standards Review**: Hot Spots, Pavement Geometry, Airport Reference Code
- **Facility Maintenance**: Pavement, Buildings
- **Support Facilities**: Navigational Aids, Fuel, Security, Land Development/Redevelopment, etc.

- **Airside Facilities**: Runways, Taxiways, etc.
- **Landside Facilities**: Aprons, Hangars, Support Facilities, etc.

Hot Spots

Hangars

Pavement Condition

Airside Facility Requirements

- **Airside Requirements**
  - **Airfield Capacity (Annual Service Volume):** The previous master plan recommended the parallel runway and high speed taxiway exits for capacity improvement.
  - **Runway Configuration:** Orientation, Length, Width, Design Standards, Separation Standards.
  - **Taxiway Design Standards:** Taxiway geometry, run-up areas, direct apron to runway access, wide pavement areas, three-node intersection concept.

Airfield Capacity

- When operations account for 60%-75% of capacity, planning for improvements should begin.
- At 80% of capacity, construction of capacity improvements should be underway.
- In 2005, the airport was at 107% of capacity (ASV of 169,000).
- Investments (e.g. parallel runway) have paid off.
- Good News: No projects are needed to specifically increase airfield capacity.

	Current	Short Term	Long Term
Operations*	152,622	160,677	191,235
Annual Service Volume	384,000	381,000	381,000
Demand/Capacity Ratio	39.7%	42.2%	50.2%

* Local helicopter operations excluded

Capacity Model Inputs

Runway Orientation

- Optimal runway orientation provides greater than 95% wind coverage.
- All runways are in the optimal orientation.

ALL WEATHER WIND COVERAGE				
10 years of annualized data 2006-2015				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	97.90%	98.98%	99.77%	99.96%
Runway 2-20	96.70%	98.52%	99.78%	99.97%

- Less than 95% wind coverage justifies a crosswind runway.
- Crosswind Runway 2-20 is needed and justified for small aircraft due to prevailing winter winds.

ALL WEATHER WIND COVERAGE				
36 years of daylight winter data 1973-2009				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 13-31	93.02%	96.27%	98.85%	99.70%
Runway 2 -20	95.25%	99.97%	99.62%	99.94%

Runway Length Parameters

- Source: Draft FAA AC 150/5325-4C, *Runway Length Recommendations for Airport Design* (2013).
- Primary factors: Aircraft type, temperature, runway gradient, elevation, maximum takeoff weight (MTOW), and wet/dry conditions.
- For aircraft weighing 12,500 lbs. or less: FAA provides a model with general recommendations for runway length based on a family of aircraft.
- For aircraft weighing 12,500 lbs. or more: Flight planning manuals for specific aircraft are to be used.

The recommended length must be supported by at least 500 operations by the critical design aircraft or family of aircraft for each runway.





Airside

Runway Length – Small Aircraft *

- **Parallel Runway 13L-31R** (3,600’ existing):
  - 3,600’ is recommended
  - Maintain at current length
- **Crosswind Runway 2-20** (3,821’ existing):
  - 3,600’ – 4,100’ is recommended
  - Maintain at current length

*12,500 pounds or less

Runway Length – Large Aircraft

Wet Conditions

- All of the business jets can (and do) operate at the airport.
- Several of the listed aircraft including the G-650 and ERJ-145 are weight restricted at times.

