

# Strategic Freight Transportation Analysis

Presentation  
To

**FMSIB Board of Directors**

***“Data and Information for Improved  
Freight Mobility”***

**Eric Jessup  
Ken Casavant**  
Assistant Professor and Professor  
Washington State University

September 26, 2003

## ***Agenda***

- ✓ **What is SFTA?**
- ✓ **SFTA's Origins**
  - **Eastern Washington Intermodal Transportation Study (EWITS).**
- ✓ **Who's involved with SFTA ?**
  - **Steering and Advisory Committee**
- ✓ **Status of SFTA Studies and Work Tasks**
- ✓ **Summary of SFTA Data and Results**



## **What is SFTA?**

*SFTA is a six year, comprehensive research and implementation analysis that will provide information (data and direction) for local, state and national investments and decisions designed to achieve the goal of seamless transportation.*

**“SFTA’s desired outcome is improved freight mobility for economic vitality”**

*To achieve this, the SFTA research and implementation project, with its collaborative partnerships and integrated dynamic freight data warehouse will aid in strategic infrastructure investment choices, including transportation support for economic development, responding to freight congestion and chokepoint locations, and other emergent issues.*

## **SFTA's Origin?**

### **Eastern Washington Intermodal Transportation Study (EWITS)**

- A six year study (1992-1998) that was funded jointly by the Federal government and the Washington State DOT as part of ISTEA.
- First statewide Origin-Destination Freight Truck Survey, 27 locations, collected over 28,000 questionnaires regarding specific freight movement attributes.
- Generated 39 analytical reports and working papers, over 40 presentations and invited talks and directly contributed to several infrastructure improvements and analyses, including:
  - Utilized for the Puget Sound Regional Council travel demand modeling for the MPO.
  - US 395 North Safety Improvement Project, Deer Park to Kettle Falls. Project has been completed.
  - North-South Corridor Justification - travel savings, freight value, truck percentages. North-South Corridor is now under construction.

## **SFTA's Steering Committee**

<p><b>Jerry Lenzi</b> Chair, SFTA Steering Committee Regional Administrator, Washington State Department of Transportation</p>			
<p><b>Deborah Stephens</b> Senior Policy Advisor, Washington State Office of Trade &amp; Economic Development</p>	<p><b>Barbara Ivanov</b> Director, Freight Policy &amp; Strategy Washington State Dept. of Transportation</p>	<p><b>Karen Schmidt</b> Executive Director Freight Mobility Strategic Investment Board</p>	<p><b>Andrew Johnsen</b> Executive Policy Advisor Governor's Executive Policy Office</p>
<p><b>Jay Weber</b> Executive Director County Road Administration Board</p>	<p><b>Scott Merriman</b> Policy Director, Washington State Association of Counties</p>	<p><b>Jackie White</b> Transportation Coordinator Association of Washington Cities</p>	<p><b>Patrick Jones</b> Executive Director, Washington Ports Association</p>
<p><b>Doug Brodin</b> Transportation Planning Supervisor Research Office Washington State Department of Transportation</p>			

## **SFTA's Advisory Committee**

SFTA's Advisory Committee currently includes over 80 transportation stakeholders representing a statewide, multi-modal spectrum from private industry, and local, city and state government. Below is a small example of these individuals.

<p><b>Peter D. Beaulieu</b> Principal Planner, Puget Sound Regional Council</p>	<p><b>Steve Frasher</b> President, Tidewater Barge Lines</p>	<p><b>Mary Beth Clark</b> Program Manager, Colville Tribes Planning Department</p>	<p><b>Jim Miller</b> Executive Director, Whatcom Council of Governments and IMTC</p>
<p><b>Glenn Miles</b> Transportation Manager, Spokane Regional Transportation Council</p>	<p><b>Larry Pursley</b> Exec. Vice President, Washington Trucking Association</p>	<p><b>Brad Smith</b> General Manager, PCC Railroad</p>	<p><b>Glen Squires</b> Senior Analyst Washington Wheat Commission</p>

## **SFTA Work Tasks**

### **I. Statewide Freight Origin-Destination Study**

- 2002 Data Collected over Four Seasons
- Allows comparisons between 1993 and 2002
- Cooperation of WSP, U.S. and Canadian Customs, Service Clubs, etc.
- Results will be posted on the website!

