Washington State Air Cargo Movement Study

Joint Transportation Committee

July 19, 2018

Olympia

Project Purpose and Objectives

Purpose: Evaluate the current and future capacity of the statewide air cargo system

Objectives:

1. Educate policy makers about air cargo movement at Washington airports;

2. Explore possibilities for accommodating the growing air cargo market at more airports around the state; and,

3. Identify the State's interest and role in addressing issues arising from air cargo.

Study Status

- Describe the Air Cargo System in WA State
  - Final

- Air Cargo Congestion
  - Final

- Evaluate how to use Existing Capacity in Washington
  - Final

- Recommendations and Implementation Strategy
  - July-September

- Draft and Final Report
  - October-December

Air Cargo Market in Washington State

Background on Air Cargo Industry

Washington State Market and Trends

Air Cargo Forecast for Washington State Airports
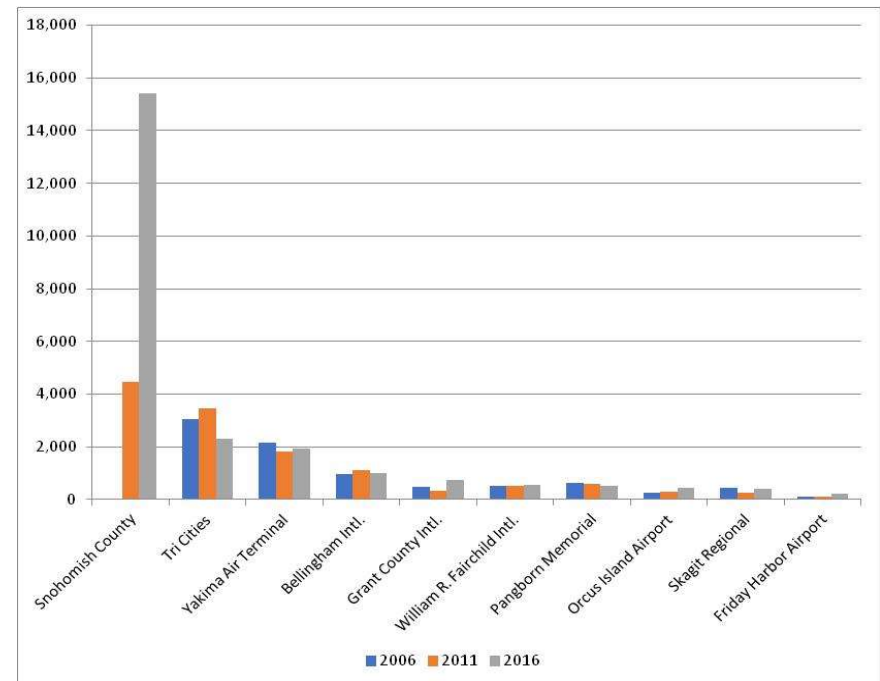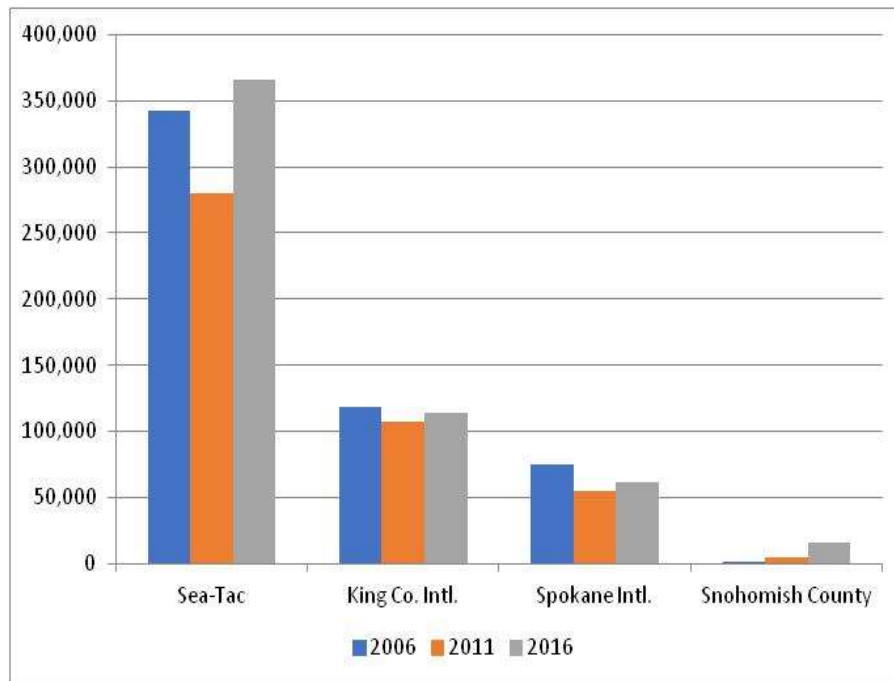
Air Cargo Carriers

- **Airport to Airport Airlines**
  - **Belly Cargo Carriers:**

    Delta, United, American, Southwest, etc.

  - **Pax & Freighter Operators:**

    Korean Air, China Airlines, Alaska Air, EVA, etc.

  - **Traditional All-cargo Airlines**

    Kalitta, Cargolux, Polar, NCA, etc.