Runway Length – Large Aircraft

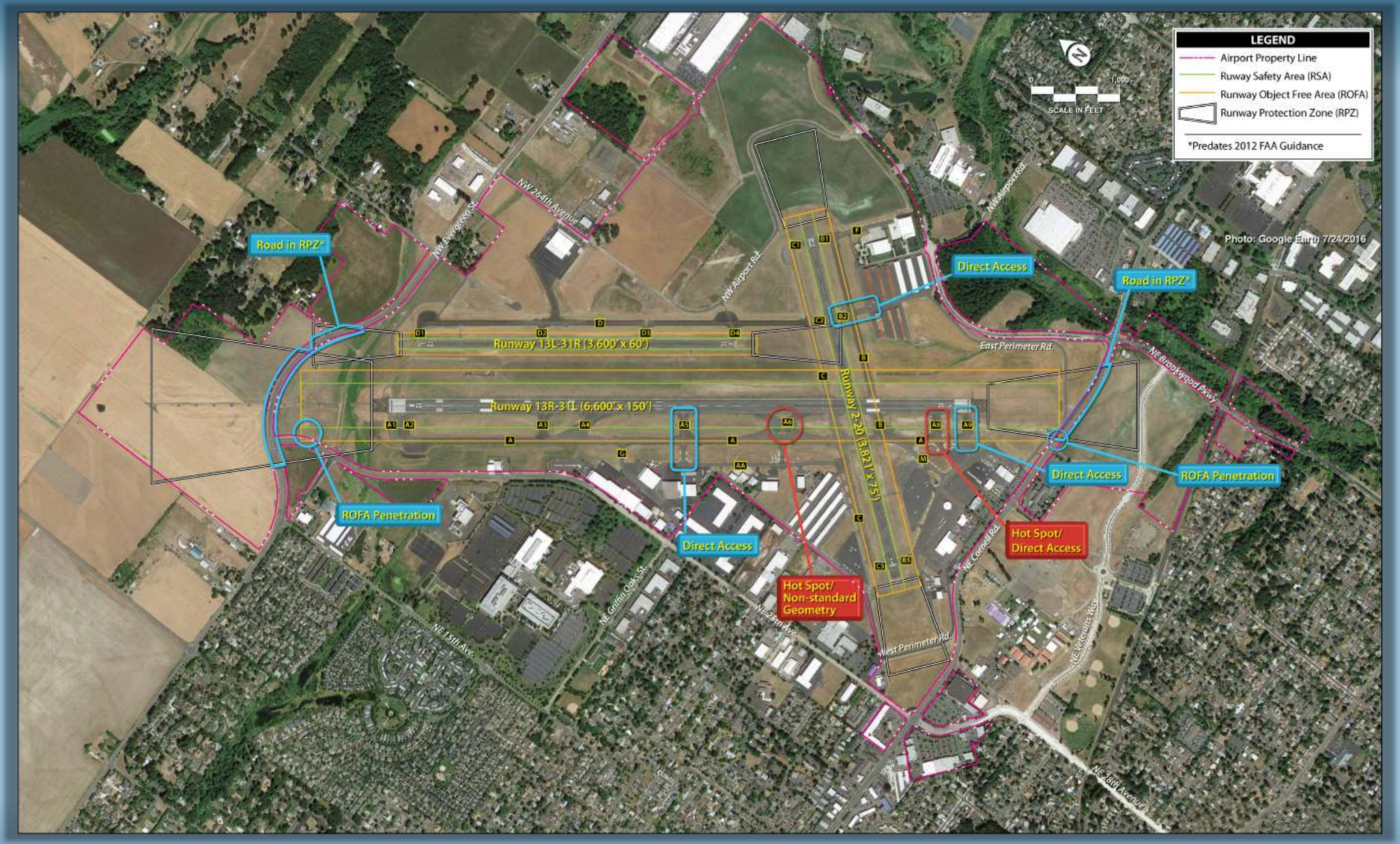
- Current length available (6,600’) does a good job of meeting the needs of the design aircraft most of the time.
- Under more extreme conditions (i.e. wet runways, very hot days) the design aircraft may be weight restricted.
- Some operators of aircraft in the design aircraft category have expressed a desire for additional runway length.
- Alternatives should evaluate the feasibility of a slightly longer runway (≤ 7,500’).

Runway Width

Runway	Design Standard	Existing Condition	Recommendation
Primary Runway 13R-31L:	100’	150’	150’
Crosswind Runway 2-20:	75’	75’	75’
Parallel Runway 13L-31R:	60’	60’	60’

- The width of the parallel and crosswind runways meet the design standard and should be maintained.
- The width of the primary runway exceeds the design standard. FAA does not participate financially beyond the design standard. The Port, with input from large-jet operators, has elected to self-fund the extra width in order to maintain an additional safety margin.

