

# Alaskan Way Viaduct Replacement Program



**Advisory Committee on Tolling and Traffic Management  
Optional Briefing  
March 14, 2012**

# Overview of Traffic Modeling

- PSRC regional model overview
- Dynamic Traffic Assignment model
- Questions and answers



# Types of Traffic Models

- Operations models (user level):
  - To understand what individual users will do.
- Dynamic Traffic Assignment model:
  - Finer grain - to address operations on city/local streets.
- Regional traffic demand model:
  - PSRC – higher level to estimate overall traffic patterns.



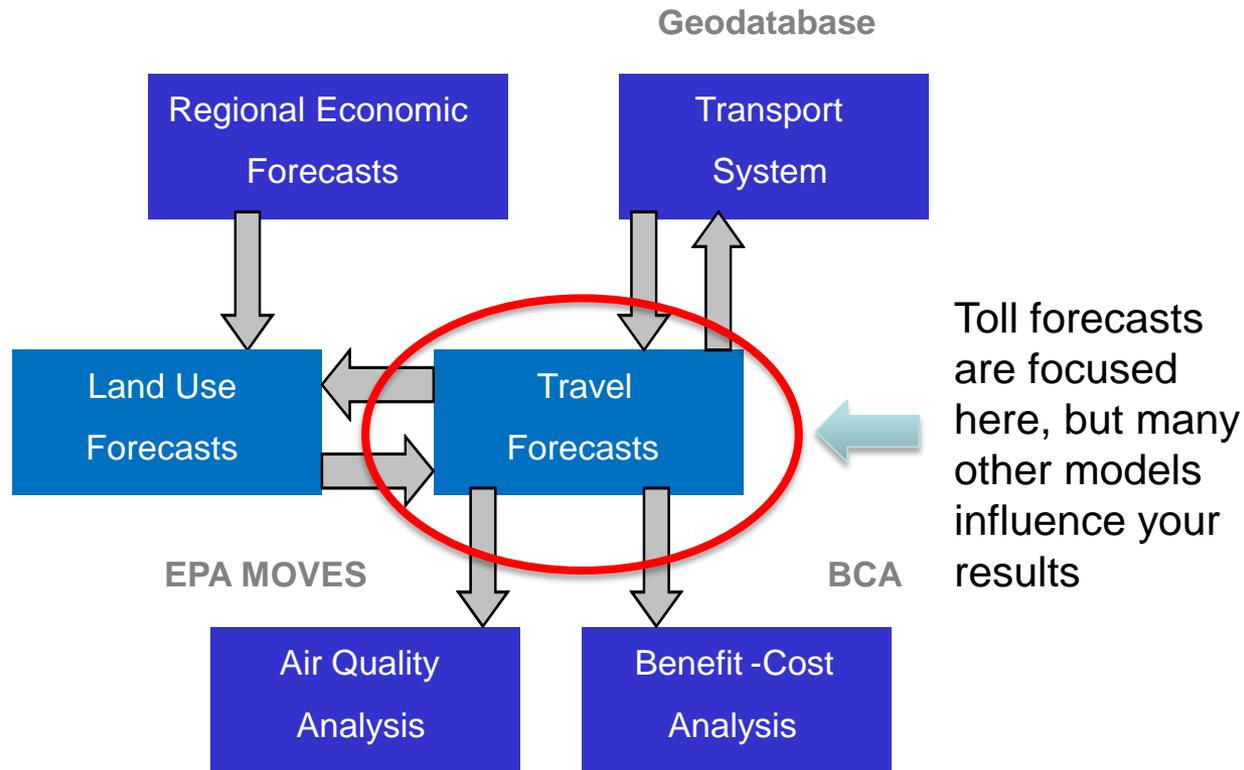
# PSRC Regional Travel Demand Model

- Four step model process
- Key inputs
- Key outputs
- Use of model results

