



SUSTAINABLE AIRPORT MASTER PLAN

Washington State Transportation Commission | July 20, 2016



Sea-Tac Airport Today

Fastest Growing Large Hub Airport in the U.S.

2014

37.5 million passengers

Up 7.7%

340,000 flight operations

Up 7.3%

2015

42.3 million passengers

Up 12.9%

381,000 flight operations

Up 12%

- \$220 million in retail and service sales
- 170,000 jobs related to airport activity

Major Current Projects:

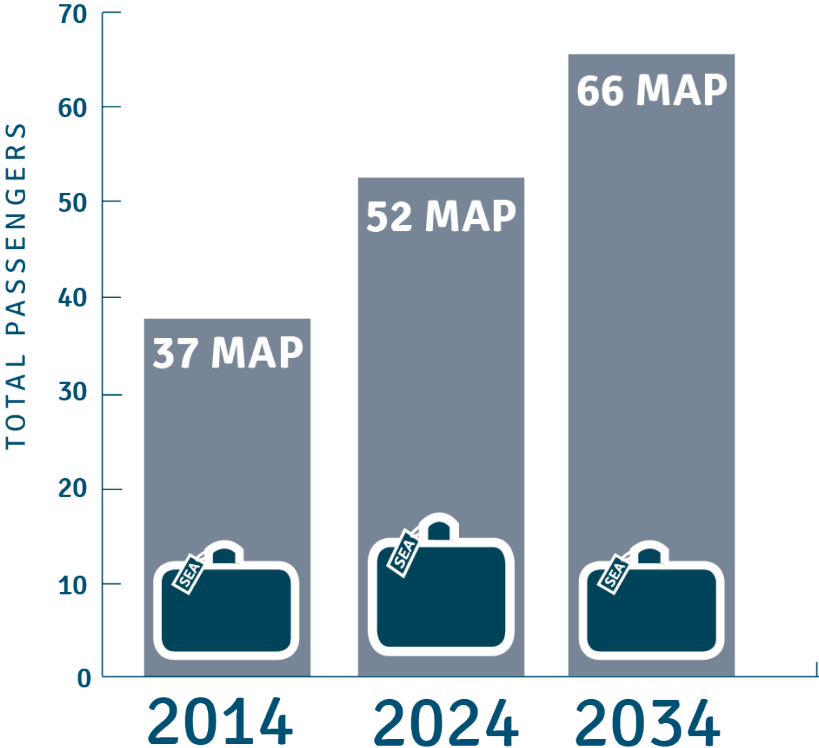
- North Satellite Expansion
- International Arrivals Facility
- 16C Reconstruction
- Baggage System Reconstruction



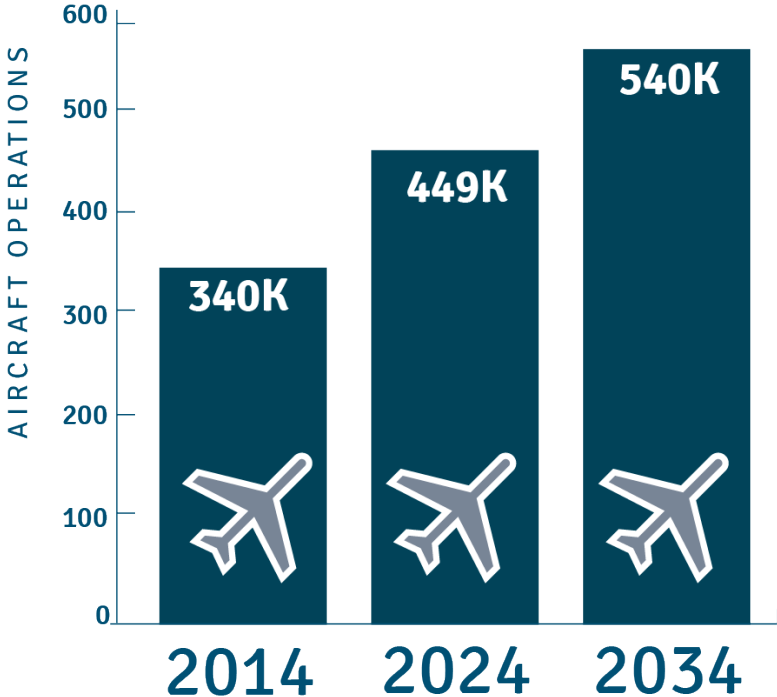
Master Plan -- Unconstrained Activity Forecast

