

Supply Chain Management 101

What You Need to Know to Plan and Design for
Washington State's Freight System

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**Washington State
Department of Transportation**

Welcome - Kate Vitasek



**Founder and Managing Partner,
Supply Chain Visions
and
Faculty,
University of Tennessee**

- Thought Leader in Supply Chain Management
 - “Woman on the Move in Trade and Transportation” by the Journal of Commerce
 - “Rainmaker” by DC Velocity Magazine
- Well-recognized authority on performance management and metrics implementation
- Served on Board of Directors for the Council of Supply Chain Management Professionals and Deliver Committee for Supply Chain Council
- Teaches a four-day course on Performance Based Logistics for the University of Tennessee’s Aerospace and Defense program
- Teaches an MBA class on performance management for Wright State University and seminars for the Warehouse Education Research Council.

Discussion Topics

A Quick Review from the Overview Class

The WSDOT Strategy and Fast Facts that Impact the Supply Chain

Key Drivers of Supply Chain Management

Example Supply Chains

Interactive Working Session

Supply Chain Management (SCM) Defined

Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities.

Importantly it also include coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers.

In essence, Supply Chain Management integrates supply and demand within and across companies.

Source: The National Council of Supply Chain Management Professionals

What's the Big Deal?

What makes SCM so different from good old Transportation and Warehousing?

- ✓ It's much broader and more complicated – due to more 'players' and more functions.
- ✓ It involves precise coordination and lots of cooperation and collaboration among firms and functions.
- ✓ It requires an entirely new mindset of how to do things: focused on speed, quality, working together, sharing costs and savings.
- ✓ It requires that functional silos be torn down.

Supply Chain Participants

SCM is made up of many **participants** that must work together within the supply chain

- **Suppliers.** Source of raw materials, component parts, semi-manufactured products, and other items that occur early in the supply chain - unfinished or non-consumable products.
- **Manufacturers.** Makers of products. Many consider them to be the heart of the supply chain.
- **Distributors.** Responsible for the packaging, storing, and handling of materials at receiving docks, warehouses, and retail outlets.
- **Retailers.** These are the manufacturer's customers - the stores that buy the actual products. Throughout this course, retailers will also be referred to simply as customers.
- **Consumers.** This is the ultimate user - the person who goes into a store and buys the product.

Who controls the supply chain?

Supply Chain Partners

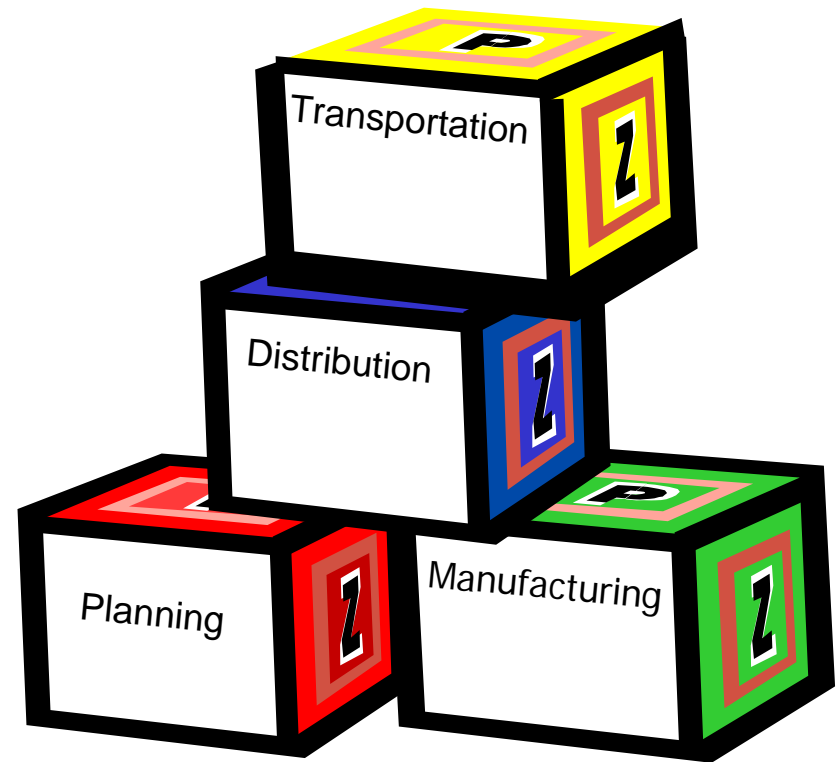
Partners help Participants by providing infrastructure, equipment and labor when needed.

- Freight Companies (local and national)
- Railroads
- Ocean Cargo Companies
- Package and Parcel Companies
- 3PL/4PLs
- Brokers/Forwarders/Consolidators
- Ports
- Inland Drayage Companies
- Air Cargo Companies

Supply Chain Processes

SCM is made up of many **processes** that must be performed within the supply chain. These form the foundational building blocks for the work to be done.

- Forecasting
- Purchasing
- Production Planning
- Inventory Control
- Warehousing
- Order Management
- Distribution
- Transportation



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Three Components of Washington State's Freight System

I. Global Gateways

International and National Trade Flows Through Washington

II. Made in Washington

Regional Economies Rely on the Freight System

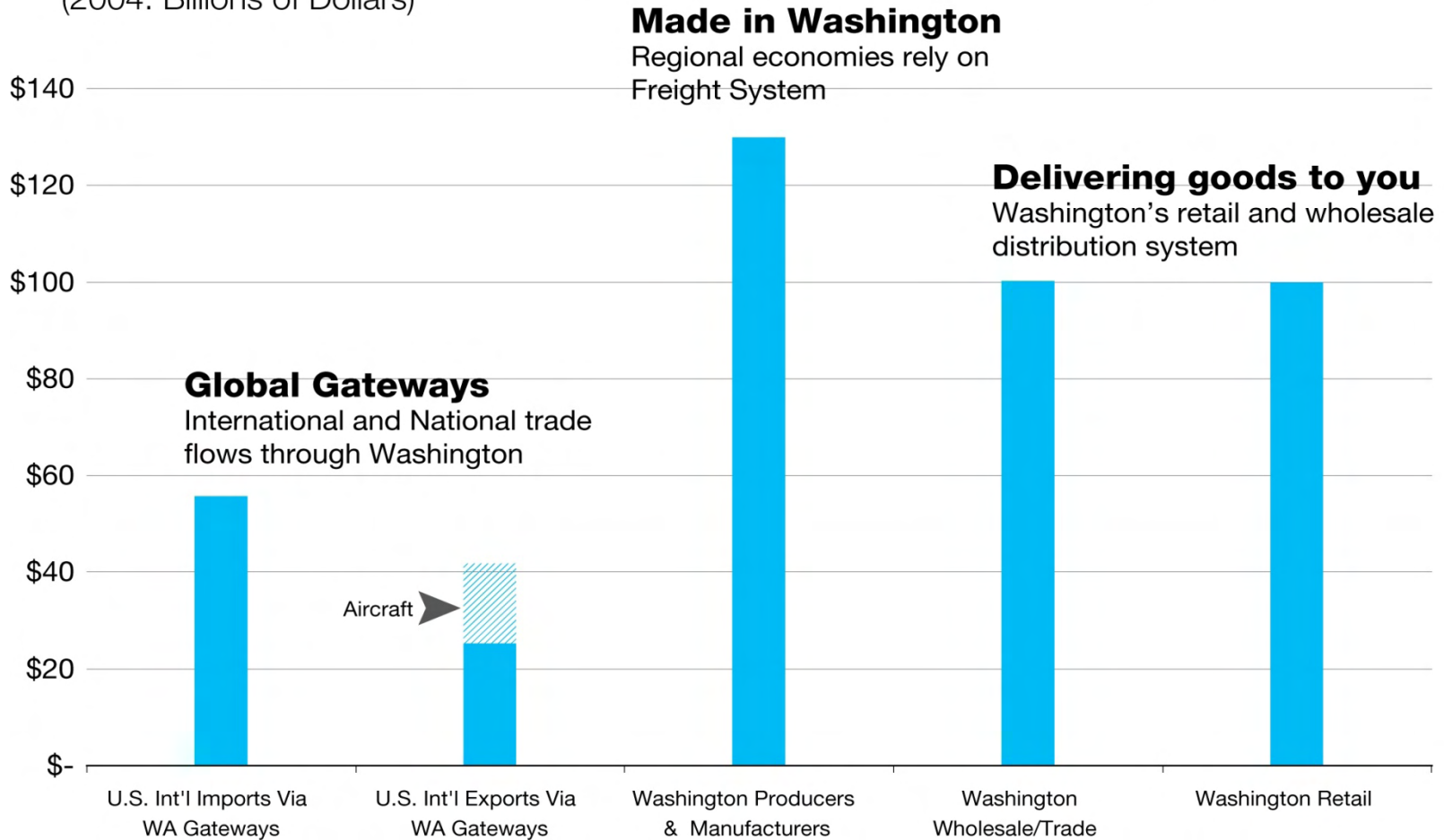
III. Delivering Goods To You

Washington's Retail and Wholesale Distribution System

What is Being Shipped?

Washington State Value of Freight Shipments

(2004: Billions of Dollars)



Source: U.S. Customs Bureau; WA State Dept. of Revenue.

Fast Facts: Washington is a Global Gateway

Import volume at Seattle and Tacoma ports has grown by 32 percent since 2003.

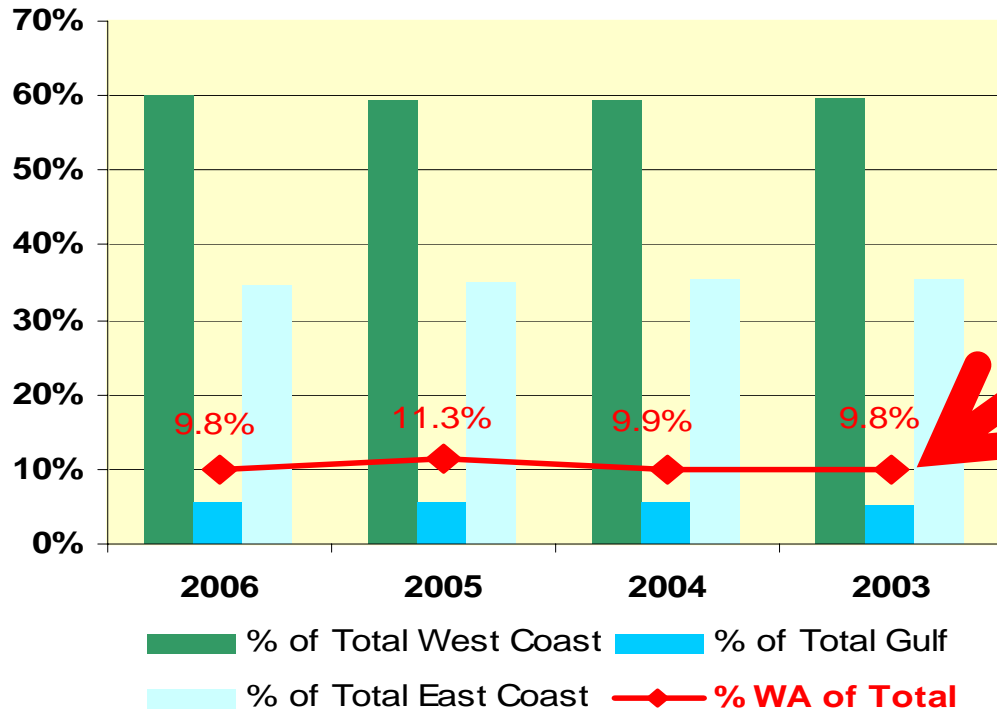


Ports	2006	2005	2004	2003
Los Angeles	5,719,497	4,867,073	4,897,346	4,709,339
Long Beach	4,792,722	4,395,942	3,716,775	3,114,221
New York	3,672,643	3,390,308	3,146,569	2,819,407
Savannah	1,602,339	1,482,728	1,287,550	1,130,581
Charleston, SC	1,510,869	1,511,935	1,401,522	1,252,674
Norfolk	1,419,327	1,318,831	1,200,244	1,095,579
Oakland	1,410,533	1,372,231	1,192,487	1,070,474
Houston	1,289,841	1,231,186	1,090,571	943,459
Seattle	1,223,266	1,339,641	1,044,270	818,684
Tacoma	1,095,316	1,154,350	937,202	936,951
All U.S. Ports	28,555,590	26,444,652	24,187,570	21,853,267

Source: Journal of Commerce PIERS Database

Fast Facts: Washington is a Global Gateway

**% Port Traffic by Region
(TEU)**



While import volume on the west coast is growing, Washington State's share of total port traffic over the past four years has remained flat.

