

ITEM NO: 7c Supp

DATE OF MEETING: August 11, 2015

SUSTAINABLE AIRPORT MASTER PLAN (SAMP) UPDATE

August 11, 2015

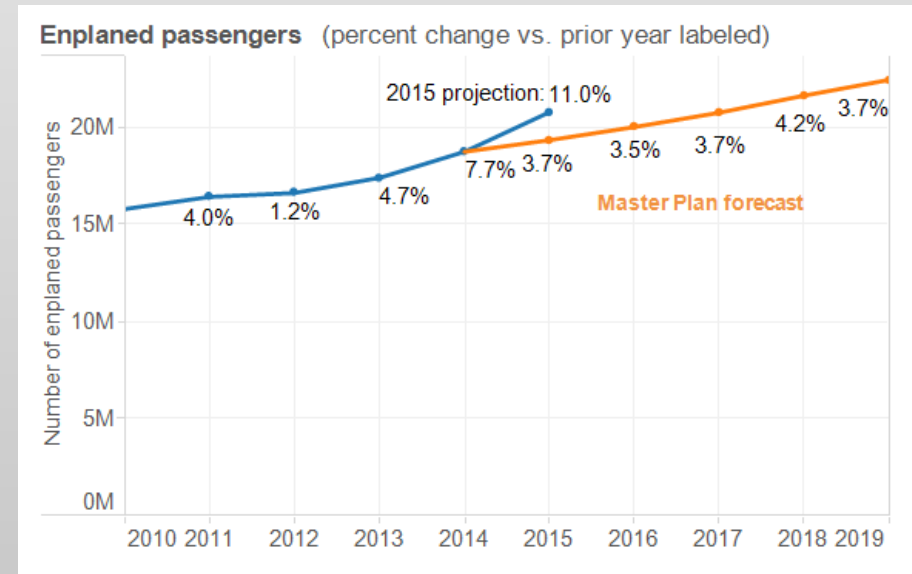
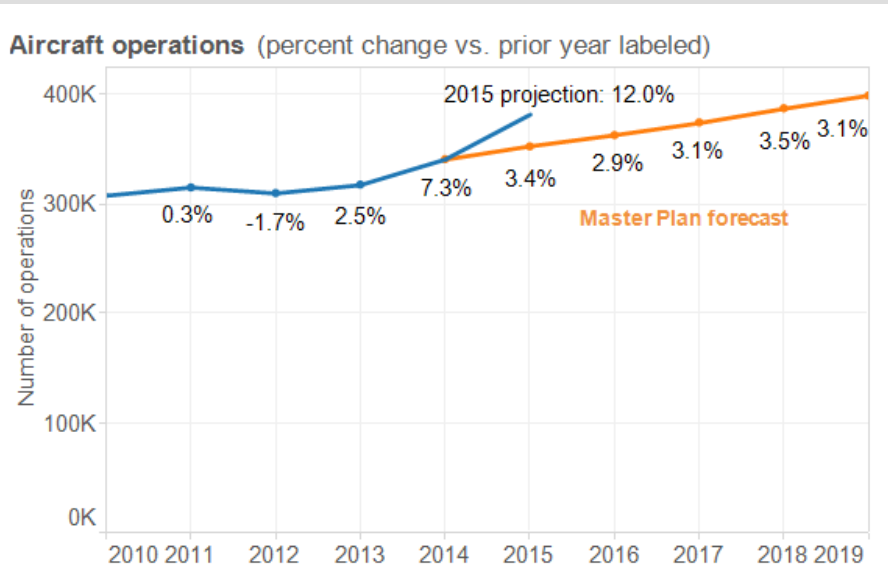
Port 
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Briefing overview

- Airport activity
- Where we are in the planning process
- Gate expansion concepts
- Airfield simulation modeling
- Landside modeling & concepts
- Public outreach
- Next steps

Airport activity

- Higher than previously forecasted growth in recent years
- Dramatic growth in 2015
 - **Operations:** 70% of SAMP 5-year forecasted growth anticipated in 2015
 - **Passengers:** 55% of SAMP 5-year forecasted growth anticipated in 2015



Higher than previously forecasted growth in recent years

Where we are in the planning process

Analysis complexities

- Gate need
 - Unconstrained 20-year forecast indicates a need for 35 gates
- Airfield modeling will determine airfield capacity
 - Could determine a lower number of operations can be accommodated, even with improvements, resulting in a lower gate requirement
- One vs two terminals
 - Analysis involves balancing airfield, terminal & landside capacity
 - Potentially significant capital cost differences between alternatives
 - Need to determine feasibility of required improvements under each alternative
 - Landside modeling will inform one vs two terminal recommendation