Airfield Focus Areas



Airside

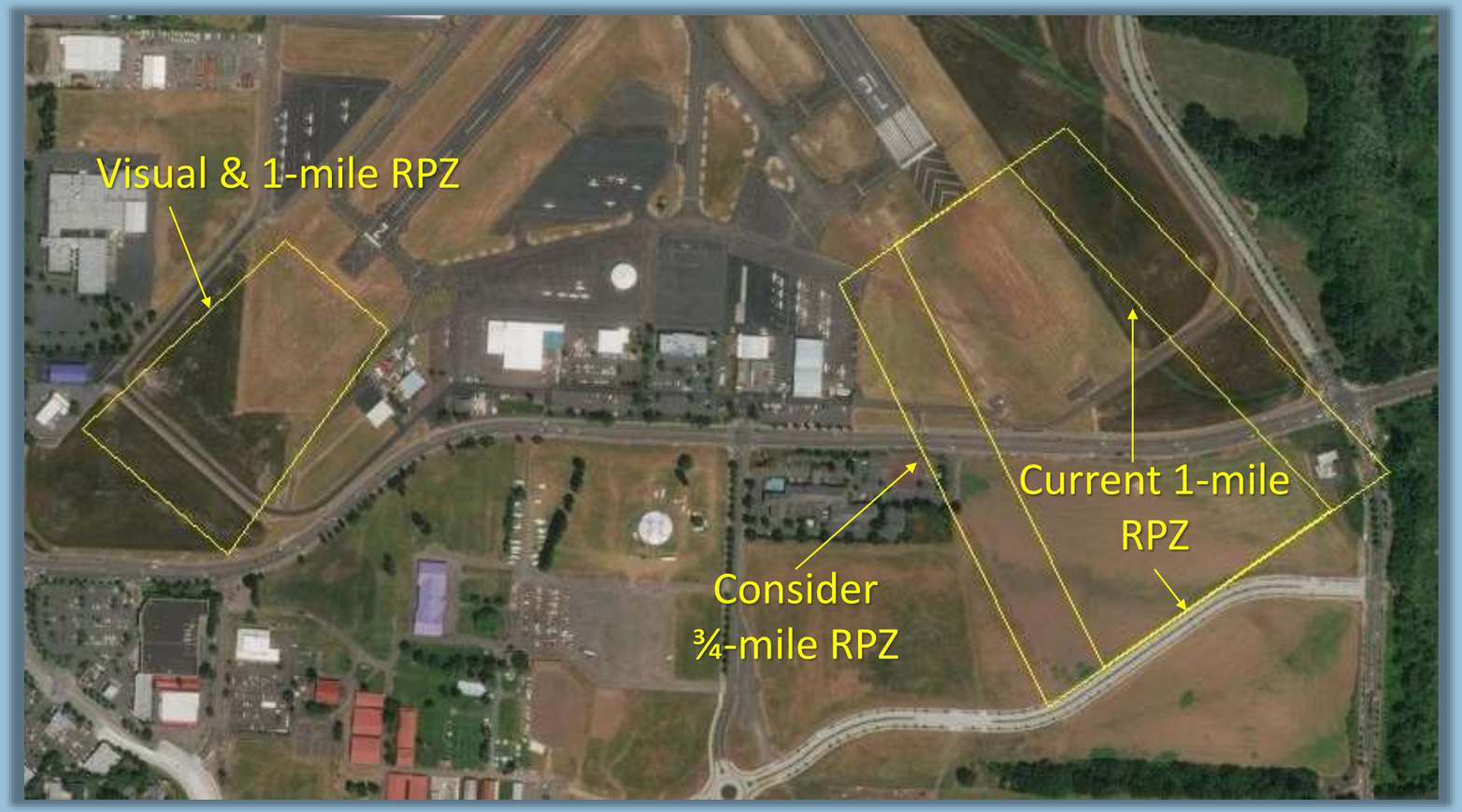
Instrument Approach Considerations

Runway 13R
- Existing: ½-mile Visibility
- Future: Maintain

Runway 31L
- Existing: 1-mile Visibility
- Future: Consider ¾-mile Visibility

Runway 2-20
- Existing: Visual (3-mile Visibility)
- Future: Consider 1-mile Visibility

Runway 13L-31R
- Existing: Visual (3-mile Visibility)
- Future: Maintain

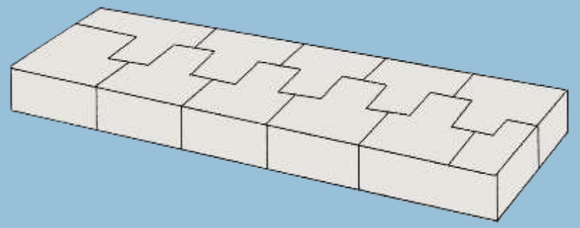


Landside Facility Requirements

- **Landside Requirements**
  - Hangar needs by type: T-hangars, box/executive, conventional.
  - Apron needs: Local tie-down and transient apron.
  - Vehicle parking needs: Known to be deficient but how much is needed?
  - Terminal building/FBO needs: GA pilot services and community services.
  - Support Needs: Maintenance equipment, fuel capacity, fencing, etc.

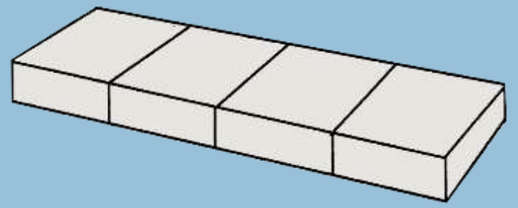
T-Hangar

T-Hangar



Conventional Hangar

Box Hangar



Hangar Needs

- Need for additional 98,800 sq.ft. of hangar space.
- Hangar need is ultimately determined by individual user preference.
- Hangar space is currently available (T-hangars)
- 2005 master plan showed a need for 273,100 sq.ft.
- Approx. 120,000 sq.ft. has been constructed since then.

	Current Supply (est.)	Long Term (2036)	Total Need Less Current Supply
BASED AIRCRAFT	**354**	**445**	
Aircraft to be Hangared	301	378	77
T-Hangar Positions	182	182	0
Box Hangar Positions	25	58	33
Conventional Hangar Positions	170	138	-32
HANGAR AREA REQUIREMENTS			
T-Hangar Area	219,500	255,000	35,500
Box Hangar Area	60,900	127,000	66,100
Conventional Hangar Area	373,600	345,000	-28,600
Total Aircraft Storage Area (s.f.)	*654,000*	*727,000*	*73,000*
Total Maintenance Area (s.f.)	*52,200*	*78,000*	*25,800*

Apron Needs

	Currently Available (2016)	Long Term (2036)	Change
LOCAL APRON POSITIONS	**179**	**77**	
Local Apron Area (s.y.)	46,500	38,400	(8,100)
TRANSIENT APRON POSITIONS	**31**	**69**	**38**
Piston Transient Positions	24	55	31
Turbine Transient Positions	7	14	7
Transient Apron Area (s.y.)	44,800	65,900	21,100
Total Apron Area (s.y.)	*91,300*	*104,300*	*13,000*

- Long term need for an additional 13,000 square yards of apron area.
- Transient apron area and positions needed most.
- Far more local tie-down positions available than needed.
- Aircraft parking positions should be in proximity to services.

Vehicle Parking

	EXISTING	LONG TERM (2036)	CHANGE
TERMINAL AREA PARKING			
Terminal Area	283	541	258
Employee	38	45	7
Rental Car	139	159	20
Subtotal Terminal Parking	460	745	285
OTHER LOCAL PARKING			
Based Aircraft Owners[1]	177	223	46
Airport Businessess	396	496	100
Subtotal Other Local Parking	573	719	146
Total All Parking	***1,033***	***1,464***	***431***

[1]Estimated need if dedicated parking were made available; however most based aircraft owners will park in their hangar when flying.