Should Washington State try to increase its share of west coast import traffic?

If so, what significant infrastructure changes should you plan for?

Container Port Growth is Driving the Need for More Warehouse Space

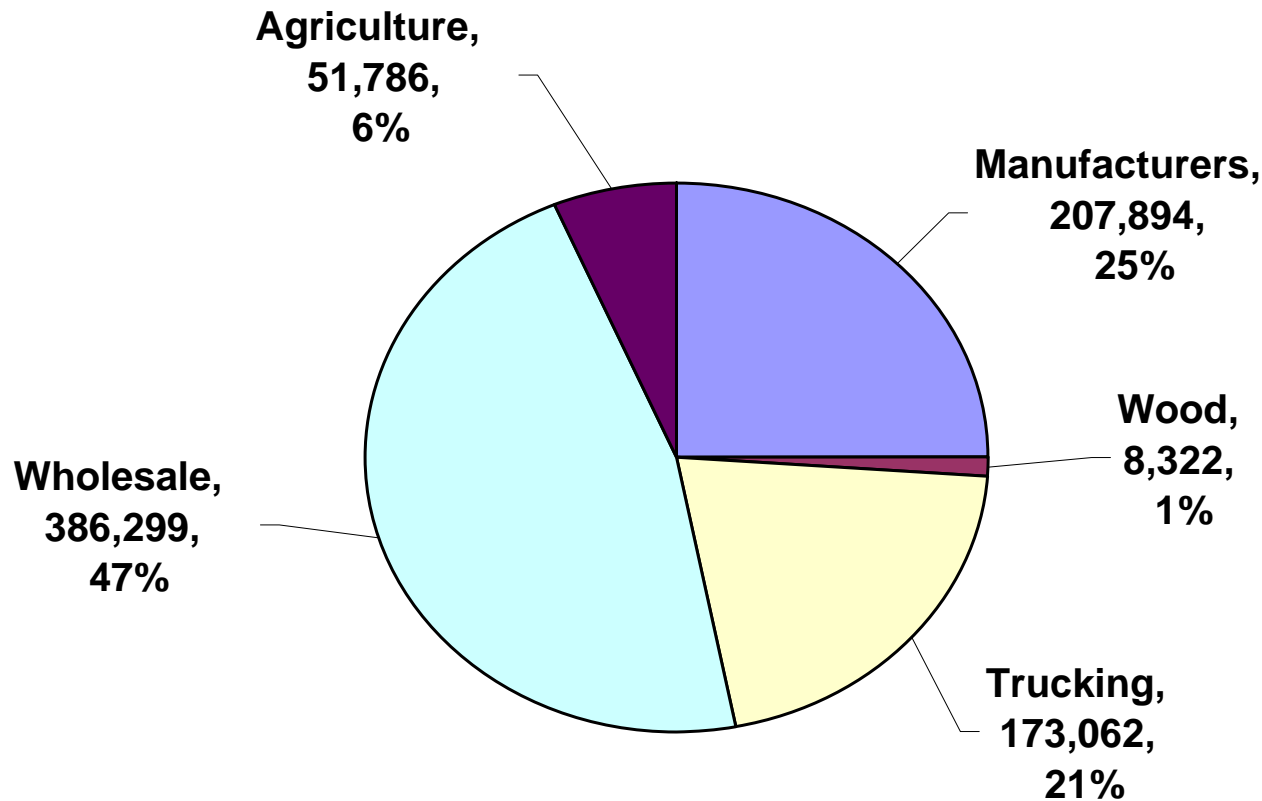
- In the PNW, every 10,000 TEUs shipped creates a need for an additional 1M SF of warehouse space according to CB Richard Ellis Brokerage. That's a ratio of 1:100
- The ports of Seattle and Tacoma:
 - Handled about 4M TEUs in 2005.
 - Both ports plan rapid growth in the next 5-10 years.
 - Typically, 30 percent of inbound containers are trucked to warehouses along the I-5 corridor and about 70 percent are directly transferred to intermodal rail.
 - Port growth could create a demand for an additional 150M sf of warehouse space along the I-5 corridor.

How will this impact WSDOT's plans?

Fast Facts: Made in Washington

What are Washington State Industries Shipping?

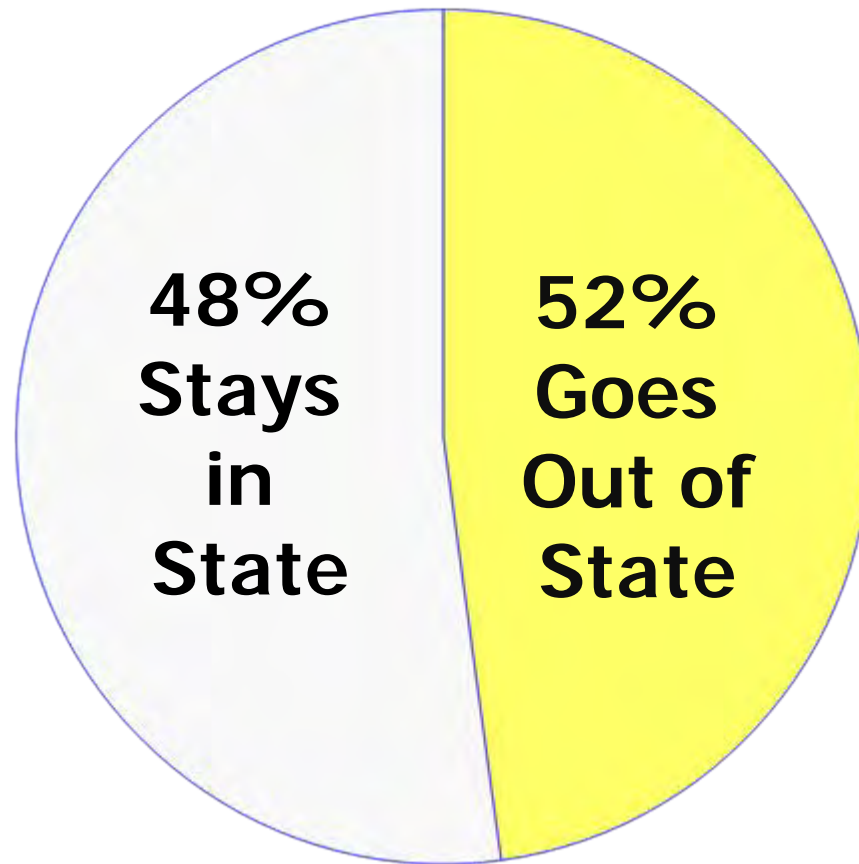
Monthly Loads by Industry Sector



Source: WSDOT, Freight Customer Study Summary
Report May 2007

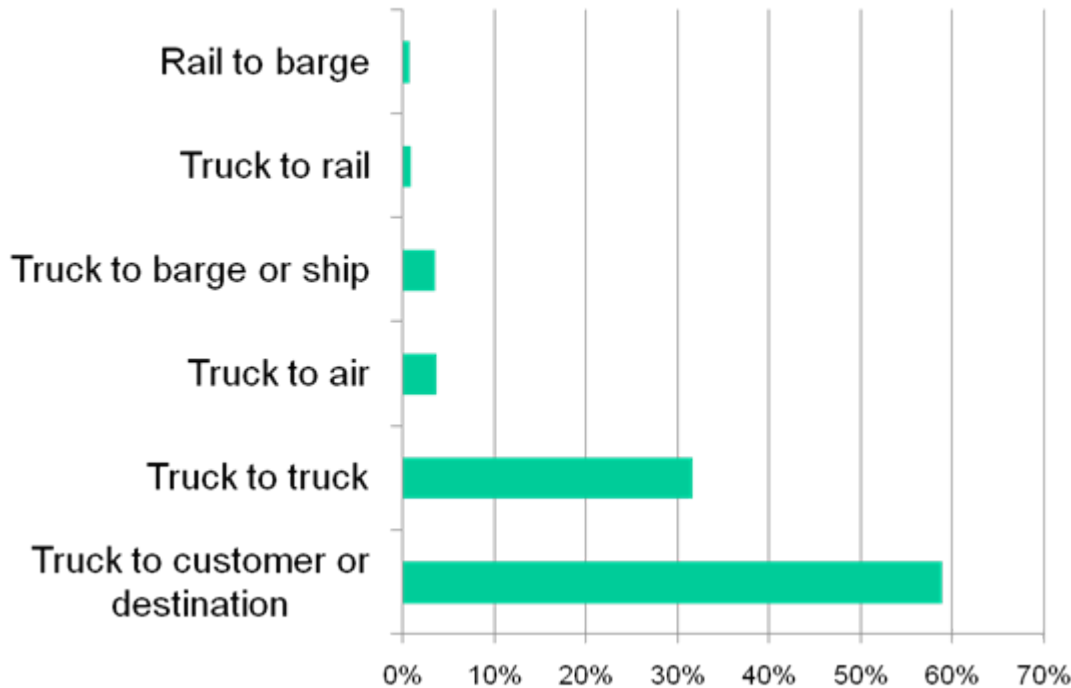
Fast Facts: Made in Washington

Where are Washington-made products going?



Fast Facts: Made in Washington

Snapshot of Eastside Wholesalers (largest freight segment by # of shipments)



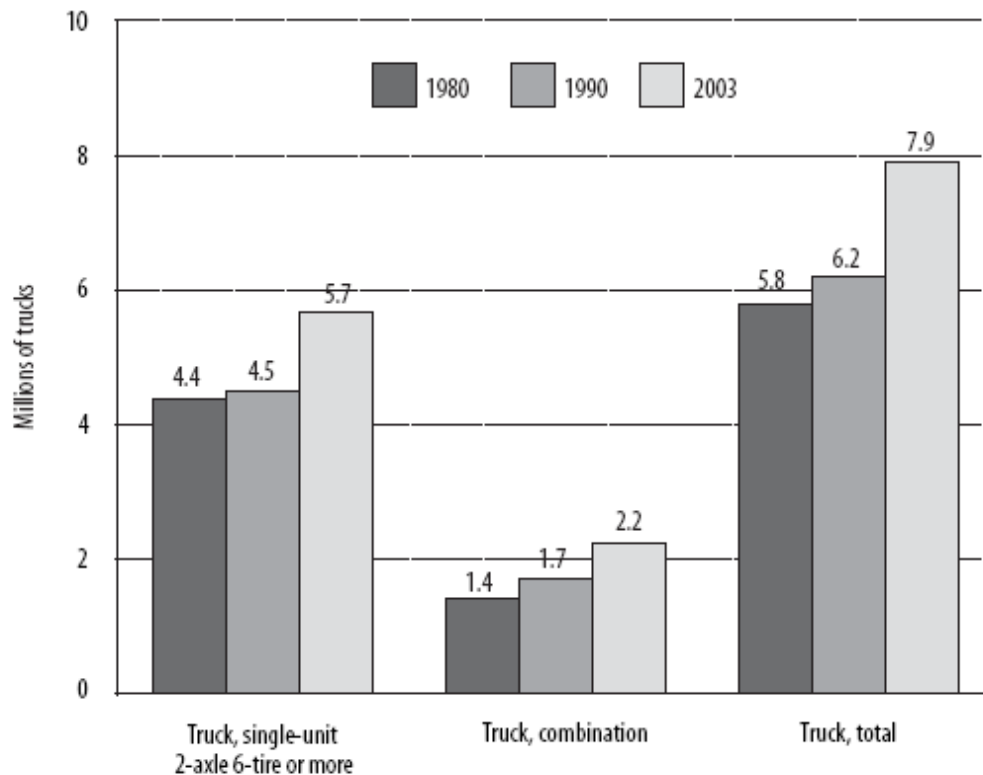
- 205,279 average loads per month (25% of the total surveyed)
- Ships via every type of shipping method
- 50%/50% split in state vs out of state shipments

*What do you think are the profiles of the other segments?
Why is knowing the profile important.?*

Fast Facts: Delivering the Goods to You

The highways are getting more congested...