Analysis of options involves complex trade-offs

Where we are in the planning process

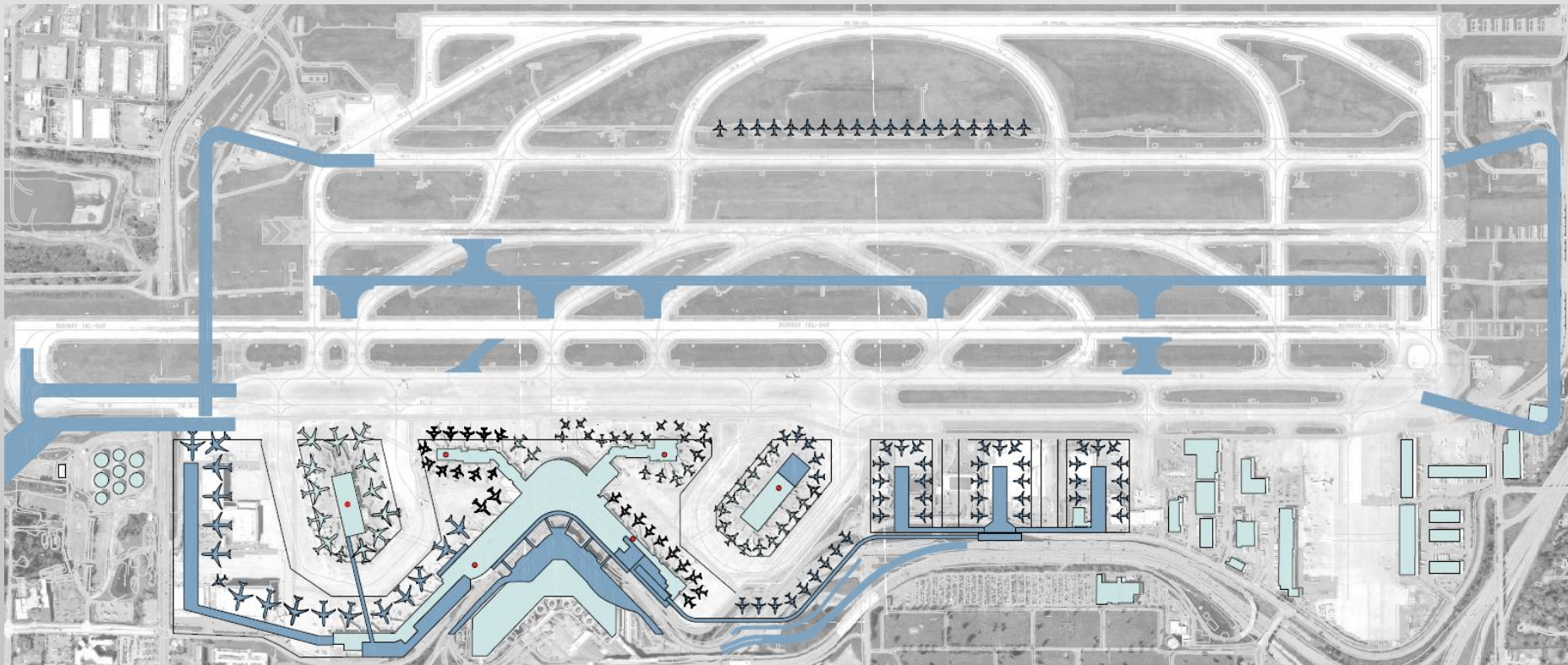
Current work

- Refined gate expansion concepts
 - Gate layout for each 5-year planning horizon
- On-going work to explore phasing for gates, terminal and hardstands
- Airfield
 - Modeling
 - Calibrated model of existing airfield
 - Currently running model to assess existing airfield with increased activity
 - Assessing impacts of runway/taxiway separation
- Refining landside concepts
 - Iterative process with development of one and two terminal concepts
 - Initial simulation modeling
 - Short list of options based on pros/cons assessment

Gate expansion concepts

One terminal

- 100% of 20-year activity accommodated in Main Terminal
- APM required to connect passengers north and south
- Terminal expansion north and east
- Relocate Upper Drive and expand Lower Drive