Region's Economy Driving Rapid Growth in Recent Years

GROWTH IN TOTAL PASSENGERS (BY MILLION ANNUAL PASSENGERS - MAP)



GROWTH IN AIRCRAFT OPERATIONS





Airfield

- Increase 88 operations per hour to 120 without adding runways
- Move more planes faster with more gates and aircraft



Terminal

- Adding 8 gates now to the existing 92 gates
 - Still need 35 more gates
- Add hold rooms and security processing for 43 new gates while handling existing passenger traffic
- Potentially build a second terminal to serve most of the new gates

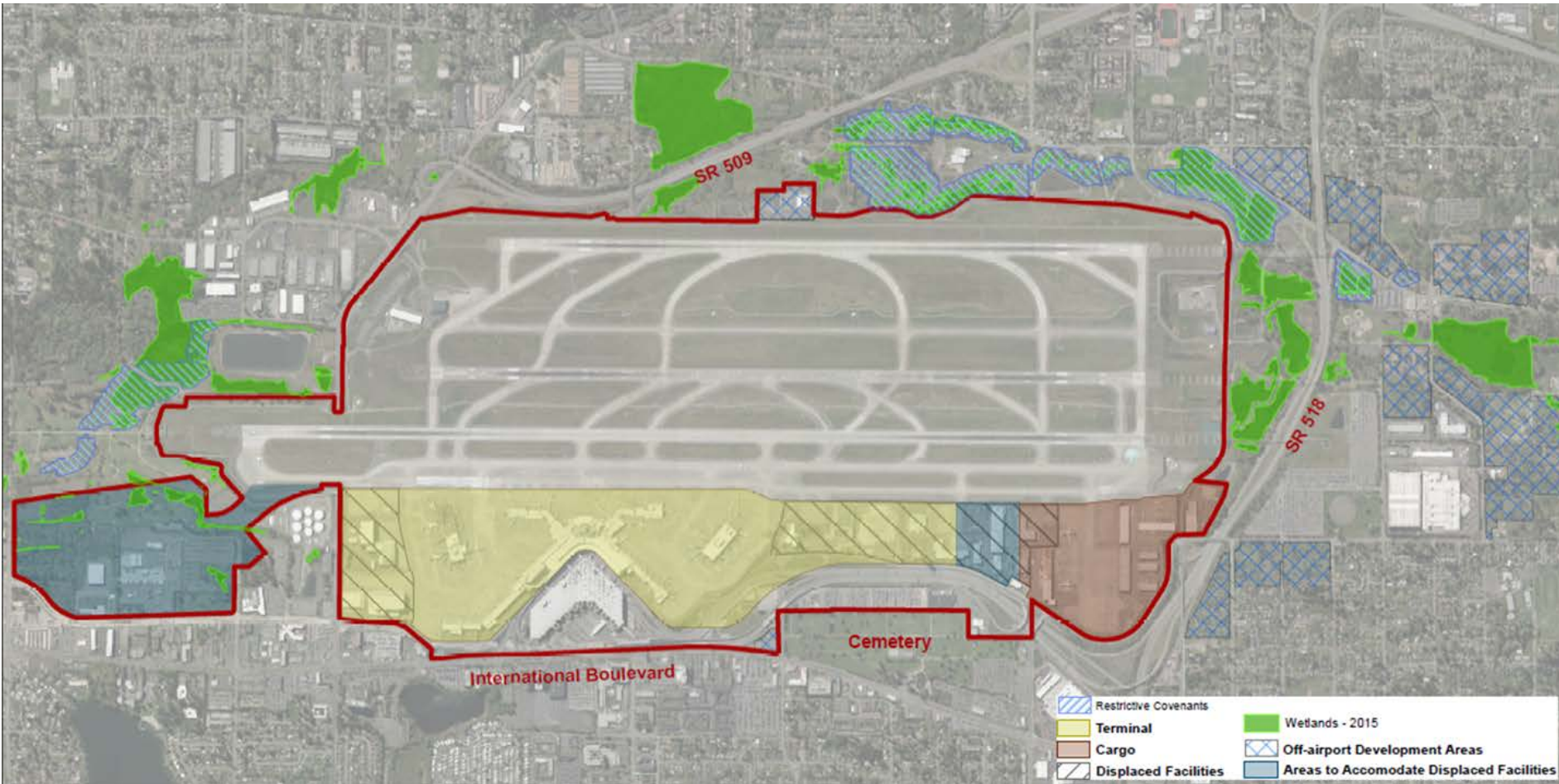


Landside

- Remove bottlenecks and chokepoints on roadways and drives
- Plan for roadway network to serve potential second terminal

Development Constraints

Environmental, Airspace, and Land Use Constraints Limit Expansion Options



✓ Long-range plan (e.g. SAMP)

- Campus-wide, comprehensive plan
- Facility requirements in 5-year increments to 20 years
- Alternatives analysis
- Narrow to Preferred Alternative(s)
- 20-year facilities development plan
 - Balance capacity to 3-runway airfield
 - Phasing plan for level of service, continuity of operations
- Capital program / plan of finance

□ Project definition (e.g., concourse layouts for new gate piers)

- Program development for individual projects
- Adequate detail required to transition projects to design

