DRAFT

Freight Performance Measures

The purpose of the Industrial Areas Freight Access Project is to conduct a focused and pragmatic technical evaluation to identify and assess current and future freight bottlenecks and problem locations, and develop a set of cost-effective operational and/or capital improvements. Freight performance measures are one of the key technical tools in understanding freight network conditions. While the context of rail freight operations will be noted, the project metrics will look primarily at truck freight operations on arterial streets. Performance measures can be used in three ways:

(1) evaluate existing conditions, including bottlenecks
(2) monitor conditions over time, including before/after studies
(3) forecast impacts relative to possible improvements

Freight performance measures can be grouped into these categories: system demand, system efficiency, system reliability, mobility barriers, and safety/physical conditions. The following describes how these measures might be used in the context of this project.

System Demand

System demand refers to volume of vehicles or goods that are being moved through the freight network. This provides both basic tracking of movement of goods, but also a way to normalize results of other performance metrics.

Example Metrics:
- Total Traffic Volumes
- Freight Traffic Volumes
- Freight Tonnage

System Efficiency

System efficiency refers to the amount of average delay encountered by freight traffic, or average network congestion. This tracks congestion at a corridor level on an average day.

Example Metrics:
- Percent of Freight Network Delayed
- Percent of Freight Network Congested
- Maximum Throughput Travel Time Index
- Total Delay or Delay per Truck

System Reliability

System reliability refers to measuring how travel times may vary day-to-day. Typically, freight operators plan according to the “bad” days and not “average” days. This metric addresses if the “bad” days are getting better or not.

Example Metrics:
- 50th-Percentile Travel Time along Freight Corridor
- 80th-Percentile Travel Time
- 95th-Percentile Travel Time
- Buffer Index

Mobility Barriers

Mobility barriers refer to bottleneck locations and other specific locations of barriers to freight mobility. This metric is a pragmatic way of tracking if highly visible locations are being addressed.

Example Metrics:
- Bottlenecks per Corridor
- At-Grade Crossings per Corridor
- Removal of Freight Barriers
- Route Accessibility

Safety and Condition

Safety and condition refers to the actual physical and safety conditions of existing freight facilities. These metrics help determine when freight facilities need to be replaced or upgraded and rate of deterioration, along with where hazards exist.

Example Metrics:
- Bridge Structure Conditions
- Pavement Conditions
- Weight Load Restrictions
- Freight Collision Rates

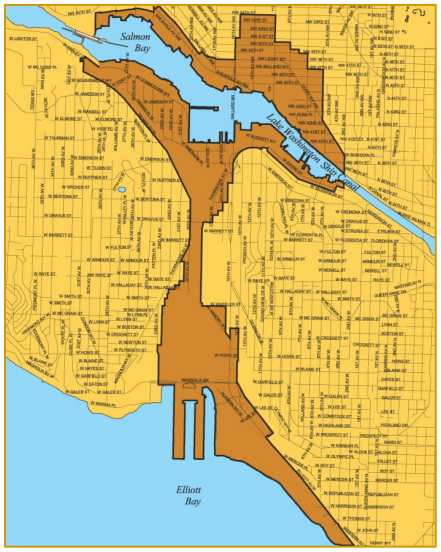
Industrial Areas Freight Access Project (FAP)

Freight Advisory Board
January 21, 2014

Key Outcomes from Last Meeting

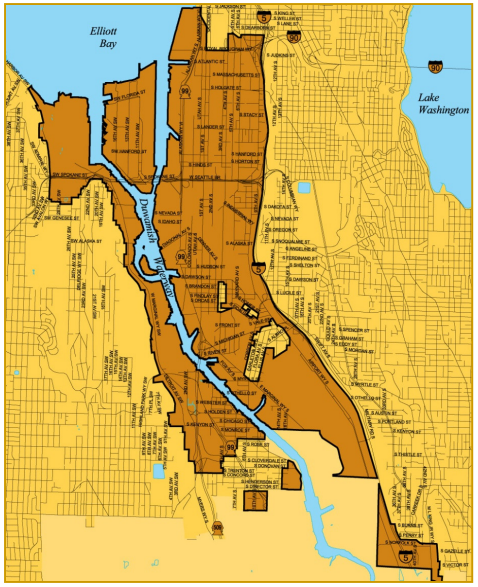
- Identified Challenges/Solutions
  - Street Paving/Construction
  - Traffic Signals
  - Obstructions/Clearances
  - Traffic Operations/Congestion
  - Other Issues
- Stakeholder Outreach
  - Businesses in the MICs
  - Shippers/Carriers
  - Others