Number of Commercial Trucks on U.S. Highways: 1980, 1990, 2003



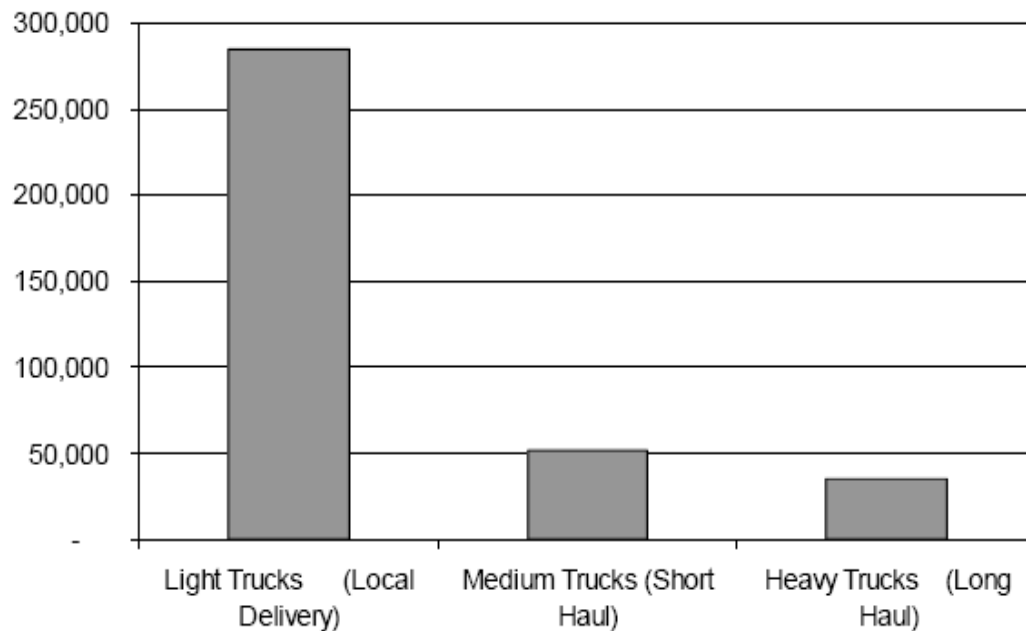
Source: US Department of Transportation

The number of trucks on US highways has grown by 27 percent over the last 23 years.

Fast Facts: Delivering the Goods to You

However, most truck trips in Washington are from smaller trucks delivering goods to local markets.

Licensed Commercial Trucks in WA State: 2005



Source: WSDOT

- In 2005, almost ten times more light and medium trucks than heavy trucks were licensed in Washington State.
- Up to 80 percent of truck trips operate in the local distribution system.

Defining Delivery

...and these delivery trucks are being held to tighter and tighter delivery windows.

Customer Defined Measure of "On Time Delivery"	%
On or before appointment time	13.3
+ 15 minutes from the appointment time	4.1
+ 30 minutes from the appointment time	8.5
+ 1 hour from the appointment time	8.9
-1 hr to +0 hours from the appointment	.9
On the requested day	40.5
On the agreed upon day	23.7

Almost 40% of shippers say their customers define on-time delivery to within a pre-defined window

Source: 2007 Warehouse Education Research Council Benchmarking Study

Why is more precise delivery becoming the norm?

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Example Supply Chains

Interactive Working Session

Supply Chain Management: The GOALS

1. WASTE ELIMINATION



2. TIME COMPRESSION



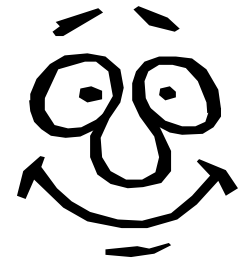
3. FLEXIBLE RESPONSE



4. UNIT COST REDUCTION



5. CUSTOMER SATISFACTION =
REVENUE GROWTH



Which is the most important?

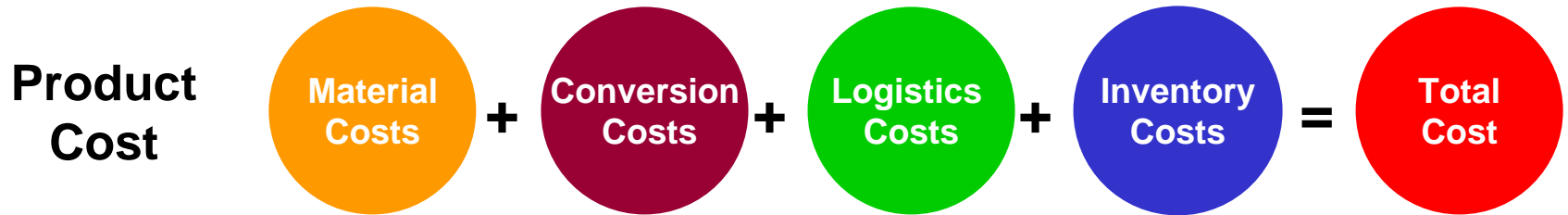
Total Cost Concept

Supply chain managers evaluate product costs as ***Total Costs***

- Products incur cost as they flow through the supply chain.
- Product costs are made up of material costs, conversion costs transportation costs and inventory costs.
- A Total Cost Analysis is a decision-making approach that considers minimization of total costs and recognizes the interrelationship among system variables such as transportation, warehousing, inventory, and customer service

The goal is to deliver product to customers at the lowest total cost... so each supply chain decision is important.

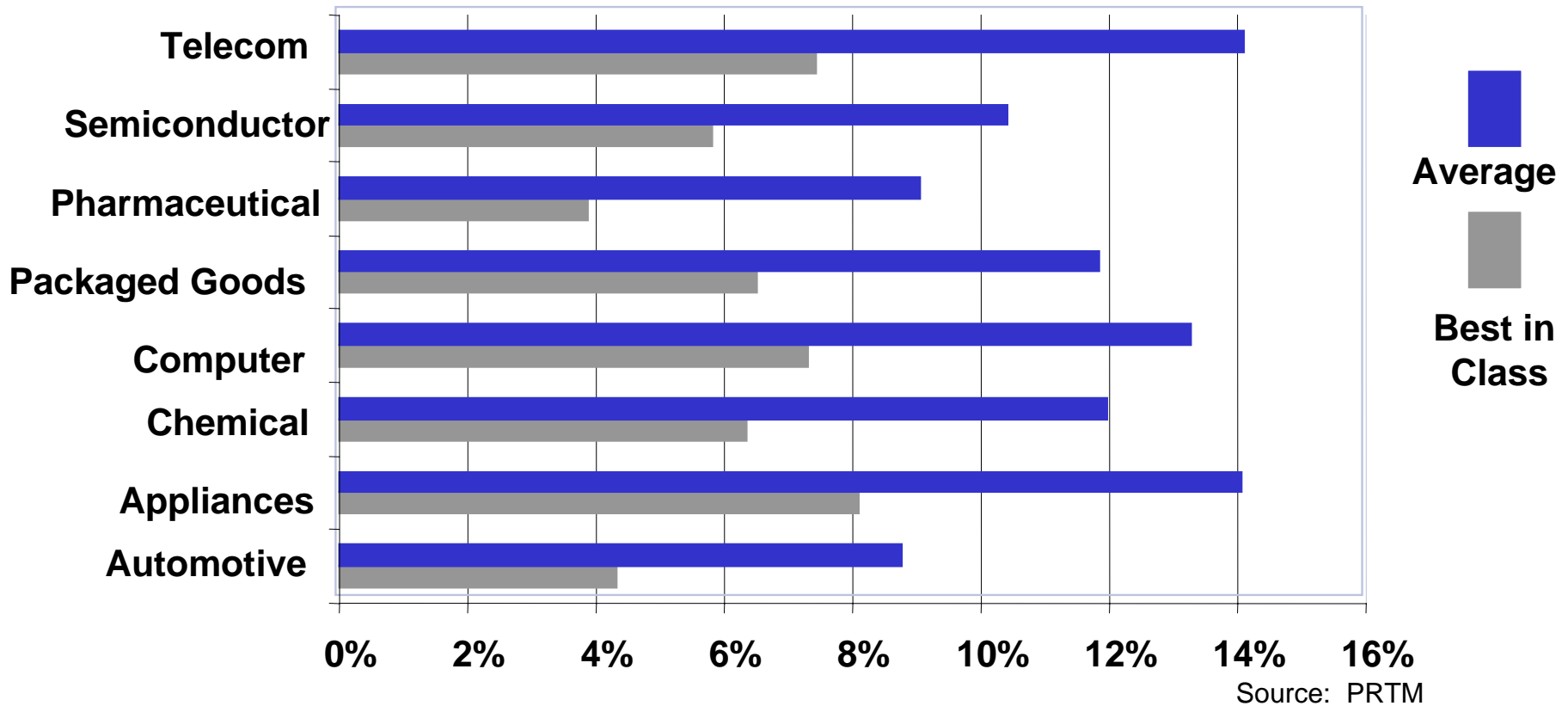
Example of Total Cost



Supplier 1 US Based	\$1.00	\$1.00	\$0.20	\$0.10	\$2.30
Supplier 2 Asia Based	\$0.70	\$0.50	\$0.80	\$0.20	\$2.20
Difference	(\$0.30)	(\$0.30)	\$0.60	\$0.10	(\$0.10)
Reason	<ul style="list-style-type: none"> ➤ Lower raw material cost 	<ul style="list-style-type: none"> ➤ Lower Labor Cost ➤ Longer production runs 	<ul style="list-style-type: none"> ➤ Higher Transportation cost ➤ Longer lead time 	<ul style="list-style-type: none"> ➤ Higher inventory carrying cost ➤ Higher on hand balances 	<ul style="list-style-type: none"> ➤ Net savings is less than expected ➤ Longer lead-times ➤ Higher supplier risk

Companies Who Manage Total Supply Chain Costs Well Have a Real Advantage

Percentage of Company Revenue Spent on Supply-Chain Activities



Efficient Supply Chains Increase Profit

Top supply chain risks, or the things that keep supply chain managers awake at night...

Top risks and concerns as cited by shippers and 3PLs in a trucking association survey were...