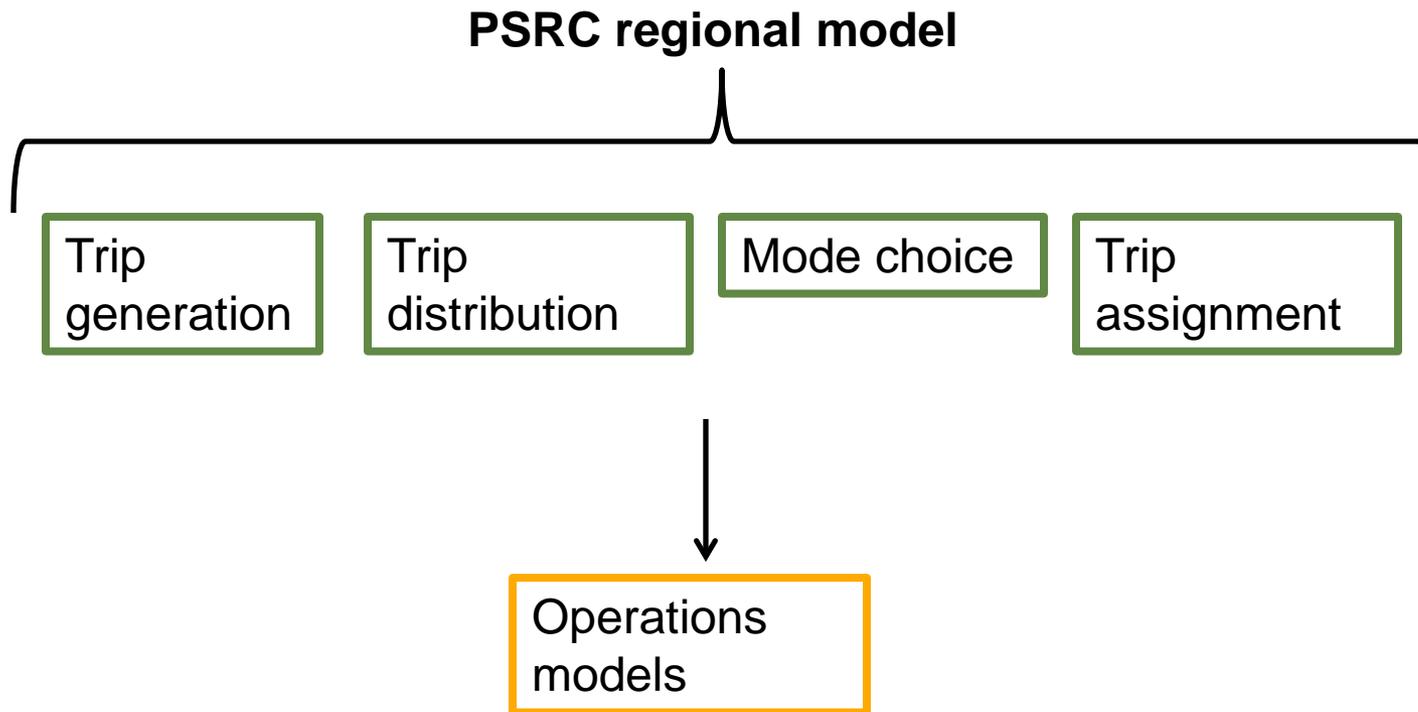


# PSRC Model Systems

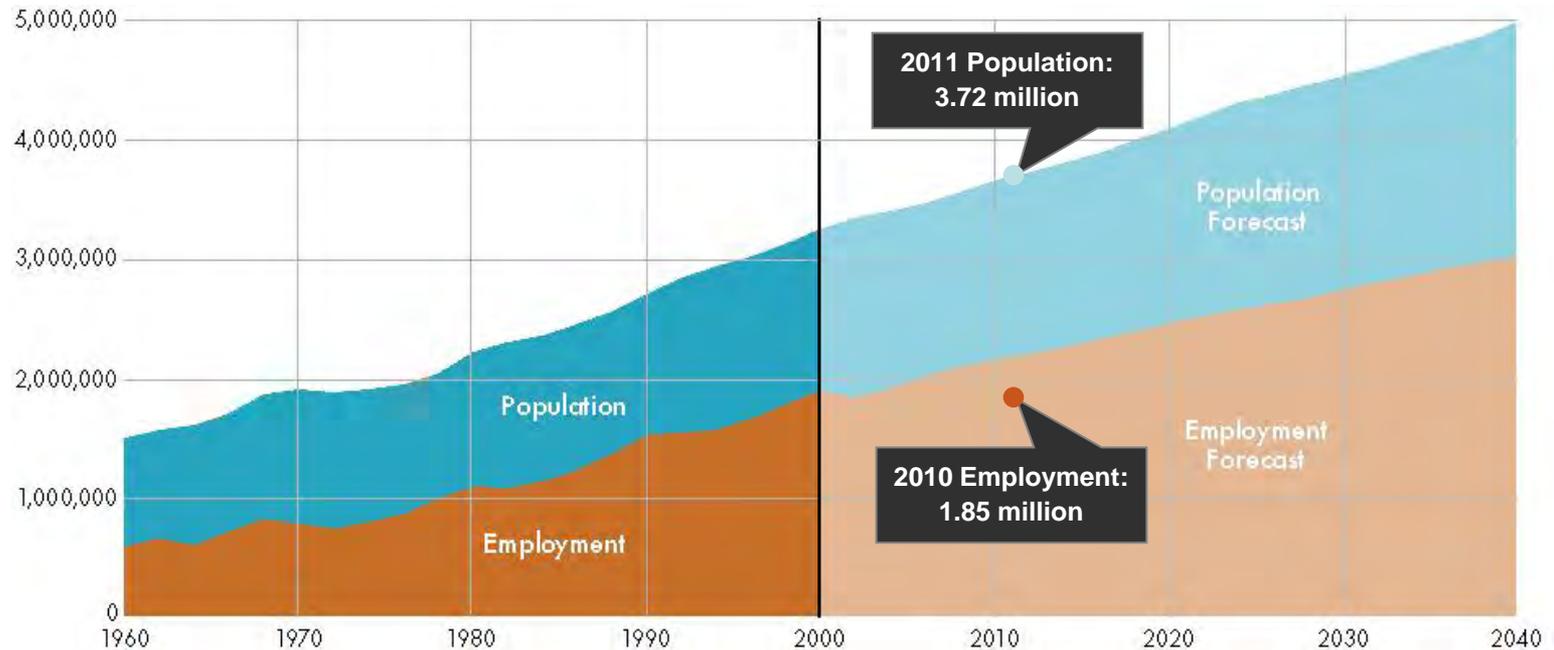
The travel demand model is one piece of the modeling system developed by PSRC.



# Traffic Modeling Process



# Key Inputs: Population and Employment



## Key Inputs: Network

Reflects region's Metropolitan Transportation Network:

- Generally principal arterials and above.
- All transit, park and ride, and ferry routes are included.
- Regional bike trails.

Intended to inform **regional decision making** and analysis for **packages of improvements**.

- Informs travel demand – not traffic operations.
- Lane specific data not available.
- Pedestrian conflicts are not considered.

## Key Inputs: Costs

- Parking costs are included for off-street pay lots only.
  - Includes new areas for paid parking in the future.
  - Doesn't include on-street parking or free off-street lots.
- Transit fares by operator and peak/off peak rates.
- Toll and ferry fares by time of day.
- Auto operating costs (includes fuel and maintenance).
- All costs are assumed to rise at the same rate of inflation.

## Value of Travel Time

- Models consider everything in terms of time – so costs are converted to time.
- Models are built on the assumption that people will always take the “fastest” trip.
- Value of time varies by trip purpose:
  - Work trips have higher values of time than non-work trips.
  - Freight trips are valued higher than commuter trips.
- Value of time varies for different income groups.