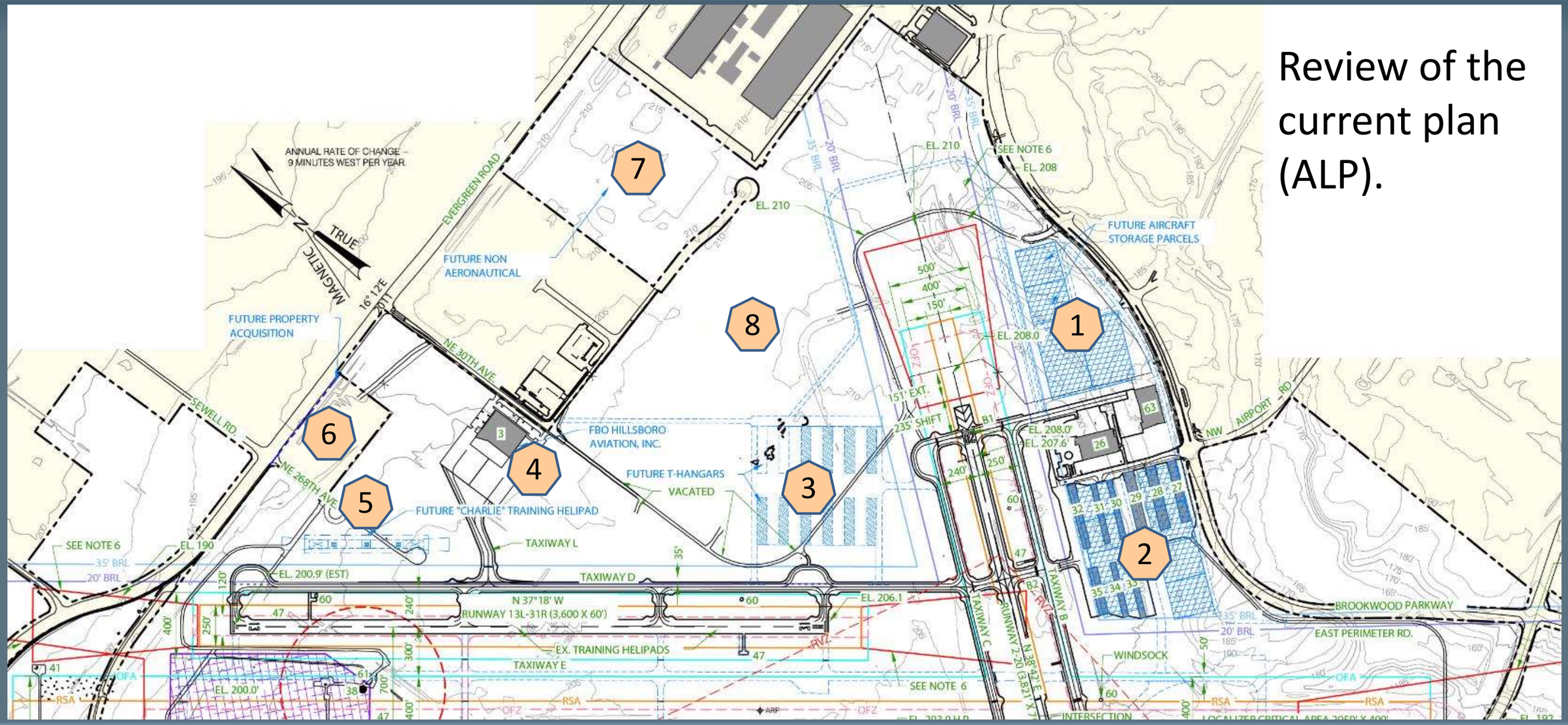
Terminal Building

- GA Terminal Services: Supplied by both the airport and FBOs
  -Existing: 12,000 sq.ft.
  -Long term need: 9,500 sq.ft.

- Commercial Terminal Services (example)
  -Existing: 20,000 sq.ft.
  -Long term need: 43,000 sq.ft. total

- Consider replacing existing facility due to age, seismic, functionality, and location.
- When designing, build in flexibility, consider community benefits (conference rooms, commercial uses, restaurant, viewing area, connectivity, etc.).

