TROUTDALE AIRPORT
SHAPING OUR FUTURE

Airport Inventory

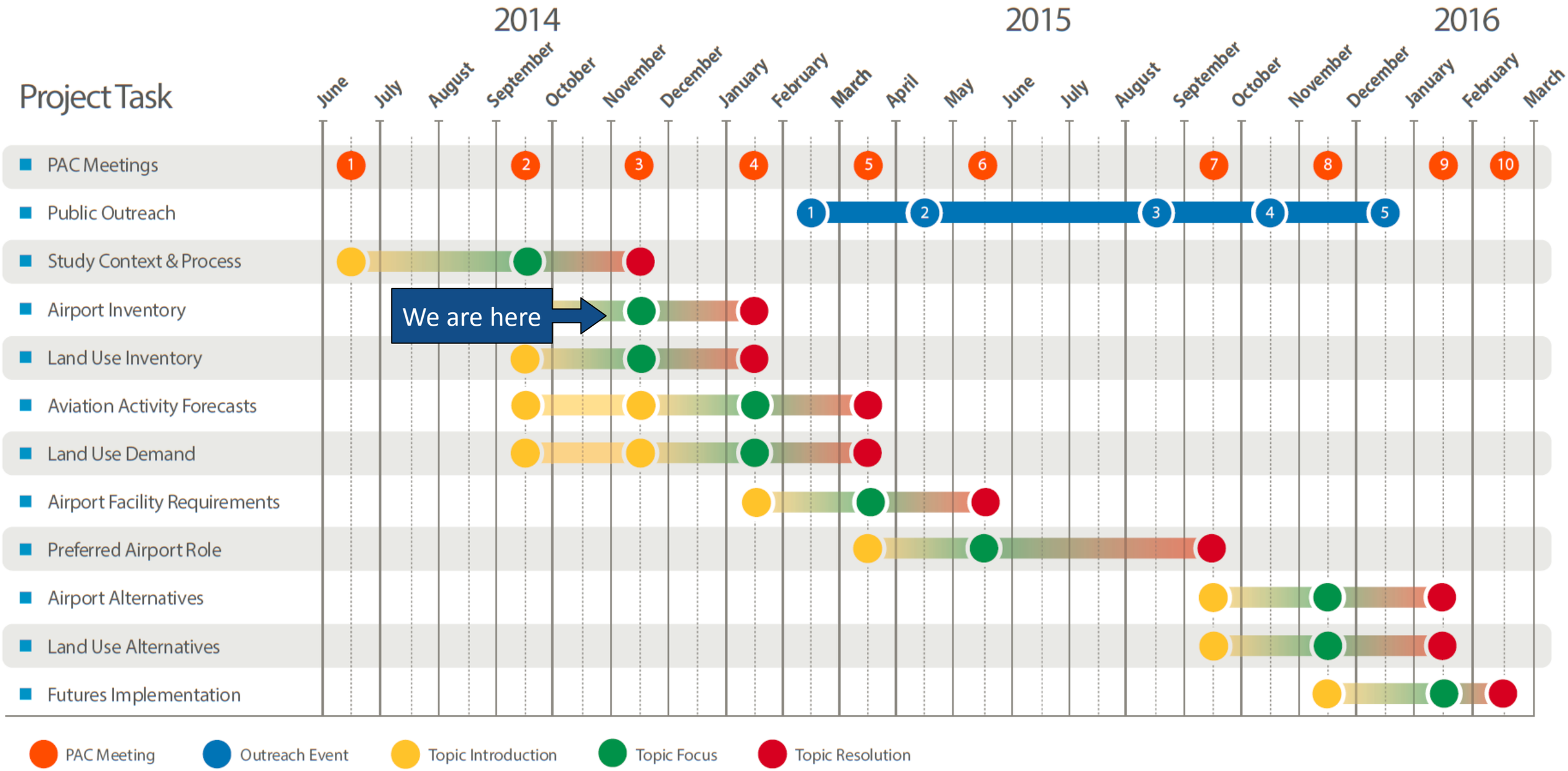
Damon Smith, Project Consultant

PAC Meeting #3

November 20, 2014

Project Schedule

What is the role of the Troutdale Airport in the future?



Central and Secondary Questions

What markets is the airport best suited to serve?

Are there environmental constraints that impact future alternatives?

What is the economic impact of the alternatives over the next 20 years?

How does the community feel about these alternatives?

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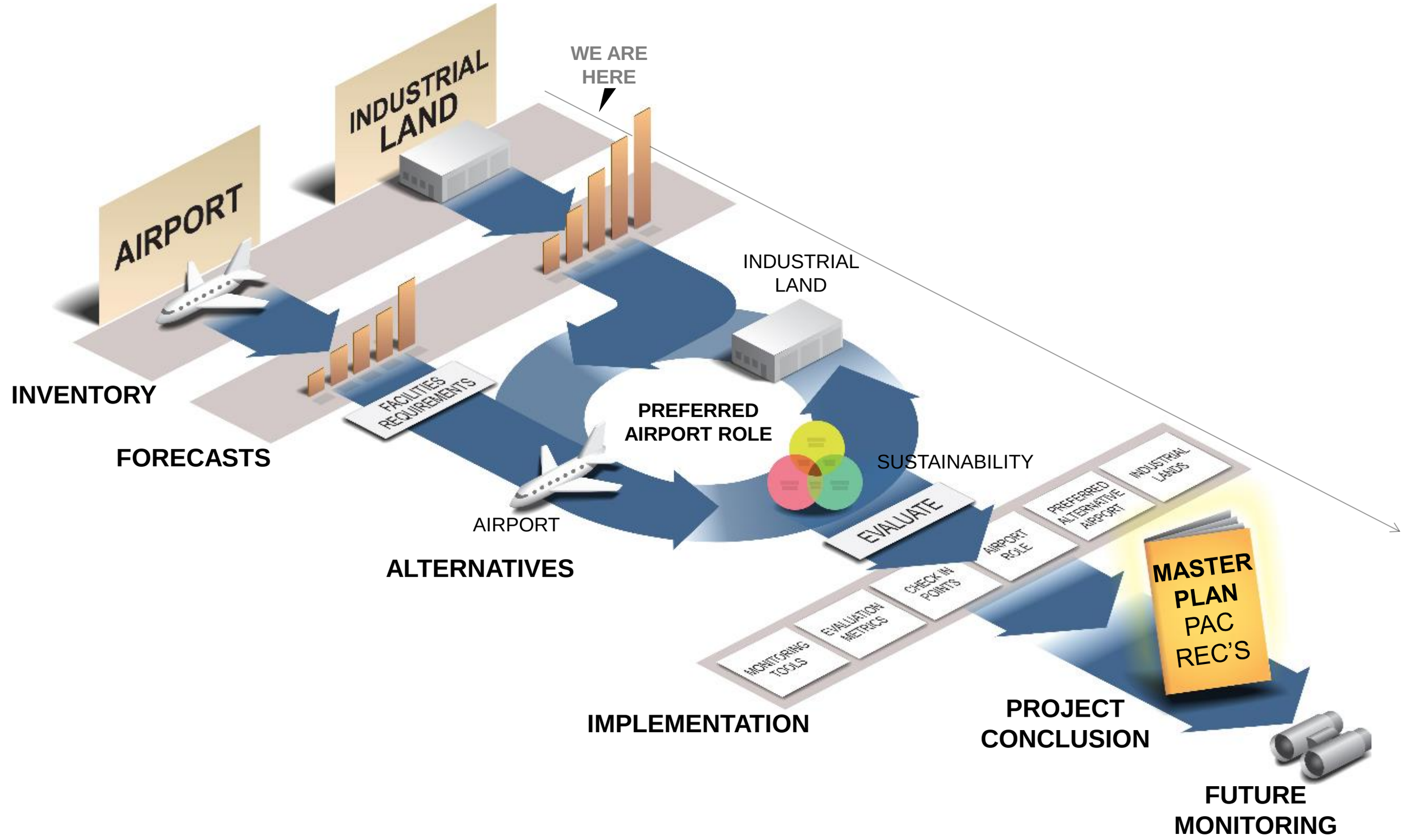
What are the financial impacts of these alternatives over the next 20 years?

What are the primary development alternatives?

What development alternatives will be recommended to the Port Executive Director?

Project Roadmap



Airport Inventory – Preview of Today's Questions

- Has all of the key information for the Airport Inventory been captured?
- Is there any information that is missing?
- If that information is provided, will you likely approve the Airport Inventory chapter for purposes of moving forward with the next phases, understanding the project's iterative nature?

Airport Inventory - Purpose

- Inventory documents airport features and conditions as they exist in 2014
- Will be used in conjunction with the Aviation Activity Forecasts, which will look out over 20 years
- Forms foundation for:
  - airport facility requirements analysis
  - development of plan alternatives

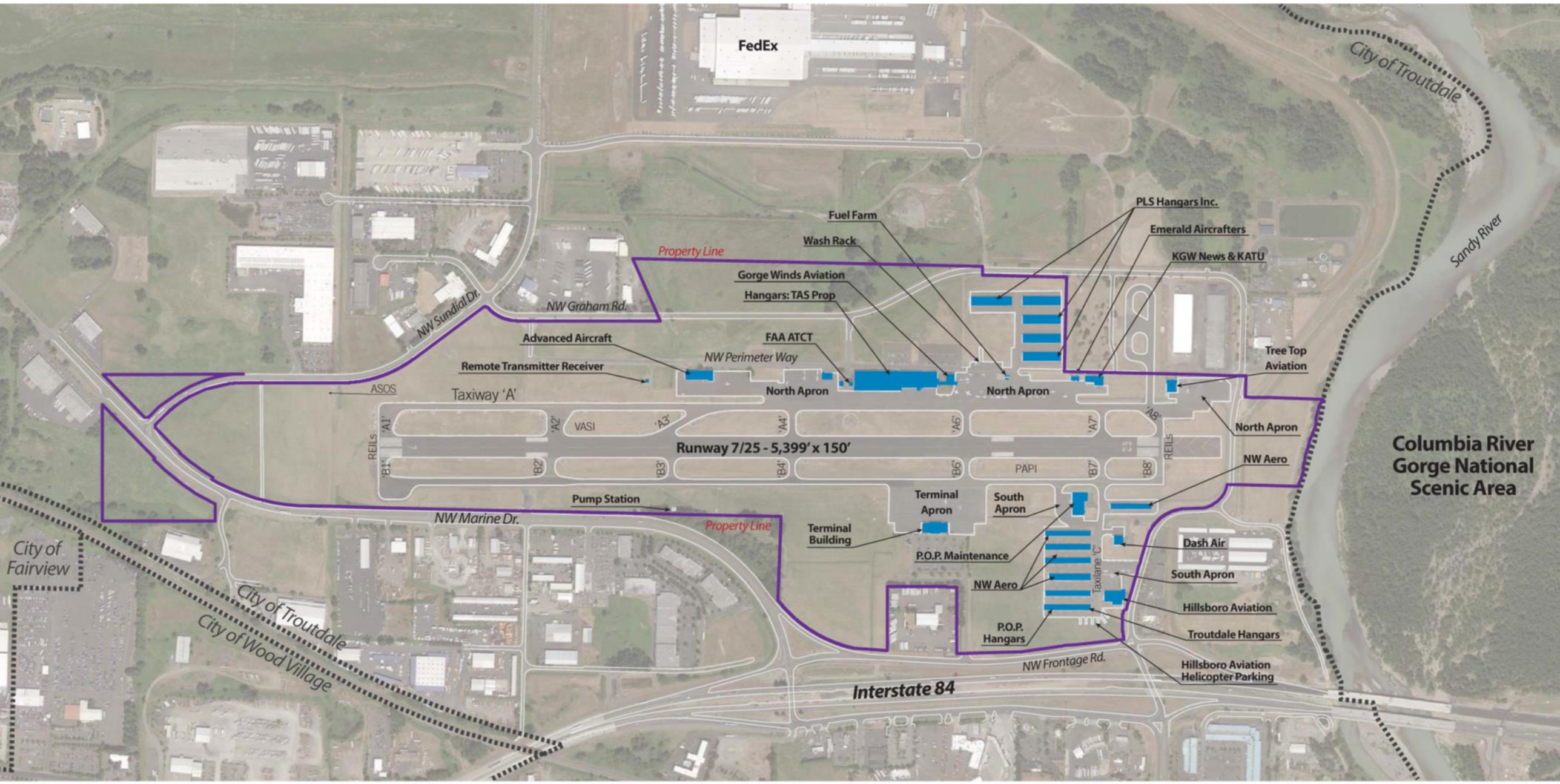
Airport Inventory – Data Collection

- Site visit August 2014
- Port of Portland records review
- Other public agencies records review
- Tenant survey

Airport Inventory - Elements

- Airfield Facilities
- Landside Facilities
- Aviation Activity
- Airfield Design Standards
- Airport Finances
- Local Socioeconomic Data
- Environmental Conditions

Airport Inventory – Airfield and Landside Facilities



Airport Inventory - Aviation Activity

- Piston propeller aircraft, business jets, helicopters
- No large commercial jets or military fixed-wing aircraft, primarily due to runway length
- No scheduled commercial passenger and air cargo operations

Based Aircraft Type Total	**Aircraft Type Total**
Single-Engine	133
Multi-engine	11
Turbojet	0
Helicopters	7
Gliders	0
Total Based Aircraft	151

Airport Inventory – Aviation Activity

Aircraft Operations

Year	Itinerant	Local	Annual Operations	% Change
2004	35,027	30,904	65,931	
2005	36,209	31,826	68,035	3.2%
2006	36,025	32,194	68,219	0.3%
2007	31,710	36,968	68,678	0.7%
2008	24,324	27,477	51,801	-24.6%
2009	21,137	32,813	53,950	4.1%
2010	21,369	43,877	65,246	20.9%
2011	21,833	44,068	65,901	1.0%
2012	29,055	64,678	93,733	42.2%
2013	30,638	77,200	107,838	15.0%