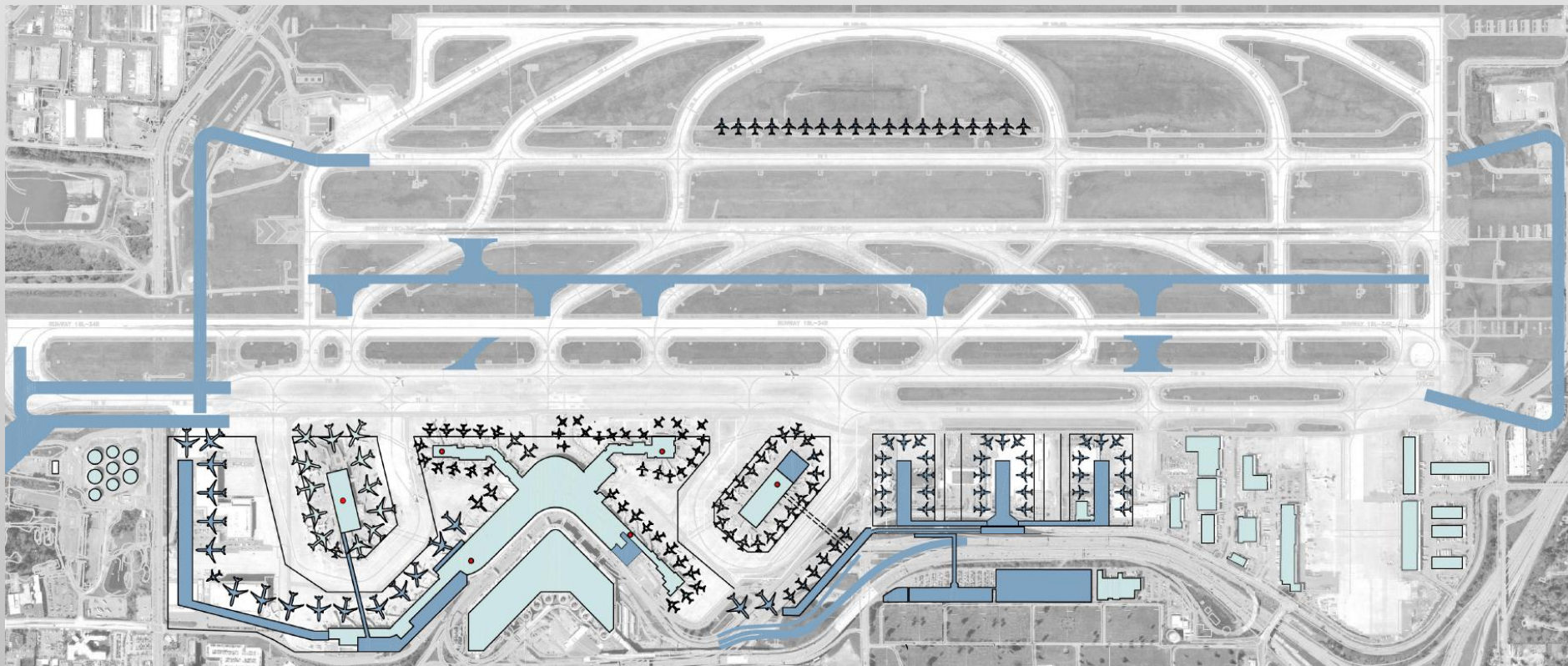


One terminal option includes terminal expansion north & east

Gate expansion concepts

Two terminals

- 70% of 20-year activity accommodated in Main Terminal
- 30% of 20-year activity accommodated in North Terminal
- Second terminal and supporting roadways
- Fewer improvements needed at Main Terminal

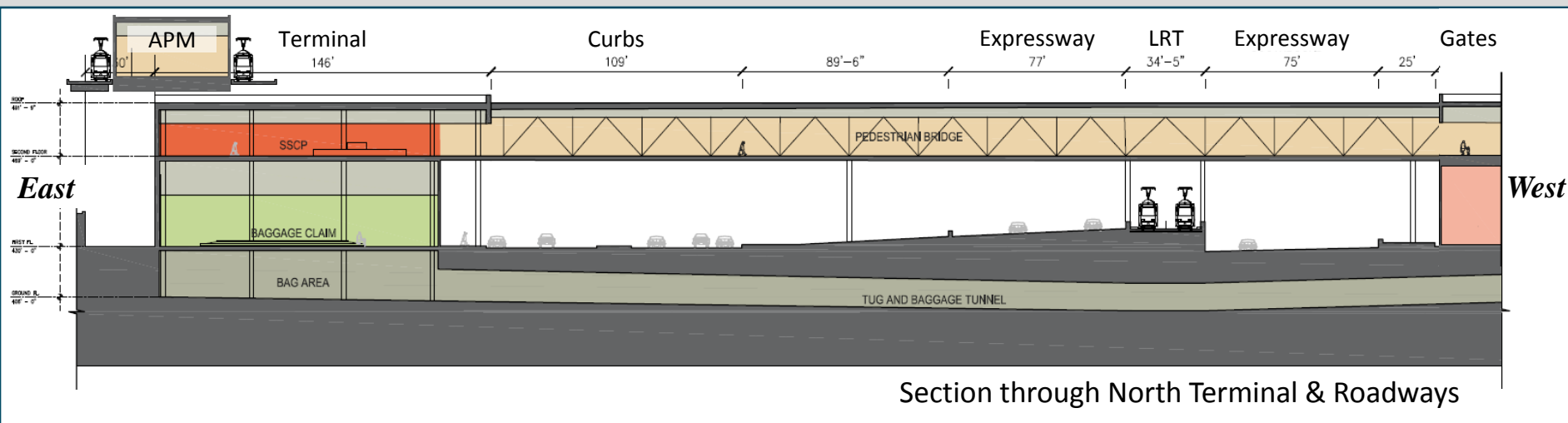


Two terminal option relieves congestion at Main Terminal

Gate expansion concepts

North Terminal concept

- Bag claim and check-in on same level
- Potential APM on upper level
- Tunnel connection for baggage & utilities
- Air Cargo Rd either in tunnel or terminates at S 160th