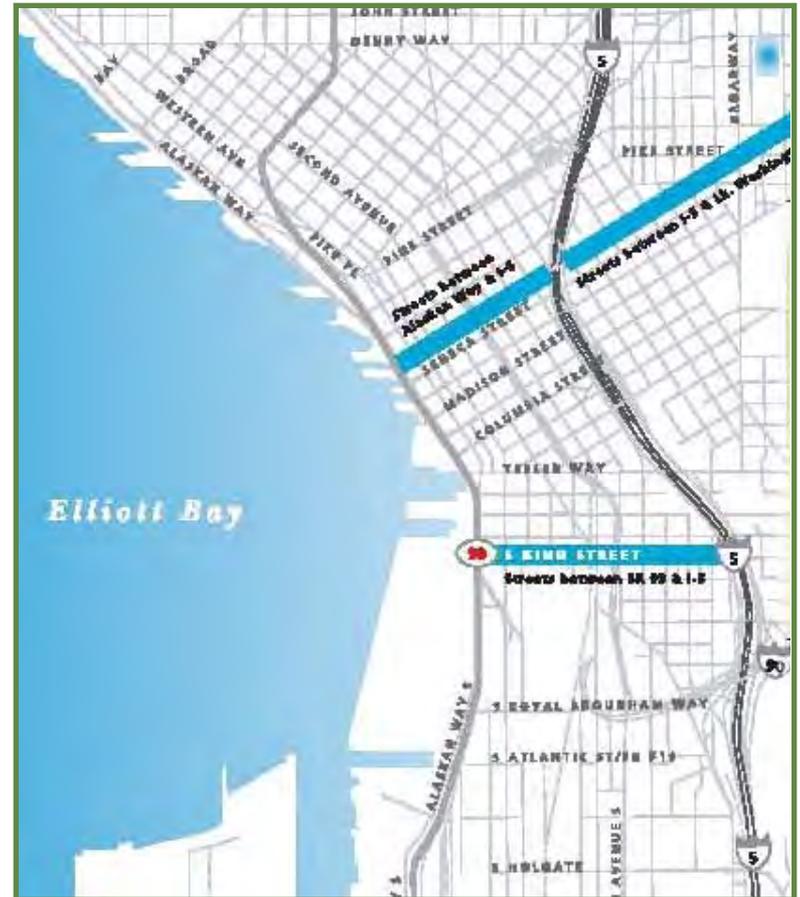


## Key Outputs: Traffic Measures

- Annual average weekday
  - Volumes
  - Speeds
  - Travel times
  - Vehicle Miles Traveled
  - Vehicle Hours of Delay

Data is available for every link in the model, but is most useful to consider at larger levels of geography such as

- Screenlines
- Subareas
- Region



# Uses for Regional Travel Demand Model Results

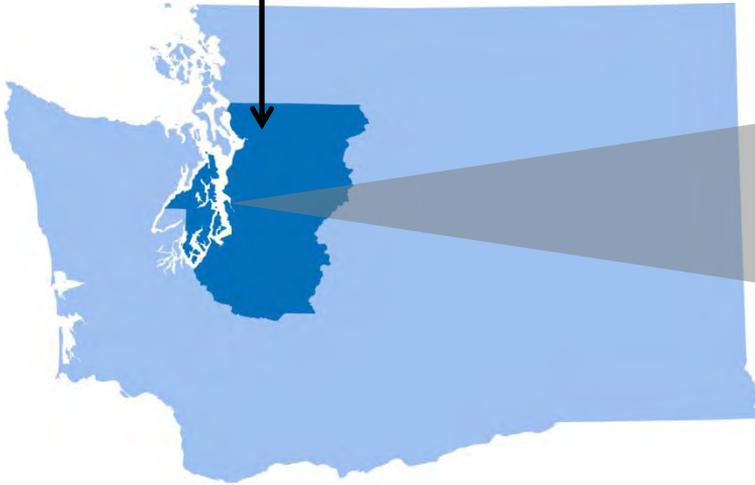
What are regional travel demand models good at doing?