- **Integrator/ Express Airlines**
  - **Integrator / Express (door to door)**

    FedEx, UPS, SF Express

  - **Integrated Forwarder (door to door)**
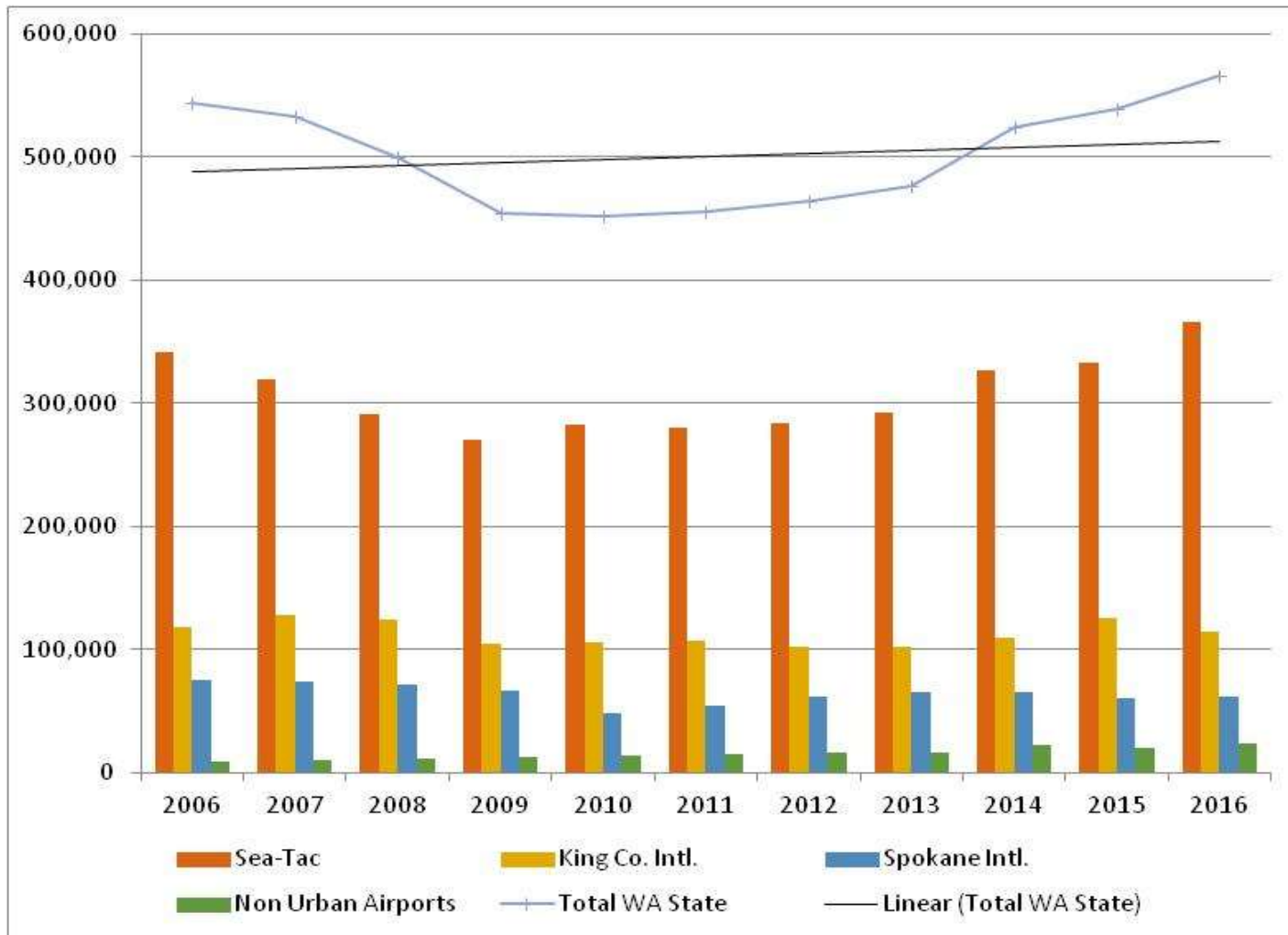
    DHL, Amazon Air, etc.

WSP KPA

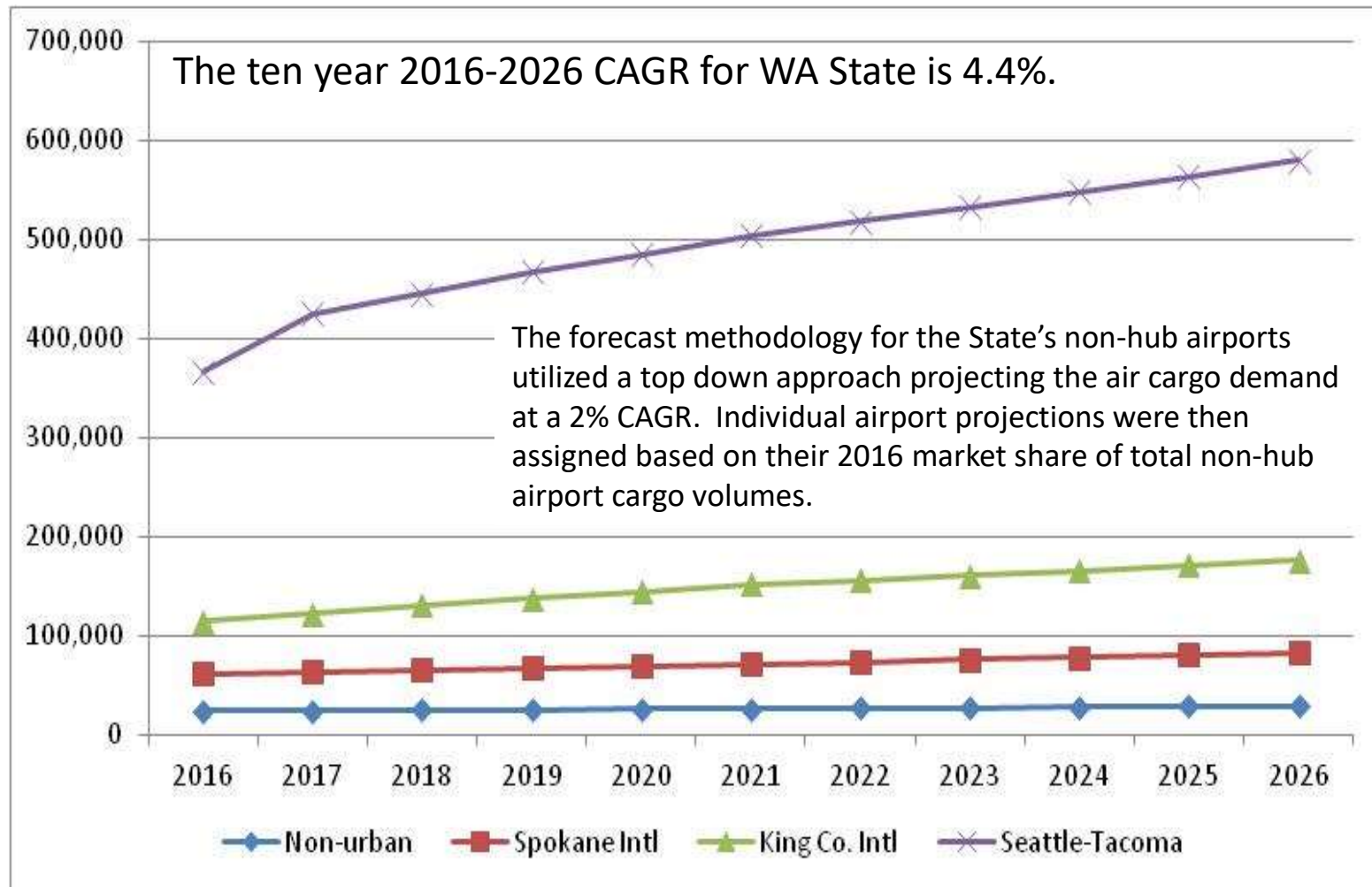# Three airports dominate the WA state air cargo market