□ Project design

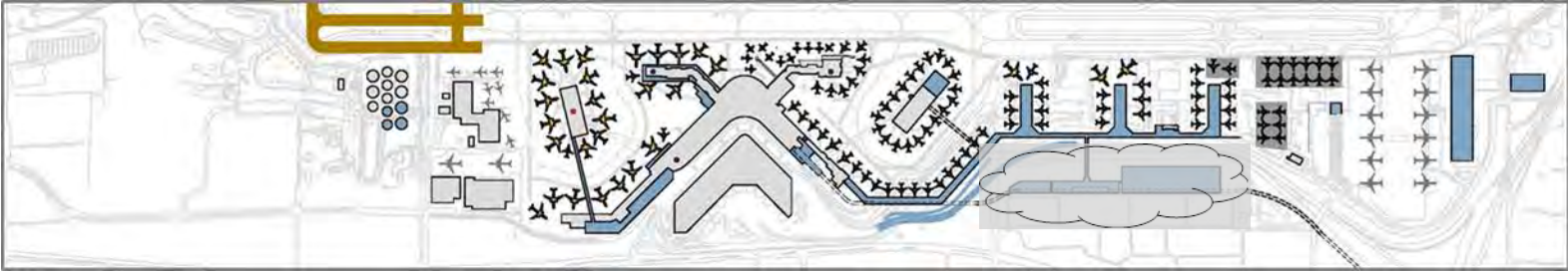
Major Plan Elements - Early Concepts

Concepts Not Meeting Operational Needs

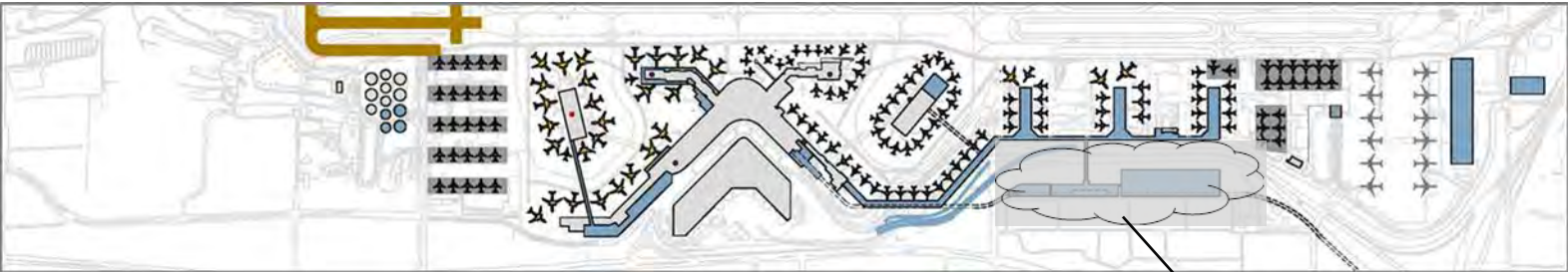
Concept 1



Concept 2



Concept 3



Light gray – existing facilities
Dark blue – potential new facilities

NOTE: Development concepts illustrate major plan elements independent of 1 vs 2 terminals

Major Plan Elements - Concept 4

Best Option to Meet Program Needs and Operational Layout

Details

- New widebody international gates on Concourse B
- Extension of Concourse D to gate piers to the north
- Aircraft hold positions provided to the north and south