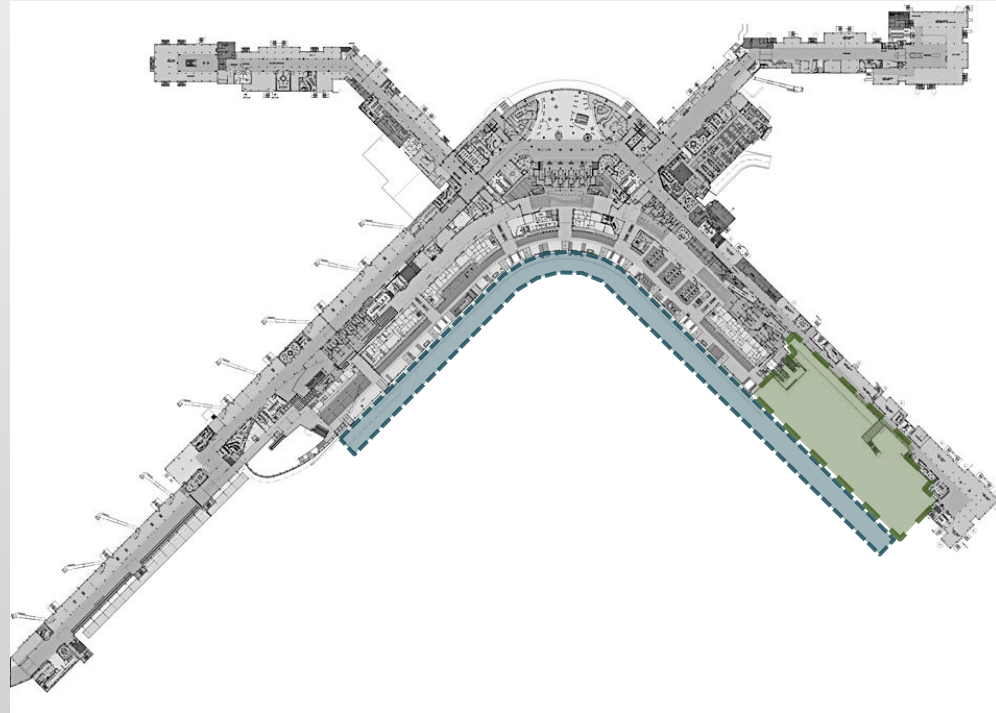
Section through North Terminal & Roadways

Terminal facility requirements

Main Terminal implications

Ticketing Level

- One terminal concept requires expansion north & east to accommodate 2034 demand for check-in & security screening
- Two terminal concept minimizes ticketing expansion (*no impact to drives*)



Terminal facility requirements		1 Terminal		2 Terminals	
	Main Terminal Existing	Main Terminal 2034	Main Terminal 2034	North Terminal 2034	
Check-in positions	214	250	216	72	
Security screening check-point lanes	31	41	35	12	

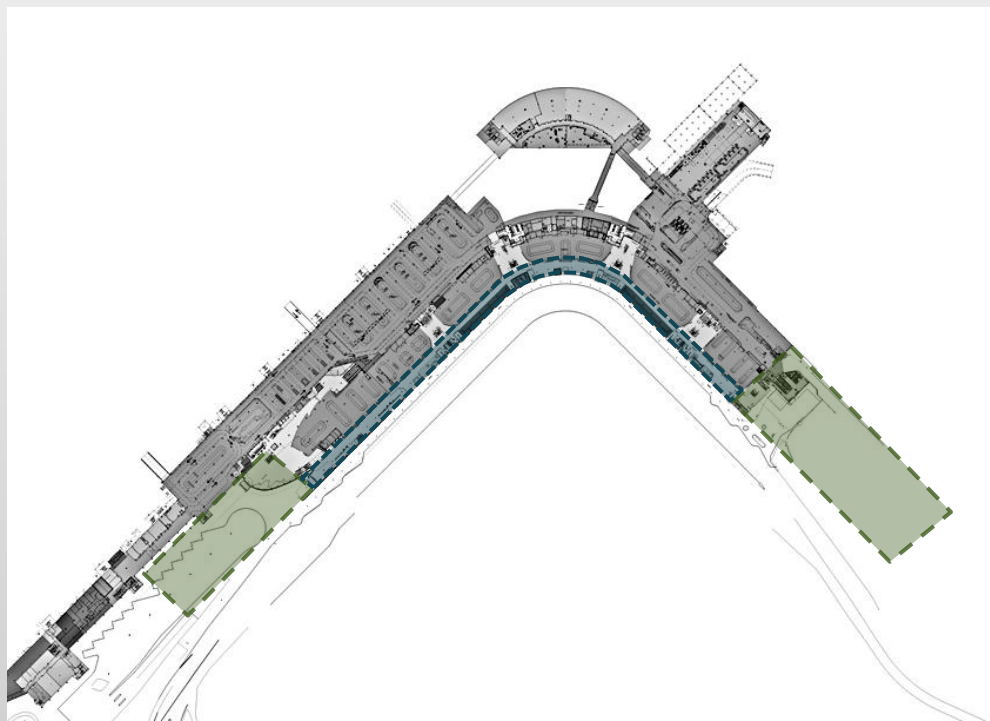
Must expand ticketing north & east under one terminal concept

Terminal facility requirements

Main Terminal implications

Bag claim Level

- One terminal concept requires expansion north & south in addition to removal of ramps in existing claim area to accommodate 2034 demand for baggage facilities
- Two terminal concept minimizes expansion (*no impact to drives*)