WA State Air Cargo Trends

WA State Forecast Summary

The ten year 2016-2026 CAGR for WA State is 4.4%.

The forecast methodology for the State's non-hub airports utilized a top down approach projecting the air cargo demand at a 2% CAGR. Individual airport projections were then assigned based on their 2016 market share of total non-hub airport cargo volumes.

Legend: Non-urban, Spokane Intl, King Co. Intl, Seattle-Tacoma
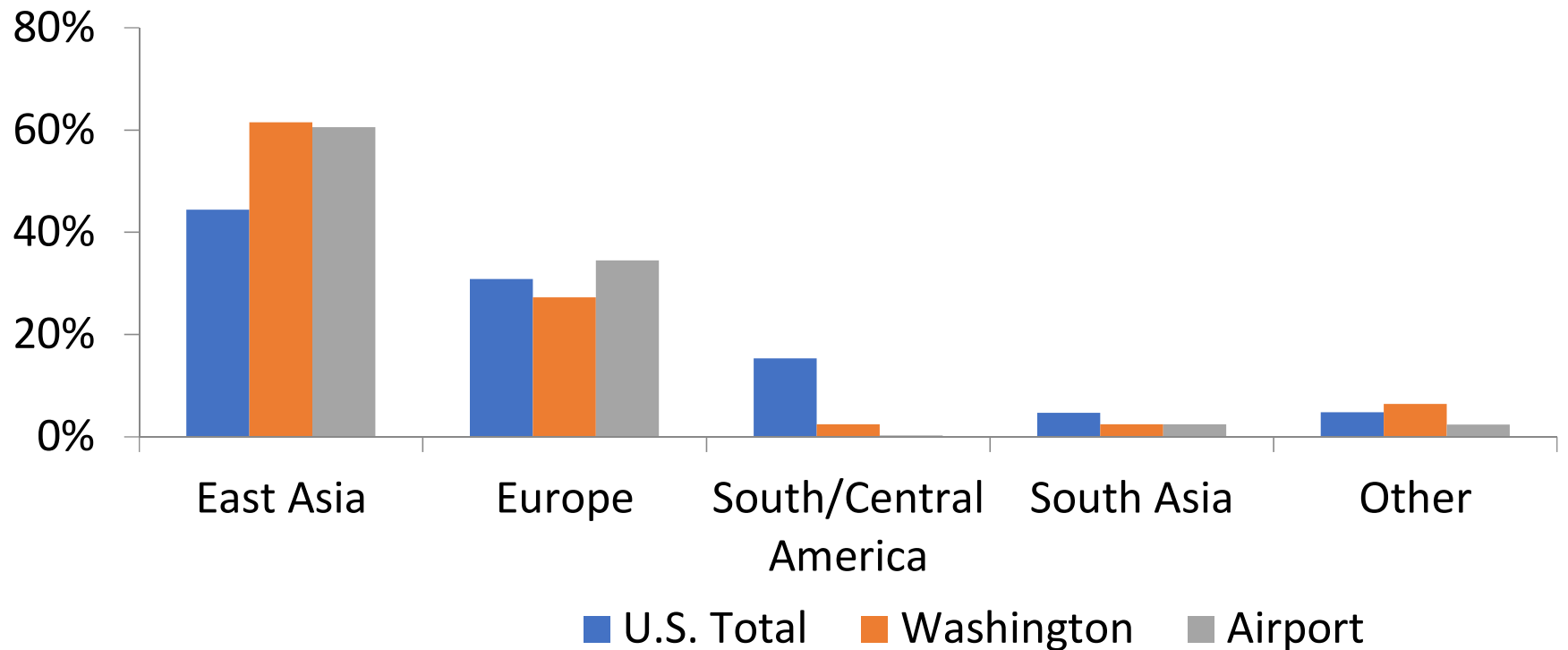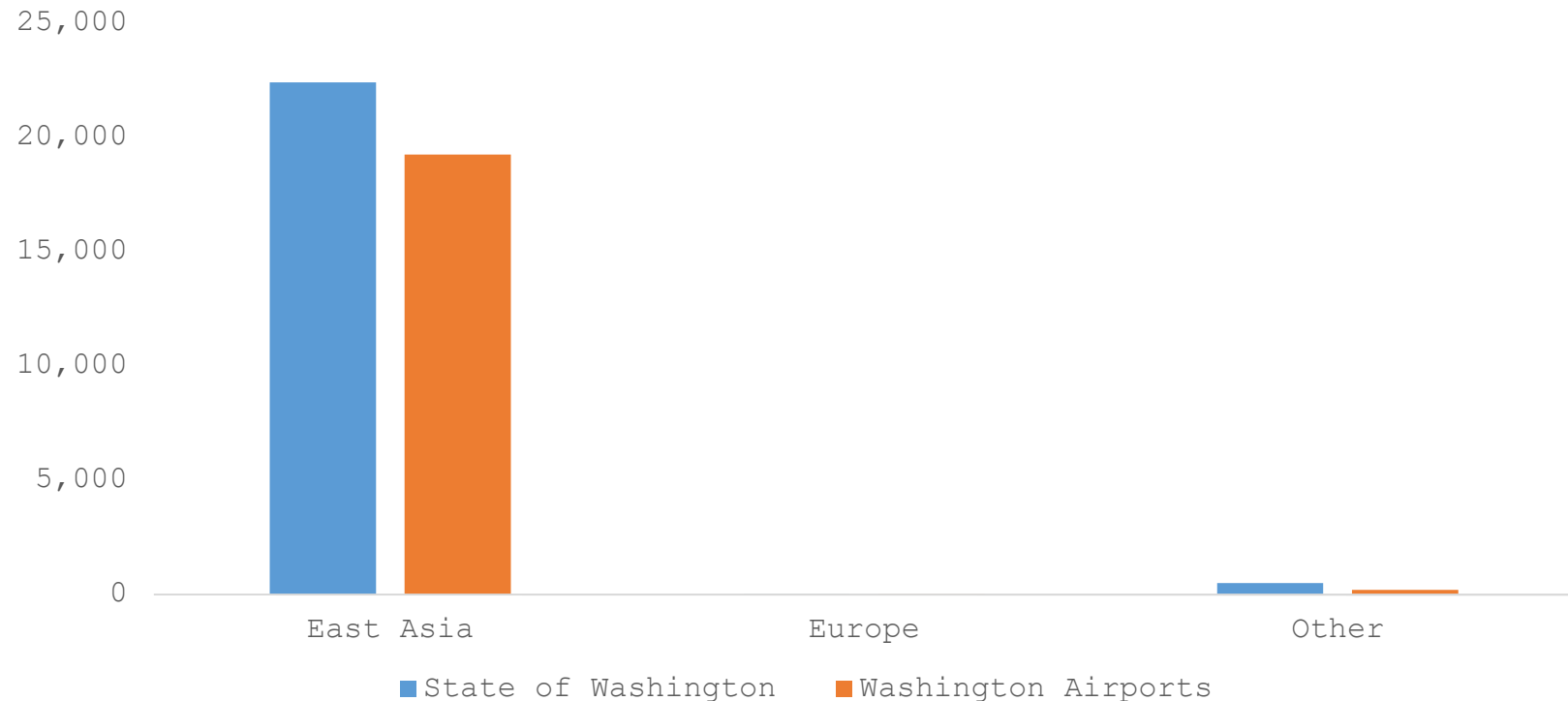
WA Market Position:
Share of air cargo imports by world region