- **Managing transportation costs was the number one risk ...**
 - Rising **fuel costs** and potential fuel shortages
 - Rising **labor costs**
 - **Driver shortages** and restrictive work rules
- **Followed by infrastructure concerns...**
 - Deterioration of **highway infrastructure** and congestion
 - Changes to import/export **security regulations**
 - Overcrowded **ports** and lack of **infrastructure**
 - Rail shortages and deterioration of **rail infrastructure**
 - Shortages in **ocean freight carriers**

Discussion Topics

A Quick Review from the Overview Class

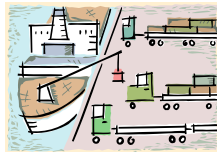
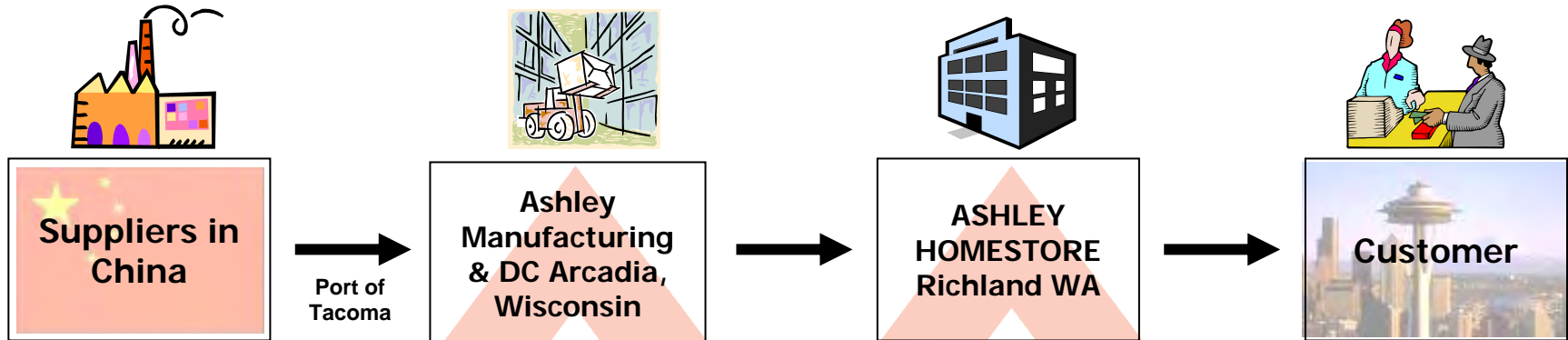
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Example Supply Chains

Interactive Working Session

Ashley Furniture - Typical Retail Supply Chain



1. Short Haul Trucking to port in China
2. Broker/Consolidator
3. Load ship
4. Ocean Transport
5. Broker/Consolidator
6. Port Load/Un-Load in Tacoma
7. Intermodal Rail to Arcadia, Wisconsin
8. Short Haul Trucking from Rail Terminal to DC

1. Long Haul Trucking to Retail Store
2. Short Haul to Retail Store

1. Local Delivery

Discussion Topics

- Which WSDOT strategy is impacted by Ashley Furniture's supply chain decisions?
- Why would Ashley (and other companies) import through the Port of Tacoma?
- Do you have projects that can impact this supply chain?

P&G's Distribution Reinvention



	2006	By 2009
Number of warehouses	450	225, likely to consolidate outsource providers
Product Mix on Pallets	Mostly full pallet or partial pallet	More mixed pallets with multiple products and focus on increasing velocity
Transportation	Less Than Truck Load and Truck Load short hauls	Mostly Truck Load/ longer hauls
Frequency of Delivery	Same	Same to More
Inventory	\$6.9 Billion	Reduced

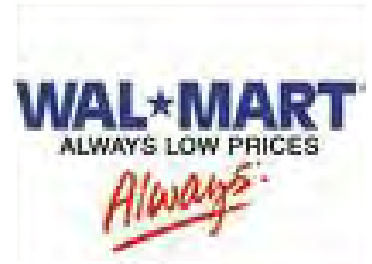
Companies such as P&G are using network optimization tools to drive lower network costs and improve efficiencies.

Source: Cleaning Up on Distribution, Traffic World, Jan 15 2007

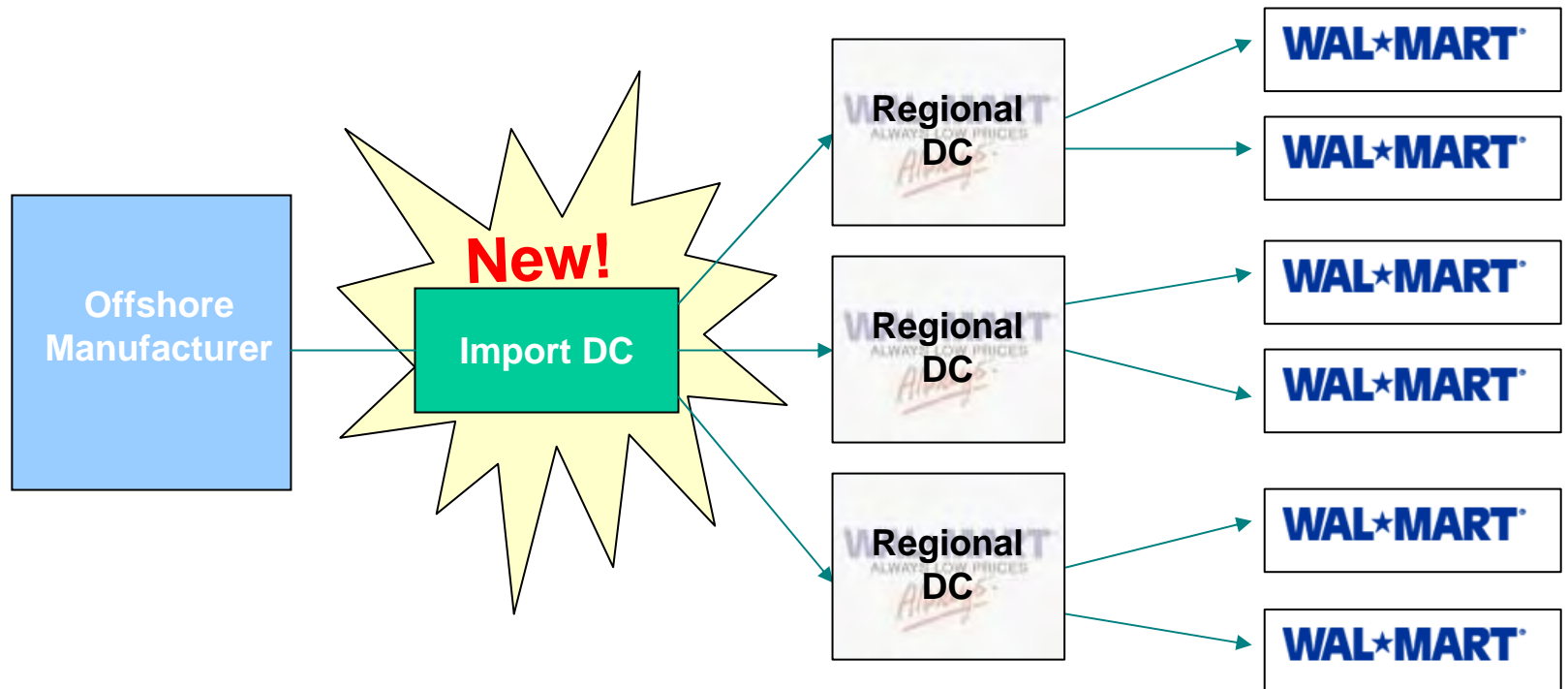
Discussion Topics

- How does P&G's reinvention of its distribution strategy impact Washington State's transportation system?
- What is inventory velocity and why is it important?
- How will gas prices impact P&G's strategy?

Wal-Mart's Import Center



Wal-Mart created a flow-through import center in Houston



Wal-Mart's New Import-Focused Warehouse

Wal-Mart's 4 Million Square Feet Warehouse in Bay Port (Houston), Texas



Photo courtesy of Cliff Lynch

Discussion Topics

- Why would a Houston-based import center be more efficient for Wal-Mart than a West-Coast-based facility?
- What if all of the top 20 national retailers did the same thing as Wal-Mart? What would be the impact to the WSDOT? What about the impact to the state's economy?