Airport Inventory – Weather Conditions

- Weather affects the direction an airplane may arrive or depart, deicing activities, and visibility.
- Prevailing wind from the east half the year; reverses to out of the west during the summer months

TABLE 1-10: TROUTDALE WEATHER AND CLIMATE

Temperature	Annual Mean Maximum	63.1° F
	Hottest Month (Mean Max)	July: 81.4° F
Precipitation	Annual Mean Total	44.9 inches
	Maximum Month (Mean Total)	December: 7.09 inches
Snowfall	Annual Mean Total	4.7 inches
	Maximum Month (Mean Total)	January: 2.2 inches
Density Altitude	During Hottest Month (July, 81.4 F)	1,711 feet

Source: Western Regional Climate Center

TABLE 1-11: PREVAILING WINDS

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Prevailing Wind	East	East	East	East	West	West	West	West	West	East	East	East

Source: Western Regional Climate Center

Airport Inventory – Arrival Flight Patterns

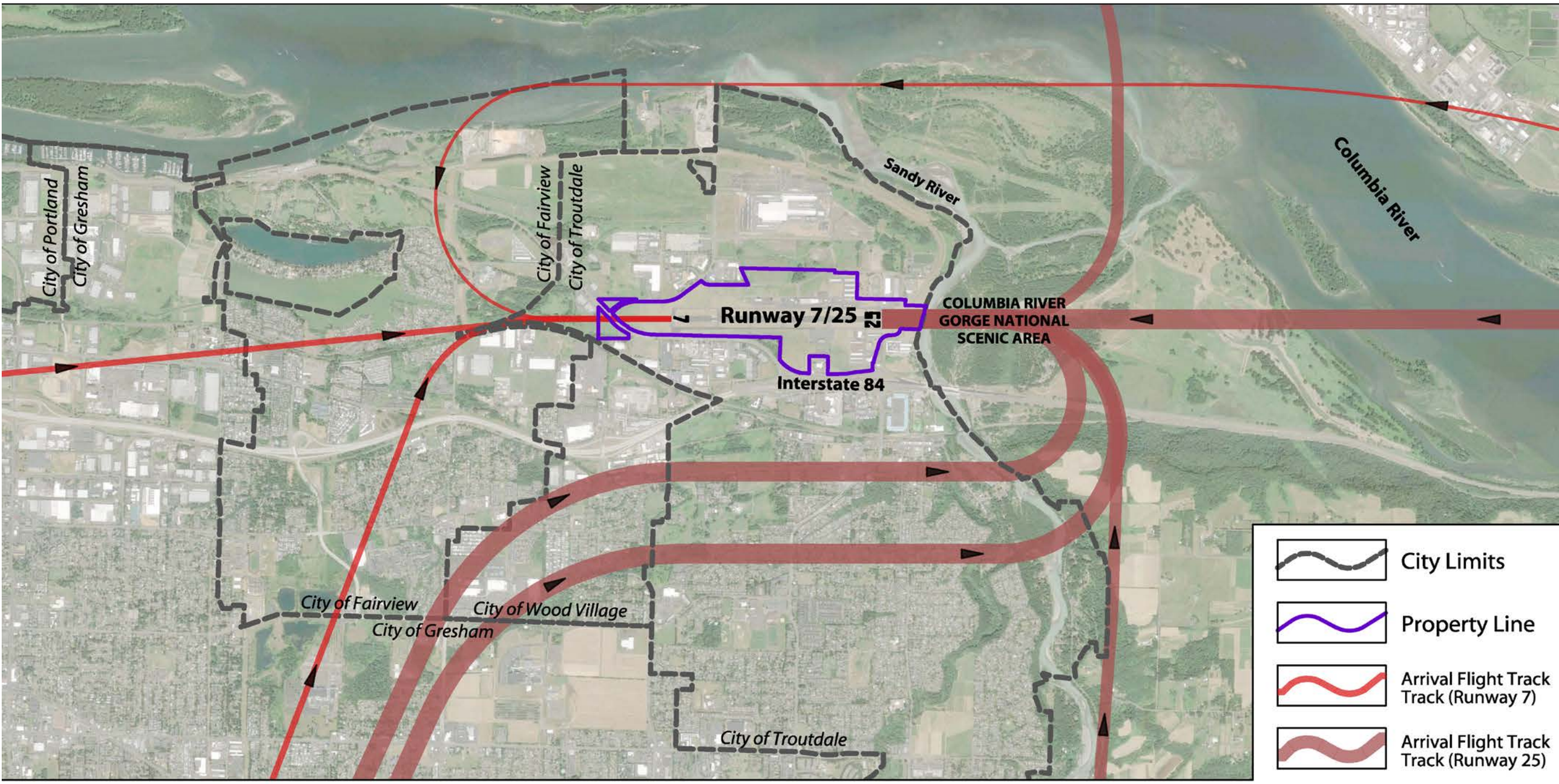


Figure 1-6 **Arrival Flight Patterns**

Airport Inventory – Departure Flight Patterns

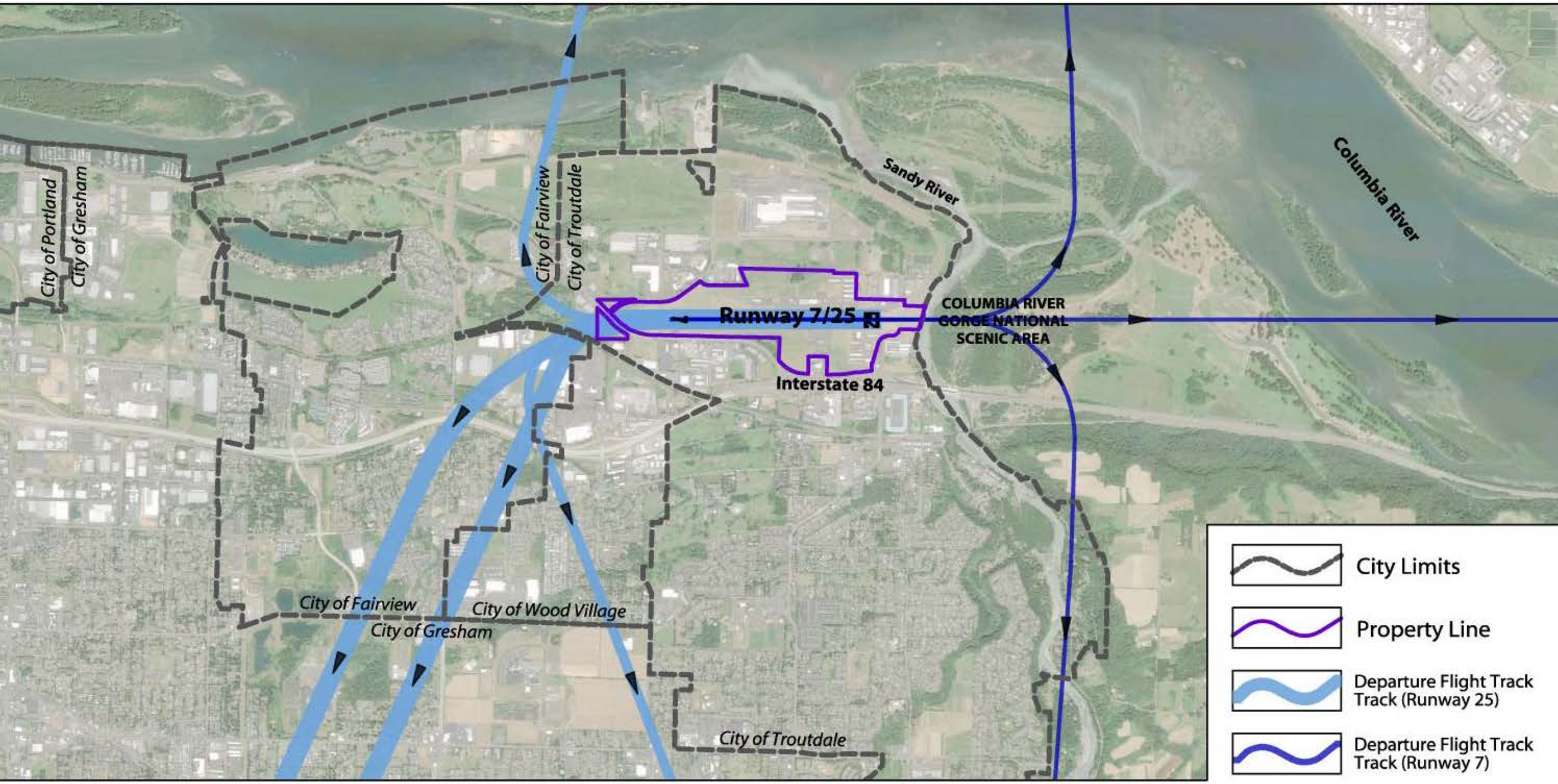


Figure 1-7 **Departure Flight Patterns**

Airport Inventory – Airspace

Airport Inventory – Navigational Aids and Airspace

- Existing visual navigational aids allow TTD to operate under visual weather conditions
- Airspace near TTD is complex due to proximity and similar alignment with PDX
- Aircraft at TTD follow a special procedure to avoid PDX air traffic – turn north to Battle Ground and circle to reach elevation sufficient to clear PDX airspace
- Seven public-use airports within 25 miles – all GA except PDX

Airport Inventory - Noise

- Standard in place is 65 dB day-night level contours
- Almost entirely on TTD property; small off-airport portion is undeveloped
- Occasional complaints from neighbors to the west
- Port of Portland noise management program
  - Recommends limiting touch and go hours
  - Guidance for urban/residential overflight
  - Informational hotline for pilots

Airport Inventory - Noise

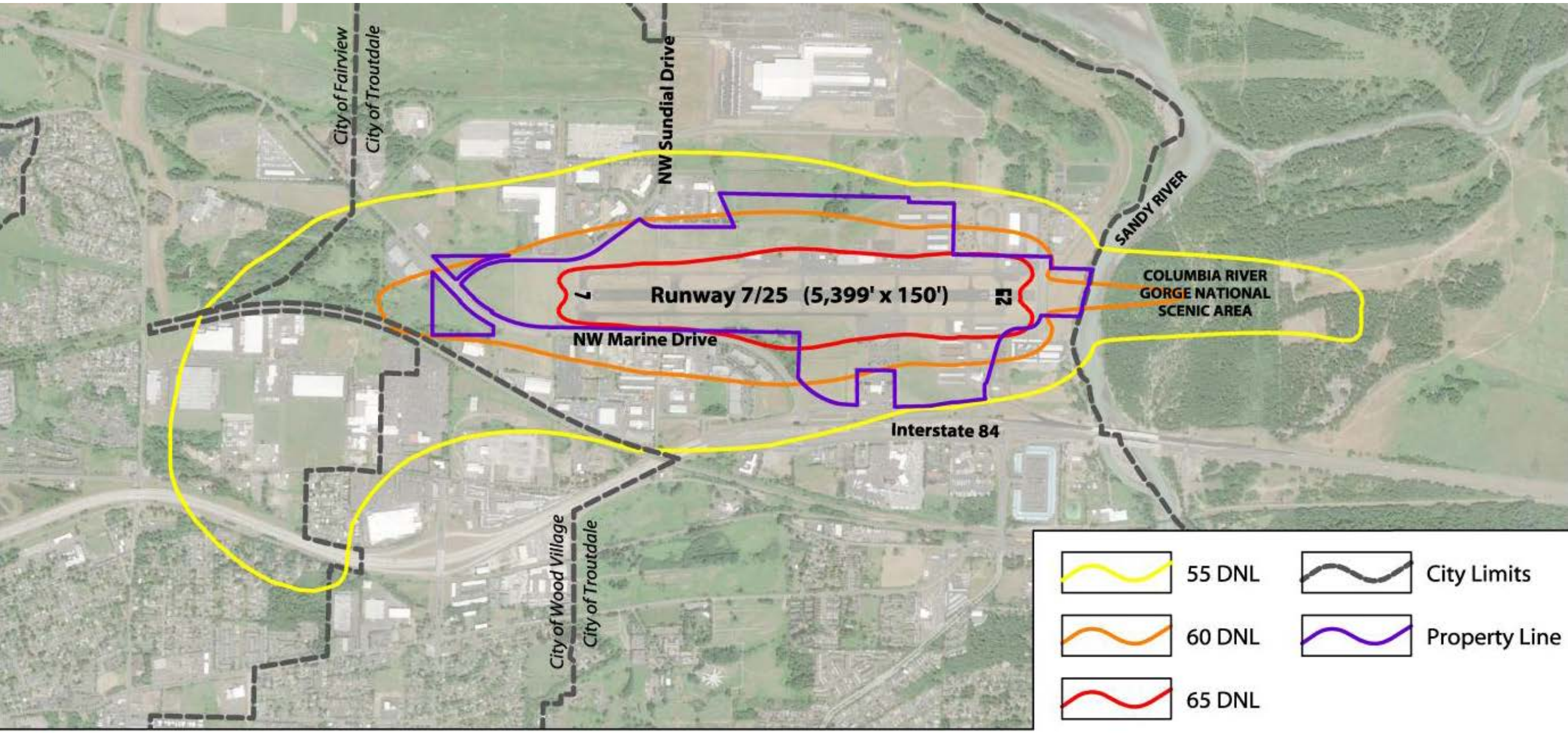
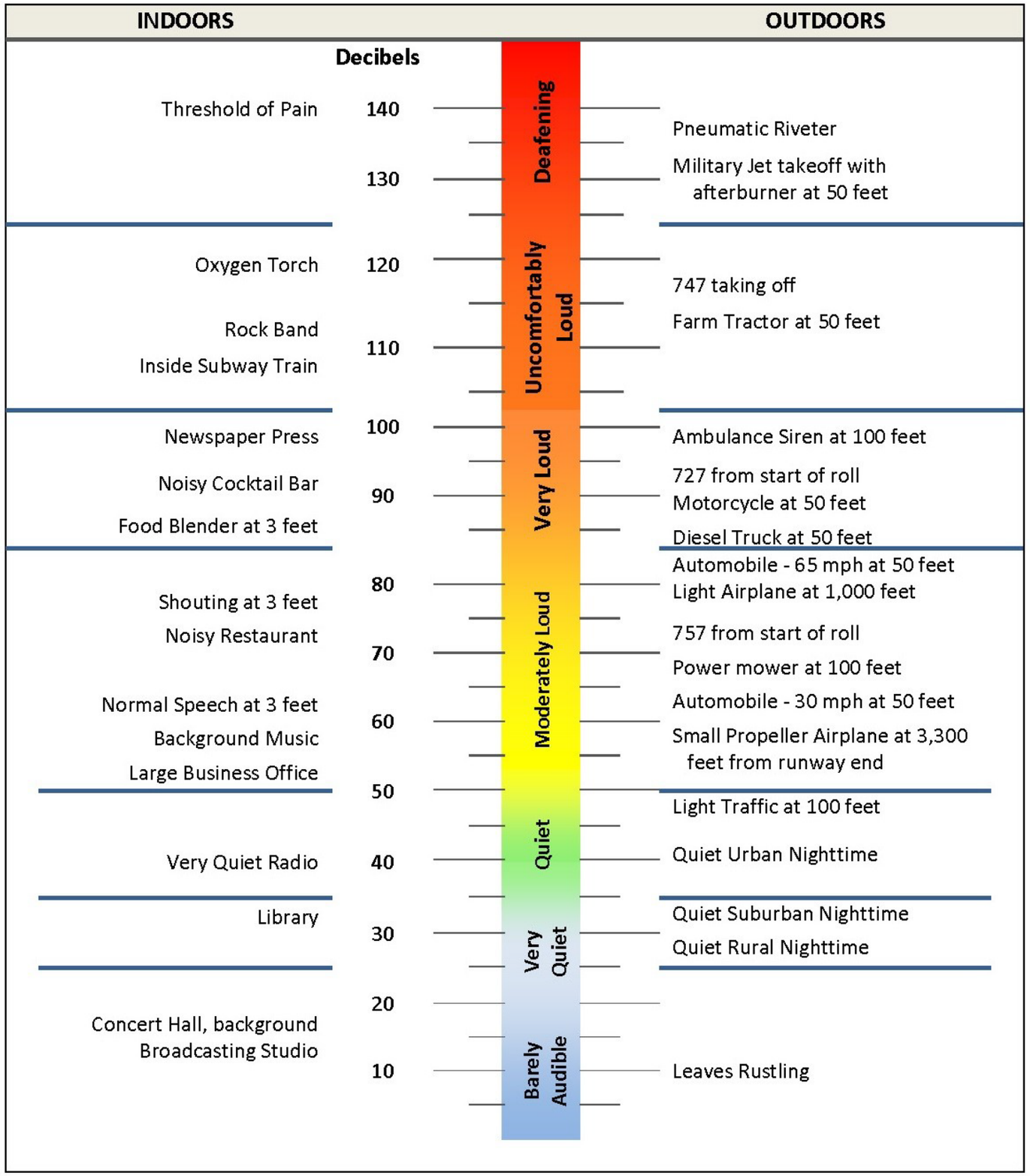