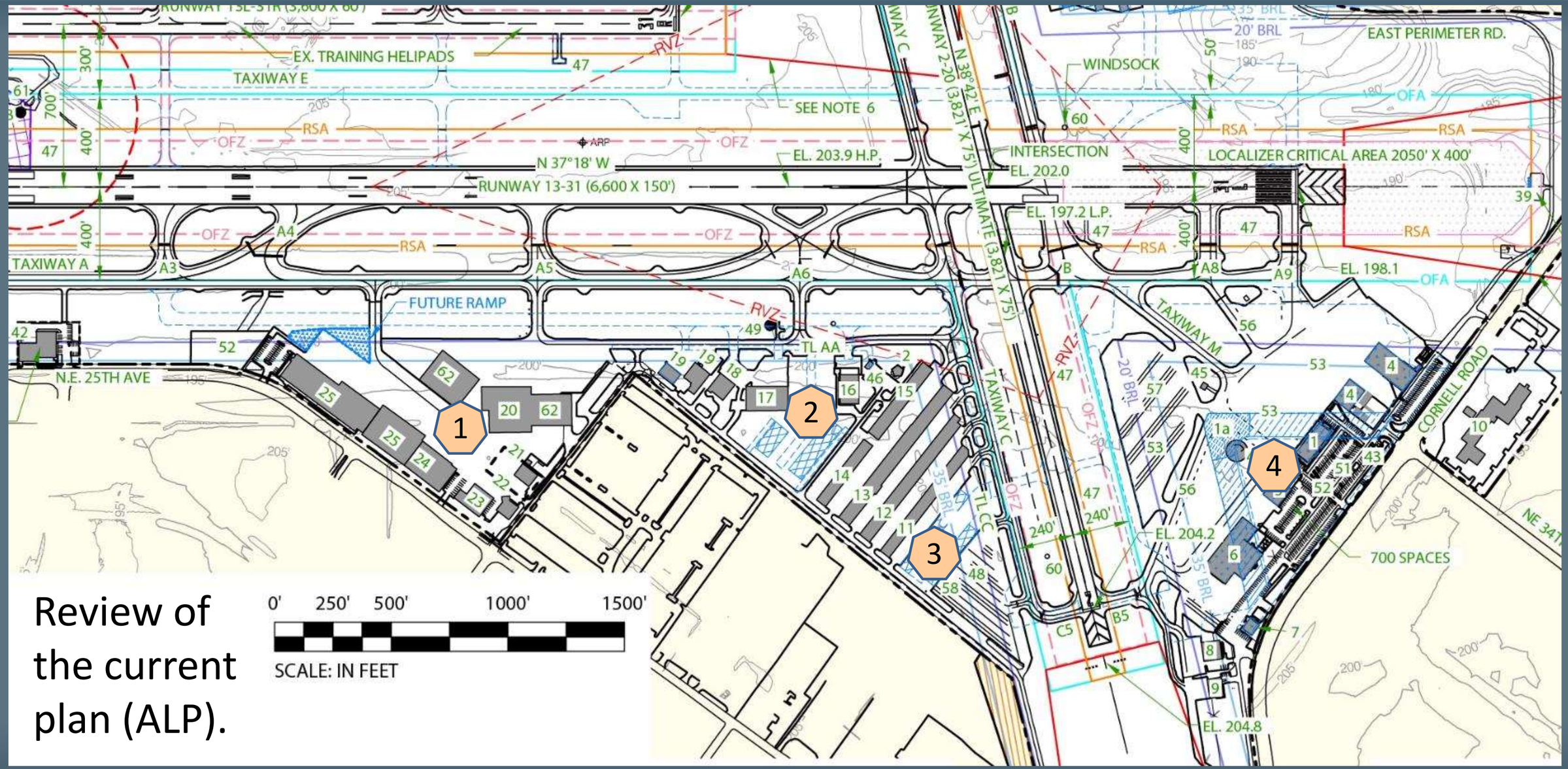
On-Airport Land Use - East



Review of the current plan (ALP).