Boeing's Original 737 Manufacturing Plant



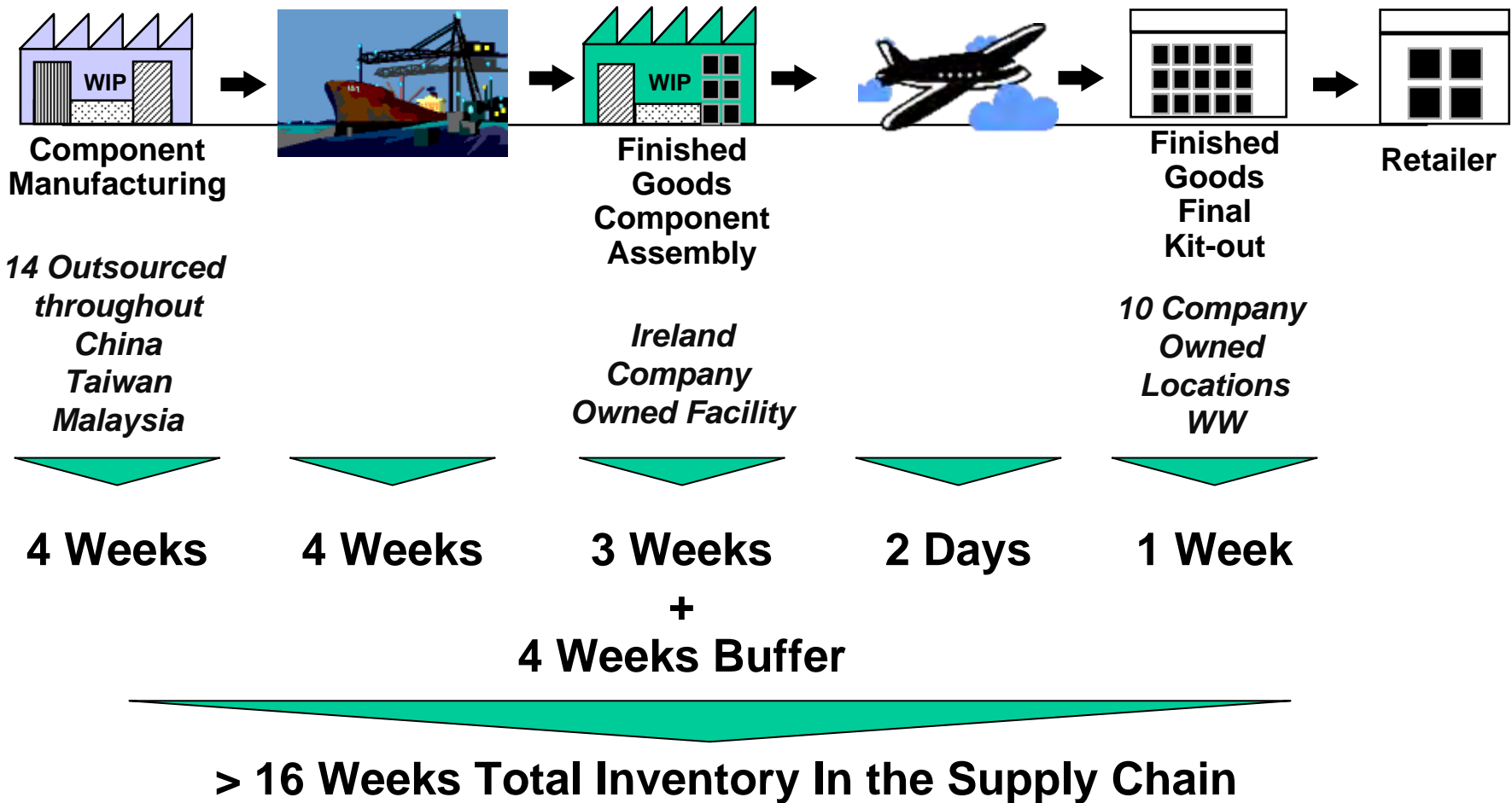
Boeing's Lean 737 Manufacturing Plant



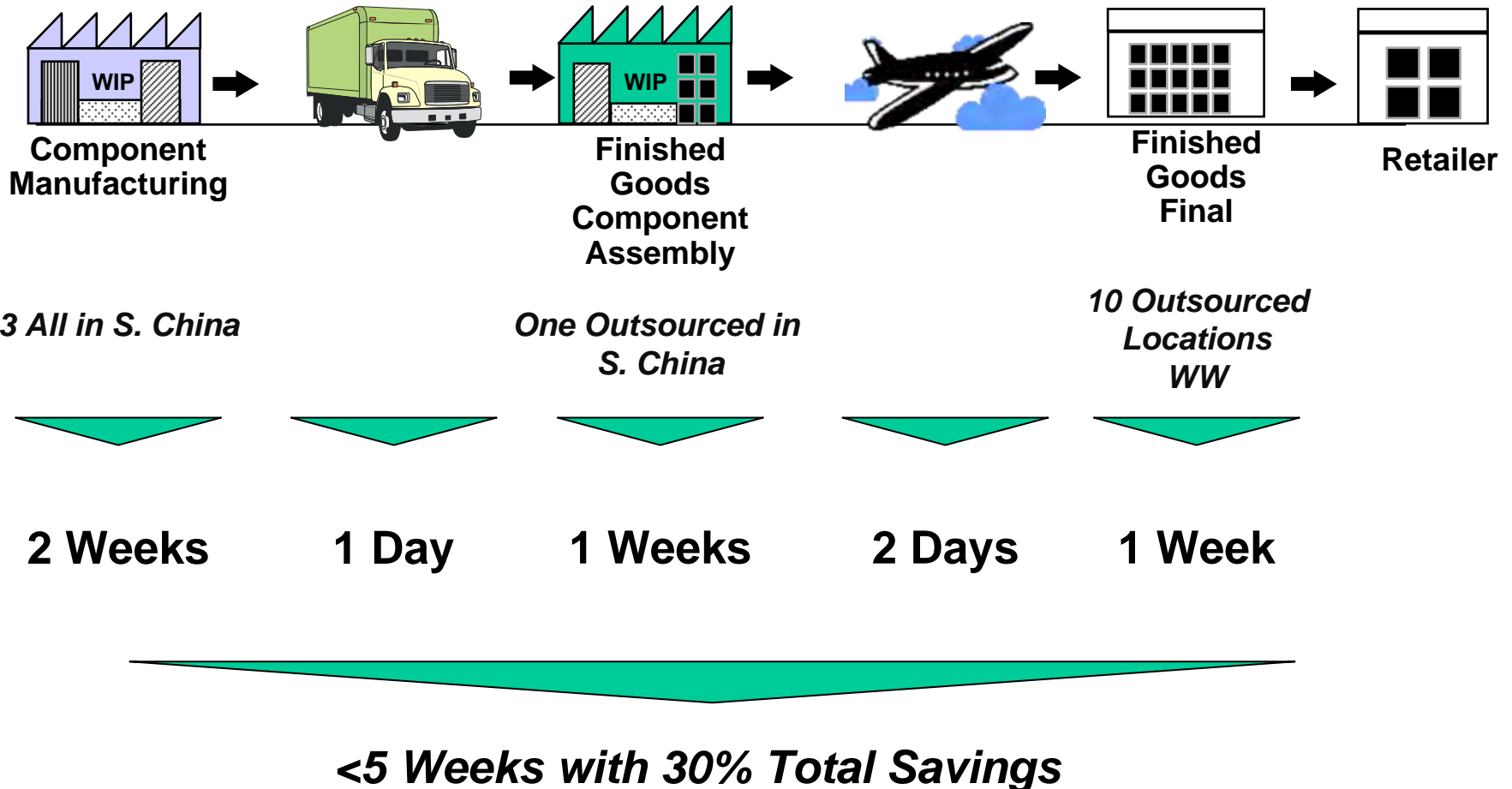
Discussion Topics

- What are the major impacts for Boeing to have their suppliers ship product “Just-In-Time” (smaller and more frequent shipments) to the plant with “Kits” ready to be assembled on the plane?
- How do these smaller and more frequent shipments affect WSDOT?
- What percent of Boeing’s inbound parts shipments are sent via air shipment?
- How does this impact Boeing outbound shipments?

High Tech Manufacturer's Original Supply Chain



High Tech Manufacturer's New Lean Supply Chain



Discussion Topics

- How does eliminating supply chain touch-points impact warehousing and transportation decisions?
- If the company changed the lean model again and the product was shipped directly from China to the retailer, how might WSDOT be impacted?
- What if a single distribution center were proposed in the US? How might WSDOT policies impact a location decision?

Microsoft's Outsourced Supply Chain



Supply Chain Process	In-source	Outsource
Forecasting	X	
Purchasing	X	X
Production Planning		X
Inventory Control		X
Warehousing		X
Order Management		X
Distribution		X
Transportation		X

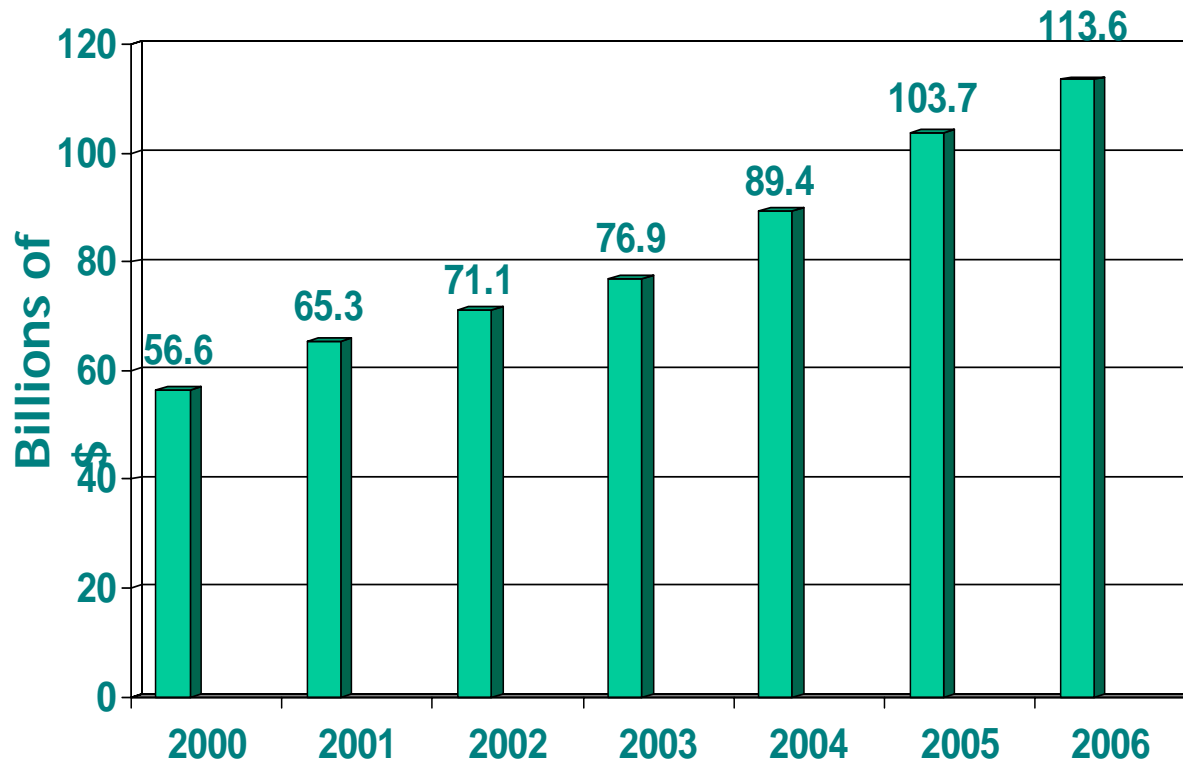
Discussion Topics

- Why has Microsoft chosen to outsource so much of their supply chain activities?
- When a company outsources – does it change who controls and influences key supply chain decisions?
- How might this impact WSDOT?

Managing out costs and working capital

More and more companies like Microsoft are looking to Third Party Logistics Providers (3PLs).

3PL revenue has almost doubled since 2000.



Source: Armstrong & Associates

***How
Does More
Outsourcing
Impact
WSDOT's
decisions?***

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Interactive Working Session

Work Session: Instructions

- Break into groups by region.
- Pick a major freight-related project in your region.
- Use the 2007 Supply Chain Performance survey data to understand the issues and concerns of supply chain participants.
- On flip charts, answer the questions on the next page.
- Pick a person from your team to report back your learning's to the entire group.

Work Session:

Questions for Each Team to Answer

- For your project, identify the various supply chain participants (your customers) that would be affected by your project.
- Understand the impact of your project on the SCM goals for each of the supply chain participants. Which of the five supply chain management goals (Waste Elimination, Time Compression, Flexible Response, Unit Cost Reduction, and Customer Satisfaction) will your project likely impact and why?
- Which of the three WSDOT freight meta-customer groups does your project impact?
- Review the 2007 survey data provided to:
 - Identify segments where freight system performance is low
 - Use the requirements rankings to identify possible causes of dissatisfaction.
 - Use the shipping methods information and correlate to satisfaction levels.
- Does what you have learned today change the way you think about planning projects? If so, how? What might you do differently for this project or future projects?

Thank You!

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WSDOT Freight System Survey: Background

Companies were selected from the following industry groupings:

- Manufacturing Firms (with at least 20 employees)
- Common Carrier Trucking Companies (with at least 10 employees)
- Distribution Centers (large retail distribution points supplying regional chains of stores)
- Wheat Growers (Southeast Washington wheat farms with at least \$1 million in annual revenue)
- Grain Associations and Grain Warehouses in SE Washington
- Columbia Basin/North Central Washington Agriculture (fruit/produce growers and processors)

WSDOT Freight System Survey: Background

The geographic scope of the study included the following major regions:

- Central Puget Sound Metro Area (King and Pierce Counties; in the case of manufacturing firms, it is split into Eastside King and South Sound sub-regions)
- Vancouver/Southwest Washington Metro Area (Portland MSA incl. Vancouver WA)
- Northwest Washington Metro Area (Whatcom County)
- Spokane Metro Area (Spokane County)
- Columbia Basin/North Central Washington (growers and processors located throughout the Columbia Basin and North Central WA area)
- Southeast Washington (large wheat farms and grain associations in counties south of Spokane and east of the Central Washington/Columbia Basin farming area)

WSDOT Survey Results:

Are Our Customers Satisfied with the Current Performance of the State's Freight Systems?