- Understanding the impacts of changes on travel demand for facilities, jurisdictions, sub-areas and the region.
  - How would travel demand to downtown Seattle change if a cordon toll was implemented?
  - How does the use of transit change if we institute changes in parking prices in the region?
  - If we toll a bridge across the lake, how many people will consider using it and how many might shift to another route or mode?

Travel demand models are best at highlighting **differences** between scenarios, not necessarily giving you exact results.

# Geographic Focus of Models

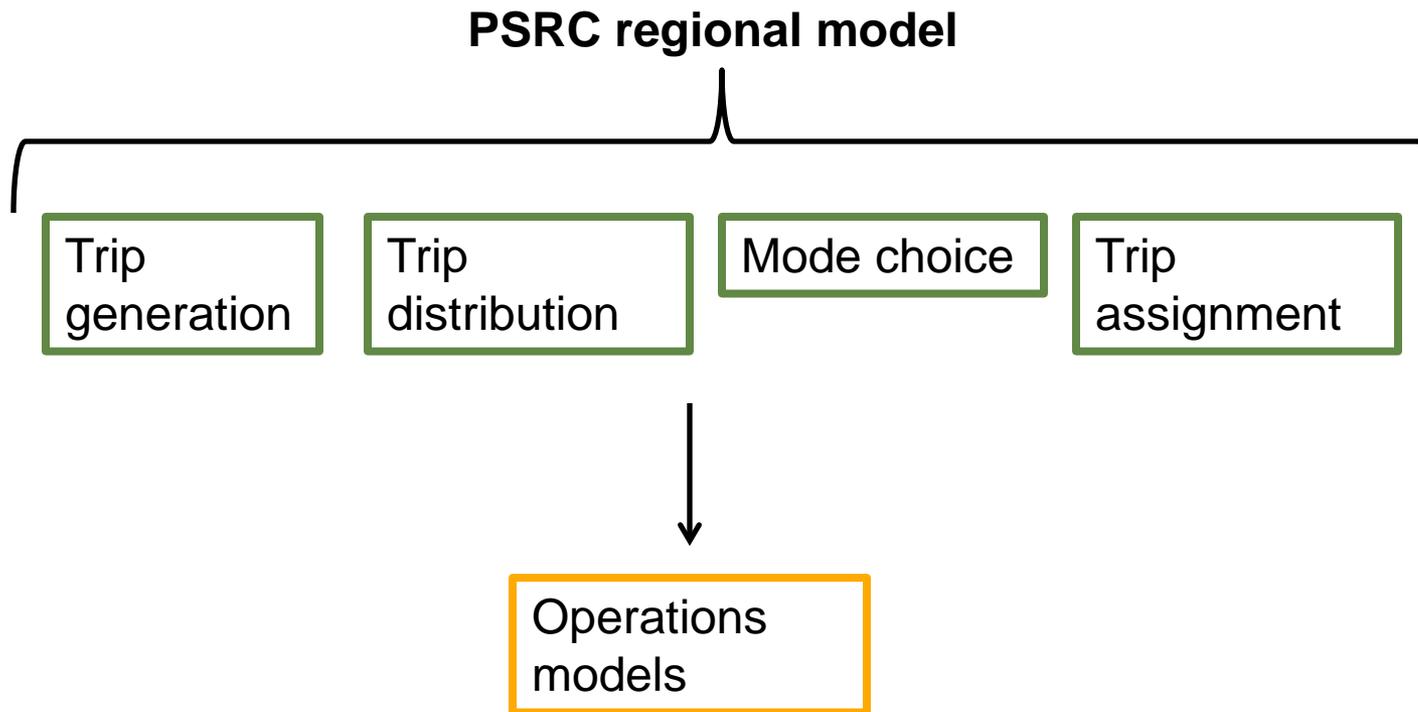
PSRC regional model area



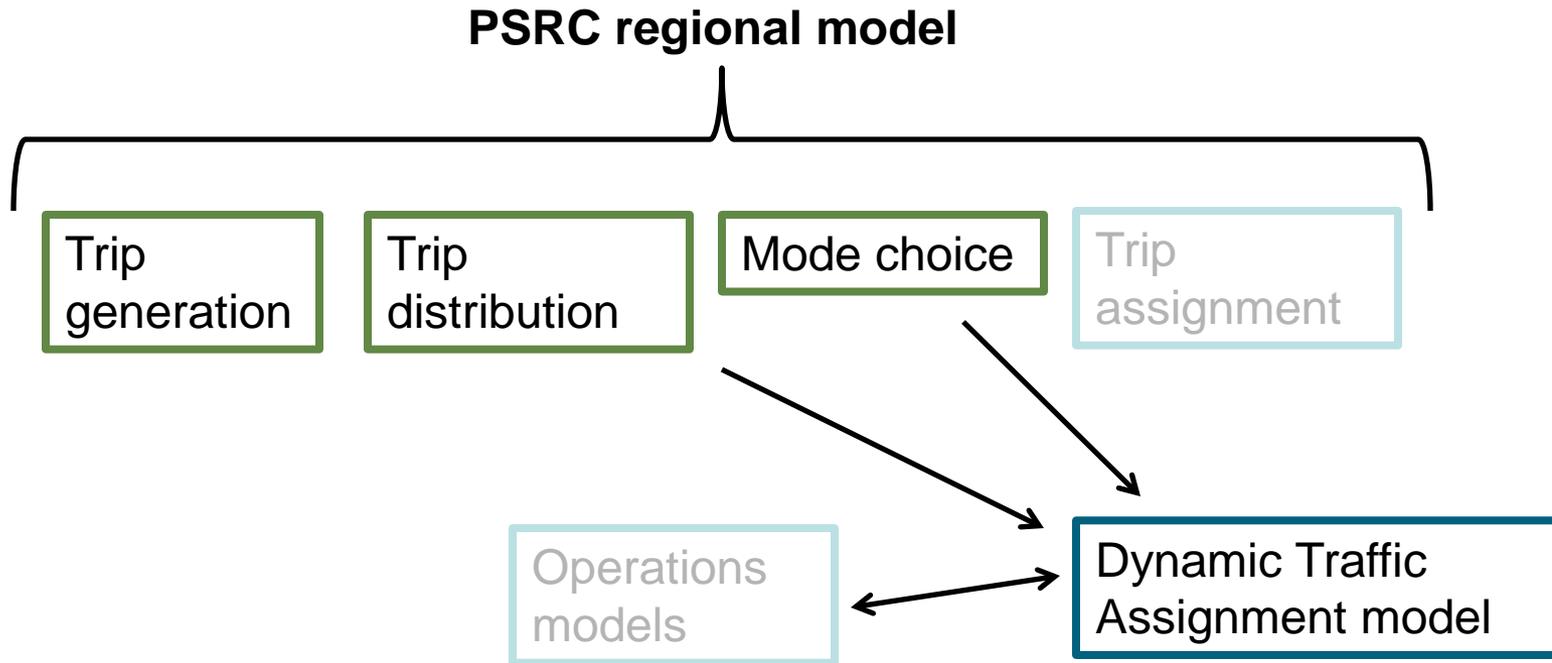
Dynamic Traffic Assignment model area



# Traffic Modeling Process and Models Used



# Traffic Modeling Process and Models Used



# Dynamic Traffic Assignment Model

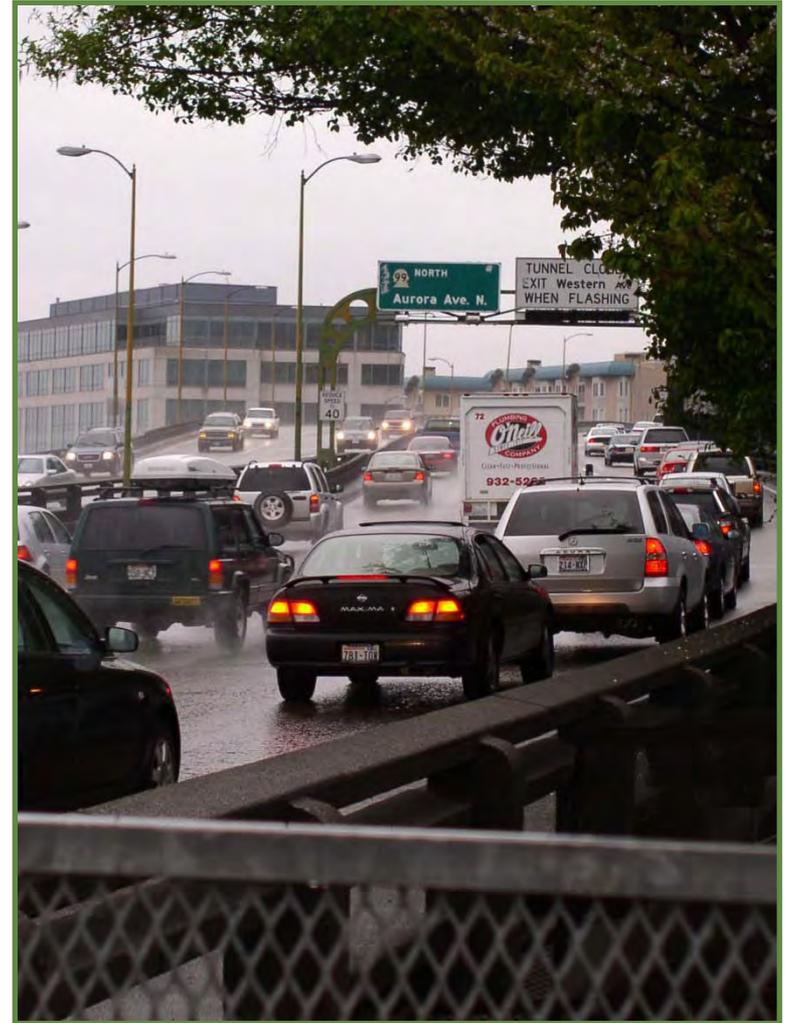