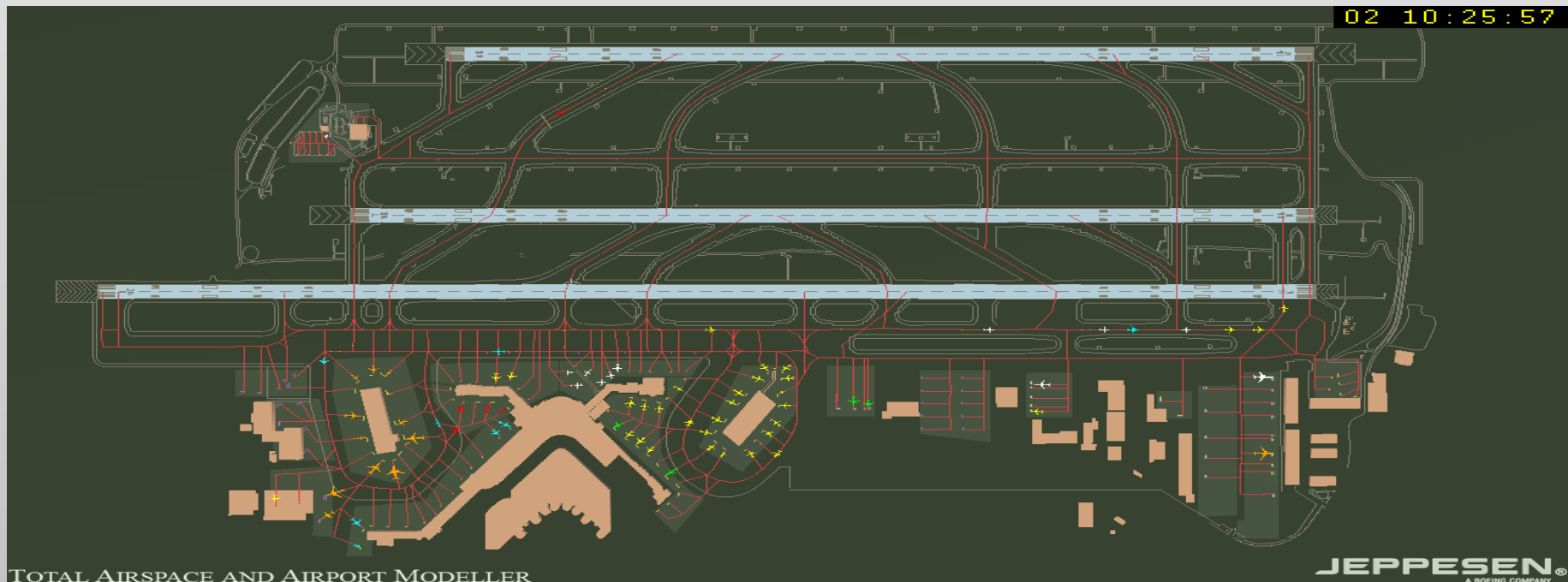
Terminal facility requirements		1 Terminal		2 Terminals	
	Main Terminal Existing	Main Terminal 2034	Main Terminal 2034	North Terminal 2034	
Domestic bag claim devices	16	25	22	7	
Domestic bag claim frontage (feet)	2,619	4,093	3,530	1,177	