Export Expansion Opportunity – Fresh Cherries by Air in 2016 (metric tons)

This doesn't include the approximately 12 thousand tons trucked to Canada, likely for re-export - about half of the total air export.
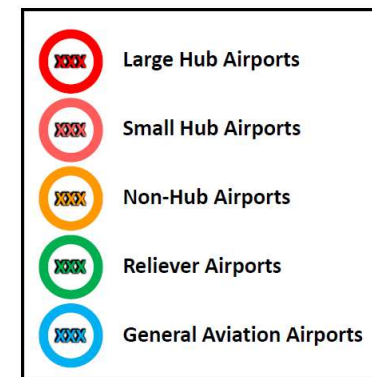
Existing and Future Airport Needs in Washington State

Inventory of Air Cargo Airport Facilities

Future Demand and Capacity Analysis

Air cargo airports

- Seattle-Tacoma Intl. (SEA)
- King County Intl. (BFI)
- Spokane Intl. (GEG)
- Bellingham Intl. (BLI)
- Paine Field (PAE)
- Pangborn Memorial (EAT)
- Yakima Air Terminal (YKM)
- Tri-Cities/Pasco (PSC)
- Walla-Walla Municipal (ALW)
- Grant County/Moses Lake (MWH)

Legend:
- Large Hub Airports
- Small Hub Airports
- Non-Hub Airports
- Reliever Airports
- General Aviation Airports
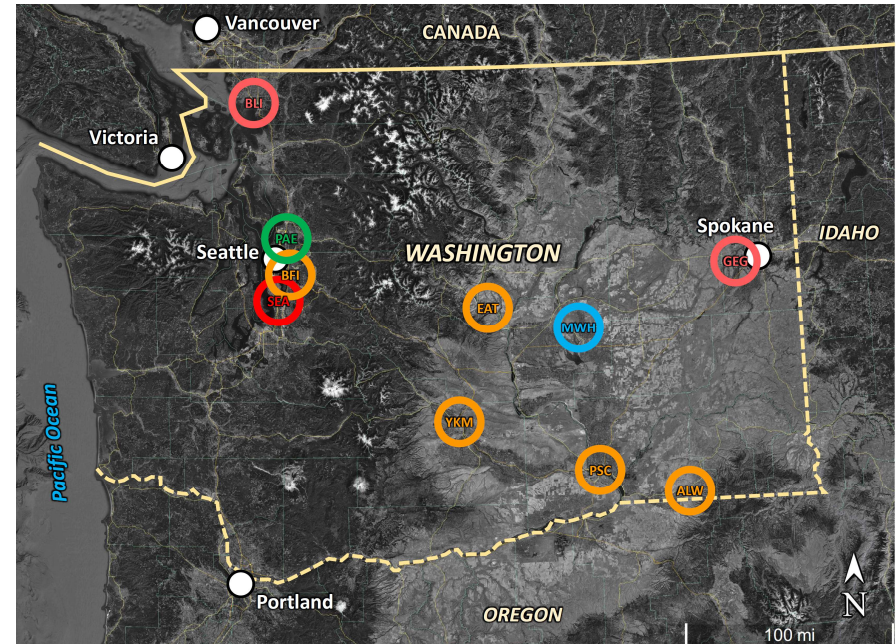
Synthesis

- Seattle-Tacoma Intl. (SEA)
  - Large hub with high growth in both cargo and passenger activity facing strategic questions over scarce resource allocations.
  - Master plan considering redevelopment of the existing on-site facilities south of 188th St. and off-airport cargo area north of SR-518 ("L-shape property).
  - Congested ground access a concern.
- King County Intl. (BFI)
  - Regional gateway hub for UPS air cargo operations.
  - Limited opportunity for cargo expansion: would require redevelopment of existing other use facilities.