- Pulls some information from regional travel demand model.
  - Trip origins and destinations
    - Mode trips taken by car, bus, freight trucks and transit.
- Next step to understand traffic patterns at local level.

SR 99 Area Detail



# Dynamic Traffic Assignment Model

- Considers local street operations such as lane configuration and traffic signals.
- Provides better estimate of travel times due to increased detail of streets and their speed characteristics for an area such as the downtown street network, especially under congested conditions.
- Assigns traffic to the path of least resistance (i.e. least cost), providing a better estimate of toll diversion.



# Dynamic Traffic Assignment Model Outputs

## Measures:

- Volumes
- Speeds
- Travel times for representative routes
- Bottlenecks: Where traffic slows down

## Modes:

- Cars
- Freight
- Transit

# Uses for Dynamic Traffic Assignment Model Results

What are DTA models good at doing?

- Understanding the impacts of changes to vehicle travel on a street network if capacity is changed or a toll is charged
  - How are volume and travel speed likely to change on streets, SR 99 and I-5 in downtown Seattle and adjacent neighborhoods?
  - How does transit performance change on key streets and pathways approaching and in downtown?
  - How might these conditions be different throughout the day?

Traffic assignment models are best at highlighting **differences** between scenarios, not providing exact results.

# Questions and Answers



**Website:**

[www.alaskanwayviaduct.org](http://www.alaskanwayviaduct.org)

**Email:**

[viaduct@wsdot.wa.gov](mailto:viaduct@wsdot.wa.gov)

**Hotline:**

1-888-AWV-LINE