Figure 1-9 **Existing Noise Contours**

Airport Inventory - Noise



Airport Inventory – Airfield Design Standards

- FAA responsible for civil aviation safety; efficiency and utility are secondary goals
- Selected design aircraft dictates design standards:
  - TTD designated as B-II
- Meets most design standards;

Both Runway Protection Zones are bisected by public roads

Airport Inventory – Airport Finances

- No city or state entity has an ownership stake in TTD besides the Port
- Operations and capital revenue not supported by property tax revenue
- Nearly all funding comes from Port or FAA
- Major capital improvement funding = FAA and ODA
- TTD operating budget subsidized by revenue sharing with PDX and HIO

Airport Inventory – Financial Trends

- Not much interest in new development
- Competition from airports in Portland metro area for based aircraft and development: PDX, Hillsboro, Mulino, Aurora, Scappoose, Pearson and Camas/Washougal
- Revenues in decline and not covering operating expenses
- Grants cover only a portion of operating expenses
- Increases in ground rent will prove to be challenging
- Many facilities are aging and in need of significant capital investment

Airport Inventory - Leases

Tenant Lease Description	Lease Term Begins	Lease Term Ends
Fueler	4/1/2002	N/A
Building Lease	1/1/2009	12/31/2013
Ground Lease, Building Lease	3/1/2010	2/28/2015
Fueler	1/1/1995	N/A
Airport Light System	6/1/1984	N/A
Emergency Service	11/1/1974	N/A
Hangar Rental	9/1/2007	N/A
FBO Building Lease	12/1/2005	6/30/2016
Hangar Rental	11/1/2007	N/A
Ground Lease	5/19/2008	2/28/2017
Hangar Rental	5/15/2011	N/A
Hangar Rental	9/1/2007	N/A
Ground Lease	11/1/1984	10/31/2014
Ground Lease	7/1/2010	6/30/2040
TTD Terminal Lease	1/1/2012	6/30/2016
Ground Lease	8/10/1995	6/30/2025
Hangar Rental	9/1/2007	N/A
Hangar Rental	9/15/2008	N/A
Hangars, Ground Lease	8/1/2008	7/31/2033
Hangar Rental	4/1/2010	N/A
Ground Lease	7/1/2009	6/30/2014
Hangars Rental	12/1/1983	6/30/2027
Ground Lease	11/2/2003	11/1/2013
Hangar Rental	2/1/2009	N/A

Airport Inventory – Economic Impact

- Positive economic impact to the community (direct and spin-off; 2012 data)
  - 283 jobs
  - $15.9 million in wages
  - $48.4 million in business sales

Airport Inventory – Socioeconomic Data

TABLE 1-24: METROPOLITAN DEMOGRAPHIC DATA

	East County Study Area							Comparison		
Indicator	Gresham	Troutdale	Fairview	Wood Village	Maywood Park	Portland	ECSA Aggregate	Multnomah	Oregon	USA
Population	105,594	15,962	8,920	3,878	752	583,776	95,848	735,334	3,831,074	308,745,538
Population In ECSA (Estimate)	24,498	12,634	8,920	3,878	752	45,166	95,848	95,848	95,848	95,848
Housing Units	41,015	5,907	3,786	1,289	312	265,439	39,763	324,832	1,675,562	131,704,730
Units Occupied	94.4%	96.0%	93.6%	94.9%	96.2%	93.6%	94.2%	93.8%	90.7%	88.6%
Average Household Size	2.6	2.7	2.4	3.0	2.4	2.2	2.4	2.3	2.3	2.3
Median Household Income	$47,577	$63,024	$52,500	$42,917	$69,038	$51,238	$51,776	$51,582	$50,036	$53,046
Median Age	33.6	34.8	34.5	29.9	41.7	36.0	34.9	35.9	38.4	37.2
High School Grad. or More	83.8%	91.5%	86.9%	75.9%	92.5%	90.3%	87.9%	89.5%	89.2%	85.7%
Living Below Poverty Level	18.0%	13.3%	17.8%	31.8%	8.3%	17.2%	17.5%	17.1%	15.5%	14.9%
Source: 2010 U.S. Census Bureau Decennial Census, 2012 American Community Survey										

Airport Inventory – Environmental Conditions

- Wetlands and Waterways
  - NRI Review (1996 and 2013 delineations)
  - Salmon Creek and Arata Creek conveyed under TTD in culverts
- Floodplains
  - Majority of TTD in 500-year floodplain
  - Protected by Sandy River levee system (SDIC)
- Stormwater
  - 1200-Z permit through June 2017
  - Stormwater Pollution Control Plan and periodic sampling
  - Three stormwater basins drain to Salmon and Arata creeks

Airport Inventory – Environmental Conditions

- Wildlife and Vegetation
  - NRI data updated in 2007
  - Wildlife Hazard Management Plan
- Threatened and Endangered Species
  - None on the site itself
  - Federally protected salmon, steelhead, other aquatic species in Sandy River and Salmon Creek Slough
  - Federally funded projects require Agency consultation
- Cultural Resources
  - Historic/Prehistoric relics encountered at TRIP
  - Sandy River levee and Salmon Creek eligible for National Registry of Historic Places listing

Airport Inventory – Major Findings

- TTD is well maintained and supports safe and efficient aircraft operations
- It is ready and available to serve existing market: general aviation, corporate aircraft, flight training, and recreational flights
- Some buildings are empty or underutilized
- Airport pavements are in good condition and TTD meets FAA design standards
- Operating expenses = Port (subsidized by PDX); Capital expenses = FAA, ODA, Port
- TTD does not provide positive cash flow, but provides a positive economic impact to the surrounding community: 283 jobs, $15.9 million in wages, and $48.4 million in business sales
- Operations (takeoffs and landings) have increased in recent years due primarily to flight training
- There are currently no significant noise impacts to the community or environmental issues

Next Steps

- Forecast aviation activity over the next 20 years
  - Future activity levels
  - Fleet mix
- Use data to study facility requirements

Airport Inventory - Today’s Questions

- Has all of the key information for the Airport Inventory been captured?
- Is there any information that is missing?
- If that information is provided, will you likely approve the Airport Inventory chapter for purposes of moving forward with the next phases, understanding the project’s iterative nature?

TROUTDALE AIRPORT
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Aviation Activity Forecasts

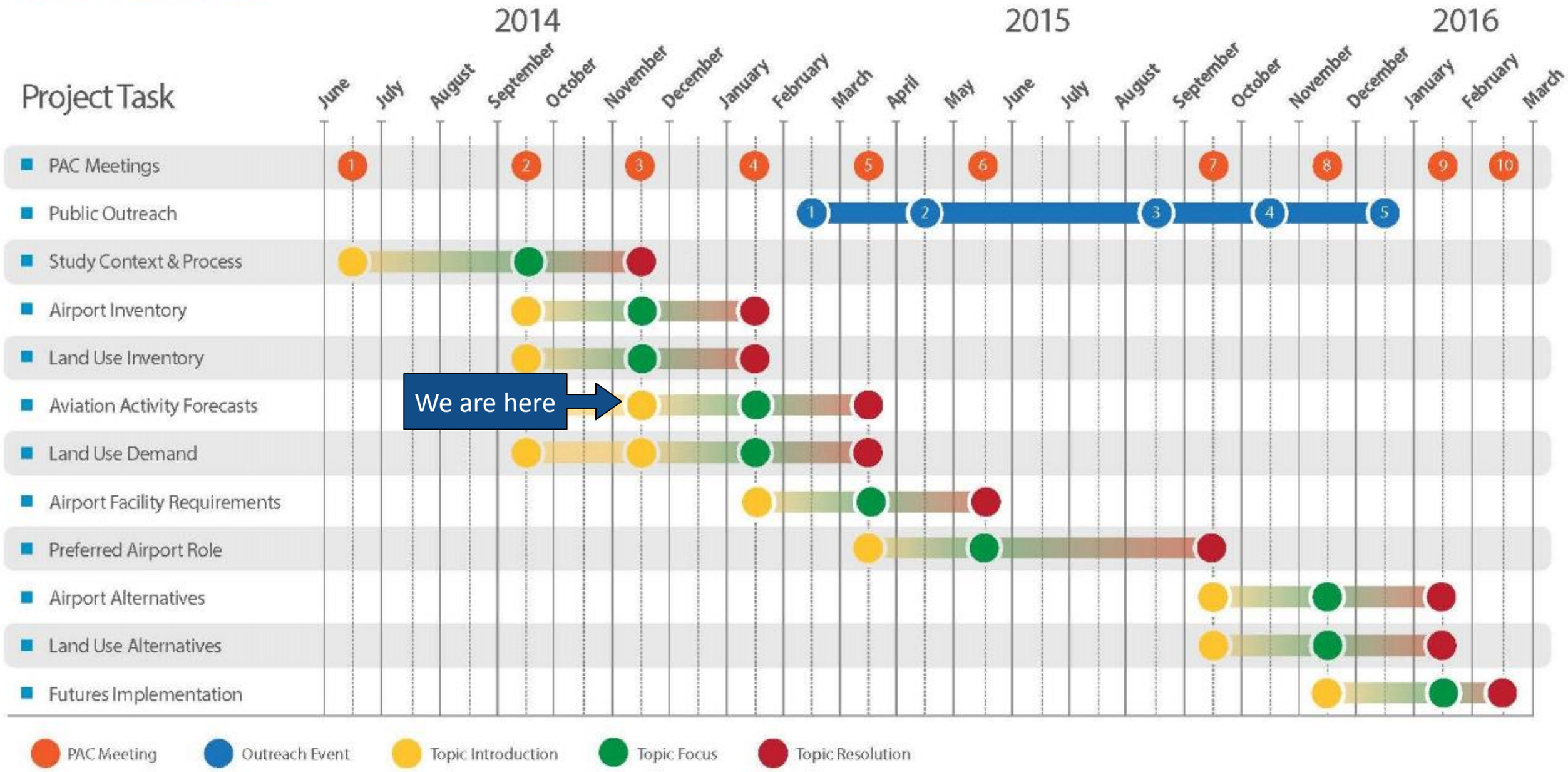
Mitchell Hooper, Project Consultant

PAC Meeting #3

November 20, 2014

Project Schedule

What is the role of the Troutdale Airport in the future?



