Weather Responsive Active Traffic and Demand Management in Washington State

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Weather Responsive
Active Traffic Management

• Expect the unexpected

• Preserve capacity

• Manage demand

• Stay dynamic and flexible
Expect the unexpected

- Local phenomena - PSCZ. Puget Sound convergence zone.

courtesy KOMO TV
Expect the unexpected

• Local phenomena
  - PSCZ. Puget Sound convergence zone.
  - Updraft leads to convection, evaporative cooling
Expect the unexpected

- Local phenomena
  - PSCZ. Puget Sound convergence zone.
  - Updraft leads to convection, evaporative cooling
  - Unexpected snow zone next to a decent road condition
Capacity loss

• from longer headway
• from turbulent flow
• differential speed across the lanes
• abrupt maneuvers
Preserve capacity

- Induce uniform speed across lanes
- Smooth transition from free flow to congested flow
- Junction warning prepares mainline to absorb merging traffic or to vacate the congested lane
Manage travel demand

• before trip is made
  - Trip choice, mode choice.
  - Media, internet, Twitter, etc…
Manage traffic demand

- after trip is made.
- ATM strategies:
  - Junction warning.
  - Ramp metering adjustment
  - Signal timing adjustment (ramp terminal signal and arterial signals)
  - Reversible lane operation
Manage traffic demand

- after trip is made.
- ICM strategies:
  - Dynamic routings: HOV facilities, alternate routes.
  - Signal timing modifications at network junctions and along parallel routes
  - Mode shifting is harder, but more affective for weather event (train is not affected by weather)
Dynamic & flexible

- Mini plow / sander strategically assigned to maintenance areas.
- Quick deployment
- Mobility in tight space
- Hot spots: short ramp, signalized intersection
Partnering

• Weather event affects traffic regionally
• Work with neighboring agencies for coordinated contingency plans
• Take risk to work across the jurisdiction boundaries – just enough to get thing moving 😊
• Debrief with partners for lesson learned