Synthesis

- Spokane Intl. (GEG)

  - Significant airside and landside infrastructure with room for expansion.

  - 97% of air cargo is generated by FedEx and UPS transshipment operations

  - New e-commerce distribution center is being planned for the airport business park.

- Paine Field (PAE)

  - Supports intl. aircraft charters related to Boeing production activity.

  - Nascent passenger commercial services may generate belly cargo activity.

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Synthesis

- Grant County (MWH)

  - Runways can accommodate large international freighter operations.

  - Recent investment in ground handling equipment, storage facilities and personnel, has generated new cherry charter activity.

- Other WA Airports: Tri-cities (PSC), Wenatchee (EAT), Walla Walla (ALM), Yakima (YKM)

  - Limited airside and land side infrastructure.

  - Served by regional aircraft with limited cargo capacity.

  - Most air cargo demand is served by truck.

  - Existing facilities meet the long-term demand.

Air Cargo Congestion

How is congestion defined and measured?

Are any of the airports in the state congested?

What are the consequences of air cargo congestion?

Air Cargo Capacity

Airport Capacity

Airside Capacity
(airplanes)

Landside Capacity
(on airport grounds)

Access Capacity
(off airport grounds)

- Runway/Taxiway/Apron Configuration
- Air Traffic Control
- Environmental Conditions
- Demand/Aircraft Characteristics

- Cargo Terminals
- Loading Bays
- Handling Systems
- Parking Facilities
- Customs Handling
- Security

- Nearby Warehousing
- Roadway/multimodal access
- Brokers and Forwarders

Air Cargo Congestion

- Effects of congestion appear long before capacity is reached.

- In congested conditions, each additional unit of cargo increases costs for everyone:
  - higher rates
  - longer queues
  - more unreliability

- Shippers/carriers must consider alternatives or become less competitive.

SEA Airside Capacity Adequate for Flight Schedules

SEA operates better than competing airports such as SFO and LAX.

SEA on par with other regional airports such as PDX, OAK, and SLC.
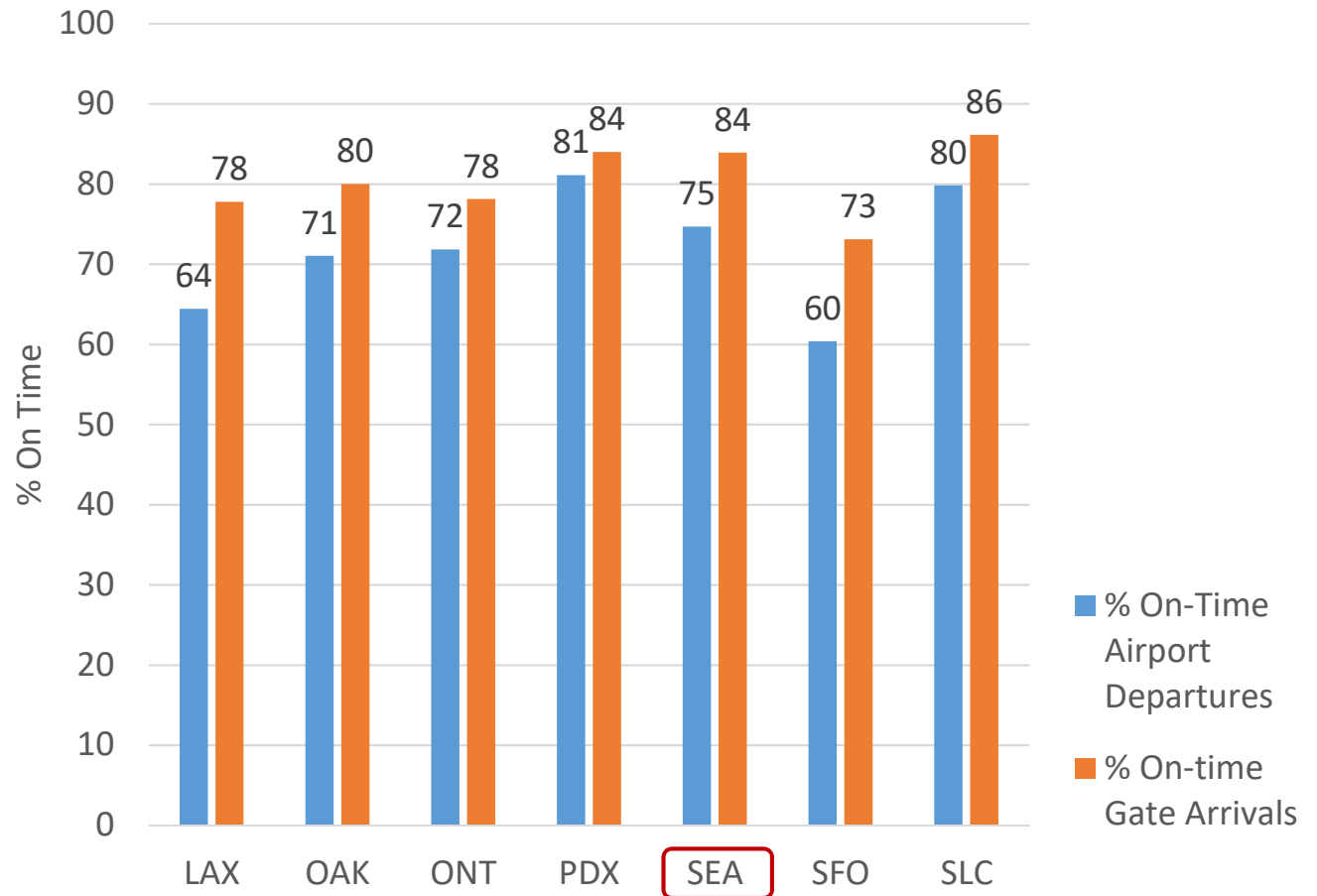
SEA Landside Capacity

- Facing cargo facility constraints due to aggressive expansion of air passenger facilities.