- SASA needed to accommodate functions displaced by gates) aircraft maintenance, potential GRE, and cargo)

Primary Advantages

- Meets program needs
- Best operational layout

Primary Concerns

- Complexity of developing new airfield-connected land
- Complexity of construction phasing



Light gray – existing facilities
Dark blue – potential new facilities

NOTE: Development concepts illustrate major plan elements independent of 1 vs 2 terminals

Gate Expansion Concepts

Variations on Gate Expansion Involve Pros and Cons

Three pier gate expansion to the north of the existing terminal



U-shaped gate expansion to the north of the existing terminal

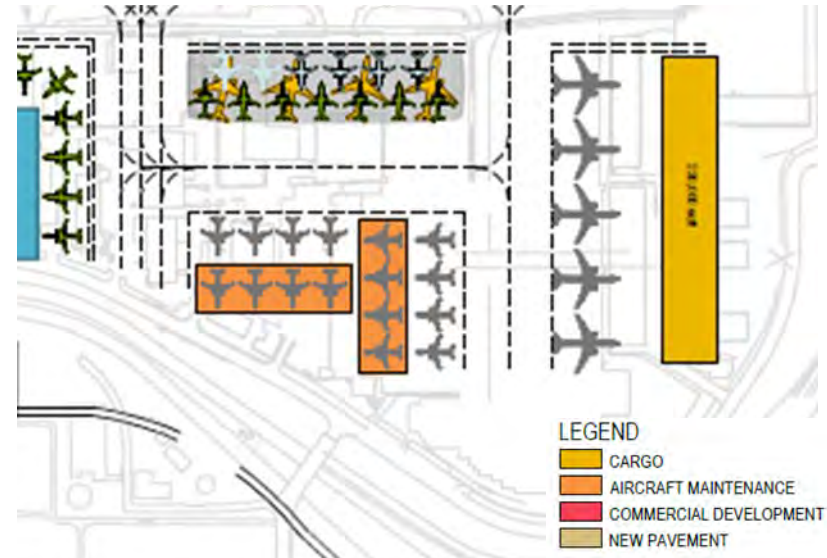
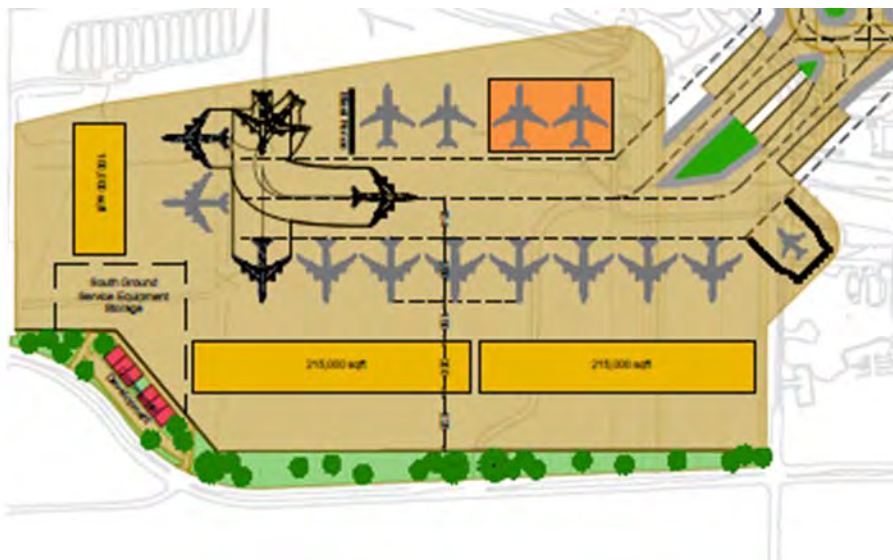