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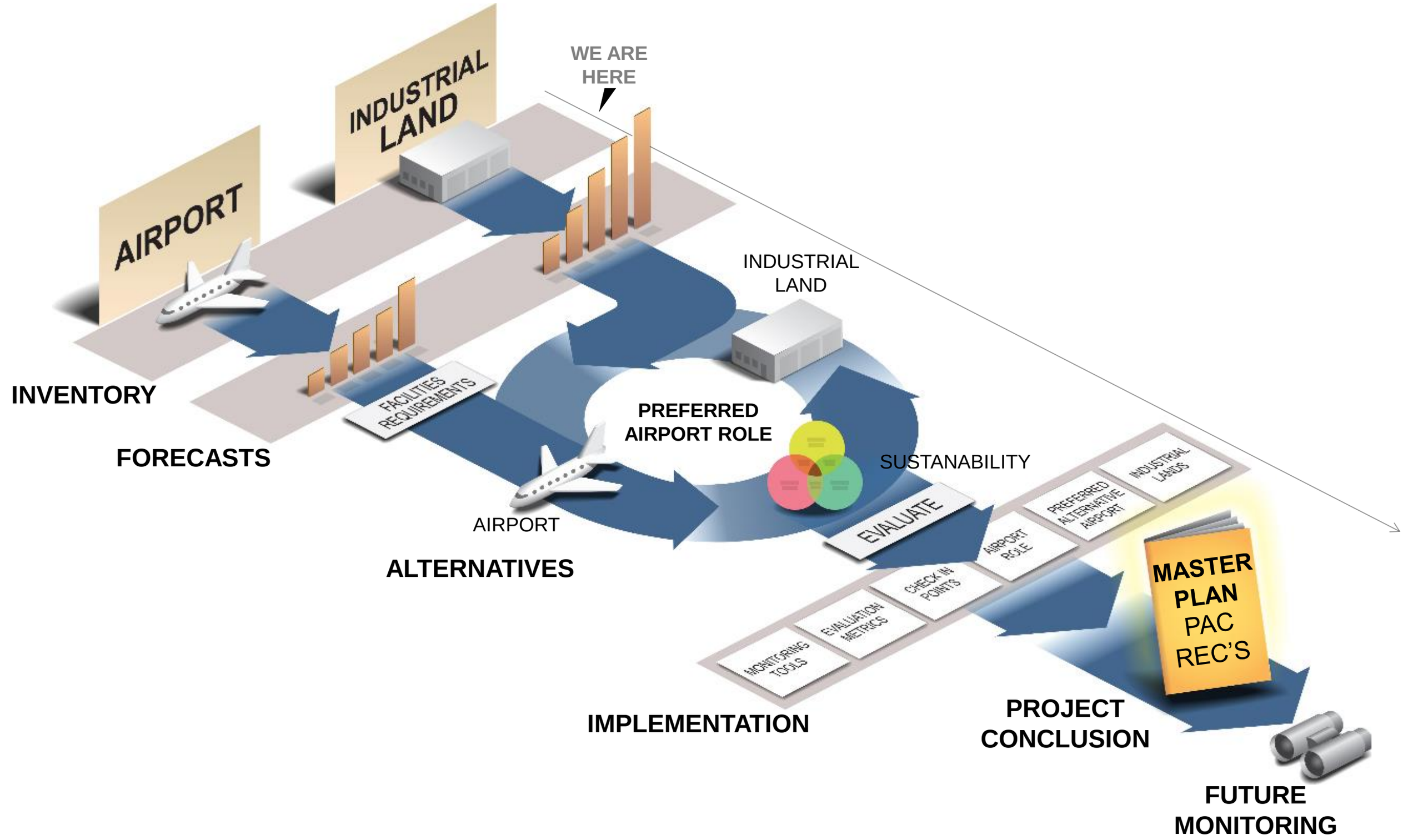
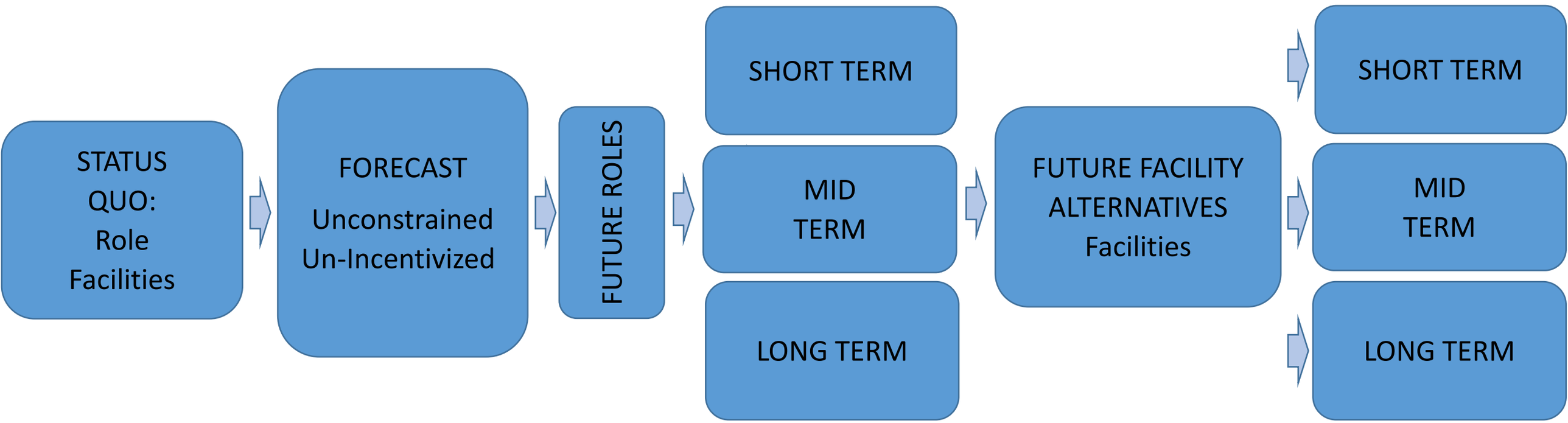
Project Roadmap



Roadmap: Expanded View

ROLE: <u>What</u> markets will TTD serve?

FACILITY ALTERNATIVES: <u>How</u> will TTD serve the markets?



Suggested Factors To Be Considered

ROLE

1) Forecast Results
2) Impact on Facility Needs
3) Ability to Market
4) Need is Served Elsewhere
5) Airspace and Air Traffic

FACILITY ALTERNATIVES

1) Capital Costs
2) Operating Costs
3) Taxes to Local Jurisdictions
4) Funding Likelihood
5) Plan Flexibility
6) # New Jobs
7) Land Uses
8) Impacts to Surrounding Areas
9) Environmental Avoidance, Minimize and Enhance Opportunities
10) Legal Feasibility

Aviation Forecasts – Preview of Today's Questions

- Questions for clarification surrounding the Aviation Activity Forecast process?
- Are there any information or steps that are missing?
- If that information and those steps are provided, do you approve the Airport Activity Forecast methodology for purposes of moving forward with the next steps, understanding the project's iterative nature?

Aviation Forecasts - Outline

- Purpose
- Documents Reviewed
- Methodology
  - Variables Considered
  - High/Low Forecasts and Decision Points
- Market Analysis
- Market Constraints
- Based Aircraft Forecasts
  - Critical Aircraft
- Aircraft Operations Forecasts
- Next Steps

Aviation Forecasts - Purpose

- **Why do we forecast?**
  - To assess existing facilities and plan for new ones
  - To stay ahead of market swings
- **What do we forecast?**
  - Based aircraft (aircraft stored at TTD)
  - Aircraft operations (takeoffs and landings)
- **How do we forecast?**
  - Observe trends and impacts
  - Tie history and external projections to local activity
- **What do we do with the forecasts?**
  - Review and revise with stakeholders and experts
  - Use as the basis for future decision making

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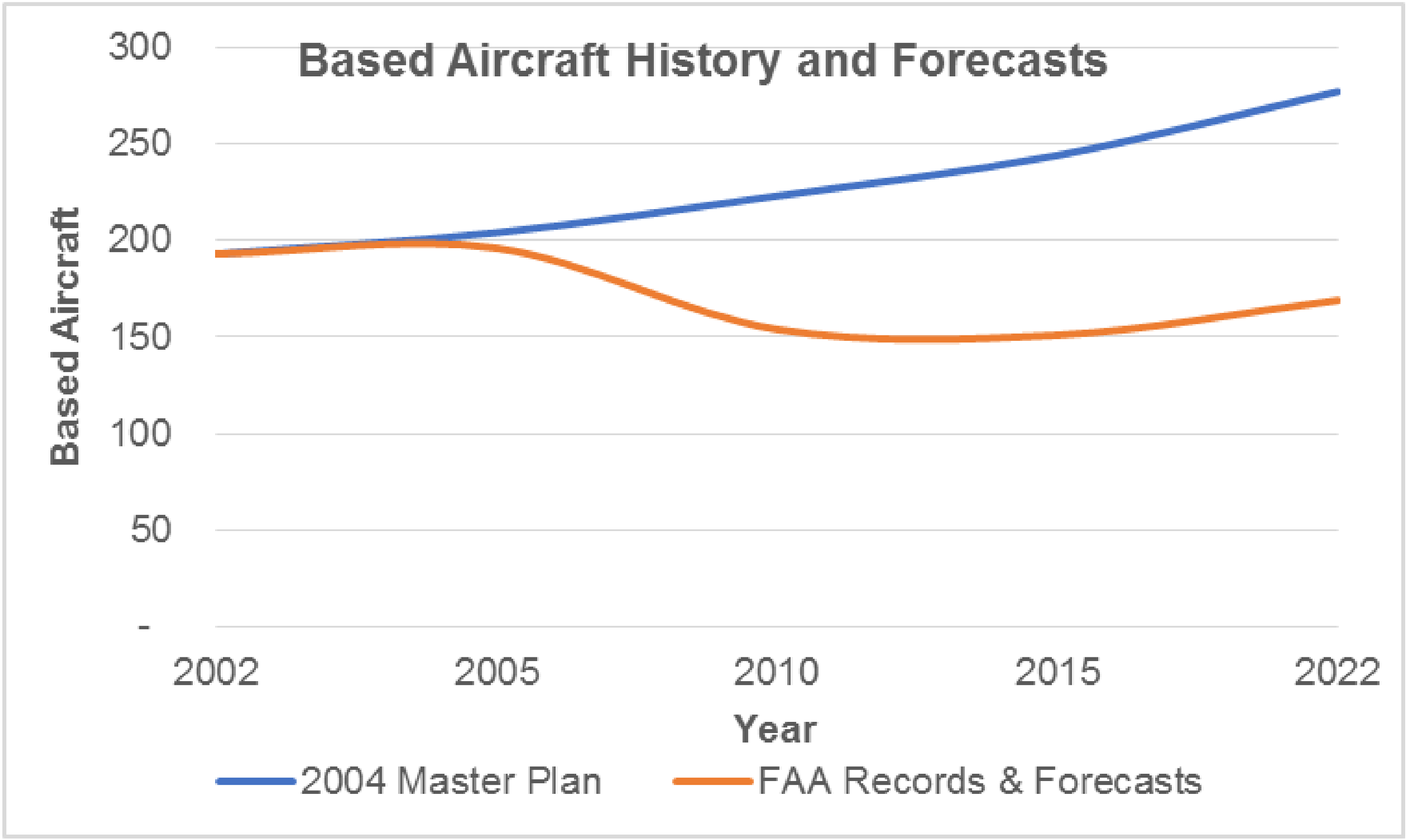
2004 Master Plan Forecast Performance



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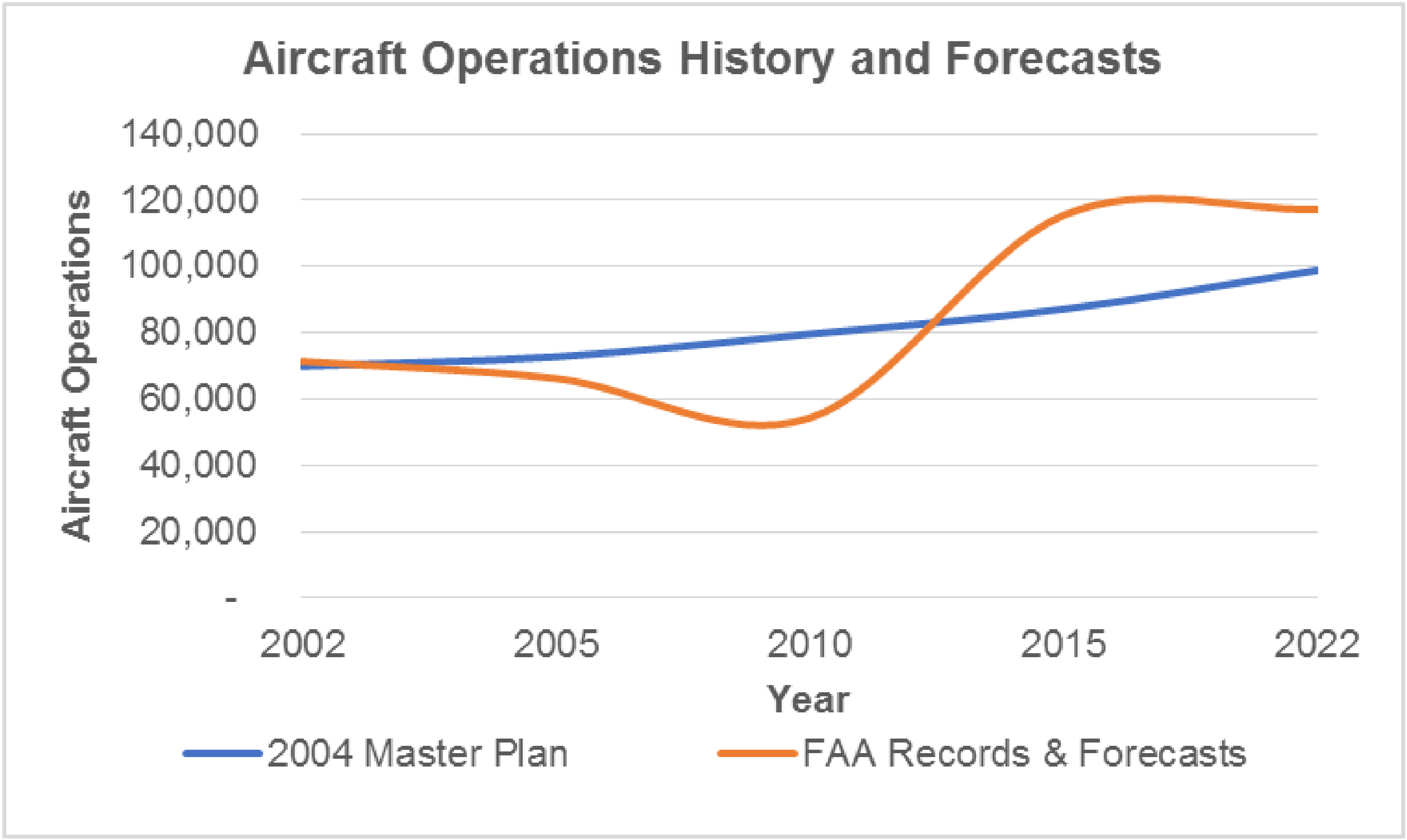