- Could begin having a cargo building deficit in 2021 without planned creation of new cargo facilities.

- Consideration may be given to supporting air cargo activity with off-airport cargo facility development.

- A lot of off-airport air cargo support facilities are located in the Kent Valley, but availability of future development has tightened considerably.

- New designs and automation are enabling distribution centers (DCs) with more effective capacity per acre.

Capacity Summary: Major Cargo Airports

Airport	Airside Capacity			Landside Capacity		Access Capacity	
	Freight Service	Runways and Taxiways	Cargo Aprons	Cargo Buildings	Parking	Roads	Off-site Facilities
SeaTac (SEA)				✖ (yellow)	✖ (red)	✖ (red)	
Boeing Field (BFI)			✖ (yellow)		✖ (red)	✖ (red)	
Spokane Intl Airport (GEG)				✖ (yellow)			

Capacity is not an issue at remaining airports in the state due to limited or specialized freight demand.

Economic Importance of Washington Airports

- WA airports handled $47.6 billion in freight in 2015, compared to state GDP of $452 billion.

- Air cargo value in the state will more than triple by 2045

- Air cargo is vitally important to a growing share of the State's economy.

- High-value supply chains rely on air cargo.

- Shippers value <u>travel time</u> by air **18** times more than travel time by truck.

- Shippers value <u>reliability</u> **142** times more by air than by truck.

- Risks to **reliability** from air cargo congestion impose a substantial economic penalty.

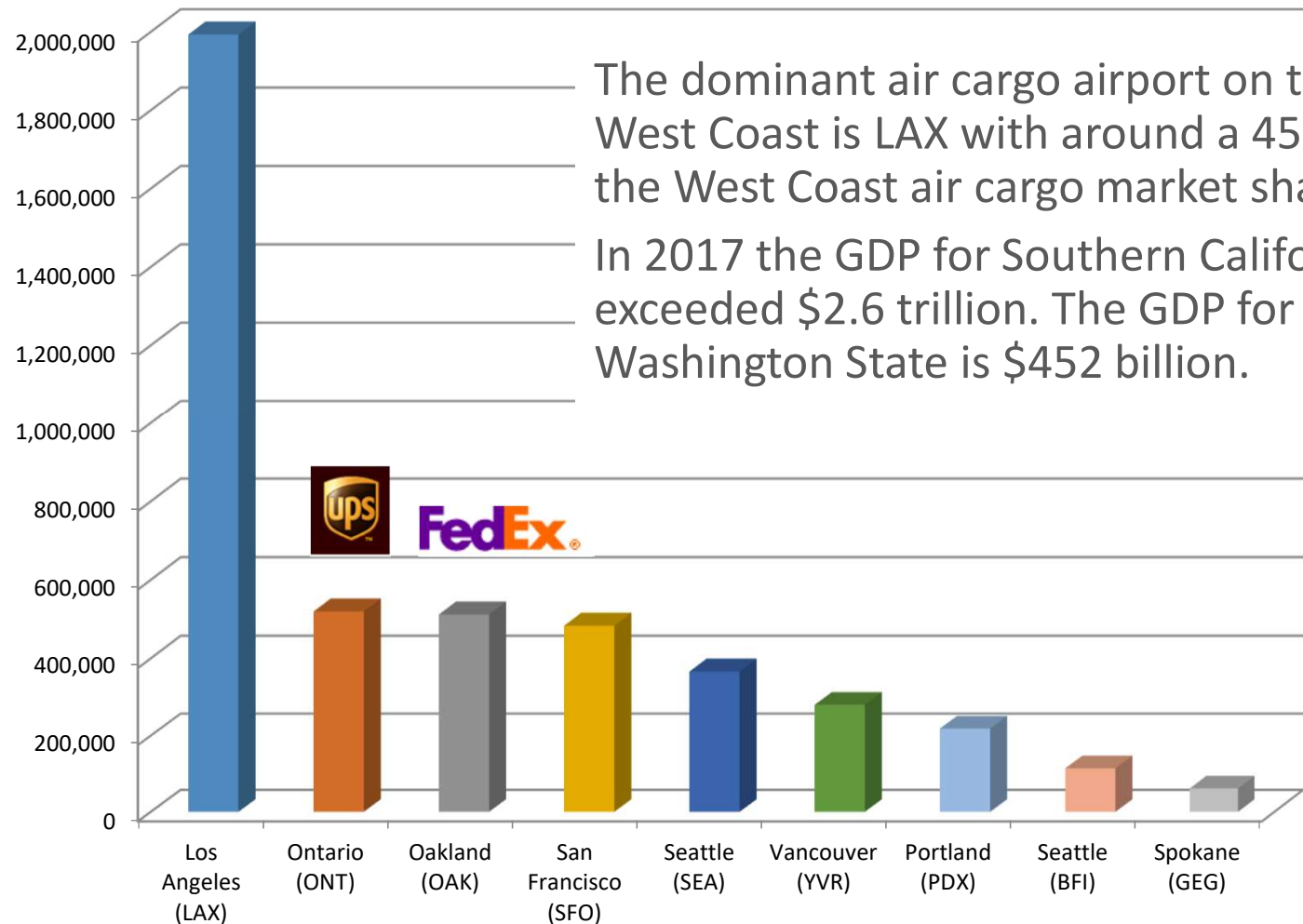# Evaluate How to Use Existing Capacity Across Washington State

What does it take to make an airport competitive for air cargo?

Which airports in WA have key elements needed to attract air cargo?

What are the strengths, weaknesses, opportunities and threats for WA air cargo airports?