Must expand bag claim south & north under one terminal concept

Airfield simulation modeling

Objectives

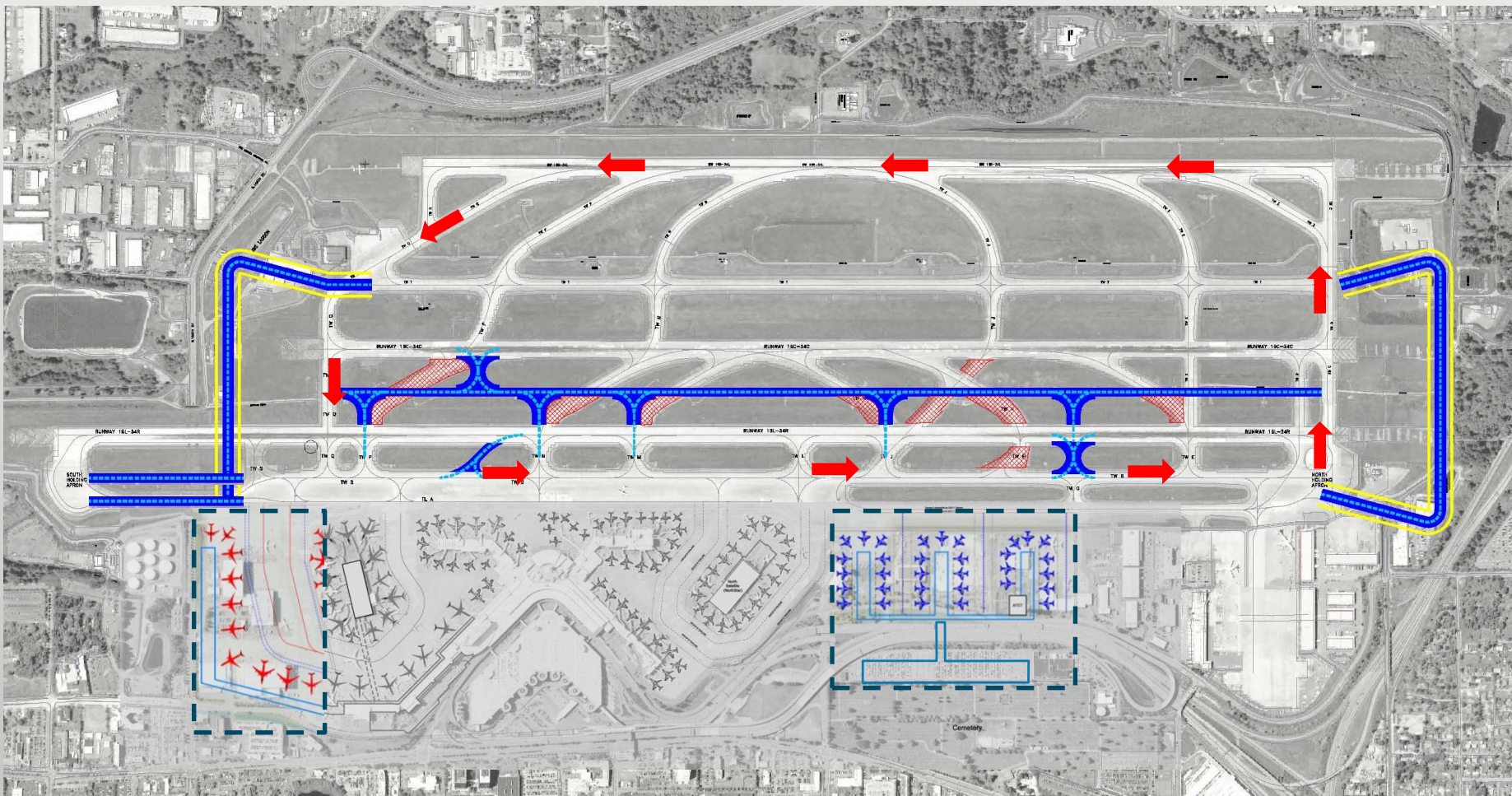
- Determine airfield capacity with almost 60% more annual aircraft operations in 2034
- Determine timing and benefit of potential airfield improvements
- Determine number of gates needed in 2034 based on airfield capacity
- Quantify benefit of operational procedures for FAA tower and airlines



Airfield modeling will determine airfield capacity

Airfield simulation modeling

Potential airfield improvements and procedures



Capacity determined by airfield layout and procedures

Landside

Landside modeling

- Current work
 - Calibrated existing base-year model
 - Simulated future demand on existing roadway system for one terminal
- Next steps
 - Simulate one terminal roadway improvement concepts
 - Simulate two terminal roadway concepts
 - Adjust model if airfield capacity is limited
 - Modeling complete in Fall 2015

Landside modeling complete in Fall 2015

Landside

Landside modeling

- Existing roadways
 - Existing roadway gridlocks between 10- and 15-year timeframes
- Potential improvements will be developed & modeled
 - Determine curb capacity
 - Relieve bottlenecks on roadways



Existing roadway gridlocks between 10- and 15-year timeframes

Landside

Landside options for one terminal concept

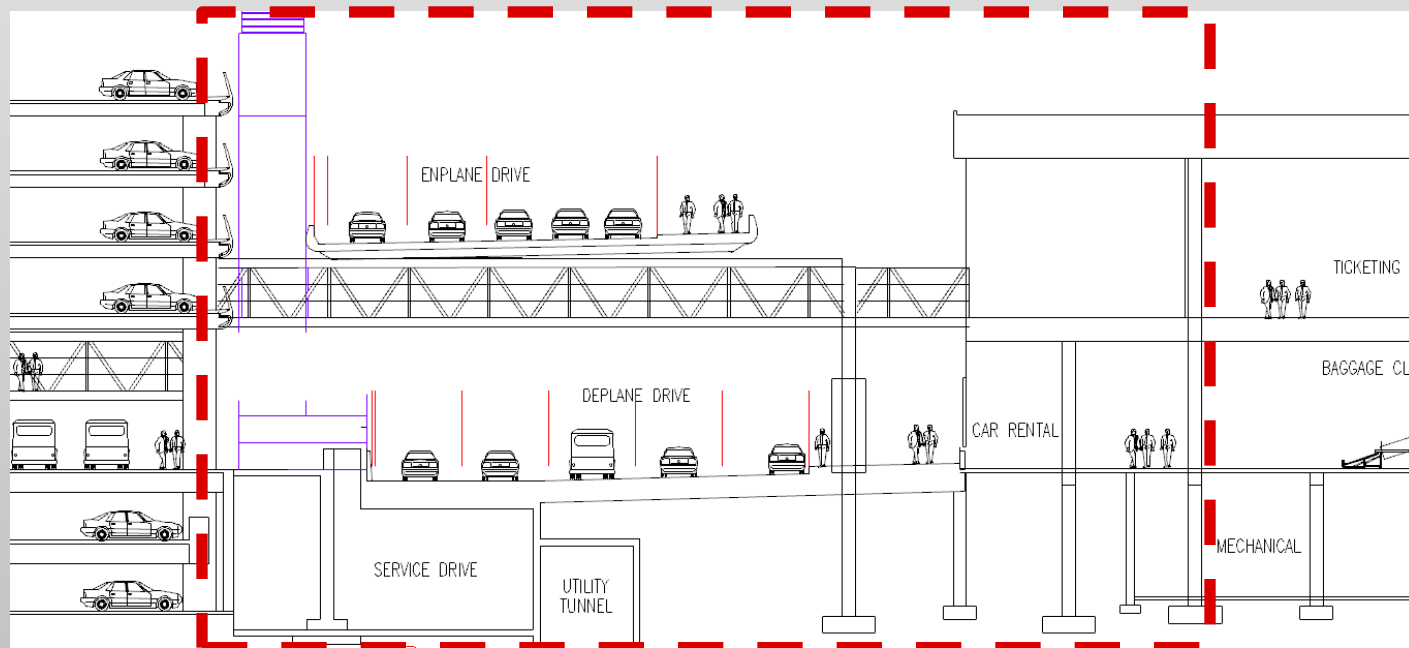
- Challenges
 - Terminal expansion to the east at check-in level impacts Upper Drive
 - Removing bag claim ramps requires raising Lower Drive
 - Requires significant capacity improvements for both the Upper & Lower Drives
 - Challenging and costly to construct curbs and roadway connections while maintaining operations
 - Capacity of access roadways needs to be enhanced
- Opportunities
 - Less confusing for departing passengers (*i.e. which terminal?*)