### **II. Strategic Resource Road Network:**

- Identification of the critical road network by layering the transportation infrastructure characteristics and mobility needs of the following:
  - Grain Freight Flows
  - Fruit and Vegetable Movements
  - Mining Access Routes
  - Grape and Wine Transportation
  - Forest Products Movements

## **SFTA Work Tasks**

*(continued)*

### **III. Short Line Railroad Issues and Analysis**

- Methods of Estimating Impacts from Abandonment Including Environmental Related Pavement Deterioration
- Abandonment Impacts on Shippers
- Short Line Abandonment and Transportation Competition

### **IV. Adaptive Research Management**

- Development of Methodology for Identifying Freight Chokepoints
- Increased Demand for 24-Hour Canadian Border Crossings
- Ability to Address Emergent Issues Identified by Steering Committee

*For a full description of SFTA Deliverables and Reports:*

<http://www.sfta.wsu.edu/>

## **O-D Study Results**

	<b><i>I-5</i></b>	<b><i>I-90</i></b>	<b><i>US 97</i></b>	<b><i>US 395</i></b>
<b>1993</b>	5,715	1,613	248	1,186
<b>2002</b>	10,990	2,743	594	2,647
<b>% Change</b>	93%	70%	140%	123%

## Average Payload Weight

Tons

	<u>I-5</u>	<u>I-90</u>	<u>US-97</u>	<u>US-395</u>
<b>1993</b>	15.3	16.9	17.7	19.2
<b>2002</b>	18.0	19.0	19.3	19.4
<b>% Change</b>	18%	13%	9%	1%

## Freight Value by Highway

	1993		2003	
	<u>Total Daily Payload (tons)</u>	<u>Total Value of Payload</u>	<u>Total Daily Payload (tons)</u>	<u>Total Value of Payload</u>
<b>I-5</b>	33,574	\$82,355,552	65,886	\$148,902,983
<b>I-90</b>	15,525	\$39,427,875	26,929	\$76,944,960
<b>US 395</b>	12,502	\$25,012,305	19,708	\$36,995,578
<b>US 97</b>	2,349	\$3,328,050	7,909	\$12,033,411
<b>SR 26</b>	8,192	\$11,558,919	11,328	\$13,466,514
<b>US 101</b>	2,842	\$3,898,715	9,086	\$16,089,723
<b>US 12</b>	7,824	\$11,332,382	17,660	\$23,685,525

## Freight Value by Truck Configuration

	<u>1993</u>		<u>2003</u>	
	<u>Average Payload (Tons)</u>	<u>Average Payload Value</u>	<u>Average Payload (Tons)</u>	<u>Average Payload Value</u>
<b>Straight Truck</b>	5.6	\$26,334	7.7	\$18,807
<b>Straight Truck &amp; Trailer</b>	17.6	\$36,633	20.6	\$46,064
<b>Tractor and Trailer</b>	17.5	\$36,803	19.6	\$44,633
<b>Tractor and Two Trailers</b>	21.9	\$24,971	26.1	\$27,773
<b>Other</b>	16	\$34,109	17	\$67,817

## Freight Value by Origin Facility Type

Origin Facility	<u>1993</u>		<u>2003</u>	
	<u>Average Payload (Tons)</u>	<u>Average Payload Value</u>	<u>Average Payload (Tons)</u>	<u>Average Payload Value</u>
<b>Truck Terminal</b>	14.9	\$35,838	18.4	\$43,710
<b>Rail Terminal</b>	17.7	\$43,640	20.1	\$65,806
<b>Marine Terminal</b>	18.5	\$34,690	19.9	\$65,254
<b>Air Terminal</b>	6.1	\$43,392	11.1	\$95,546
<b>Factory</b>	19.2	\$33,337	21.3	\$41,812
<b>Warehouse/Dist.</b>	15.2	\$31,997	18.1	\$40,036
<b>Farm</b>	19.8	\$13,113	24.7	\$18,653
<b>Point of Sale</b>	9.7	\$35,250	14.0	\$46,826
<b>Other</b>	14.9	\$35,372	19.1	\$44,631

## Freight Value by Destination Facility Type

Destination Facility	<u>1993</u>		<u>2003</u>	
	<u>Average Payload (Tons)</u>	<u>Average Payload Value</u>	<u>Average Payload (Tons)</u>	<u>Average Payload Value</u>
Truck Terminal	14.3	\$33,734	18.1	\$39,176
Rail Terminal	18.1	\$33,012	22.4	\$33,793
Marine Terminal	18.6	\$28,184	23.1	\$34,281
Air Terminal	9.2	\$52,619	14.3	\$117,260
Factory	20.7	\$37,121	24.4	\$34,923
Warehouse/Dist.	16.5	\$31,406	19.2	\$40,343
Farm	18.1	\$24,902	22.2	\$20,353
Point of Sale	14.2	\$33,833	16.1	\$45,320
Other	15.1	\$53,337	15.8	\$59,765