PERFORMANCE MEASURES



Purpose in Context of the FAP

- Evaluate System Conditions
- Prioritize Projects
- Communicate Results



Items we have Considered

- WSDOT Freight Plan
- MAP-21 Performance Guidance
- Best Practices
- Data Availability / Resources

PERFORMANCE MEASURES

Key Categories

1. System Demand
2. System Efficiency
3. System Reliability
4. Mobility Barriers
5. Safety and Condition

**Performance is based upon a combination of several measures*

1. SYSTEM DEMAND

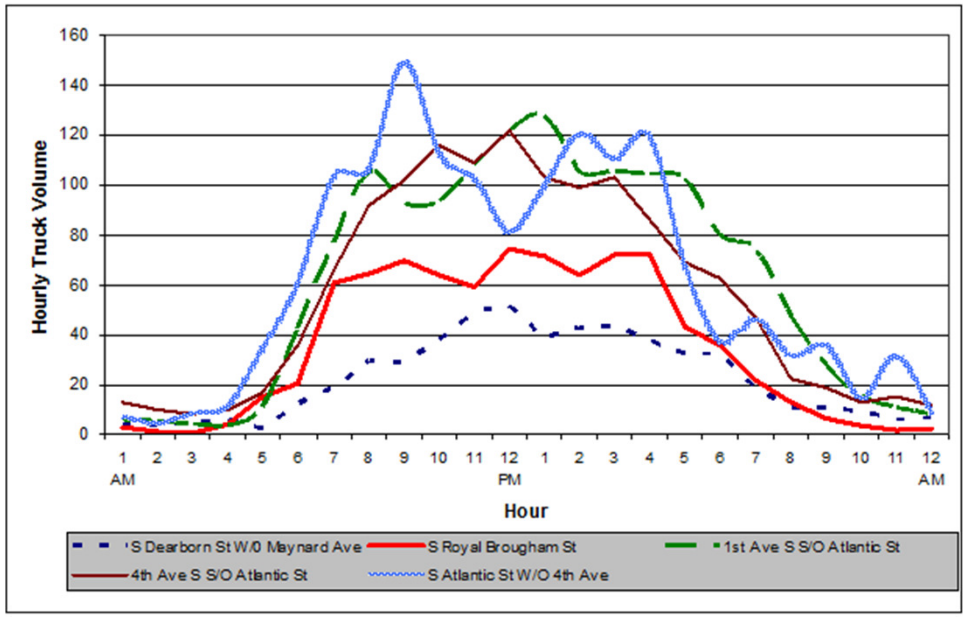
What it Measures

Scale of freight activity along a corridor

Possible Metrics

- Total Traffic Volumes
- Truck Volumes
- Tonnage

  per Corridor



2. SYSTEM EFFICIENCY

What it Measures

Travel times / delays along a network for a defined period

State Route/ Interstate	Route Description	Distance (miles)	Average Travel Time	Current Travel Time	Via HOV (min.)
405	Alderwood to Southcenter	29.40	29	29	N/A
5	Alderwood to Southcenter	27.97	29	28	N/A
5	Arlington to Everett	13.32	13	13	N/A
167	Auburn to Renton	9.76	10	10	10
405	Bellevue to Bothell	9.61	10	10	10
405 5	Bellevue to Everett	26.04	26	26	27

Possible Metrics

- Total Delay by Corridor during Peak Periods*
- Annual Hours of Truck Delay by Corridor