Support Facilities

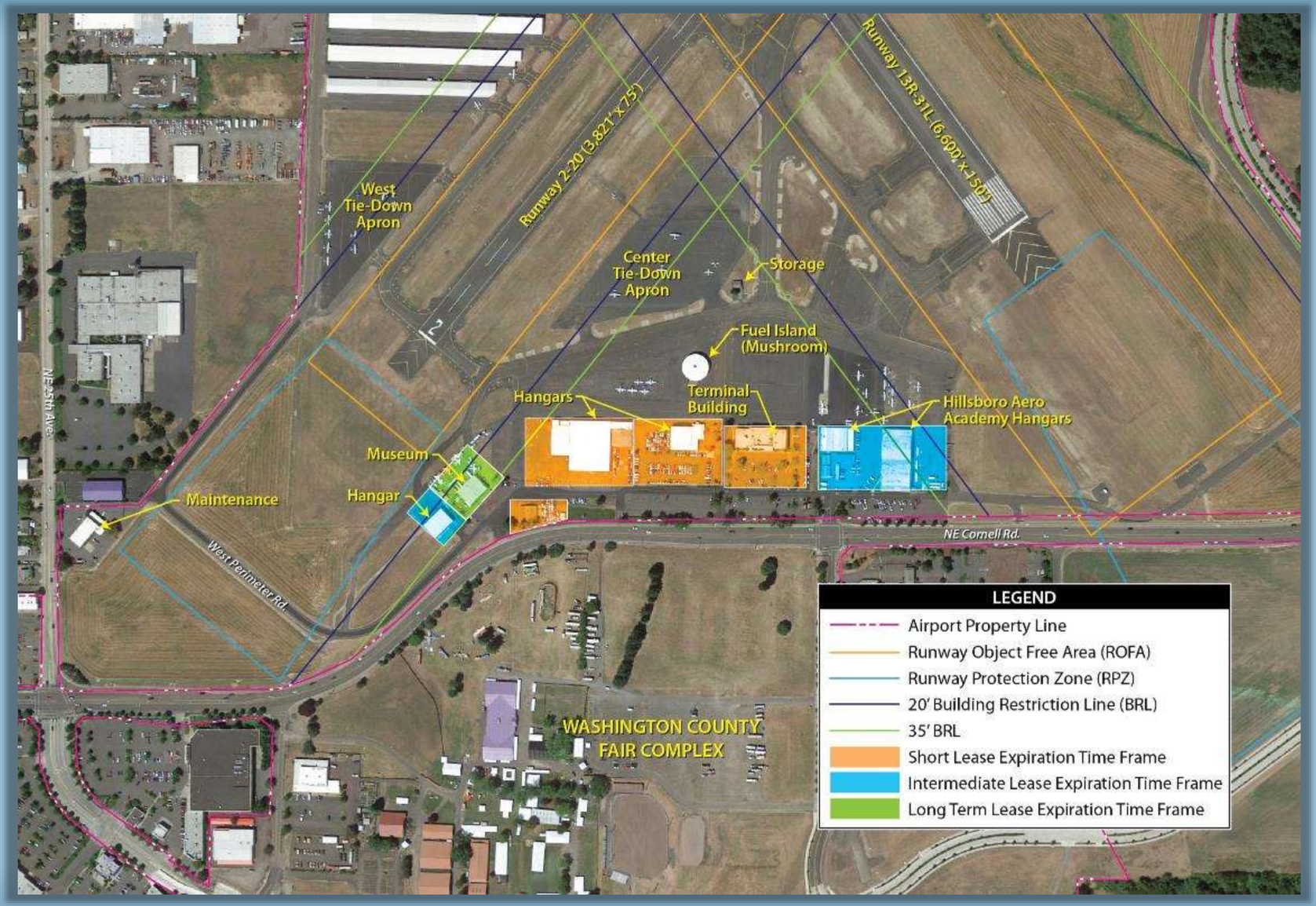
On-Airport Land Use - West



Review of the current plan (ALP).

Support Facilities

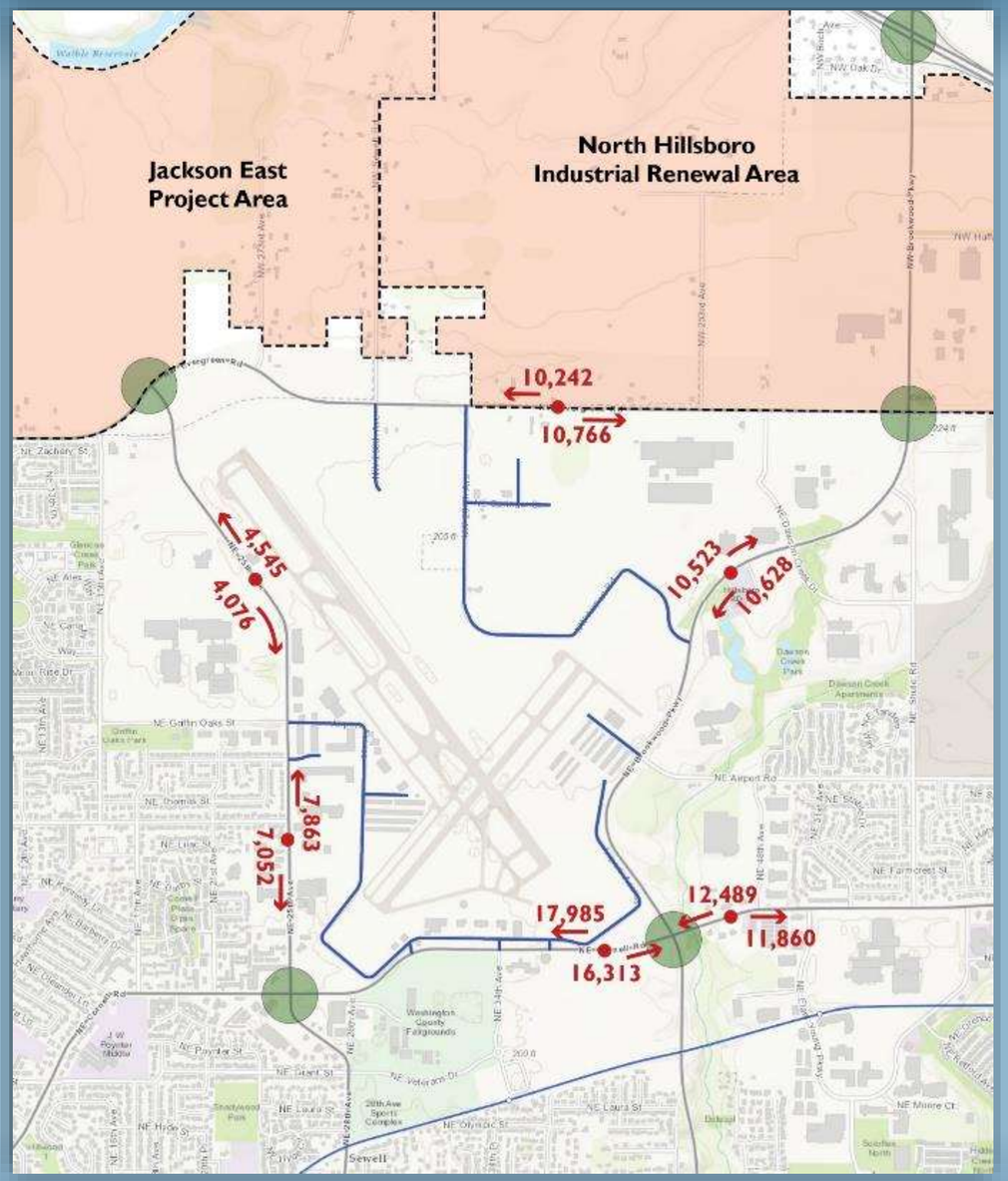
Terminal Area Opportunities



- A primary focus of this master plan.
- Several terminal area leases expiring soon.
- Redevelopment opportunities should be considered.