## Top Ten Origin Cities by Freight Value, 1993

Rank	Origin City	Origin State/ Province	Average Daily Tons	Total Daily Value (\$)
1	Seattle	WA	24,648	\$53,618,716
2	Portland	OR	20,644	\$39,870,716
3	Spokane	WA	11,844	\$28,353,969
4	Tacoma	WA	14,291	\$24,557,998
5	Kent	WA	7,657	\$21,572,426
6	Everett	WA	2,715	\$11,735,447
7	Auburn	WA	3,084	\$10,250,118
8	Yakima	WA	9,024	\$9,738,654
9	Wenatchee	WA	6,774	\$7,722,917
10	Aberdeen	WA	6,038	\$5,565,435



## Top Ten Origin Cities by Freight Value, 2003

Rank	Origin City	Origin State/ Province	Average Daily Tons	Total Daily Value (\$)
1	Tacoma	Washington	47,788	\$133,049,549
2	Seattle	Washington	52,064	\$121,614,201
3	Portland	Oregon	38,134	\$109,711,227
4	Kent	Washington	20,696	\$74,444,313
5	Everett	Washington	19,509	\$63,124,563
6	Spokane	Washington	18,910	\$36,087,375
7	Auburn	Washington	9,978	\$29,763,701
8	Vancouver	British Columbia	9,373	\$22,064,860
9	Vancouver	Washington	9,292	\$18,977,422
10	Sumner	Washington	5,903	\$18,458,968

## Top Ten Destination Cities by Freight Value, 1993

Rank	Destination City	Destination State/ Province	Average Daily Tons	Total Daily Value (\$)
1	Seattle	WA	26,511	\$55,521,588
2	Spokane	WA	21,771	\$38,466,545
3	Portland	OR	16,579	\$33,780,678
4	Tacoma	WA	16,031	\$24,486,538
5	Kent	WA	8,811	\$22,527,088
6	Vancouver	BC	13,601	\$20,921,288
7	Everett	WA	3,973	\$19,236,511
8	Yakima	WA	7,711	\$10,264,547
9	Auburn	WA	3,194	\$9,426,662
10	Pasco	WA	5,629	\$7,881,306

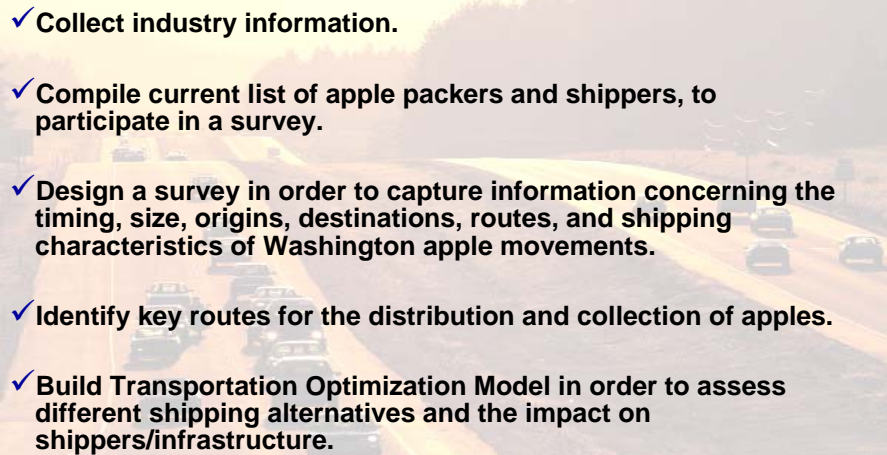
## Top Ten Destination Cities by Freight Value, 2003

Rank	Destination City	Destination State/ Province	Average Daily Tons	Total Daily Value (\$)
1	Seattle	Washington	64,821	\$186,570,549
2	Tacoma	Washington	62,617	\$112,542,430
3	Kent	Washington	28,258	\$85,761,864
4	Portland	Oregon	29,035	\$65,645,582
5	Spokane	Washington	26,402	\$63,405,549
6	Auburn	Washington	9,821	\$48,744,264
7	Renton	Washington	6,585	\$47,006,889
8	Vancouver	British Columbia	18,202	\$41,030,788
9	Fife	Washington	6,620	\$39,099,455
10	Everett	Washington	9,401	\$35,815,151