* Prioritized for freight activity

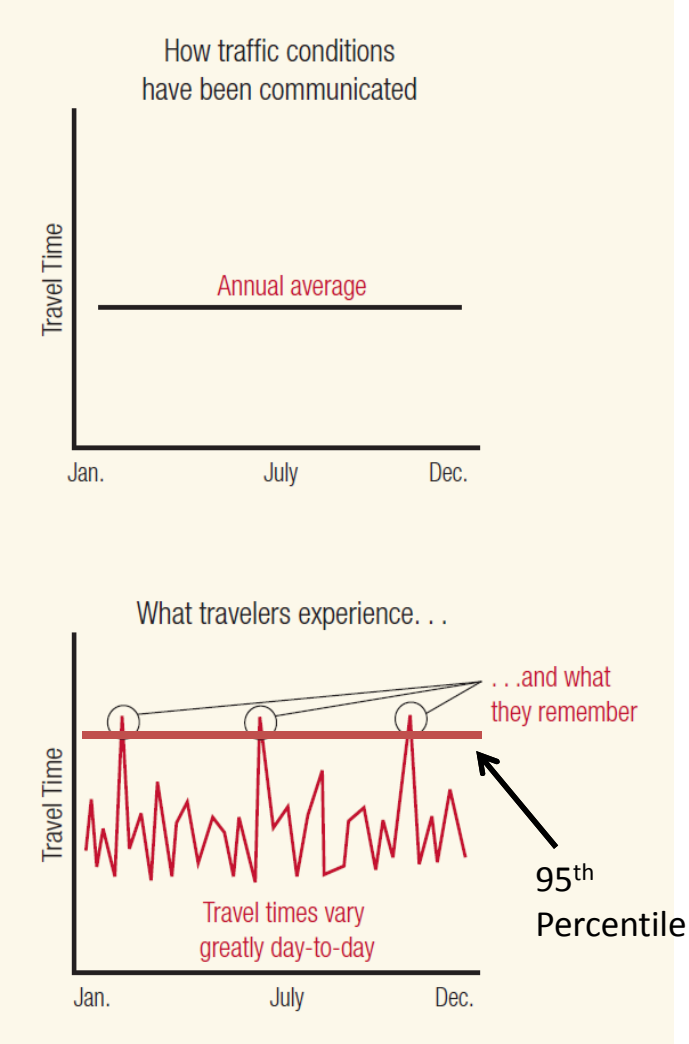
3. SYSTEM RELIABILITY

What it Measures

Variability of travel time or delay

Possible Metrics

- 80th Percentile Travel Time by Corridor
- Buffer Index (95th Percentile) per MIC



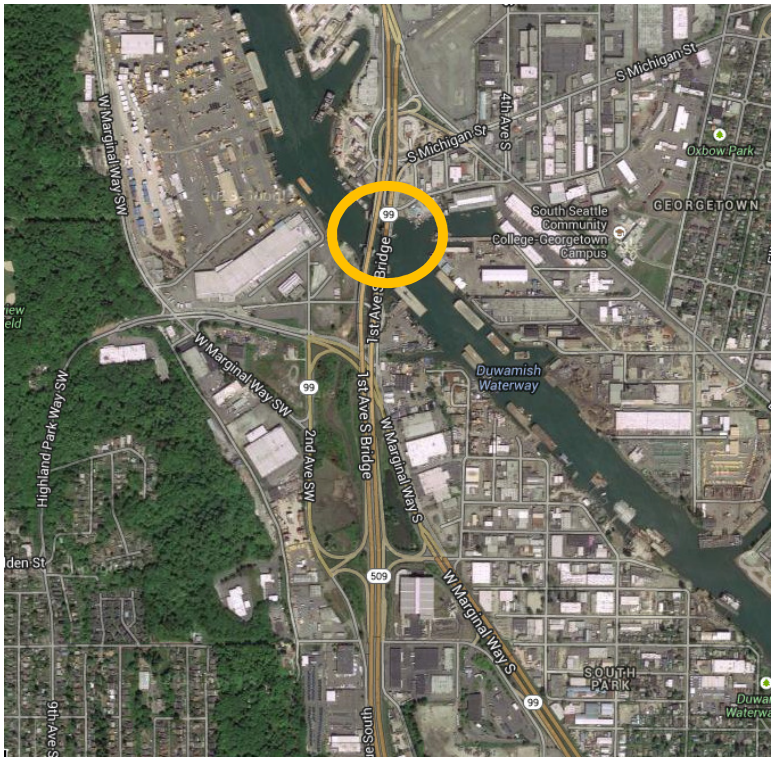
4. MOBILITY BARRIERS

What it Measures

Bottleneck locations or route constraints

Possible Metrics

- Bottlenecks per Corridor
- At-grade Crossings



5. SAFETY AND CONDITION

What it Measures

Collisions and roadway conditions

Possible Metrics

- Freight Collision Rates
- Pavement Conditions
- Potential Modal Conflicts

Questions to Consider

- Do these measures capture how we should be evaluating the health of the transportation system for freight?
- Are these measures relevant to routing decisions?
- What are we missing?