South Aviation Support Area

Aircraft Maintenance in North Requires Trade-offs with Air Cargo






Aircraft maintenance split between SASA and north cargo area

- Would reduce the overall number of cargo aircraft parking positions
- GRE not located in convenient place for north end maintenance



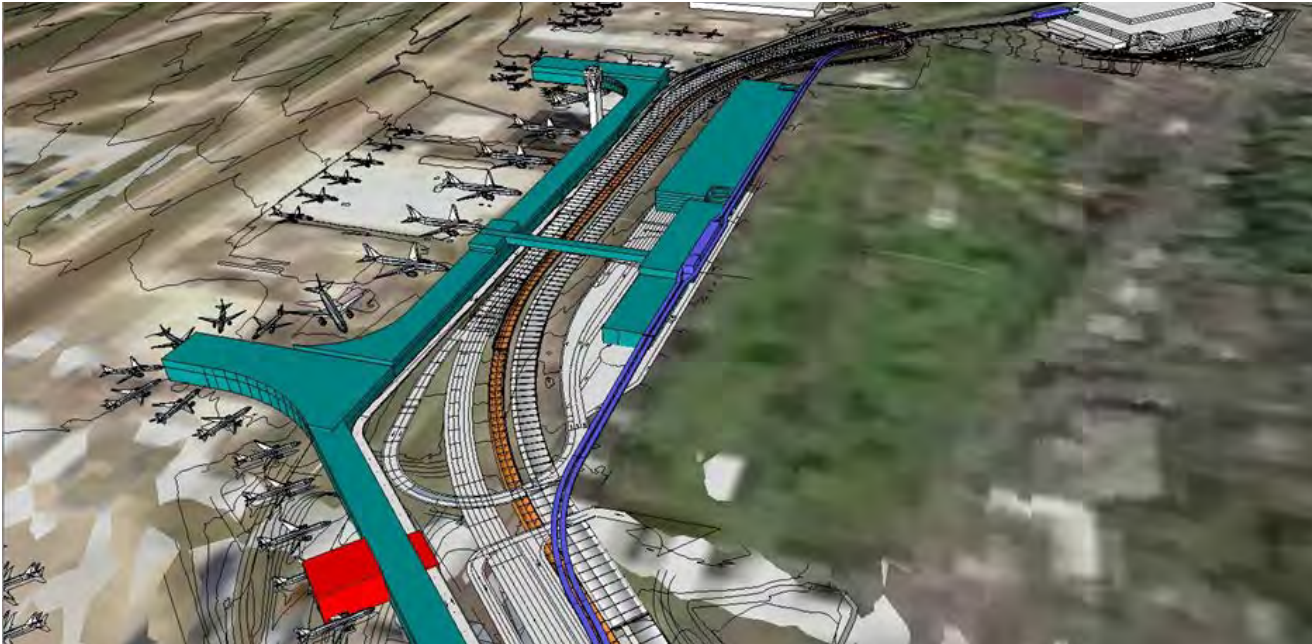
LEGEND
CARGO
AIRCRAFT MAINTENANCE
COMMERCIAL DEVELOPMENT
NEW PAVEMENT

Evaluation Criteria

-  **Cost (total cost of ownership)**
 - Capital
 - Operation and maintenance
-  **Risk**
 - Ability to accommodate faster growth than anticipated
 - Ability to accommodate higher level of activity than ultimately anticipated
-  **Flexibility**
 - Operational: airline assignments, load balancing
 - Facilities: efficiency, sustainability, timing and scope
-  **Development**
 - Phasing: ability to provide adequate capacity in a timely manner
 - Constructability: code issues, abatement
-  **Level of service**
 - During construction
 - Post construction

U-shaped gate expansion and roadways challenges

- Provide north terminal ingress and egress