Challenging and costly to construct while maintaining operations

Landside

Options for one terminal concept

- **Option 1:** Relocate Upper Drive to above relocated pedestrian bridge and level with 6th floor of garage
 - Requires rebuild of Lower Drive, Service Tunnel & Main Terminal support structure
 - Requires expensive relocation of garage vent stacks
 - Creates viaduct structure over Lower Drive with limited natural light

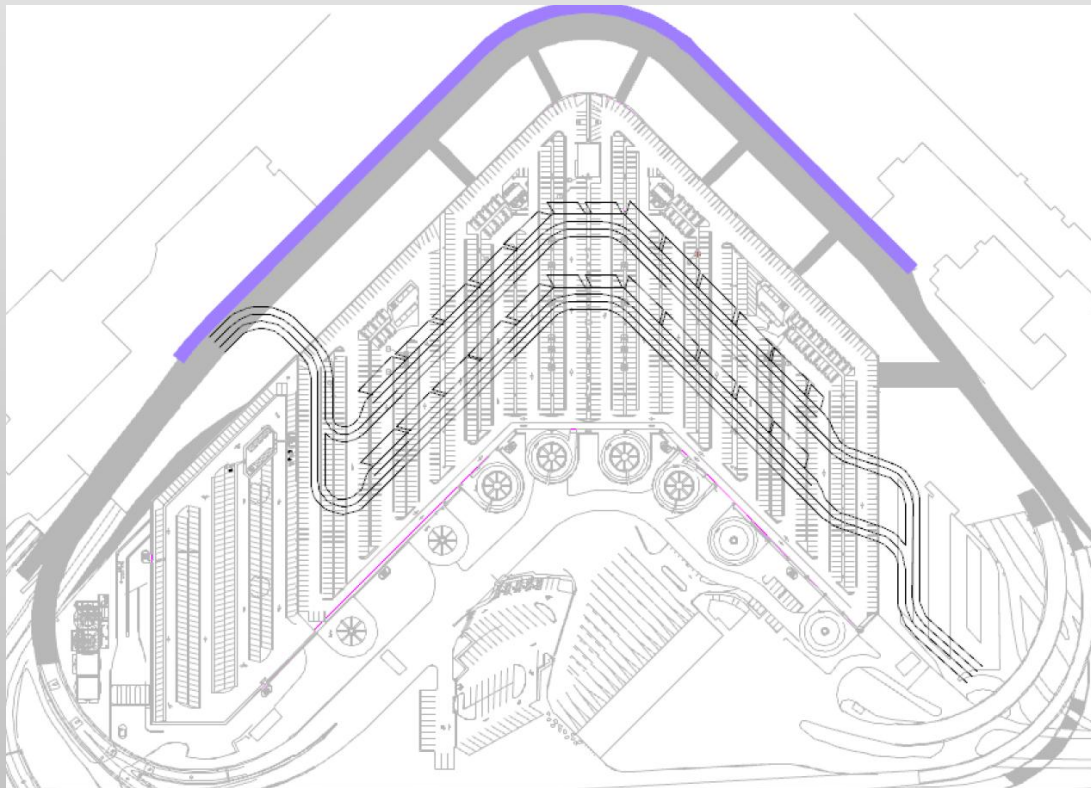


Expensive & difficult to construct drives improvements

Landside

Options for one terminal concept

- **Option 2:** Relocate Upper Drive into 5th floor of garage
 - Does not provide adequate Upper Drive capacity
 - Not feasible due to constraint within garage: column spacing, vertical clearance...