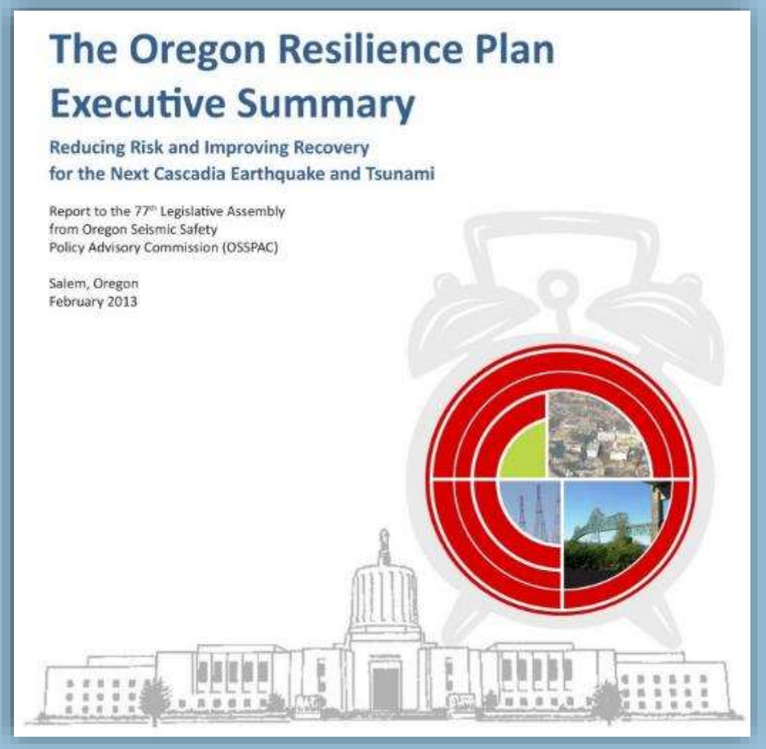
Access and Circulation

- Access Considerations
  - Key intersection capacity
  - Upcoming improvements
  - Airport contribution
  - Interior airport access roads
  - Circulation in new development



Seismic Resilience

- Many agencies and governments make emergency plans
  - FEMA, Oregon Office of Emergency Management, Washington County Office of Emergency Management, others
  - Oregon Resilience Plan
  - Role of Hillsboro Airport is evolving
  - FAA unable to contribute funds
- Seismic Assessment
  - HIO facilities not built to withstand 9.0 earthquake
- Ways this plan will add value:
  - Better understand needs to inform facility investments
  - Maintain an inventory of infrastructure and assets
  - Coordinate with agencies in plan-making
  - Adapt CIP to meet resilience objectives as feasible


The Oregon Resilience Plan
Executive Summary
Reducing Risk and Improving Recovery
for the Next Cascadia Earthquake and Tsunami
Report to the 77th Legislative Assembly
from Oregon Seismic Safety
Policy Advisory Commission (OSSPAC)
Salem, Oregon
February 2013

Facility Requirements Summary

- **Airfield Capacity**: No issues through long term.
- **Runway Length**: Consider up to 7,500 feet.
- **Runway Design Standards**: Runway safety area (RSA), object free area (ROFA), runway protection zones (RPZ), obstacle free zone (OFZ).
- **Taxiway Standards**: Review geometry.
- **Instrument Approaches**: Consider improvements.
- **Hangar Needs**: 98,800 sq.ft.
- **Apron**: Up to 13,000 sq.yd.
- **Parking**: Up to 431 new spaces (285 in terminal area).
- **Terminal Area**: Redevelopment opportunities.
- **Terminal Building**: Relocate/replace.
- **On-Airport Land Use**: Meet aviation needs first. Reserve flight lines for aviation.