Satisfaction Ratings of Current Performance with the Most Important Supply Chain Requirement	Not Satisfied (0-3 rating)	Moderately Satisfied (4-7 rating)	Satisfied (8-10 rating)	Mean
Eastern Washington				
Spokane Manufacturing	0.0%	9.10%	90.90%	8.79
Spokane Wood	0.0%	14.30%	85.70%	8.00
Spokane Trucking	0.0%	36.40%	63.60%	8.06
Spokane Wholesale	0.0%	23.80%	76.20%	8.33
SE WA Agriculture	19.00%	14.30%	66.70%	7.05
Vancouver: SW Washington/Portland				
Vancouver: SW WA Manufacturing	0.0%	15.00%	85.00%	8.66
Vancouver: SW WA Trucking	0.0%	25.00%	75.00%	8.47
Vancouver: SW WA Wholesale	8.30%	16.70%	75.00%	7.67
N. Central Washington				
N. Central Manufacturing	3.70%	48.10%	48.10%	7.44
N. Central Agriculture	0.0%	60.00%	40.00%	6.75
N. Central Trucking	0.0%	35.70%	64.30%	7.79
N. Central Wholesale	4.30%	34.80%	60.90%	7.78
Northwest Washington/Puget Sound				
Northwest WA Manufacturing	0.0%	22.70%	77.30%	8.29
Northwest WA Wood	0.0%	50.00%	50.00%	8.00
Northwest WA Trucking	0.0%	13.30%	86.70%	8.73
Eastside/Central Puget Sound Manufacturing	0.0%	50.00%	50.00%	7.77
South King Manufacturing	3.70%	44.40%	51.90%	7.11
Eastside/Central Puget Sound Trucking	12.00%	36.00%	52.00%	7.27
Eastside/Central Puget Sound Wholesale	0.0%	15.60%	84.40%	8.44
Coastal Counties				
Coastal Counties Manufacturing	0.0%	38.90%	61.10%	7.61
Coastal Counties Wood	23.10%	23.10%	53.80%	6.15

WSDOT Survey Results: Importance of Washington State's Freight System

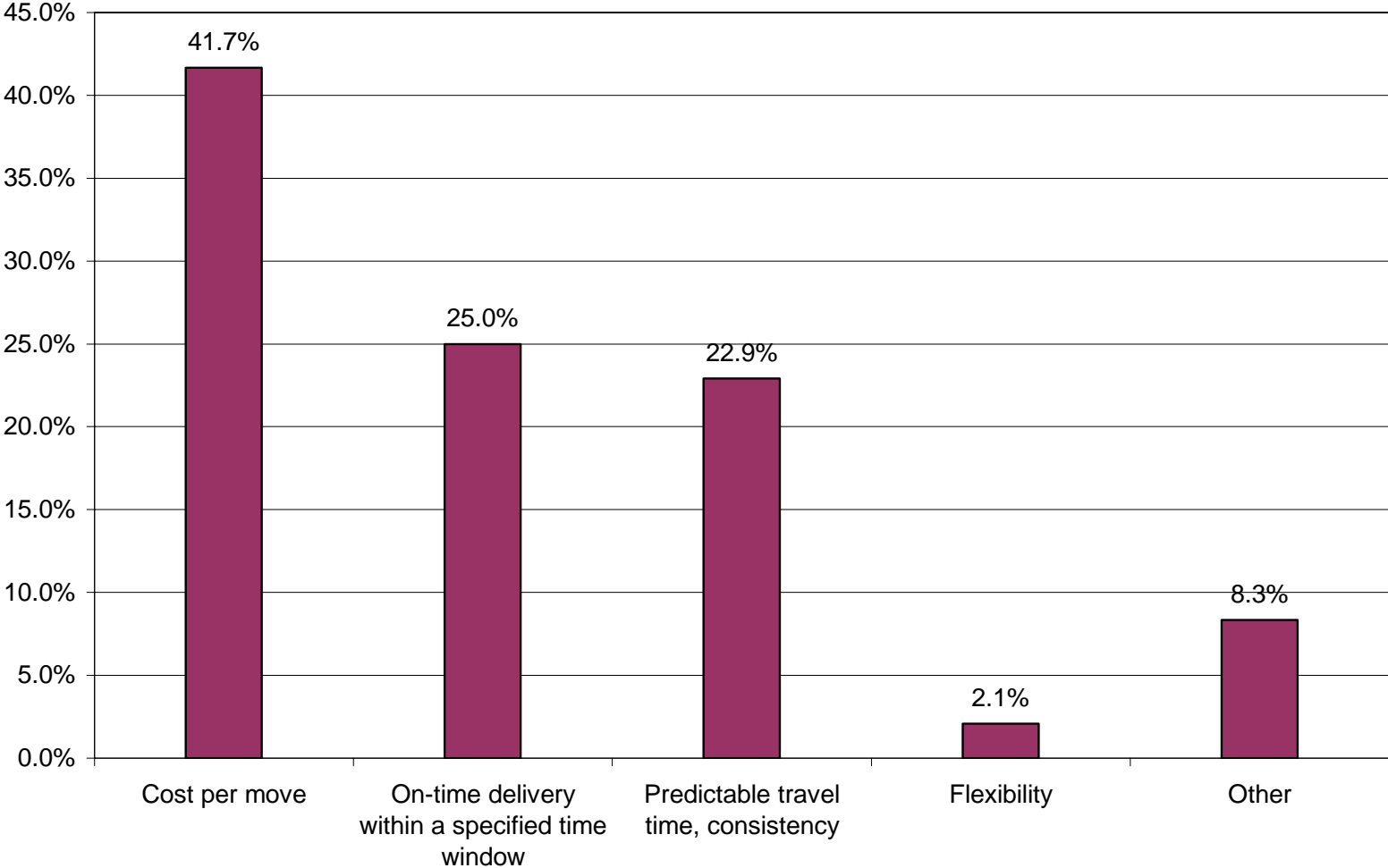
Importance Ratings of the States Freight System	Not Important (0-3 rating)	Moderately Important (4-7 rating)	Highly Important (8-10 rating)	Mean
Eastern Washington				
Spokane Manufacturing	4.3%	4.3%	91.3%	9.08
Spokane Wood	0.0%	14.3%	85.7%	8.43
Spokane Trucking	0.0%	0.0%	100.0%	9.93
Spokane Wholesale	13.0%	17.4%	69.6%	7.91
SE WA Agriculture	0.0%	0.0%	100.0%	9.77
Vancouver: SW Washington/Portland				
Vancouver: SW WA Manufacturing	0.0%	12.0%	88.0%	9.14
Vancouver: SW WA Trucking	0.0%	5.3%	94.7%	9.63
Vancouver: SW WA Wholesale	4.0%	4.0%	92.0%	8.92
N. Central Washington				
N. Central Manufacturing	0.0%	14.8%	85.2%	8.89
N. Central Agriculture	0.0%	0.0%	100.0%	9.83
N. Central Trucking	0.0%	6.7%	93.3%	9.33
N. Central Wholesale	3.8%	3.8%	92.3%	9.27
Northwest Washington/Puget Sound				
Northwest WA Manufacturing	0.0%	15.4%	84.6%	8.88
Northwest WA Wood	14.3%	14.3%	71.4%	7.29
Northwest WA Trucking	0.0%	0.0%	100.0%	9.87
Eastside/Central Puget Sound Manufacturing	0.0%	26.1%	73.9%	8.31
South King Manufacturing	3.6%	14.3%	82.1%	8.63
Eastside/Central Puget Sound Trucking	0.0%	10.0%	90.0%	9.59
Eastside/Central Puget Sound Wholesale	5.7%	11.4%	82.9%	8.83
Coastal Counties				
Coastal Counties Manufacturing	5.6%	22.2%	72.2%	8.33
Coastal Counties Wood	0.0%	12.5%	87.5%	9.38

WSDOT Freight Survey Results: What Freight Services Matter to Customers?

Requirement	Cost per move	On time delivery w/in window	Predictable travel time	Average speed of move at certain level	Flexibility	All weather freight system accessible yr round	Capacity in refrigerated trucks yr round	General rail capacity	Adequate storage at the right location
Eastern Washington									
Spokane Manufacturing	31.8%	45.5%	13.6%	0.0%	0.0%	9.1%	0.0%	0.0%	0.0%
Spokane Wood	28.6%	57.1%	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%	0.0%
Spokane Trucking	0.0%	75.0%	16.7%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%
Spokane Wholesale	23.8%	57.1%	9.5%	0.0%	9.5%	0.0%	0.0%	0.0%	0.0%
SE WA Agriculture	21.7%	39.1%	0.0%	0.0%	13.0%	4.3%	21.7%	0.0%	0.0%
Vancouver: SW Washington/Portland									
Vancouver: SW WA Manufacturing	18.2%	72.7%	4.5%	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%
Vancouver: SW WA Trucking	5.9%	52.9%	29.4%	0.0%	5.9%	5.9%	0.0%	0.0%	0.0%
Vancouver: SW WA Wholesale	29.2%	62.5%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
N. Central Washington									
N. Central Manufacturing	44.4%	44.4%	3.7%	0.0%	3.7%	3.7%	0.0%	0.0%	0.0%
N. Central Agriculture	50.0%	4.2%	0.0%	0.0%	4.2%	8.3%	4.2%	29.2%	0.0%
N. Central Trucking	23.1%	61.5%	7.7%	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%
N. Central Wholesale	26.1%	60.9%	0.0%	0.0%	8.7%	4.3%	0.0%	0.0%	0.0%
Northwest Washington/Puget Sound									
Northwest WA Manufacturing	18.2%	54.5%	13.6%	0.0%	9.1%	4.5%	0.0%	0.0%	0.0%
Northwest WA Wood	33.3%	33.3%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	16.7%
Northwest WA Trucking	6.7%	80.0%	6.7%	0.0%	6.7%	0.0%	0.0%	0.0%	0.0%
Eastside/Central Puget Sound Manufacturing	20.0%	64.0%	4.0%	0.0%	12.0%	0.0%	0.0%	0.0%	0.0%
South King Manufacturing	37.0%	33.3%	7.4%	3.7%	7.4%	3.7%	3.7%	0.0%	3.7%
Eastside/Central Puget Sound Trucking	15.4%	53.8%	23.1%	0.0%	3.8%	0.0%	0.0%	3.8%	0.0%
Eastside/Central Puget Sound Wholesale	22.6%	64.5%	6.5%	0.0%	3.2%	3.2%	0.0%	0.0%	0.0%
Coastal Counties									
Coastal Counties Manufacturing	27.8%	27.8%	27.8%	5.6%	5.6%	0.0%	5.6%	0.0%	0.0%
Coastal Counties Wood	28.6%	50.0%	7.1%	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%

WSDOT Freight Survey Results: Customers Rank Their Service Requirements

Single Most Important Requirement



WSDOT Freight Survey Results: System Failures

Percent of Time Spend Incurring Additional Expenses to Recover from Shipping Problems	0%	1-4%	5-9%	10-19%	20-49%	50-100%	Mean
Eastern Washington							
Spokane Manufacturing	11.1%	50.0%	16.7%	11.1%	5.6%	5.60%	6.89
Spokane Wood	20.0%	20.0%	40.0%	20.0%	0.0%	0.0%	4.40
Spokane Trucking	0.0%	10.0%	40.0%	20.0%	20.0%	10.00%	19.80
Spokane Wholesale	19.0%	23.8%	14.3%	23.8%	9.5%	9.50%	12.57
SE WA Agriculture	50.0%	14.3%	0.0%	7.1%	28.6%	0.00%	11.08
Vancouver: SW Washington/Portland							
Vancouver: SW WA Manufacturing	20.0%	20.0%	5.0%	20.0%	20.0%	15.0%	14.78
Vancouver: SW WA Trucking	8.3%	41.7%	8.3%	33.3%	8.3%	0.0%	8.08
Vancouver: SW WA Wholesale	33.3%	23.8%	0.0%	23.8%	9.5%	9.5%	11.76
N. Central Washington							
N. Central Manufacturing	19.0%	33.3%	9.5%	28.6%	4.8%	4.80%	9.52
N. Central Agriculture	38.9%	0.0%	5.6%	22.2%	16.7%	16.70%	22.50
N. Central Trucking	33.3%	16.7%	16.7%	8.3%	16.7%	8.30%	9.67
N. Central Wholesale	15.0%	25.0%	25.0%	10.0%	20.0%	5.00%	11.95
NW Washington/Puget Sound							
Northwest WA Manufacturing	7.70%	15.40%	7.70%	23.10%	38.50%	7.70%	16.30
Northwest WA Wood	28.60%	42.90%	14.30%	0.00%	0.00%	14.30%	8.29
Northwest WA Trucking	7.10%	57.10%	14.30%	7.10%	7.10%	7.10%	12.07
Eastside/Central Puget Sound Manufacturing	24.00%	32.00%	16.00%	8.00%	12.00%	8.00%	10.33
South King Manufacturing	0.00%	8.70%	60.90%	8.70%	21.70%	0.00%	8.45
Eastside/Central Puget Sound Trucking	17.40%	43.50%	4.30%	21.70%	4.30%	8.70%	11.09
Eastside/Central Puget Sound Wholesale	16.00%	52.00%	8.00%	16.00%	4.00%	4.00%	7.32
Coastal Counties							
Coastal Counties Manufacturing	26.70%	13.30%	13.30%	20.00%	13.30%	13.30%	15.00
Coastal Counties Wood	37.50%	12.50%	25.00%	0.00%	25.00%	0.00%	7.19