Aviation Forecasts – Documents Reviewed

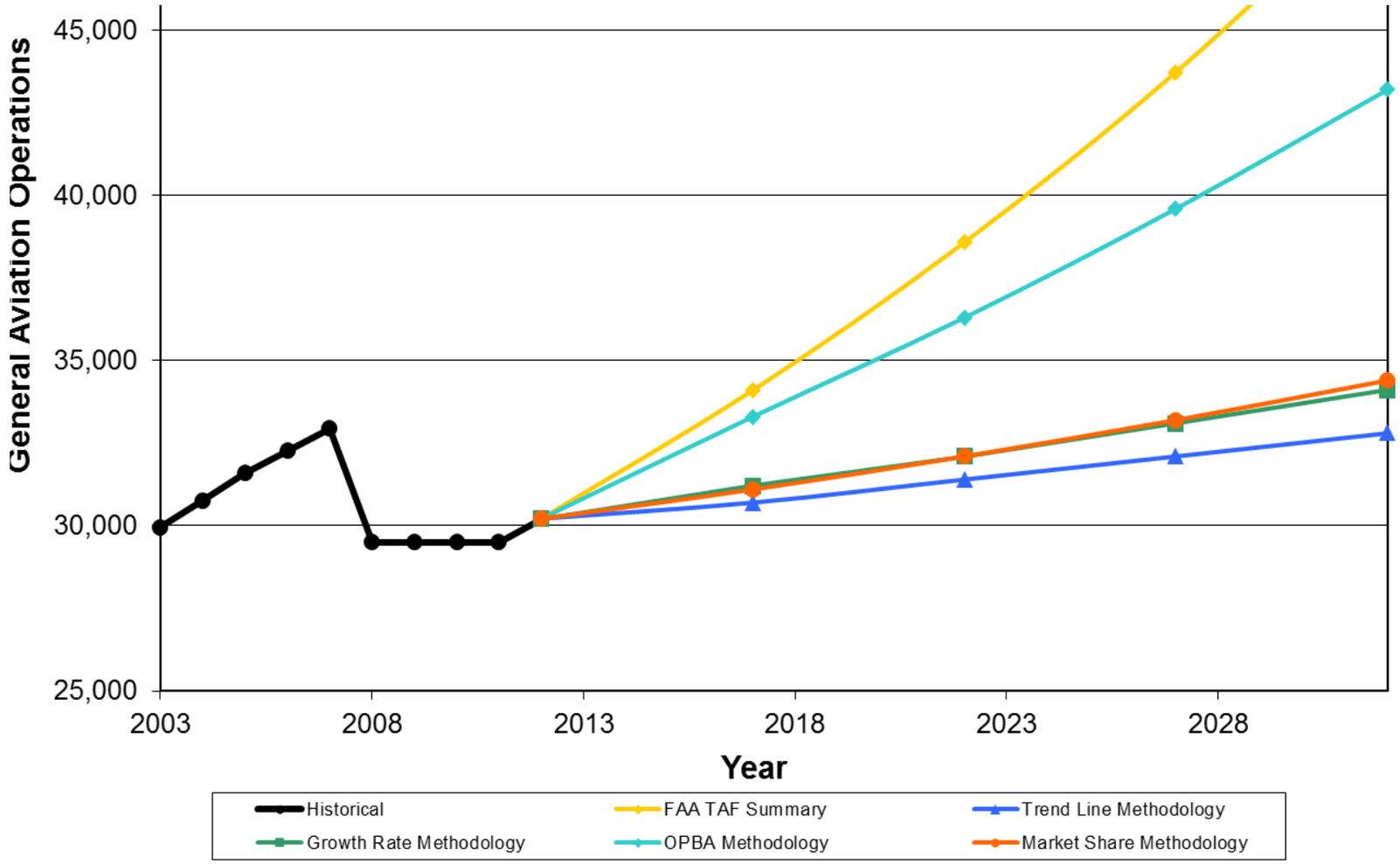
- 2004 Troutdale Airport Master Plan
- 2013 Airport Traffic Control Tower Records
- 2013 FAA Terminal Area Forecast
- 2014-2034 FAA Aerospace Forecast
- 2013 Socioeconomic Records and Forecasts
  - (Metro, U.S. Government, Woods & Poole)
- 2014 Master Plan Inventory Chapter
- 2014 Aircraft Manufacturer Marketing Forecasts
- 2014 Troutdale Airport Market Analysis (Part of Master Plan)

Aviation Forecasts - Variables Considered

- **National/Regional Trends**
  - Aircraft Usage by Type – FAA
  - Ownership / Pilot Registration – Oregon Dept. of Aviation
  - Fuel Prices and Availability – U.S. Dept. of Energy
- **Local Trends**
  - Population Growth/Decline – Metro
  - Employment History – Oregon Dept. of Labor
  - Employment Forecasts – Metro
  - Gross Regional Product – U.S. Bureau of Economic Analysis
  - Per Capita Income – U.S. Bureau of Economic Analysis
  - Impact of new employers/businesses – 2014 Master Plan

Aviation Forecasts - Methodology

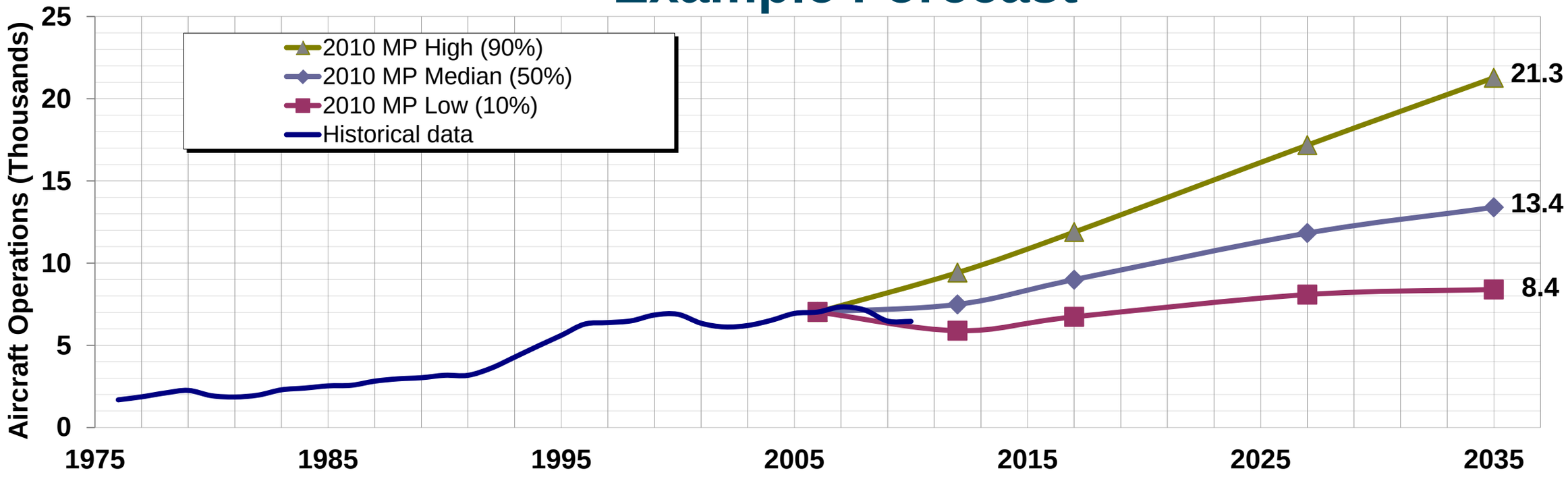
- **Linear Regression**
  - Tie one variable to aviation activity, fixed coefficient
  - Project historical relationship into future
  - Run and done (one trial)



Aviation Forecasts - Methodology

- **Monte Carlo Simulation**
  - Tie multiple variables to aviation activity
  - Variable coefficients (probability range)
  - Project historical relationship into future
  - Hundreds or thousands of trials
  - Use to extract likely ranges

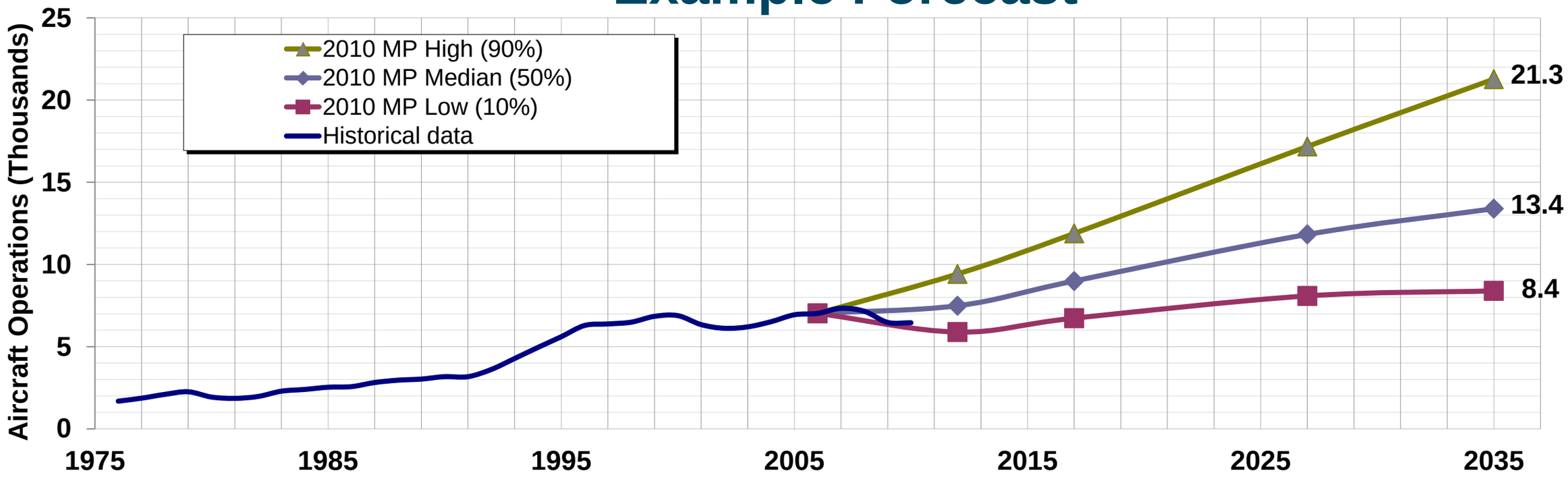
Example Forecast



Aviation Forecasts - Methodology

- **Monte Carlo Simulation**
  - Infer percentiles from distribution
  - Prepare high-, mid-, and low/negative-growth forecasts
  - Use to prepare “decision points”

Example Forecast



Aviation Forecasts - Market Analysis

- **Existing market drivers**
  - Flight training
  - Business aviation
  - Repair and maintenance
  - Recovering economy

- **Future market drivers**
  - Continuation of existing
  - Unmanned aerial vehicles
  - Additional business activity
  - Area airport closure/congestion

Aviation Forecasts - Risk Assessment

- **Airport Constraints**
  - Airspace
  - Instrument approach procedures
  - Runway dimensions
  - Aircraft storage availability
- **Market Constraints**
  - Competing airports
  - Fuel type and price
  - Economic health

Aviation Forecasts - Based Aircraft

- **What is considered?**
  - New aircraft (purchased, relocated)
  - Lost aircraft (relocated, retired)
  - Aircraft type (single/multi-engine, helicopter, jet)

- **Why is this considered?**
  - How much storage space is needed?
  - What type of storage is needed? (hangars, tie downs)
    - Different aircraft/users have different needs
  - What support facilities are needed? (fuel, maintenance)

Aviation Forecasts - Critical Aircraft

- **What is considered?**
  - Most demanding (size/speed) aircraft
    - 500 operation threshold
  - May be based at TTD or may visit frequently

- **Why is this considered?**
  - Critical aircraft drive airfield layout
  - Setbacks, pavement strength, and dimensions

Aviation Forecasts - Aircraft Operations Forecasts

- **What is considered?**
  - How many take offs and landings occur
  - What types of aircraft are flying in and out of the Airport?
  - What are the infrastructure implications (Facility Requirements)

- **Why is this considered?**
  - Are facilities (runway, taxiways, airspace) approaching capacity?
  - Are pavement strengths adequate?
  - Are common users changing?
  - Does the Port hold adequate property interests?

Aviation Forecasts - Next Steps

- Consider based and critical aircraft, and aircraft operations
- Compare forecasts to FAA forecasts, explain deviation
- Prepare “decision points”
- Consider demand, determine Facility Requirements
- Review in conjunction with Land Use Demand Analysis
- Use both to determine Preferred Airport Role
- Prepare Airport Improvement Alternatives

Aviation Forecasts - Today's Questions

- Questions for clarification surrounding the Aviation Activity Forecast process?
- Is there any information that is missing?
- If that information is provided, will you likely approve the Aviation Activity Forecast methodology for purposes of moving forward with the next phases, understanding the project's iterative nature?