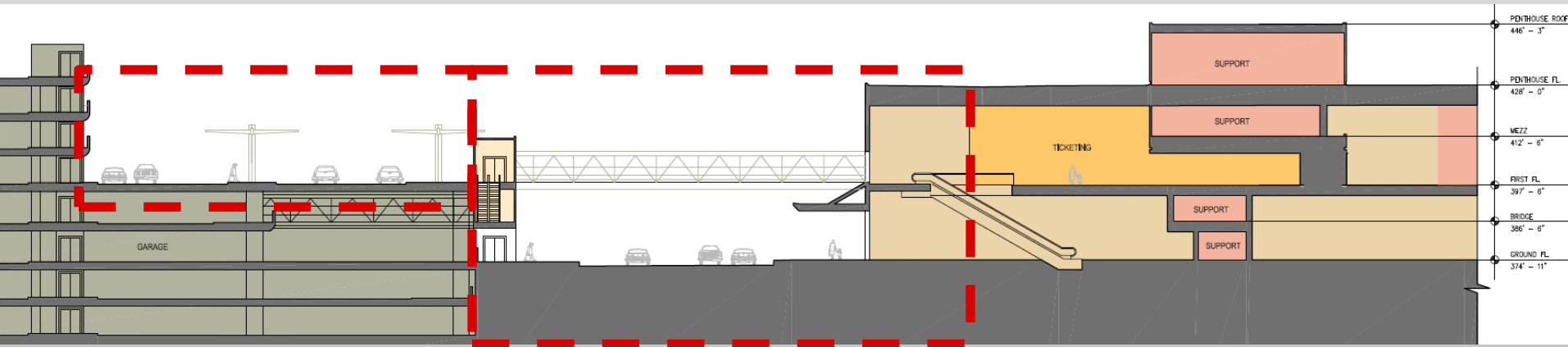


Not feasible due to constraints within garage

Landside

Options for one terminal concept

- **Option 3:** Relocate Upper Drive into 5th floor of garage + remove floors 6-8 above
 - Adequate Upper & Lower Drive capacity
 - Requires rebuild of Lower Drive, Service Tunnel & Main Terminal support structure
 - Requires relocation of elevator cores
 - Loss of long-term parking stalls and revenue



Expensive to provide capacity & loss of garage revenue

Landside

Landside options for two terminal concept

- **Challenges**
 - Requires second roadway system to new terminal
 - Crosses Airport Expressway and Light Rail
 - Difficult connections to 160th Loop and SR 518
 - Busing and/or APM required to transport passengers from 2nd terminal to existing terminal and Light Rail station
- **Opportunities**
 - 30% of vehicles diverted to 2nd terminal – and off of existing terminal drives
 - Potentially requires no capacity improvements to Upper & Lower Drives
 - Easier to construct curbs and roadway connections while maintaining operations

Easier to maintain operations during 2nd terminal landside construction

Landside

Options for two terminal concept

- **Option 1:** Ingress crosses over Light Rail & Expressway



- **Option 2:** Ingress crosses under Light Rail & Expressway



Need more technical analysis of north terminal roadways

Public Outreach

- **Community open houses designed to engage regional audiences**
 - 1st Series: SAMP process, goals, forecast, and development concepts
 - Des Moines, Seattle, Bellevue locations (Spring 2015)
 - 2nd Series: Preliminary Alternatives (Fall 2015)
 - 3rd Series: Preferred Development Alternative (Winter 2015)
- **Federal, state, regional & local government briefings to date**
 - Airport-area city councils (5)
 - South King County councilmembers (2)
 - Congressional delegation – Senate (2) and House (4)
 - State Legislature Joint Transportation Committee
 - Washington State Transportation Commission
 - Puget Sound Regional Council Transportation Policy Board
 - South King County Area Transportation Board, SeaShore Subarea Group
 - King County Department of Health
- **Ongoing engagement with tenants, operators, FAA, & TSA**

Public Outreach

- **Forums and focus groups to reach specialized audiences**
 - Local & regional planners on transportation issues
 - Airport-area cities, WSDOT, Sound Transit, King County
 - Targeted audiences on sustainability and triple bottom line
 - Forums and small-group meetings Q3 2015
 - Environment, economic and social community emphasis
- **Business outreach and economic development**
 - Upcoming survey of airport-area economic development managers, followed by business forums in the cities
 - Regional business forum(s) on port-centered economic development, including lodging, concessions, land redevelopment, workforce needs
 - Engagement with regional business, labor, contracting
- **Engagement with local and regional communities and associations**
 - Airport-area and Puget Sound: chambers, EDCs,
 - Area Rotaries and Kiwanis, ports association, labor & business

Next steps

- Airfield
 - Determine airfield capacity
 - Test benefits of potential airfield improvements
- Gates
 - Refine gate layouts & phasing
- Terminal
 - Continued analysis of one vs two terminal concepts
- Landside
 - On going capacity analysis through modeling
 - Develop roadway layouts and assess challenges
- Support facilities
 - Incorporate support facilities into overall land use plan