WSDOT Freight Survey Results: On-time Impact

Amount of Time Late a Delivery is Considered to be "On Time"	Under 30 min	30-59 min	1-1.9 hours	2-2.9 hours	3-7.9 hours	8-11.9 hours	12-23.9 hours	24 hours	More than 24 hours	Median Hours
Eastern Washington										
Spokane Manufact.	0.0%	0.0%	28.6%	0.0%	0.0%	9.5%	0.0%	52.4%	9.5%	24.0
Spokane Wood	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	71.4%	14.3%	24.0
Spokane Trucking	18.2%	0.0%	54.5%	9.1%	9.1%	0.0%	0.0%	9.1%	0.0%	1.5
Spokane Wholesale	4.2%	0.0%	20.8%	4.2%	8.3%	8.3%	0.0%	50.0%	4.2%	24.0
SE WA Agriculture	12.5%	0.0%	41.7%	0.0%	0.0%	0.0%	0.0%	41.7%	4.2%	1.5
Vancouver: SW Washington/Portland										
Vancouver: SW WA Manuf.	0.0%	0.0%	36.0%	0.0%	0.0%	8.0%	4.0%	44.0%	8.0%	18.0
Vancouver: SW WA Trucking	5.6%	0.0%	27.8%	0.0%	0.0%	0.0%	0.0%	38.9%	27.8%	19.4
Vancouver: SW WA Wholesale	0.0%	0.0%	32.0%	4.0%	0.0%	8.0%	0.0%	52.0%	4.0%	24.0
N. Central Washington										
N. Central Manufacturing	7.7%	0.0%	34.6%	0.0%	3.8%	0.0%	0.0%	53.8%	0.0%	24.0
N. Central Agriculture	4.0%	0.0%	12.0%	4.0%	4.0%	0.0%	0.0%	68.0%	8.0%	24.0
N. Central Trucking	20.0%	6.7%	40.0%	0.0%	6.7%	0.0%	0.0%	26.7%	0.0%	1.5
N. Central Wholesale	8.3%	0.0%	45.8%	0.0%	0.0%	0.0%	0.0%	41.7%	4.2%	1.5
NW Washington/Puget Sound										
Northwest WA Manufacturing	8.3%	8.3%	12.5%	0.0%	4.2%	8.3%	0.0%	50.0%	8.3%	24
Northwest WA Wood	0.0%	0.0%	57.1%	0.0%	0.0%	0.0%	0.0%	28.6%	14.3%	1.5
Northwest WA Trucking	0.0%	13.3%	40.0%	6.7%	0.0%	0.0%	0.0%	40.0%	0.0%	1.5
Eastside/Central Puget Sound Manuf.	0.0%	0.0%	25.0%	0.0%	8.3%	0.0%	0.0%	54.2%	12.5%	24
South King Manufacturing	9.7%	0.0%	29.0%	3.2%	3.2%	3.2%	3.2%	45.2%	3.2%	19.8
Eastside/Central Puget Sound Trucking	3.4%	3.4%	48.3%	0.0%	0.0%	0.0%	0.0%	37.9%	6.9%	1.5
Eastside/Central Puget Sound Wholesale	5.7%	0.0%	48.6%	2.9%	2.9%	0.0%	0.0%	34.3%	5.7%	1.5
Coastal Counties										
Coastal Counties Manufacturing	5.9%	0.0%	23.5%	11.8%	11.8%	5.9%	0.0%	35.3%	5.9%	5.5
Coastal Counties Wood	0.0%	6.3%	50.0%	6.3%	6.3%	6.3%	0.0%	12.5%	12.5%	1.5

Washington Industry Definitions of 'ON-TIME'

Every industry sets on-time delivery windows according to their business needs. Performance in on-time delivery relates to the way 'on time' is defined in shipping contracts and customer expectations. Firms such as manufacturers who have wider delivery windows are able to keep shipments 'in time' easier than common carrier trucking firms. A company may be able to satisfy customers with on-time deliveries in a congested area like Central Puget Sound if the standards are loose enough to allow flexibility in shipping times, even though cost increases may negatively affect the bottom line.

WSDOT Freight Survey Results: Transport to Final Market

NE WA/Spokane Manufacturers

Destination in Washington State	Share
Tri - Cities (road or rail)	11.0%
Central Puget Sound (road or rail)	10.3%
Spokane Airport	9.0%
Ports of Seattle/Tacoma (sea)	5.1%
Spokane (road or rail)	3.5%
Greater Bellingham area/Whatcom or Skagit County (road or rail)	2.1%
N. Central WA	1.7%
Canada Border (Road or rail)	1.0%
Tri - Cities (road or rail)	0.6%
TOTAL	44.3%
Destination Out of State	Share
Nationwide	22.3%
California through Oregon (road and rail)	14.6%
Worldwide	4.4%
The Midwest (road or rail)	4.5%
East coast	3.5%
Mountain States (ID, CO, NE, ETC.)	2.9%
Portland area (road or rail)	2.3%
Alaska	0.6%
South (road or rail)	0.3%
Other Southwest states (road or rail)	0.2%
TOTAL	55.7%

Method of Transport	Share
Truck to customer or destination	68.1%
Truck to truck	14.1%
Truck to rail	1.0%
Truck to barge or ship	6.2%
Truck to air	9.0%
Rail to truck	1.0%
Rail to barge	0.6%

WSDOT Freight Survey Results: Transport to Final Market

NE WA/Spokane Trucking

Destination in Washington State	Share
Central Puget Sound (road or rail)	24.8%
TOTAL	24.8%
Destination Out of State	Share
Nationwide	37.2%
California through Oregon (road and rail)	23.4%
East coast	12.4%
South (road or rail)	1.6%
Other Southwest states (road or rail)	0.6%
TOTAL	75.2%

Method of Transport	Share
Truck to customer or destination	57.2%
Truck to truck	37.0%
Truck to barge or ship	5.9%

WSDOT Freight Survey Results: Transport to Final Market

NE WA/Spokane Wholesale

Destination in Washington State	Share
Spokane (road or rail)	31.7%
Central Puget Sound (road or rail)	10.4%
Spokane Airport	9.2%
Tri - Cities (road or rail)	5.4%
Ports of Seattle/Tacoma (sea)	5.0%
N. Central WA	3.7%
Greater Bellingham area /Whatcom or Skagit County (road or rail)	1.5%
SE WA	0.5%
TOTAL	67.3%
Destination Out of State	Share
Portland area (road or rail)	10.0%
Mountain States (ID, CO, NE, ETC.)	9.5%
Nationwide	7.6%
East coast	1.8%
Oregon (road or rail)	1.5%
California through Oregon (road and rail)	1.5%
The Midwest (road or rail)	0.7%
TOTAL	32.7%

Method of Transport	Share
Truck to customer or destination	79.3%
Truck to truck	7.7%
Truck to barge or ship	3.8%
Truck to air	9.2%

WSDOT Freight Survey Results: Transport to Final Market

SE WA Agriculture

Destination in Washington State	Share
Ports of Seattle/Tacoma (sea)	39.3%
N. Central WA	15.1%
SE Washington	7.3%
Spokane (road or rail)	3.4%
Tri - Cities (road or rail)	2.7%
Canada Border (road or rail)	1.0%
Central Puget Sound (road or rail)	0.6%
TOTAL	69.4%
Destination Out of State	Share
Portland area (road or rail)	12.6%
Nationwide	7.7%
Mountain States (ID, CO, NE, ETC.)	3.1%
World wide	2.7%
Ports of Portland, Kalama, Vancouver	2.6%
California through Oregon (road or rail)	1.6%
Oregon (road or rail)	0.4%
TOTAL	30.6%

Method of Transport	Share
Truck to truck	10.6%
Truck to rail	0.7%
Truck to barge or ship	87.8%
Rail to truck	0.8%

WSDOT Freight Survey Results: Transport to Final Market

Eastside Manufacturing

Destination in Washington State	Share
Central Puget Sound (road or rail)	44.6%
SeaTac International Airport (air)	14.4%
Ports of Seattle/Tacoma (sea)	9.5%
Greater Bellingham area /Whatcom or Skagit County (road or rail)	1.4%
Canada Border (Road or rail)	1.1%
N Central WA	0.1%
TOTAL	71.1%
Destination Out of State	Share
California through Oregon (road and rail)	13.9%
Nationwide	6.1%
World wide	3.1%
East coast	1.4%
South (road or rail)	1.3%
The Midwest (road or rail)	1.3%
Other Southwest states (road or rail)	1.0%
Oregon (road or rail)	0.8%
TOTAL	28.9%

Method of Transport	Share
Truck to customer or destination	58.6%
Truck to truck	16.8%
Truck to rail	0.8%
Truck to barge or ship	9.5%
Truck to air	14.4%

WSDOT Freight Survey Results: Transport to Final Market

South King/Pierce Manufacturing

Destination in Washington State	Share
Central Puget Sound (road or rail)	31.2%
Ports of Seattle/Tacoma (sea)	13.4%
SeaTac International Airport (air)	9.0%
NW Wash. Area (Road or Rail)	3.3%
Canada Border (Road or rail)	0.9%
Spokane (road or rail)	0.2%
TOTAL	58.0%
Destination Out of State	Share
California through Oregon (road and rail)	17.0%
Nationwide	16.9%
The Midwest (road or rail)	8.0%
Mountain States (ID, CO, NE, ETC.)	0.1%
TOTAL	42.0%

Method of Transport	Share
Truck to customer or destination	65.0%
Truck to truck	6.7%
Truck to rail	3.3%
Truck to barge or ship	13.4%
Truck to air	9.8%
Rail to truck	1.4%
Rail to barge	0.4%

WSDOT Freight Survey Results: Transport to Final Market

Eastside/South King Trucking

Destination in Washington State	Share
Central Puget Sound (road or rail)	20.5%
SeaTac International Airport (air)	17.2%
Ports of Seattle/Tacoma (sea)	7.3%
Spokane (road or rail)	4.7%
Tri - Cities (road or rail)	3.9%
Vancouver, WA area (north of Columbia River)	1.9%
NW Wash. Area (Road or Rail)	1.6%
Greater Bellingham area /Whatcom or Skagit County (road or rail)	1.3%
N Central WA	0.8%
TOTAL	59.1%
Destination Out of State	Share
Nationwide	26.0%
California through Oregon (road and rail)	8.2%
Mountain States (ID, CO, NE, ETC.)	3.7%
Oregon (road or rail)	1.6%
Portland area (road or rail)	1.3%
TOTAL	40.9%

Method of Transport	Share
Truck to customer or destination	53.1%
Truck to truck	19.8%
Truck to rail	0.8%
Truck to barge or ship	7.0%
Truck to air	17.2%
Rail to truck	1.2%
Rail to barge	0.9%

WSDOT Freight Survey Results: Transport to Final Market

Eastside/South King Wholesale

Destination in Washington State	Share
Central Puget Sound (road or rail)	40.1%
SW WA/Vancouver area	3.8%
SeaTac International Airport (air)	3.7%
N Central WA	1.4%
Spokane (road or rail)	1.2%
TOTAL	50.1%
Destination Out of State	Share
Nationwide	29.3%
World wide	8.8%
Mountain States (ID, CO, NE, ETC.)	4.5%
The Midwest (road or rail)	4.2%
Portland area (road or rail)	1.2%
Oregon (road or rail)	0.9%
East coast	0.9%
TOTAL	49.9%

Method of Transport	Share
Truck to customer or destination	58.9%
Truck to truck	31.6%
Truck to rail	0.9%
Truck to barge or ship	3.5%
Truck to air	3.7%
Rail to truck	0.6%
Rail to barge	0.7%