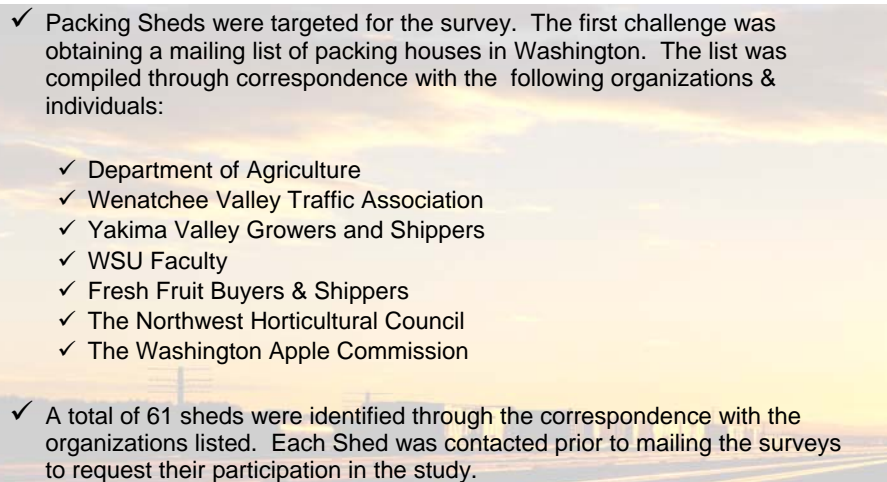
## Summary of Findings 1993 to 2002

- **Significant growth in freight truck traffic**
  - *Roughly 100% increase*
- **Tractor trailer is configuration representing growth.....not tractor and two trailers**
- **Average payload weights are heavier**
  - *10 to 15%*
- **Value of payloads has increased substantially**
  - *Between 47 and 300%*

## **Fresh Fruit and Vegetable Study**

- 
- ✓ **Collect industry information.**
  - ✓ **Compile current list of apple packers and shippers, to participate in a survey.**
  - ✓ **Design a survey in order to capture information concerning the timing, size, origins, destinations, routes, and shipping characteristics of Washington apple movements.**
  - ✓ **Identify key routes for the distribution and collection of apples.**
  - ✓ **Build Transportation Optimization Model in order to assess different shipping alternatives and the impact on shippers/infrastructure.**

## **Collecting Information**

- 
- ✓ **Packing Sheds were targeted for the survey. The first challenge was obtaining a mailing list of packing houses in Washington. The list was compiled through correspondence with the following organizations & individuals:**
    - ✓ Department of Agriculture
    - ✓ Wenatchee Valley Traffic Association
    - ✓ Yakima Valley Growers and Shippers
    - ✓ WSU Faculty
    - ✓ Fresh Fruit Buyers & Shippers
    - ✓ The Northwest Horticultural Council
    - ✓ The Washington Apple Commission
  - ✓ **A total of 61 sheds were identified through the correspondence with the organizations listed. Each Shed was contacted prior to mailing the surveys to request their participation in the study.**

# Collecting Information

## Sample Page 1 of 6

**Transportation of Apples into this Facility:**

- 1) For a typical year, please estimate the annual volume of apples shipped into this facility. \_\_\_\_\_ Tons per year.
- 2) Please estimate the typical percentage of apples shipped into this facility for the following months in a typical year.
 