- Determine alignment and elevation of APM or bus guideway and stations
- Optimize regional and local access
- Assess potential trade-offs with north gate expansion
- Provide airside and landside access to relocated ARFF (east of existing)



Building 3-D model
in AutoCAD to
set geometry of
facilities in North
Terminal area

- **Preliminary landside options**

- Developed 4 APM options and 1 elevated busway option
- Conducted decision analysis to screen options

- **Further study**

- Will recommend shortlist of landside options for further study by SAMP consultant
- Study will also include assessment of airside people movers:
 - Passenger flow analysis
 - Diagrammatic layout concepts for APM, power walks and busing
 - Identify airside options for connecting North Satellite and future gates
 - Capacity analysis for APM, power walks and busing
 - Transfer time evaluation between international and domestic flights
 - Capacity assessment of existing Satellite Transit System (STS) trains

Mid-Term Landside Strategy

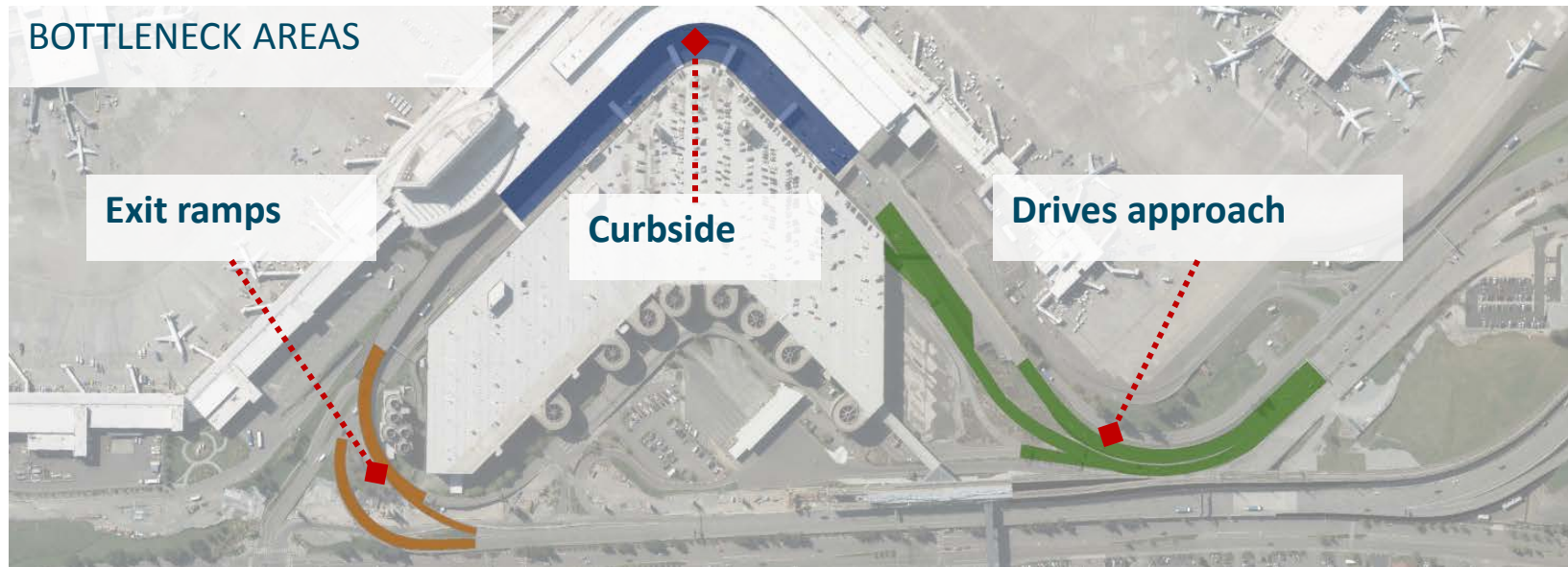
Combination of Operational and Lower-cost Solutions Identified