WSDOT Freight Survey Results: Transport to Final Market

Coastal Counties Manufacturing

Destination in Washington State	Share
Coastal Counties	25.8%
Ports of Seattle/Tacoma (sea)	14.6%
Central Puget Sound (road or rail)	12.9%
SeaTac International Airport (air)	6.4%
Canada Border (Road or rail)	4.0%
TOTAL	63.7%
Destination Out of State	Share
Nationwide	18.5%
California through Oregon (road and rail)	7.7%
East coast	6.4%
The Midwest (road or rail)	1.6%
Mountain States (ID, CO, NE, ETC.)	1.2%
Other Southwest states (road or rail)	0.4%
South (road or rail)	0.4%
TOTAL	36.3%

Method of Transport	Share
Truck to customer or destination	61.9%
Truck to truck	11.1%
Truck to rail	2.5%
Truck to barge or ship	6.4%
Truck to air	18.1%

WSDOT Freight Survey Results: Transport to Final Market

Coastal Counties Wood

Destination in Washington State	Share
Central Puget Sound (road or rail)	32.4%
Coastal Counties	24.7%
SW WA/Vancouver area	2.9%
Ports of Seattle/Tacoma (sea)	0.3%
TOTAL	60.3%
Destination Out of State	Share
United States	23.5%
California through Oregon (road and rail)	10.4%
The Midwest (road or rail)	2.3%
Oregon (road or rail)	1.9%
Portland area (road or rail)	0.8%
South (road or rail)	0.8%
TOTAL	39.7%

Method of Transport	Share
Truck to customer or destination	81.5%
Truck to truck	11.7%
Truck to rail	1.0%
Truck to barge or ship	5.0%
Rail to truck	0.5%
Rail to barge	0.2%

Developing Washington State's Strategic Plan for Freight Systems

Barbara Ivanov
Director
Freight Systems Division

**WSDOT Transportation Planning Conference
November 16, 2007**



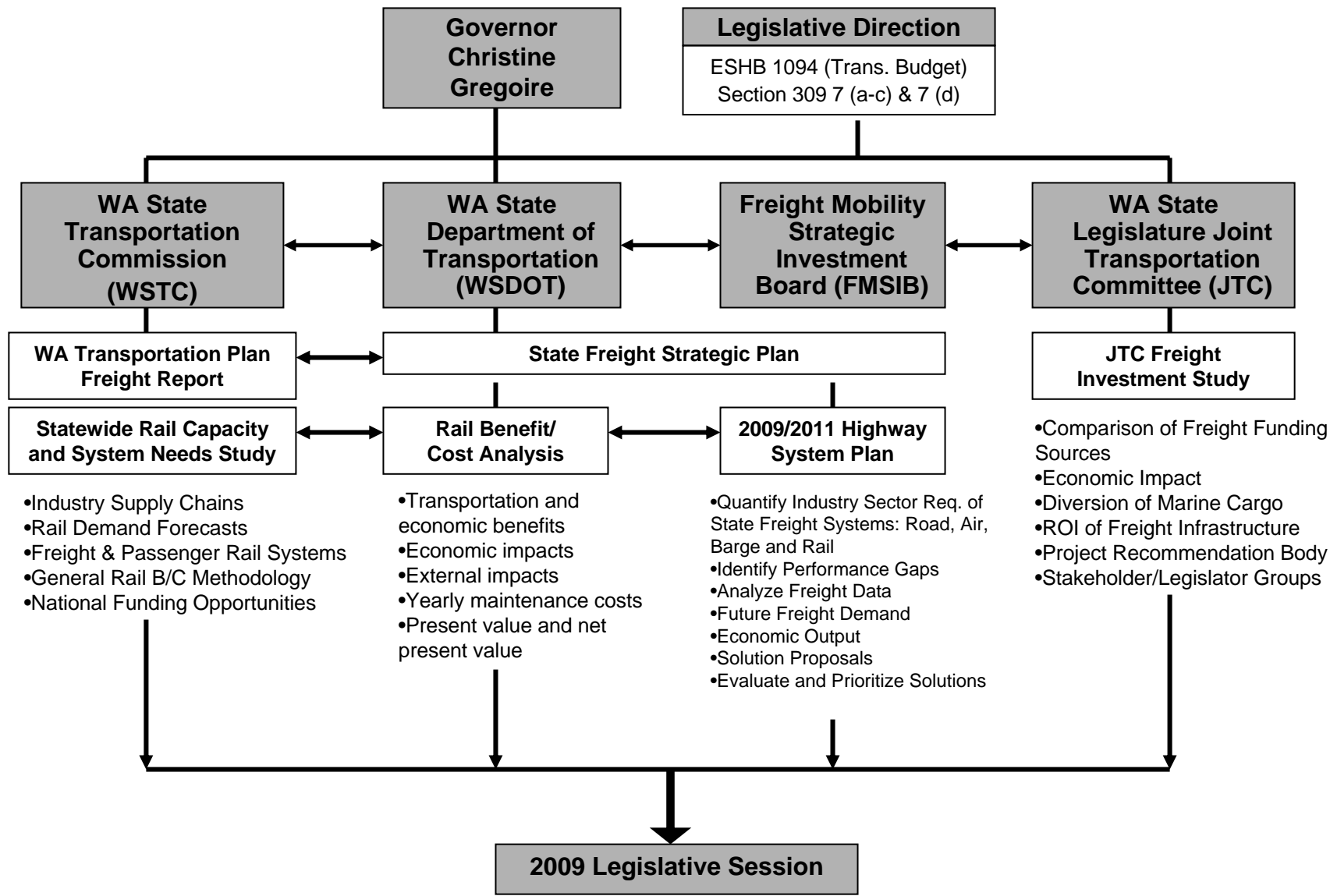
**Washington State
Department of Transportation**

Why Does Washington State Need a Strategic Plan for Freight Systems?

- **There are investment constraints: political, financial and economic.**
- **Washington State's freight systems strategic plan must:**
 - **Balance the cost of investments with resulting economic output;**
 - **Direct limited resources to their most productive use; and**
 - **Set clear priorities linked to the growth of jobs and the state's economy.**

Washington State Freight Strategic Plan

WSDOT Work Program 2007-2009



Washington State Freight Strategic Plan

Highway Strategic Planning Timeline

2007 Transportation Budget Section 309 7(d) states that: “The department (WSDOT) and the freight mobility strategic investment board (FMSIB) shall submit a report to the office of financial management and the transportation committees of the legislature by September 1, 2008, listing proposed freight highway and rail projects. The report must describe the analysis used for selecting such projects...”



JUNE 2008

WSDOT Freight Systems Division identifies current freight system deficits and determines future demand.

WSDOT Regions develop highway solution proposals for consideration.

AUGUST 2008

WSDOT executive team, working with OFM, sends 2009/11 Highway System Plan proposals to the Governor's Office.

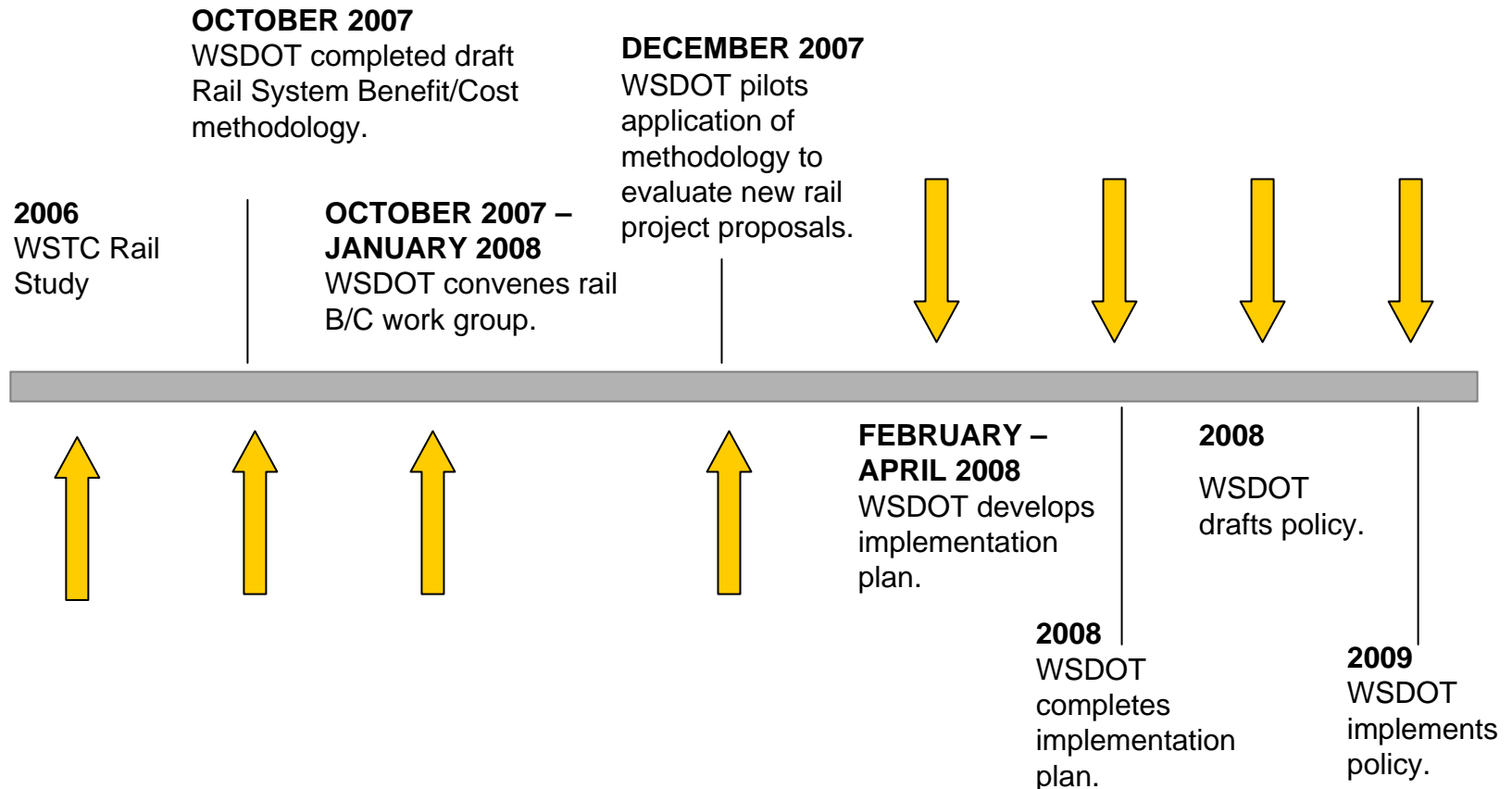
SEPTEMBER 2008

Joint WSDOT and FMSIB report describing analytic method and listing proposed freight highway and rail projects to OFM & Transportation Committees.

Washington State Freight Strategic Plan

Freight Rail Cost/Benefit Analysis Timeline

2007 Transportation Budget Section 309 7(a)-7(c) states that: "The department (WSDOT) shall develop a standardized format for submitting requests for state funding for rail projects that includes an explanation of the analysis undertaken, and conclusions derived from the analysis."



The Goal of Washington State's Freight Systems Strategic Plan Is to Support Broad Industry Sectors

I. Global Gateways

International and National Trade Flows Through Washington



II. Made in Washington

Regional Economies Rely on the Freight System



III. Delivering Goods To You

Washington's Retail and Wholesale Distribution System



Freight Highway Systems Strategic Planning: Seven Steps

Step 1: Quantify freight customer requirements

Step 2: Identify existing performance gaps

Step 3: Get good data

Step 4: Predict future freight demand

Step 5: Estimate additional economic output created by meeting demand

Step 6: Develop solution proposals

Step 7: Prioritize solutions based on their ability to meet the state's goals

Next steps.....

For more information:

For a full copy of the WTP Freight Report:

www.wsdot.wa.gov/freight

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