TROUTDALE AIRPORT
SHAPING OUR FUTURE

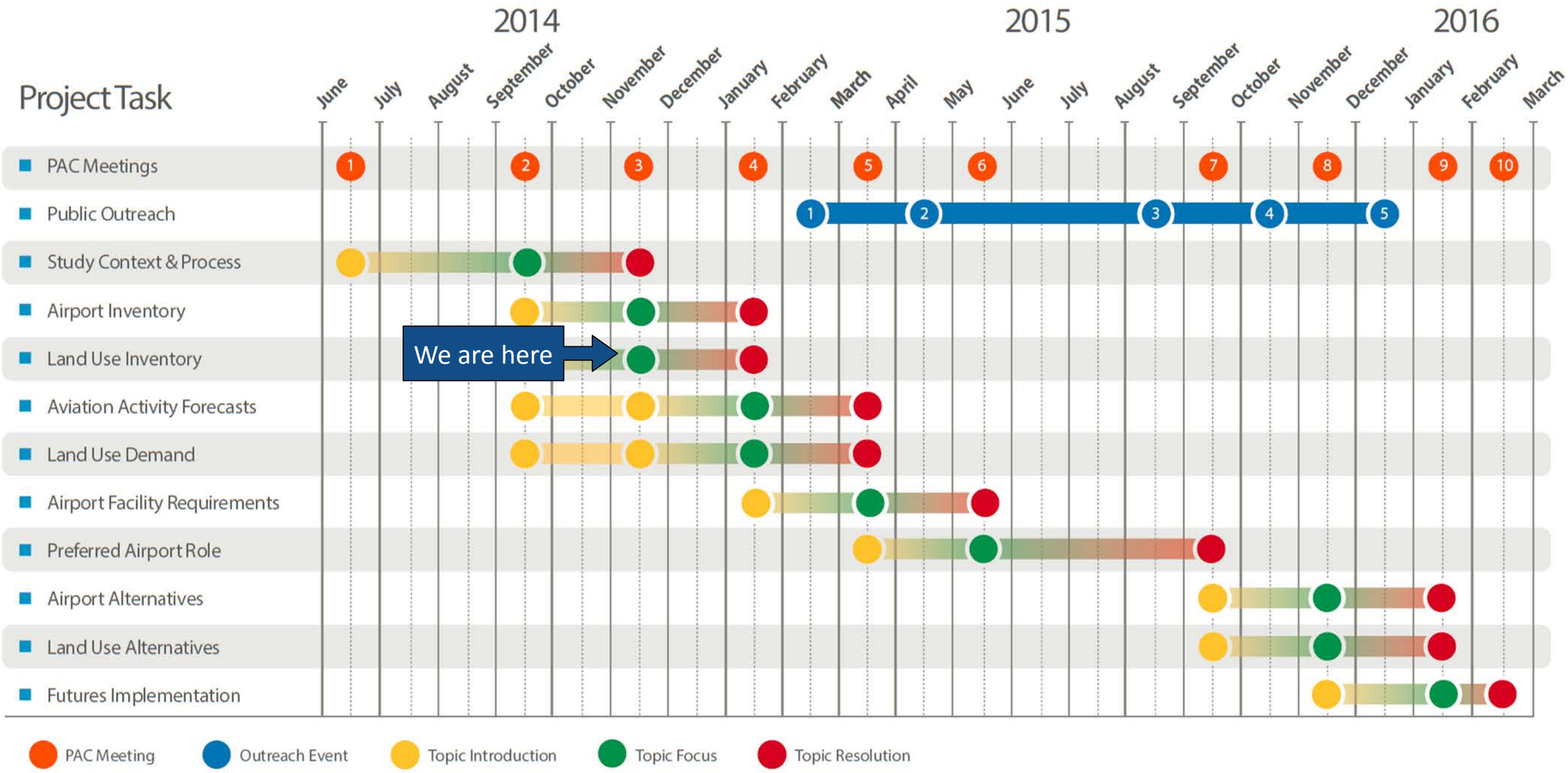
Land Use Inventory

Todd Johnson, Project Consultant
Bob Thompson, Project Consultant

PAC Meeting #3
November 20, 2014

Project Schedule

What is the role of the Troutdale Airport in the future?



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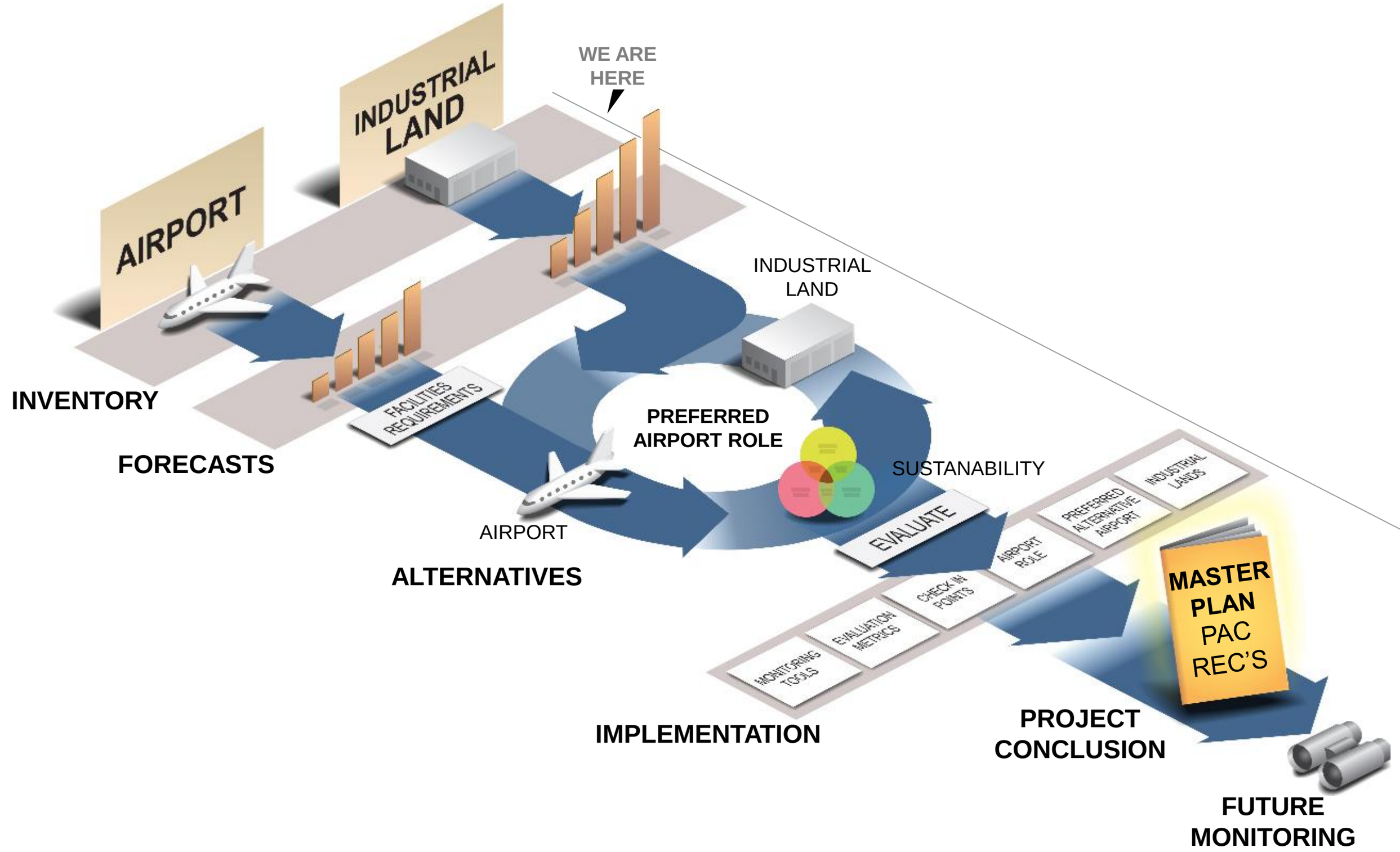


Land Use Inventory – Preview of Today's Questions

- Has all of the key information for the Land Use Inventory been captured?
- Is there any information that is missing?
- If that information is provided, will you likely approve the Land Use Inventory chapter for purposes of moving forward with the next phases, understanding the project's iterative nature?

Land Use Inventory - Purpose

- Land use inventory forms the foundation for the land use demand analysis and the development of land use alternatives
- Used in conjunction with the Land Use Demand, Aviation Activity Forecasts, and Airport Facility Requirements chapters
- Identifies land uses surrounding TTD to determine industrial or aviation development compatibility
- Reviews land use regulations and compatibility with FAA and ODA guidelines for adjacent properties

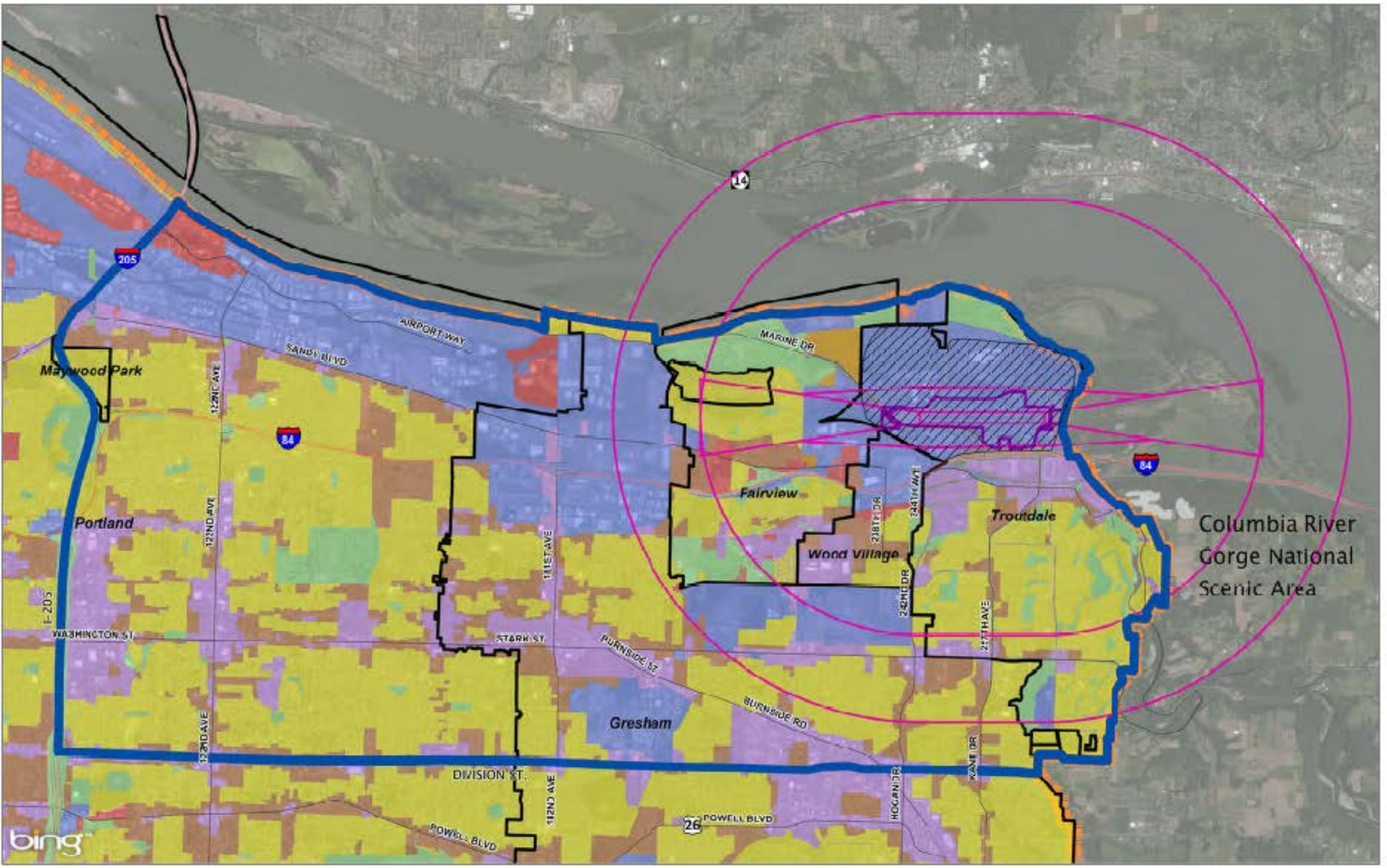
Land Use Inventory – Land Use Context

- Metro is the lead agency in planning for growth within the Portland metropolitan area urban growth boundary
- Port has the authority to:
  - Operate facilities that support the region's transportation needs in support of employment growth
  - Engage in long-range planning of its facilities

Land Use Inventory – Land Use Context

- ODA land use compatibility guidelines describe land use considerations in areas where aircraft are low to the ground, traffic pattern areas and within defined noise contours
- Cities of Troutdale, Fairview and Wood Village have airport-specific overlay zones based on FAR Part 77
- Surrounding land uses:
  - Arrival/departure path: industrial/open space
  - North traffic pattern: industrial/open space
  - South traffic pattern: commercial/residential

Land Use Inventory – Zoning Map and FAR Part 77 Surfaces



MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

LEGEND

- Urban Growth Boundary (UGB)
- East County Study Area (ECSA)
- Adjacent Lands Study Area (ALSA)
- Troutdale Airport (TTD)
- TTD FAR Part 77 Surfaces
- City Boundary

General Land Use Zoning

- Industrial
- Future Urban Development
- Commercial
- Multiple Use Residential
- Multiple Family Residential
- Single Family Residential
- Parks & Open Space