Problem:

- Accommodate near- to mid-term demand on existing terminal roadways and curb
- Address bottleneck areas to reduce congestion and improve Level of Service (LOS)

Goal:

- Leverage operational strategies before phasing in capital projects
- Seek lower cost capital projects that minimize throwaway work, maximize flexibility for either one or two terminal solutions



Sustainability Goals and Objectives

Integrating Sustainability into the Master Plan

Master Plan

Designed to meet sustainability goals in the Century Agenda, Airport's strategic goals, and Strategy for a Sustainable Sea-Tac (S3)

Integrates sustainability in three phases:

1. What and where we build
2. How we build
3. How we operate





Airline Partners

Pre-conditioned air and electric ground service equipment; advance aviation biofuels



Fleet vehicles

Renewable natural gas buses, alternative fuel vehicles required for taxi fleet, TNC environmental standards



Facilities

LED lighting replacement and electric vehicle charging stations in parking garage, and central mechanical plant upgrades



Aquatic Resources

Completed Airport stormwater retrofit, advanced wetland mitigation development through aggressive management

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- **1st Airport in North America to Receive Airports “Carbon Accreditation Certification”**
 - **2014 Best Workplace Recycling Award – Honor Roll *King County Solid Waste Division***

- NEPA will be conducted to comply with FAA requirements
- SEPA will be conducted to comply with Port of Seattle Commission Resolution No. 3650
- 23 environmental categories evaluated under NEPA and SEPA
- Landrum and Brown selected for environmental review analysis
- Currently evaluating baseline conditions and developing a public and agency outreach strategy
- Expected to be complete in Q4 2017.



Airfield

- Continue assessing impacts of runway/taxiway separation
- Assess constructability and estimate cost of south end-around taxiway



Gates

- Refine gate layouts & phasing plan



Terminal

- Continued analysis of one vs two terminal concepts



Landside

- On-going capacity analysis through modeling
- Develop roadway layouts and assess challenges
- Support Airport Operations in mid-term strategy and spin-off projects



Support facilities

- Incorporate support facilities into overall development plan
- Determine land uses for South Aviation Support Area & timing of development



Continued robust community engagement

Activity forecast *(completed Q1 2015)*

Alternatives analysis & development alternatives(s) *(Q4 2014 – Q4 2015)*

- Iterative process, finalizing facility requirements and defining development alternatives
- Commission engagement at key decision points