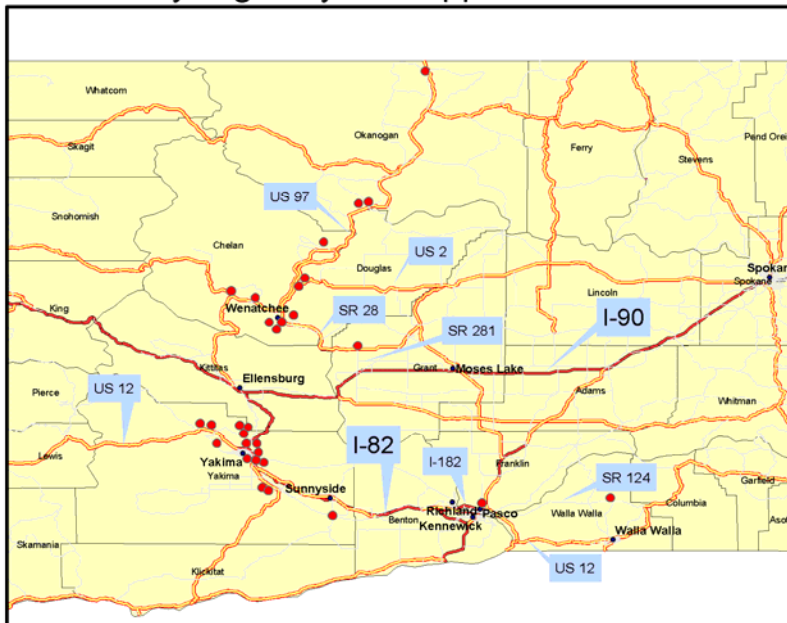
a) January - March	_____	%
b) April - June	_____	%
c) July - September	_____	%
d) October - December	_____	%
<b>Total</b>	<b>100</b>	<b>%</b>
- 3) Approximately what percentage of apples utilized by this facility is shipped into the location by the following transportation modes?  
 Truck \_\_\_\_\_ % Rail \_\_\_\_\_ % Other \_\_\_\_\_ %
- 4) Approximately what percentage of apples utilized at this facility is received from the following areas in a typical year?
 

a) Less than 5 mile radius	_____	%
b) 6 to 10 mile radius	_____	%
c) 11 to 25 mile radius	_____	%
d) 26 to 50 mile radius	_____	%
e) Greater than 50 miles	_____	%
<b>Total</b>	<b>100</b>	<b>%</b>
- 5) What local and Washington state roads are utilized most frequently to transport apples into this facility (For example: I-82, US 395 and Wheeler Road)?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

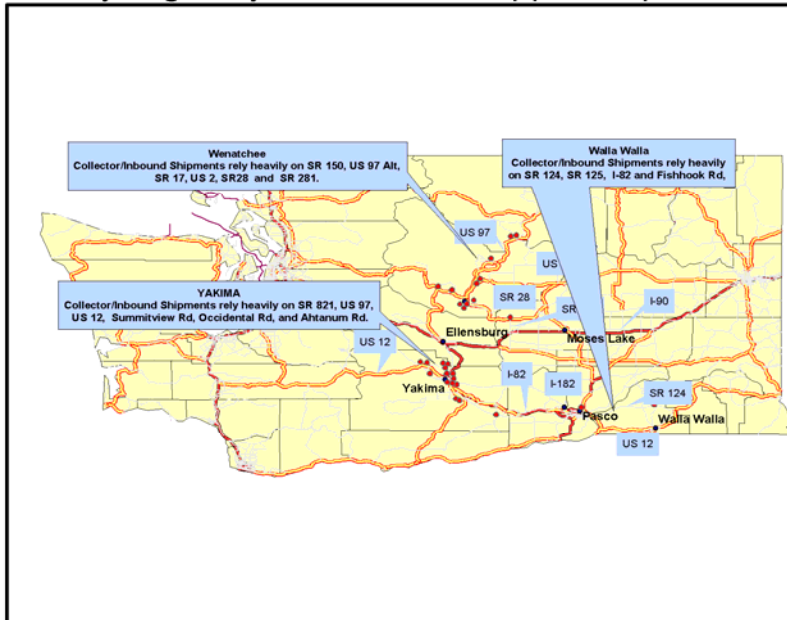
The survey asked information on the following items:

- ✓Timing of shipments into and from the facility.
- ✓Mode of transportation used for shipments to and from the facility.
- ✓Distance from Collection site to facility.
- ✓Roads used for Collection and Distribution.
- ✓Quantities shipped to major marketing areas.
- ✓The survey also requested qualitative data on rail service.