LAX dominates the West Coast Air Cargo Market

The dominant air cargo airport on the West Coast is LAX with around a 45% of the West Coast air cargo market share.

In 2017 the GDP for Southern California exceeded $2.6 trillion. The GDP for Washington State is $452 billion.

Comparison of Scale between LAX and SEA and other WA Airports

Average number of outbound flights per week

Airport	Widebody Pax	Freighters	Total
SEA	182	110	292
GEG	0	87	87
BFI	0	48	48
LAX	824	290	1,114
ONT	0	217	217
SFO	533	47	337
OAK	23	183	206
PDX	30	132	162
SLC	36	100	136

Source: Bureau of Transportation Statistics T-100 Segment Data, 2016

LAX generates over 1,100 wide-body aircraft flights per week, as opposed to the 292 weekly flights at Sea-Tac.

No other airports on the US West Coast can compete with LAX on capacity, frequency or number of destinations that can be serviced by shippers or freight forwarders.

Similarly, within the state of Washington, no other airports can provide the level and extent of air service provided by Sea-Tac.

What Basic Components Are Needed to Attract & Maintain Air Cargo Air Service?

Location

Operational Freedom

Airport Market Area Requirements

Airport Infrastructure

Financial Environment

There are certain basic factors, or components, that airports need to satisfy to attract and maintain both passenger and air cargo service. These components can be divided into five distinct areas.

All five criteria are interrelated and are important to cargo carriers and forwarders, although priorities vary among different airline types.

Factors Influencing Airline/Airport Choice

Market Area	Location	Infrastructure
Primary–up to 100 mi *Secondary*-within 400 mi *Tertiary*->400 mi	*Fits Existing Network*-different for integrator, belly & line haul freighter airlines	*Runways*- length, strength, redundancy, approaches, minimums, etc.
Connectivity between services (interlining) - airline, Road Feeder Service, regional Pick Up and Delivery	*Close to Customers*-% of pop (markets) within X miles or Y minutes of airport	*Aircraft Parking & Ground Handling Capabilities*
Freight Forwarders – multinational, local, specialty, etc.	*Local Surface Access*	*Landside Facilities & Services*-terminals, FIS, customs brokers, temp. control, etc.
Distribution Services-warehouses/DCs, cool chain, FTZs	*Interstate Highway Connectivity*	*Interstate Highway Access*

Factors Influencing Airline/Airport Choice

Financial Environment	Operational Freedom
Operating Costs –landing fees, aircraft parking, facility leasing, fuel service charges, etc.	*Permissions*-related to routes, frequencies, pricing, slot controls, curfews
Transparency of Accounts – paying only for services utilized	*Operational Flexibility*-aircraft change of gauge, self-handling or ability to select among competing agents, ability to transfer between aircraft, 24/7 operations, etc.
Economic Incentive Packages	
	Ability to Use Intermodal Services

Factors Influencing Airline/Airport Choice (Primary Criteria)

PRIMARY CRITERIA		Seattle-Tacoma International Airport	King County International Airport	Spokane International Airport	Snohomish County Paine Field	Grant County International Airport	Bellingham International Airport	Pasco-Kennewick Tri-Cities/ Wenatchee Pangborn Memorial/ Walla Walla Regional Airports
Market Area	**Distance from significant populations:** *Primary = up to 100 miles Secondary = within 400 miles Tertiary = >400 miles*							
	Connectivity/Interlining *(airline, road feeder service, regional pickup and delivery)*							
	Freight Forwarders *(multinational, local, specialty)*							
	Distribution Services *(warehouses/distribution centers, cool chain, foreign trade zones)*							
Location	**Fits Existing Network** *(different for integrator, belly and line-haul freighter airlines)*							
	Close to Customers *(percentage of population [markets] within X miles or Y minutes of airport)*							
	Local Surface Access							
	Interstate Highway Connectivity							
Infrastructure	**Runways** *(length, strength, redundancy, approaches, minimums)*							
	Aircraft Parking and Ground-Handling Capabilities							
	Landside Facilities and Services *(terminals, flight information service, customs brokers, temperature control)*							
	Interstate Highway Access							

Note: For a given criteria, four filled squares are best then diminishing from three, two, etc.

Factors Influencing Airline/Airport Choice (Secondary Criteria)

		Seattle-Tacoma International Airport	King County International Airport	Spokane International Airport	Snohomish County Paine Field	Grant County International Airport	Bellingham International Airport	Pasco-Kennewick Tri-Cities/ Wenatchee Pangborn Memorial/ Walla Walla Regional Airports
SECONDARY CRITERIA								
Financial Environment	**Operating Costs** *(landing fees, aircraft parking, facility leasing, fuel service charges)*	■	■	■	■	■	■	■
	Transparency of Accounts *(paying only for services utilized)*	■	■	■	■	■	■	■
	Economic Incentive Packages	□	□	□	□	□	□	□
Operational Freedom	**Permissions** *(related to routes, frequencies, pricing, slot controls, curfews)*	■	■	■	■	■	■	■
	Operational Flexibility *(aircraft change of gauge, self-handling or ability to select among competing agents, ability to transfer between aircraft, 24/7 operations)*	■	■	■	■	■	■	■
	Ability to Use Intermodal Services	■	■	■	■	■	■	■

Note: For a given criteria, four filled squares are best then diminishing from three, two, etc.

Assessment of Opportunities: Which airports in WA have key elements needed to attract air cargo?