PAC Discussion/Activity I

Let’s Take a 10 Minute Break

HILLSBORO AIRPORT MASTER PLAN UPDATE

Public Comment Period

Anne Pressentin, EnviroIssues/Facilitator

HILLSBORO AIRPORT MASTER PLAN UPDATE

Preview Topic: Alternatives Analysis

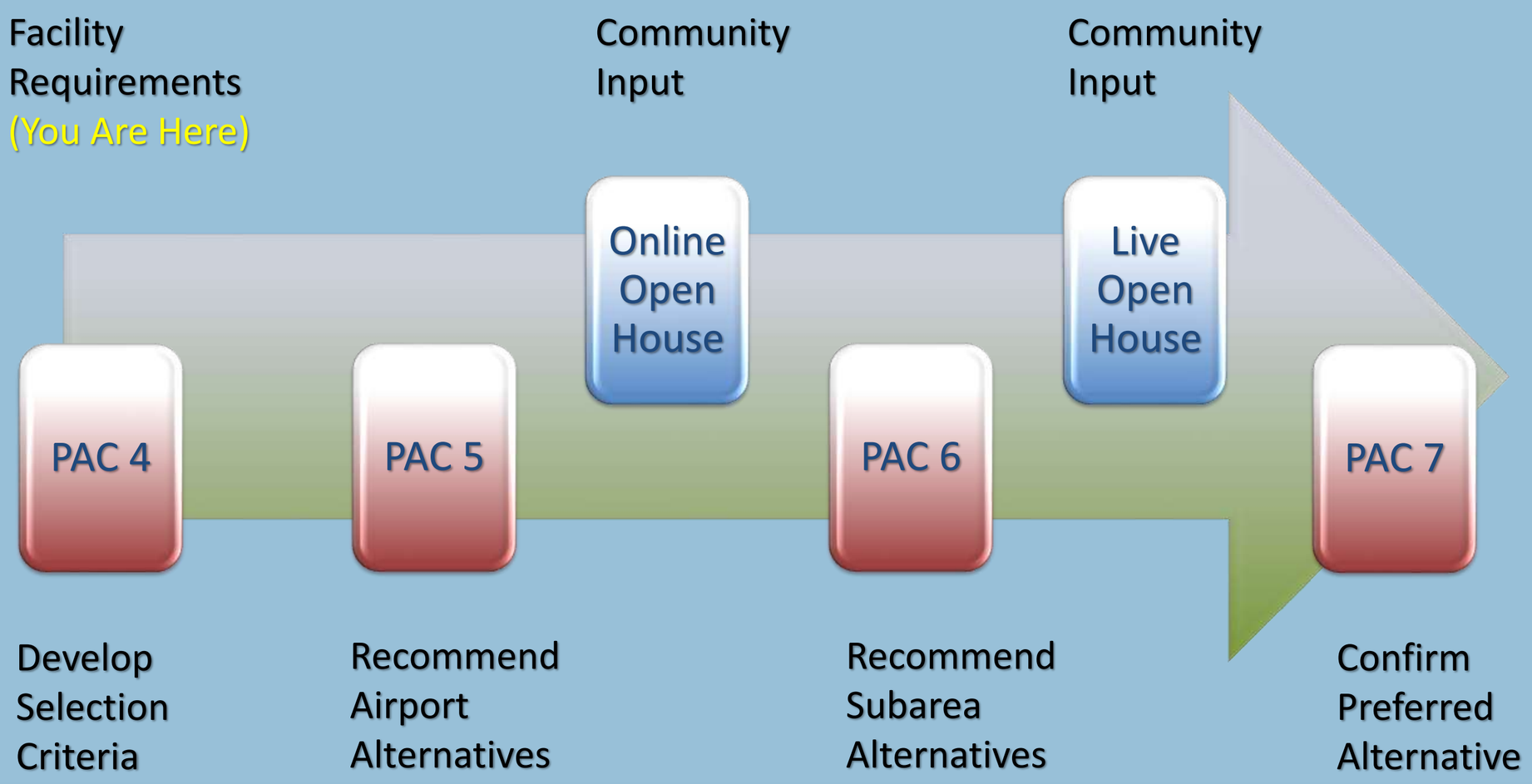
Dave Nafie, WH Pacific

Preview Topic: Alternatives

- This is the real work of the master plan.
- Each facility requirement that has alternative methods to implement is examined individually and then coordinated with others to ensure the final plan is functional, efficient, and cost-effective.
- Alternatives analysis is only necessary for those elements where there may by several viable solutions to specific problems or challenges.
- Propose draft evaluation criteria based on Port values, previous input, and regulatory requirements.

Preview Topic: Alternatives

Process Overview



Preview Topic: Alternatives

- Selection Criteria
  - Guide the development and analysis of the alternatives
  - Reflect the goals and values of the airport, stakeholders, and community
  - Can be used to identify the most important issues to weigh
  - Some criteria recommended by FAA, but we can add or tailor to suit

Preview Topic: Alternatives

- **Airport Alternatives** - Focus of PAC Meeting No. 5
  - Three concepts in various future configurations for analysis
  - Vary the location of one or more major features, remaining facilities fill in
  - Recommended Alternative will be a hybrid incorporating best ideas from stakeholder input

Preview Topic: Alternatives

- **Subarea Alternatives** - Focus of PAC Meeting No. 6
  - Builds on the Recommended Alternative from PAC Meeting No. 5
  - Alternative concepts provide detail for areas that are of special interest
  - Key Subarea: Along Cornell Avenue facing the Fair Complex
  - Market Study: Increase understanding on marketing potential

PAC Discussion/Activity II

Alternatives Criteria Discussion

Community planning compatibility: *Conformance with community plans, flexibility to adapt with changing circumstances, preserving opportunities, proposing socially feasible development, meeting needs of multiple stakeholders.*

Environmental factors: *Increasing the compatibility with neighboring uses with typical airport operations. Includes natural resources, air quality, storm water, noise, airport-induced traffic, etc.*

Financial factors: *Considers the financial sustainability of the airport, balancing costs with expected benefits, opportunities for new/increased revenues and business success on and around the airport.*

Operational safety and efficiency: *Increasing the overall operational safety and efficiency of the airport as it grows to meet future traffic levels. Includes meeting all applicable FAA regulations.*

Seismic resilience: *Enhancement of facilities to be better capable of recovery following a major earthquake. "Resilience" means investments made prior to a major earthquake allow for a quicker recovery.*

Social equity: *Aimed at the equitable distribution of community and economic benefits while seeking a proportional distribution of any airport impacts.*

HILLSBORO AIRPORT MASTER PLAN UPDATE

Close Out and Meeting Evaluation

Anne Pressentin, EnviroIssues