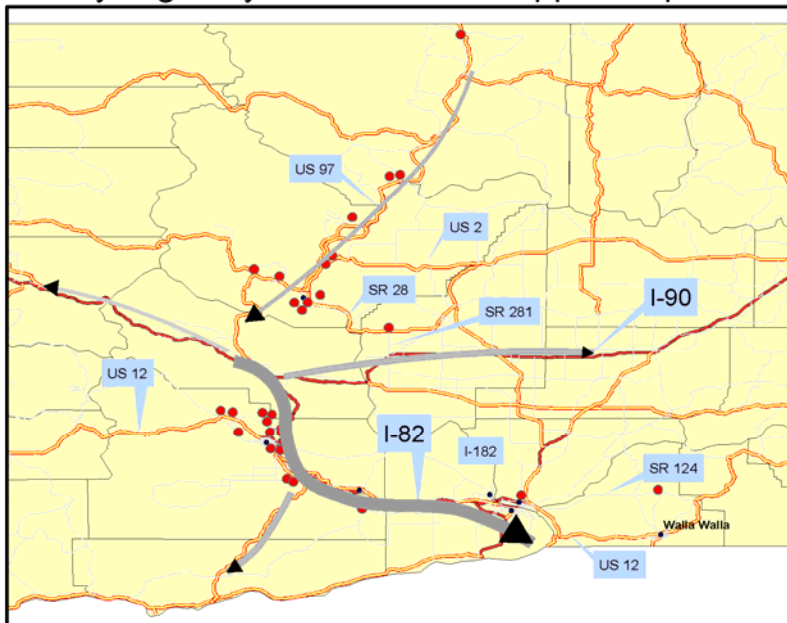
## Key Highways for Apple Movements



## Key Highways for Inbound Apple Shipments



## Key Highways for Outbound Apple Shipments



## Apple Survey Findings

- **Steady decline in rail usage for Apple shipments over the last 8 years.**
  - **Increased demand among shippers for reliability, timeliness, and accessibility.**
  
- **Extensive growth in Walla Walla County**
  - **Production has nearly quadrupled in the last 10 years.**
  - **Increased stress on the SR124, and I82 corridors.**
  
- **Key corridors for apples are US97, and I82.**
  - **Significant volume is transported over I90 for export, and distribution in Western Washington.**

## Data Request and Inquiries

### Examples

<u>Agency</u>	<u>Purpose</u>
1. <b>U.S. DOT</b>	<ul style="list-style-type: none"> <li>• Used in "The West Coast Corridor System" Phase I report, funded as part of the Borders and Corridors budget of USDOT. The analysis and data were used to confirm and in some cases to establish levels of freight activity within the corridor system.</li> </ul>
2. <b>Benton-Franklin Council of Governments</b>	<ul style="list-style-type: none"> <li>• Requested for use in RTPO's and MPO's planning.</li> </ul>
3. <b>Washington Wheat Commission</b>	<ul style="list-style-type: none"> <li>• Utilized to evaluate industry changes and transportation shifts over the last 10 years.</li> </ul>
4. <b>Transportation Ministry, Seoul, Korea</b>	<ul style="list-style-type: none"> <li>• Methodological information was requested to help in the development of freight collection techniques for Seoul, Korea.</li> </ul>
5. <b>Oregon Department of Transportation</b>	<ul style="list-style-type: none"> <li>• SFTA methodology incorporated into the development of an urban and metropolitan freight data collection technique.</li> </ul>
6. <b>City of Reardan, Washington</b>	<ul style="list-style-type: none"> <li>• Utilized to compare and contrast changes in freight flows, by vehicle type and commodity, between 1994 and 2002.</li> </ul>

# Data Request and Inquiries

## Examples

<u>Agency</u>	<u>Purpose</u>
7. <b>Freight Strategy and Planning: WSDOT</b>	<ul style="list-style-type: none"><li>• Provide data for use in reports, presentations and freight policy plans.</li><li>• Address private citizen concerns regarding freight traffic and safety issues.</li></ul>
8. <b>Planning and Data Offices: WSDOT</b>	<ul style="list-style-type: none"><li>• WSDOT Planning and Data offices are developing a planning data depository where multiple types of data will be stored.</li></ul>
9. <b>Cambridge Systematics</b>	<ul style="list-style-type: none"><li>• Development of survey design and sample frame for Port of Portland for freight data collection.</li></ul>
10. <b>WSDOT / WSP</b>	<ul style="list-style-type: none"><li>• The data are being utilized to develop and design a process for locating future weigh-stations and weigh-in-motion locations based upon freight vehicle frequencies, truck type, commodity, etc.</li></ul>
11. <b>Puget Sound Regional Council</b>	<ul style="list-style-type: none"><li>• Utilized to validate truck travel demand models used by the MPO.</li></ul>
12. <b>City of Lind, Washington</b>	<ul style="list-style-type: none"><li>• Used by consultants hired by the City of Lind, WA to profile changing freight truck travel through town.</li></ul>
13. <b>Texas Transportation Institute</b>	<ul style="list-style-type: none"><li>• Used in designing statewide origin and destination freight study for Texas.</li></ul>