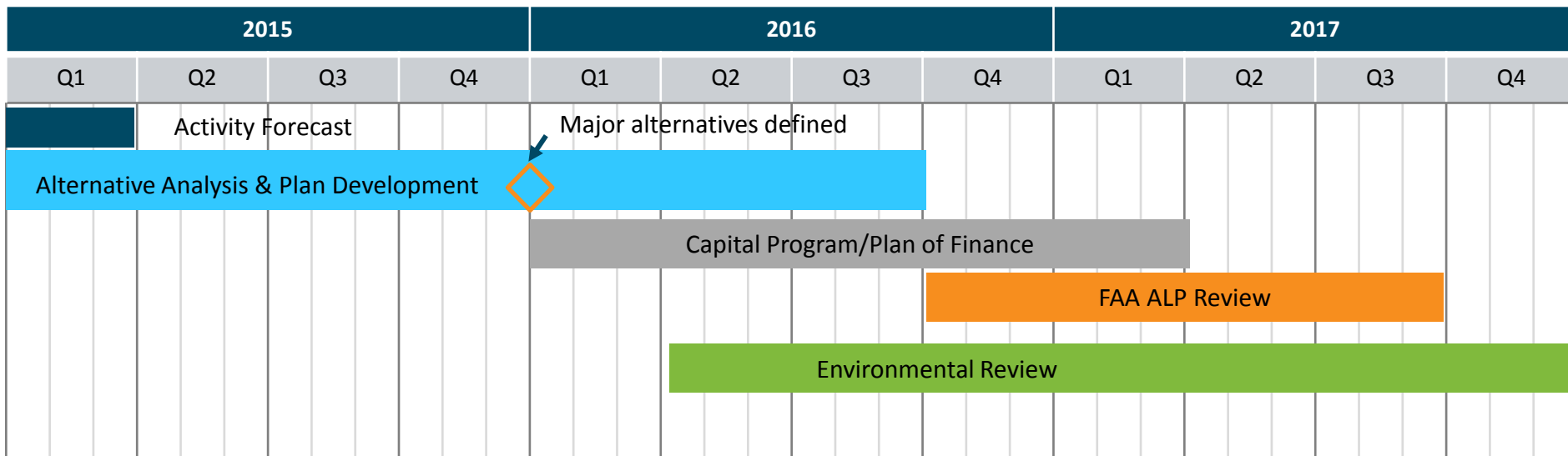
Development of integrated preferred alternative(s) *(Q1 2016 – Q3 2016)*

- Constructability assessment
- Phased implementation plan
- Planning level cost estimates

Capital program and plan of finance *(Q1 2016 – Q1 2017)*

FAA Airport Layout Plan review *(Q4 2016 – Q3 2017)*

Environmental review *(Q2 2016 – Q4 2017)*



Airport growth provides economic development opportunities

SAMP helps define airport operation needs for off-airport properties

Port has hosted business roundtable meetings with airport cities:

- Business and civic leadership provide input towards economic development initiatives and aspirations
- Specific plans and strategies can be coordinated with SAMP
- Development can occur even when not specific to SAMP



- **Community open houses**
 - 1st Series: SAMP process, goals, forecast (March 2015)
 - 2nd Series: Major Plan Elements (March 2016)
 - 3rd Series: Preferred Development Alternative (Q3 2016)
- **Commission Roundtables**
 - February, March, April, June – completed
 - August and September – planning underway
- **Targeted engagement with external stakeholders (Q2-Q3)**
 - Social justice community leaders
 - Airport-area business leaders
- **Ongoing engagement with tenants, operators, FAA, & TSA**
- **Quarterly outreach report and coordination with Port calendars**
- **Environmental Review begins mid-2016**
 - Coordinated outreach program between SAMP and environmental

Complete or in Process

- ✓ Round One Open Houses (Des Moines, Seattle, Bellevue)
- ✓ Round Two Open Houses (SeaTac, Seattle, Bellevue)
- ✓ Air Mail newsletter (ongoing)
- ✓ Interjurisdictional Transportation Advisory Group
- ✓ Airport Communities Business Roundtables
- ✓ Social Justice outreach
- ✓ Economic Development follow-up
- ✓ Environmental community outreach
- ✓ SAMP brochure
- ✓ County-wide research

Upcoming

- Translated documents
- Website update
- Video
- Social media emphasis
- Media outreach
- Focus groups
- Round Three Open Houses (Burien, Seattle, Eastside)
- Initiate environmental review

Thank You

For more information, visit the Port's SAMP webpage and sign up to receive updates:

www.portseattle.org or <http://bit.ly/airport-master-plan>