NORTH

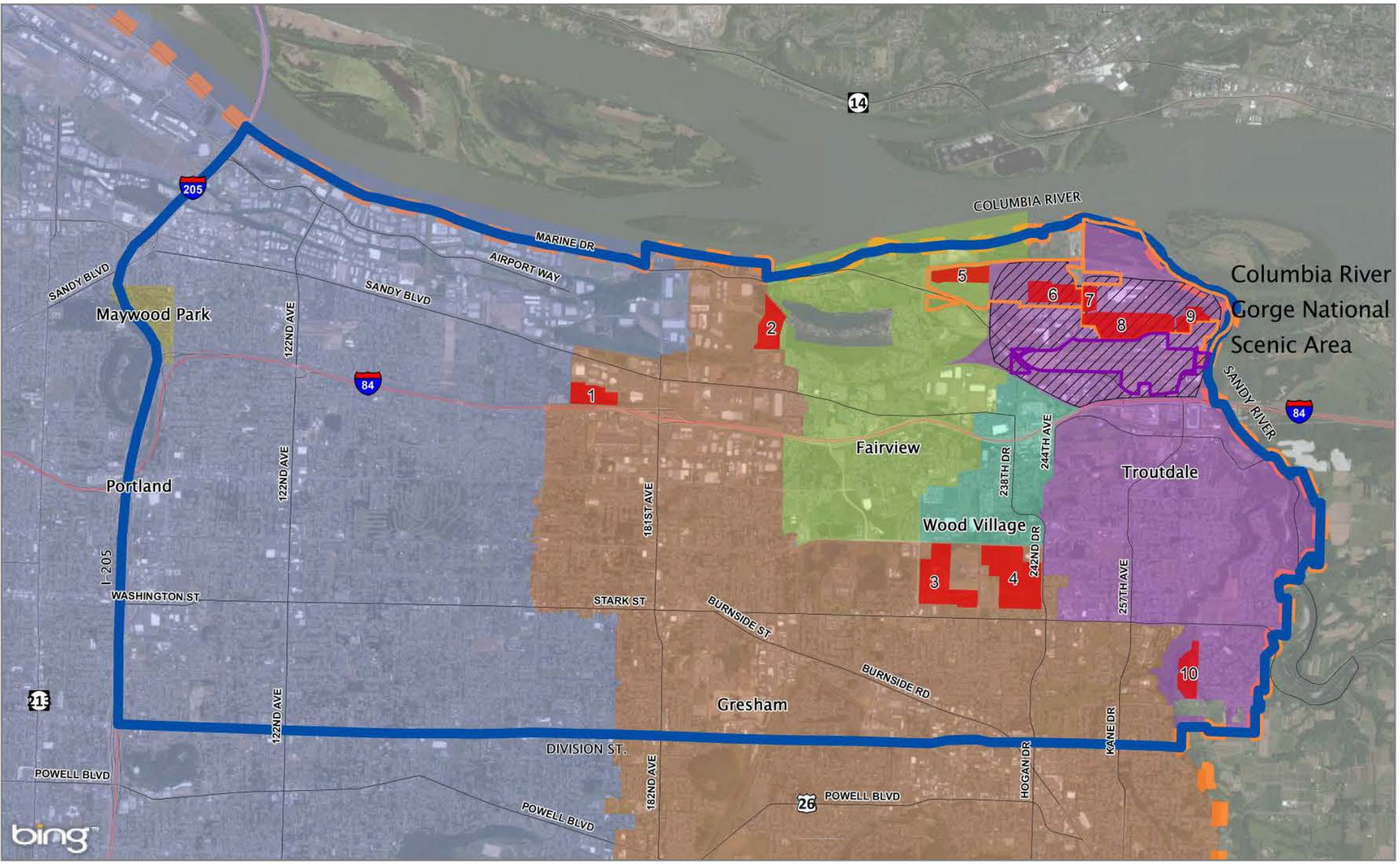
0 1 2 Miles

Land Use Inventory – Methodology

Review of available development sites, focusing on:

- East County Study Area (ECSA)
  - Developable land in a defined area within the UGB
  - Located in the same general market area as TTD/TRIP
  - Properties identified in the 2012/2014 Regional Industrial Site Readiness Project
- Adjacent Lands Study Area (ALSA)
  - Sites within the City of Troutdale adjacent to TTD
  - Local infrastructure usage and capacity: using City of Troutdale Public Works & Engineering data
- TTD/TRIP
  - Property within airport boundaries and at TRIP

Land Use Inventory – Study Areas



MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

LEGEND

- Urban Growth Boundary (UGB)
- East County Study Area (ECSA)
- Adjacent Lands Study Area (ALSA)
- Troutdale Reynolds Industrial Park (TRIP)
- Troutdale Airport (TTD)
- Inventory Sites

City Boundary

- Maywood Park
- Portland
- Gresham
- Fairview
- Wood Village
- Troutdale

NORTH

0 1 2 Miles

Land Use Inventory – ECSA Findings

- Spans six municipalities with different zoning code and land use regulations
- 10 sites suitable for large lot industrial development
- 8 large lot industrial sites >25 acres
  - 3 ready for development within six months
  - 3 ready for development in 7-30 months
  - 2 require > 30 months for site readiness
- Public utilities and transportation infrastructure are adequate or can be upgraded to support continued industrial development

Land Use Inventory – ALSA Findings

- Consists of four sites within the ECSA
- Located within City of Troutdale; portion in City of Fairview
- Reviewed City of Troutdale development standards, environmental overlays, and Troutdale Airport Landing Field Overlay
- City of Troutdale water system is adequate for industrial needs within its service area
- City of Troutdale sewer system will require additional pump stations to handle future industrial sites within its service area

Land Use Inventory – TRIP/TTD

- Freight access is currently a limiting factor at TRIP, though planned road construction will improve access over the next several years
- The ODOT Interchange Area Management Plan assumes that undeveloped lands within the area will be developed in a manner consistent with City of Troutdale Comprehensive Plan and existing zoning. For TTD the existing zoning is General Industrial and Light Industrial.
- Currently, most of TTD is zoned GI and a small amount is in LI. The airport is an allowed use in both the LI and GI zoning categories.

Land Use Inventory – Condition of Study Sites

TABLE 2-1: INFRASTRUCTURE CONDITION AT AVAILABLE SITES

Sites	Net Developable Area (acres)	Location	Utility Infrastructure Rating			Transportation Infrastructure Rating			
			Water	Sewer	Storm	Nearby System Quality	Access to Interstate Highway	Access to Freight Route	Access to Freight System
1: Weston Investments – Columbia Gorge Corporate Center	26.0	Gresham	A	A	A	A	B	A	A
2: Cereghino	25.0	Gresham	A	A	A	B	B	A	B
3: Port of Portland – Gresham Vista Business Park West (Lots 8-10)	67.8	Gresham	A	A	A	A	B	A	B
4: Port of Portland – Gresham Vista Business Park East (Lots 1-5)	115.0	Gresham	A	A	A	A	B	A	B
5: Port of Portland – TRIP Phase 3	30.0	Fairview	C	B	A	B	C	B	B
6: Port of Portland – TRIP Lots 10-11	30.2	Troutdale	A	A	A	A	B	B	C
7: Port of Portland – TRIP Lot 1	14.4	Troutdale	A	A	A	B	B	B	C
8: Port of Portland – TRIP Lots 6-9	80.3	Troutdale	A	A	A	A	B	B	C
9: Port of Portland – TRIP Lots 4-5	17.0	Troutdale	A	A	A	A	B	B	C
10: Mount Hood Community College	37.4	Troutdale	A	A	B	A	C	B	B

A= adequate B=some deficiencies C=some significant improvements required to support development

Land Use Inventory – Major Findings

- 10 large industrial sites in the ECSA; only three of sites are development-ready within six months
- TTD is well situated among commercial/industrial properties generally compatible with aircraft operations
- Public utilities and transportation infrastructure are adequate or can be upgraded to support continued industrial development in the ECSA
- TTD's current zoning is industrial, with aviation as an allowed use
- Using all land at TTD to its maximum potential (whether for aviation or ancillary uses) supports Metro's UGB planning efforts while ensuring that development will be compatible with the facility

Land Use Inventory - Next Steps

- Adequacy of supply will be evaluated in the Land Use Demand chapter
- Information will be used in conjunction with the Land Use Demand, Aviation Activity Forecasts, and Airport Facility Requirements chapters to develop plan alternatives

Land Use Inventory - Today's Questions

- Has all of the key information for the Land Use Inventory been captured?
- Is there any information that is missing?
- If that information is provided, will you likely approve the Land Use Inventory chapter for purposes of moving forward with the next phases, understanding the project's iterative nature?

TROUTDALE AIRPORT
SHAPING OUR FUTURE

Land Use Demand

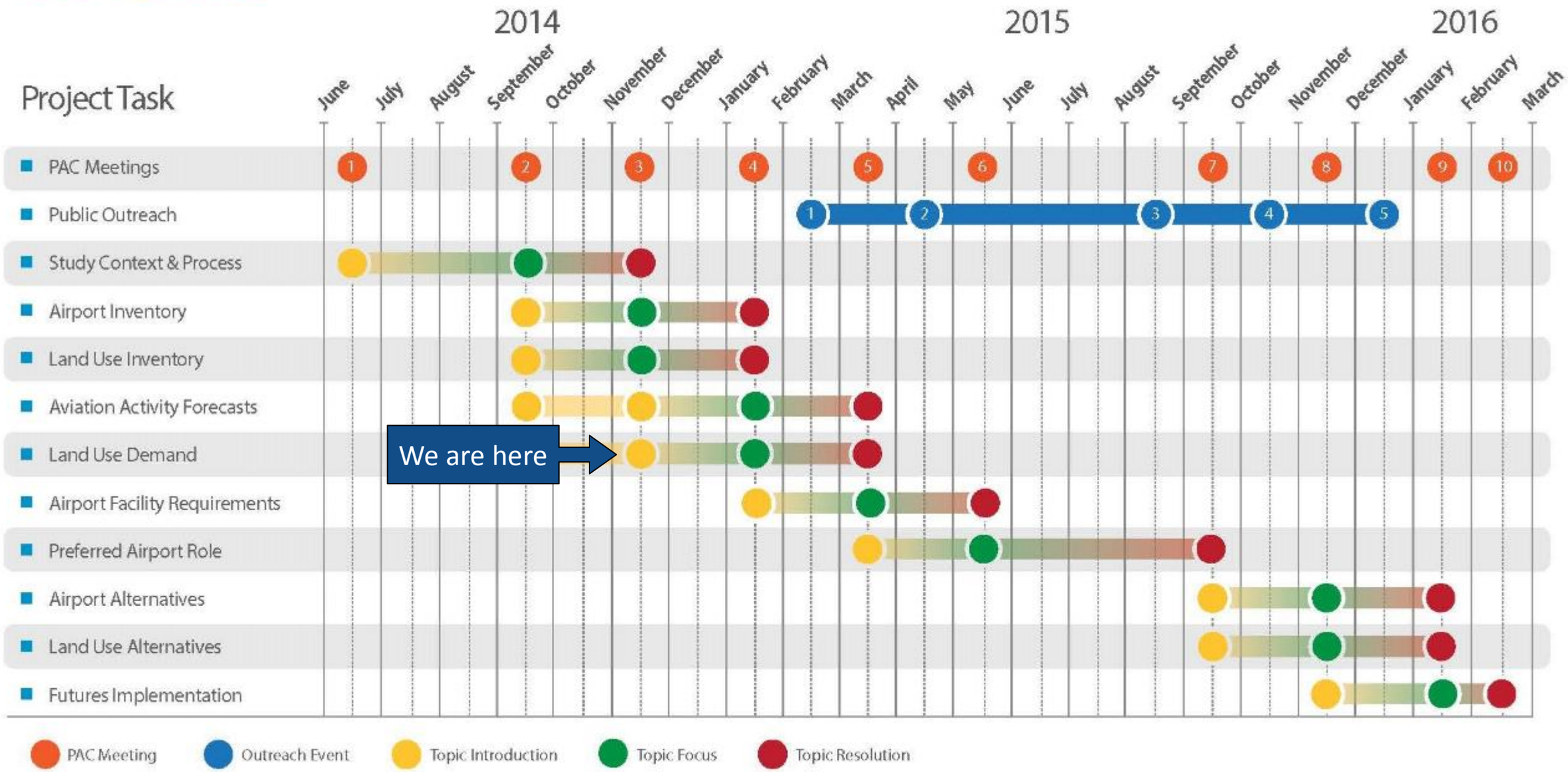
Jerry Johnson, Project Consultant

PAC Meeting #3

November 20, 2014

Project Schedule

What is the role of the Troutdale Airport in the future?



Central and Secondary Questions

What markets is the airport best suited to serve?

Are there environmental constraints that impact future alternatives?

What is the economic impact of the alternatives over the next 20 years?

How does the community feel about these alternatives?

What is the role of the Troutdale Airport in the future?