- Non-Integrator freighter operators
  - Charters
  - Scheduled service
- Passenger-belly cargo airlines
- Integrator/express all-cargo carriers
- Third-party logistics companies/airport based distribution centers

Non-Integrator Freighter Operators

Air Charters

Competitive Factors

- Convenience
- Pricing
- Consistency

Assessment

- Cherry charters to Central WA
- Special charters to Paine Field, Boeing Field, Spokane/GEG and Grant County

Scheduled Service

Competitive Factors

- Strong local and secondary market

Assessment

- Niche markets in Eastern WA/ Intermountain region
- Paine Field, Boeing Field

Passenger/ Belly Cargo Operators

Competitive factors

- Large market area for passenger and cargo

- Network of freight forwarders

- Widebody aircraft international service

Assessment

- SEA is the only competitive WA state airport in this market

- Long-term possibilities at Spokane/GEG

Integrator/Express Airlines

Competitive factors

- Strong primary & secondary markets
- Late pick up and early drop-off times to customers
- Fits within existing network

Assessment

- Key gateways at SEA and BFI
- Overflow possibilities at Paine
- Growth of Spokane/GEG as PNW express distribution center

Airport Based Logistics/ Distribution Centers/ Inland Ports

Other facilities and services related to air logistics

Value added facilities & services/FTZ

Traditional on-airport facilities and services

Airport Logistics Park

Network hubs for consolidation/ distribution of air, truck and rail freight and other related commercial activities.

Enables 3PLs the option to relocate SEA logistics activities to a number of remote hub sites at under-utilized WA airports.
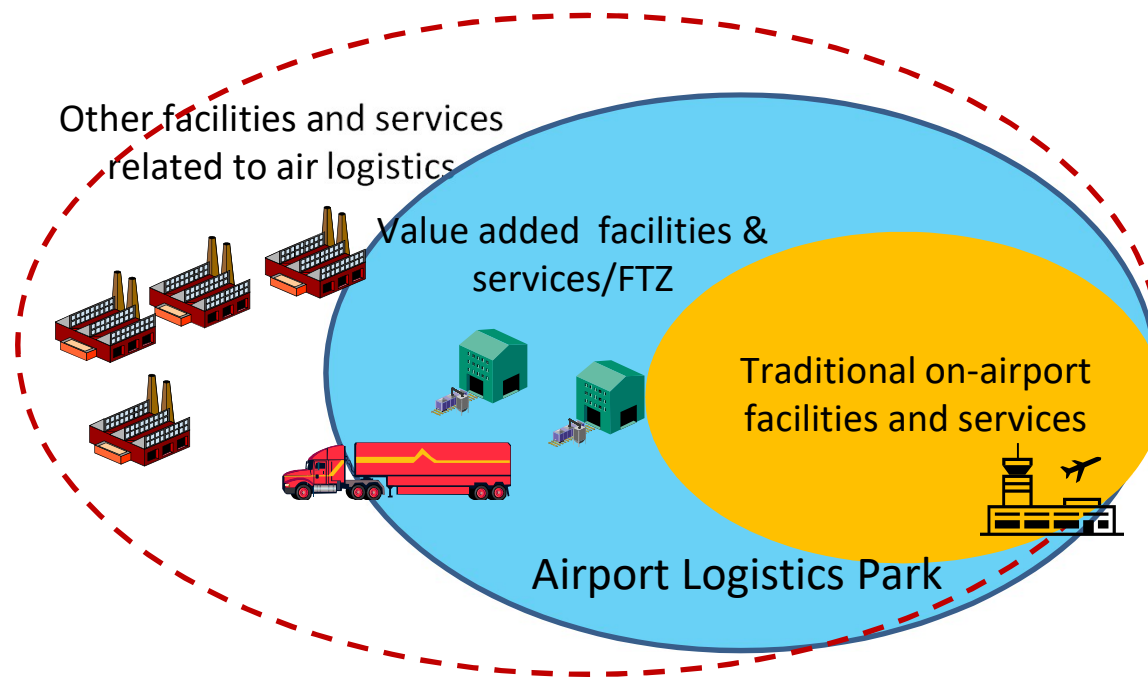
The Cargo Logistics Park/Inland Port Value Proposition

- Provide third party logistics providers with facilities that allows them to combine off- and on-airport functions.
  - Turnkey access to readily available facilities.
  - Suitable location close to existing operations.
- Attract air cargo service as part of a larger multimodal distribution concept for airports with little or no air cargo.
- Offers efficient alternative supply chain.
- Growth of jobs and secondary businesses to boost the economy of local communities.

Assessment

- Sea-Tac can increase efficiencies by utilizing Port owned land adjacent to the airport to establish an integrated airport logistics park with both surface access and IT integration.

- Spokane International can further develop its airport business park into a fully integrated airport logistics park.

- Other airports in the state can create airport logistics centers that provide consolidation/ distribution of air, truck and rail freight and other related commercial activities, including remote TSA certified air cargo screening facilities (CCSFs) for air cargo destined for Sea-Tac.

Conclusions

- Maintain and expand the existing integrator operations within WA State

- Attract new airlines within the industry, specifically the Chinese integrators SF Express (initiating direct widebody service to the US in 2019), YTO Airlines, and EMS Airlines

- Attract cherry air charter operations to central and eastern Washington airports

- Develop non-hub airports into centers for regional ground-based logistical operations, including e-commerce, to relieve pressures at SEA

Conclusions

- Scheduled freighter service is a more realistic, longer term goal for some airports such as Paine, Spokane International and Grant County International

- Spokane International Airport will eventually attract wide-body passenger service, bringing with it the potential to grow their belly cargo potential

- A statewide strategy including specific steps (e.g. market analysis, incentives, etc.) will be developed in the next task

Upcoming Tasks: Strategy and Recommendations

Statewide Business Strategy – Summer

Draft and final report – Fall

Stakeholder Advisory Committee Feedback

Issues/Needs

- Retain and increase future cargo to state
- Enhance opportunities for all airports
- How to attract air cargo to eastern WA?
- Consider costs/impact of plans and policies on industry
- How to improve facilities and secure funding?
- How to facilitate movement of goods produced in eastern WA to Puget Sound Ports?
- Relieve pressure on Sea-Tac

Strategies

- Consider state as a system
- State plays coordination role
- Air Cargo Commission concept
- System-wide research, marketing and branding
- Explore inland distribution center concept
- Establish competitive grant program
- Invest in information technology that facilitates air cargo community collaboration
- Reduce unnecessary requirements

Discussion

What is the appropriate role for the State?

What types of strategies should be considered?