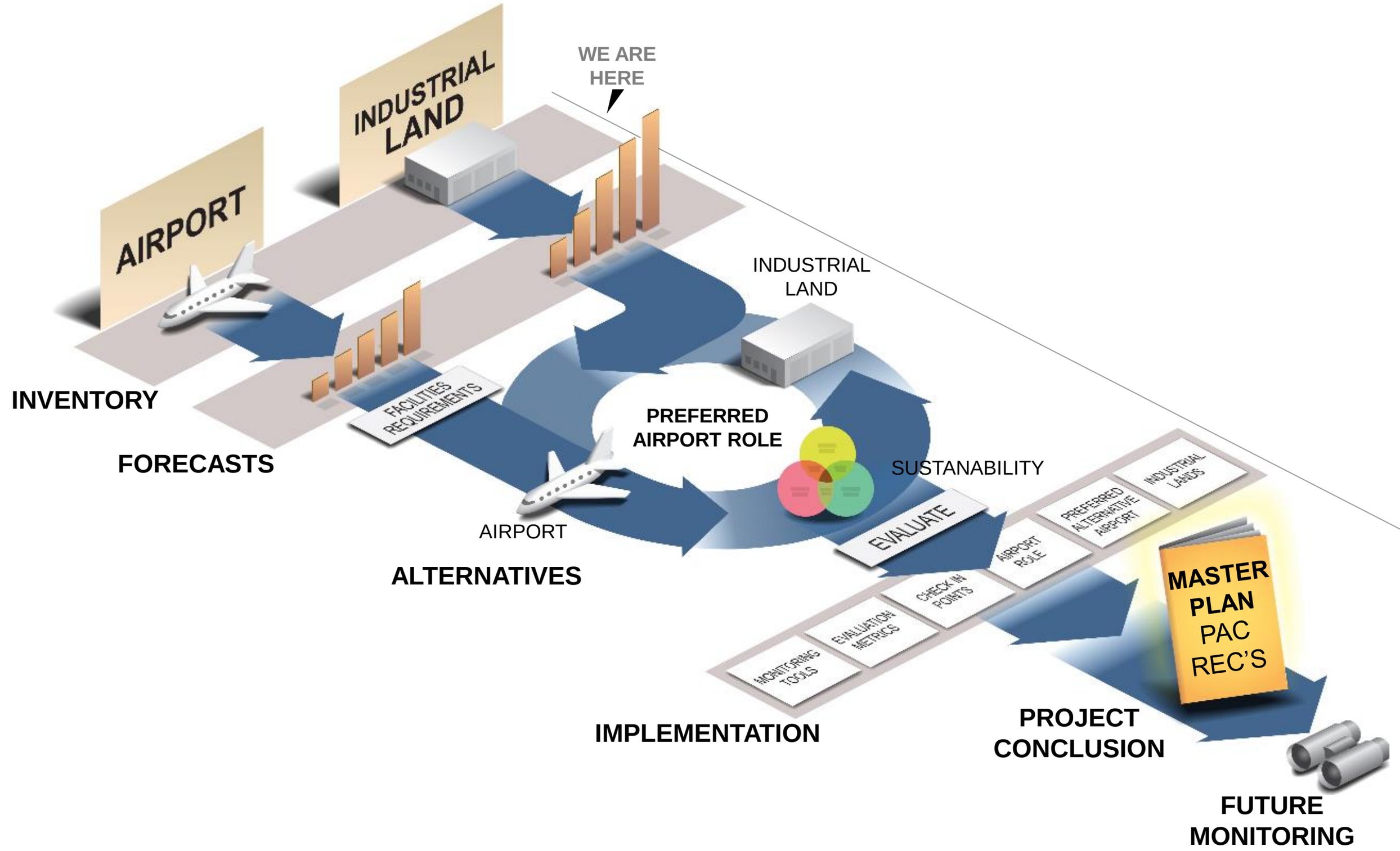
Are there legal constraints that impact future alternatives?

What are the financial impacts of these alternatives over the next 20 years?

What are the primary development alternatives?

What development alternatives will be recommended to the Port Executive Director?

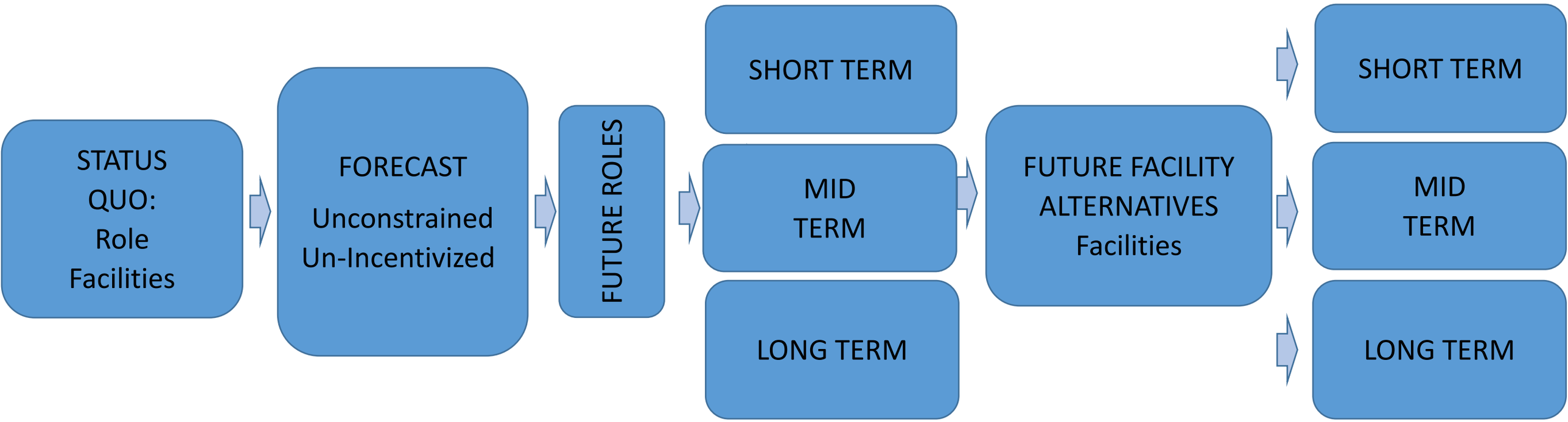
Project Roadmap



Roadmap: Expanded View

ROLE: What markets will TTD serve?

FACILITY ALTERNATIVES: How will TTD serve the markets?



Land Use Demand – Preview Today's Questions

- Questions for clarification surrounding the Land Use Demand process?
- Are there any information or steps that are missing?
- If that information and those steps are provided, do you approve the Land Use Demand methodology for purposes of moving forward with the next steps, understanding the project's iterative nature?

Land Use Demand - Outline

- Land Use Demand Overview
- Methodology Overview
  - Employment Growth
  - Associated Space Needs
  - Projected Demand
  - Economic Trend Analysis
  - Target Industry Analysis
- Data Sources
- Development Concept Schematic Designs
- Land Use Demand Questions

Land Use Demand - Purpose

- **Why do we forecast?**
  - To assess future demand for industrial lands
  - To evaluate development potential of TTD and vicinity
- **What do we forecast?**
  - Employment demand characteristics
  - Industry growth cycles
- **How do we forecast?**
  - Observe trends and impacts
  - Tie history and external projections to local activity
- **What do we do with the forecasts?**
  - Review and revise with stakeholders and experts
  - Use as the basis for future decision making
  - Alternative development

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Land Use Demand - Overview

- Cluster analysis to determine the range of industrial/ commercial/aviation development for the TTD site and the existing/projected demand for these types of land uses in the TTD area
  - Will consider available lot size and land use development restrictions
- Schematic level development concepts of highest/best uses

Land Use Demand - Methodology Overview

EMPLOYMENT GROWTH

- Regional
- Local Capture
- By Sector

ASSOCIATED SPACE NEEDS

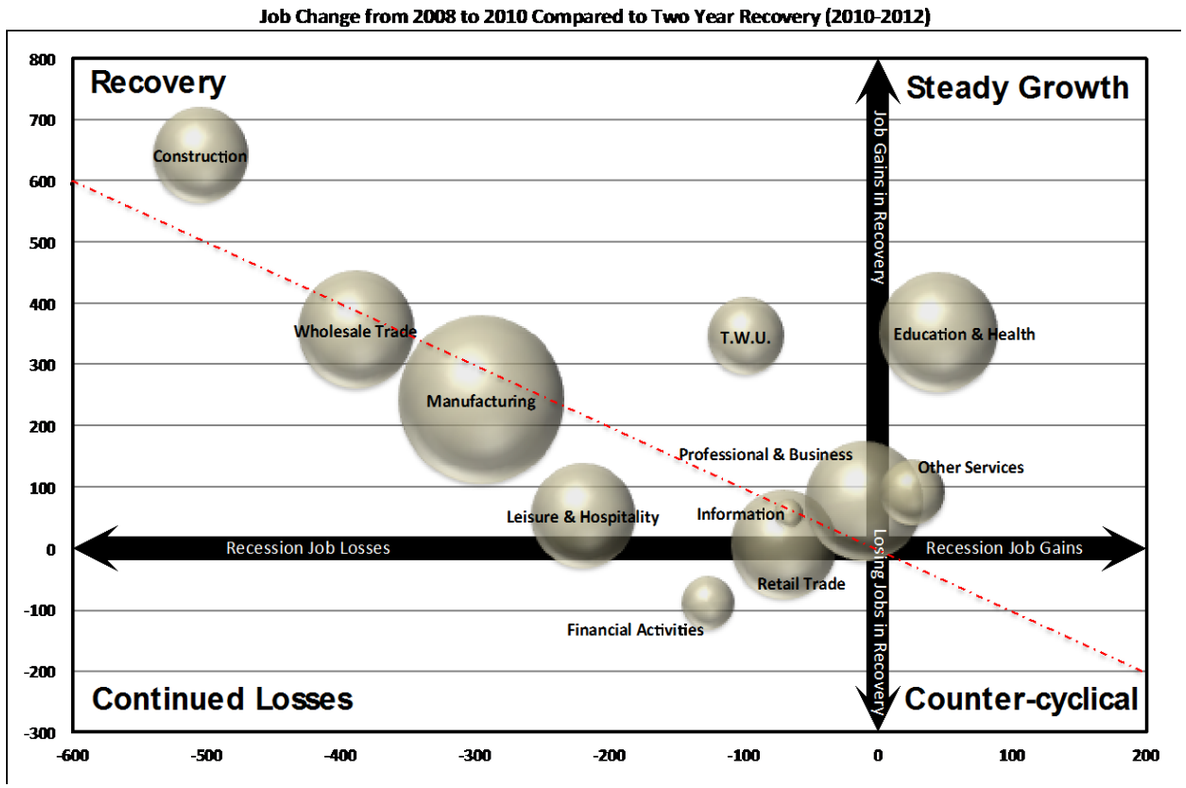
- By Sector
- By Product Type

PROJECTED DEMAND

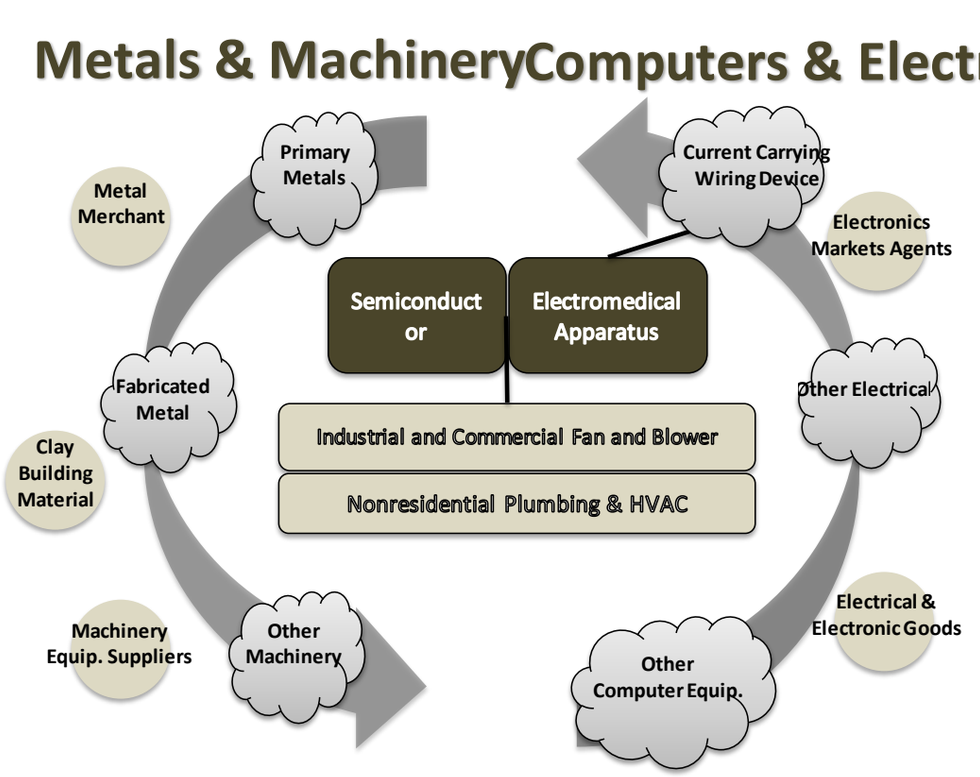
- Magnitude
- Character
- Location

Land Use Demand - Methodology

- Economic Trend Analysis
  - Regional and localized employment trends
  - Current employment characteristics



- Target Industry Analysis
  - Specialization (location quotient)
  - Economic drivers (shift-share)
  - Vertical linkages (input-output)
    - Supply chain analysis



Land Use Demand - Methodology

- Employment Forecast by Industry
  - Trend driven
  - Regional coordination with Metro estimates
- Industry Specific Site Needs Matrix
  - Access
  - Utilities
  - Labor Force
- Land Demand
  - Regional demand by industry
  - Local capture factor

Land Use Demand - Sources of Data

Data Set	Source
Population Trends	PSU Population Center
Population Forecast	Metro, 2014 Regional Forecast
Employment Trends	State of Oregon
Local Employment Trends	Firm-level QCEW Data
Local Capture/Population and Employment	MetroScope Baseline Allocation
Per Capita Income	Bureau of Economic Analysis
Gross Regional Product	Bureau of Economic Analysis

Land Use Demand - Development Concept Schematic Designs

- After the cluster analysis identifies targeted business types, three highest-and-best uses will be illustrated as development concepts in the Land Use Alternatives phase.
- Concepts may involve a portion of TTD (subject to FAA legal limitations) if it is determined there is a surplus of property and a demand for land in this region.
- Schematic designs will depict general site layouts and building coverage for any part of TTD not needed for future aviation demands.
- Concepts will be compared based on transportation and utility capacity and rough cost estimates for needed upgrades
- The preferred concept will be identified after comparing all three schematic designs

Land Use Demand - Today’s Questions

- Questions for clarification surrounding the Land Use Demand process?
- Are there any information or steps that are missing?
- If that information and those steps are provided, do you approve the Land Use Demand methodology for purposes of moving forward with the next steps, understanding the project’s iterative nature?