

Active Traffic Management Feasibility Study

Reducing Traffic Congestion – Real Opportunities
from Europe and the US

June 21, 2007



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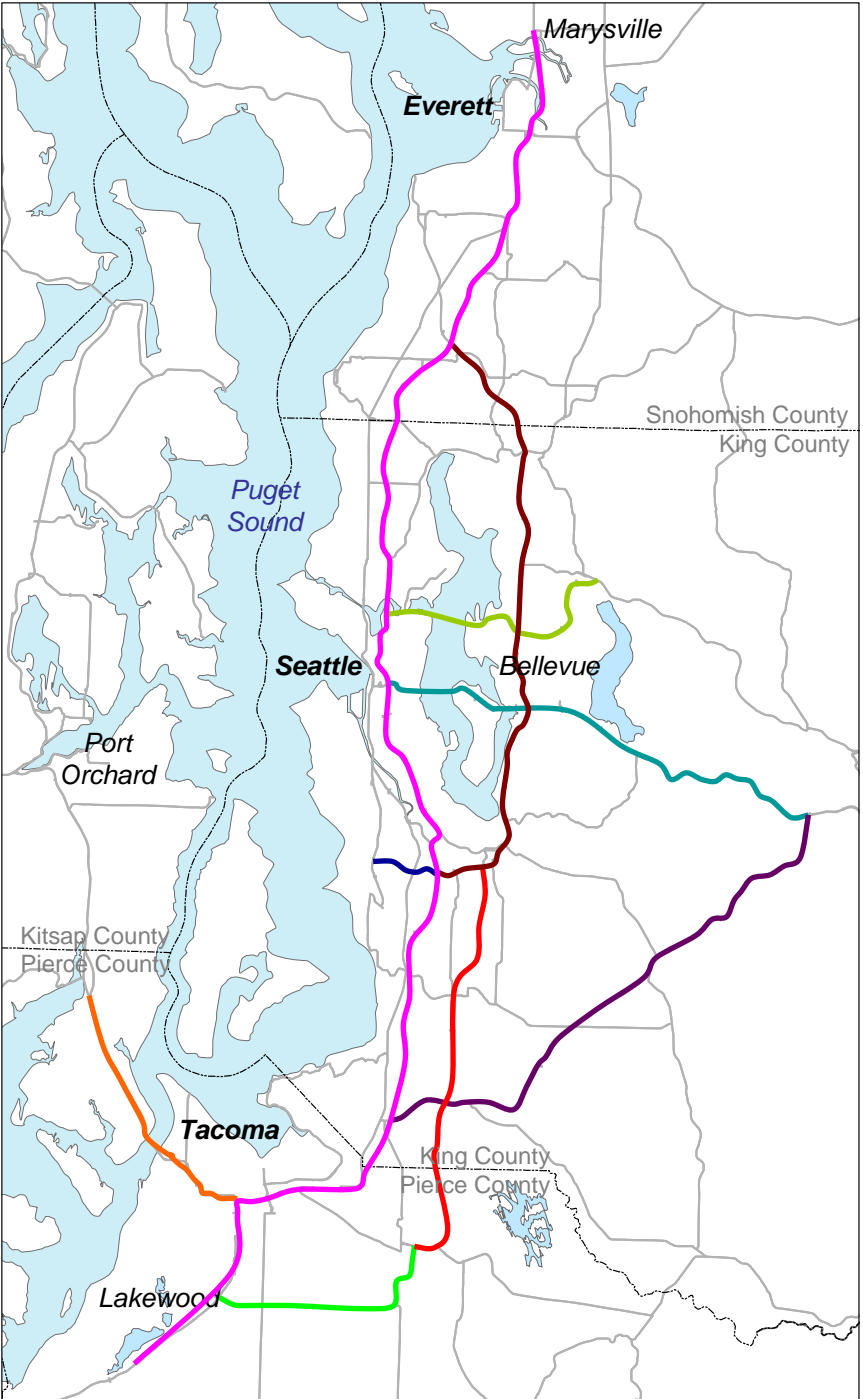
Objective:

- Qualitatively and quantitatively assess the feasibility of Active Traffic Management (ATM) techniques.

Challenge:

- Considerable daily congestion on all major roadway facilities
- Limited number of major roadways
- Limited opportunities for expansion

Potential Central Puget Sound Active Traffic Management Network



- I-5
- I-405
- I-90
- SR 520
- SR 167

- SR 18
- SR 512
- SR 16
- SR 518

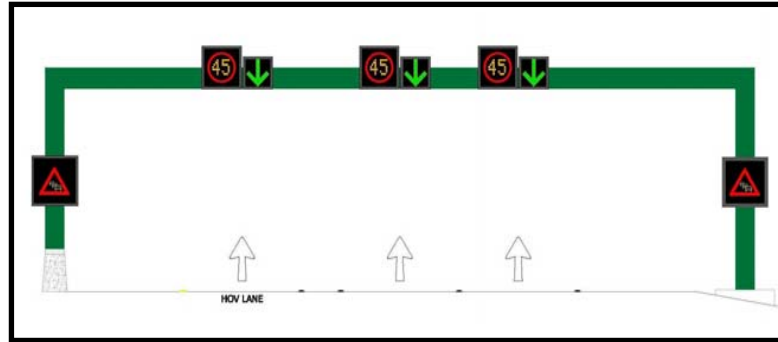
Phase 1 - Qualitative Analysis

- Screened major corridors for ATM techniques
- Conducted peer workshop
- All corridors provided opportunities for ATM techniques
- Recommended I-405 for quantitative analysis
 - I-90 interchange to Sea-Tac airport

Phase 2 Technical Analysis

- Modeling and quantitative analysis
- Develop signing/design concepts
- Develop typical operations scenarios
- Cost estimation
- Assess institutional and policy issues
- Assess operational issues

Speed Harmonization



- Incident Duration and Impact:
 - 15 minute = 50 hours of delay
 - 30 minute = 145 hours of delay
 - 90 minute = 4,000 hours of delay
- Collision Reduction
 - Injury collisions 30% and other collisions 16%
 - 586 fewer collisions per 3 year period.
- Potential Savings: \$13 million/year
- Conceptual Planning-Level Cost Estimate:
 - \$13 to \$65 million depending on design concept
 - Cost range \$1.1 to \$5.4 million per mile

Workshop Findings

- Flexibility is key
 - Multi-purpose signing (regulatory or advisory)
- Leaning toward European signing approach
- Incorporate lane use control
- Request experimental use applications
- Potential need for 24/7 operations center staffing

Independent Queue Warning

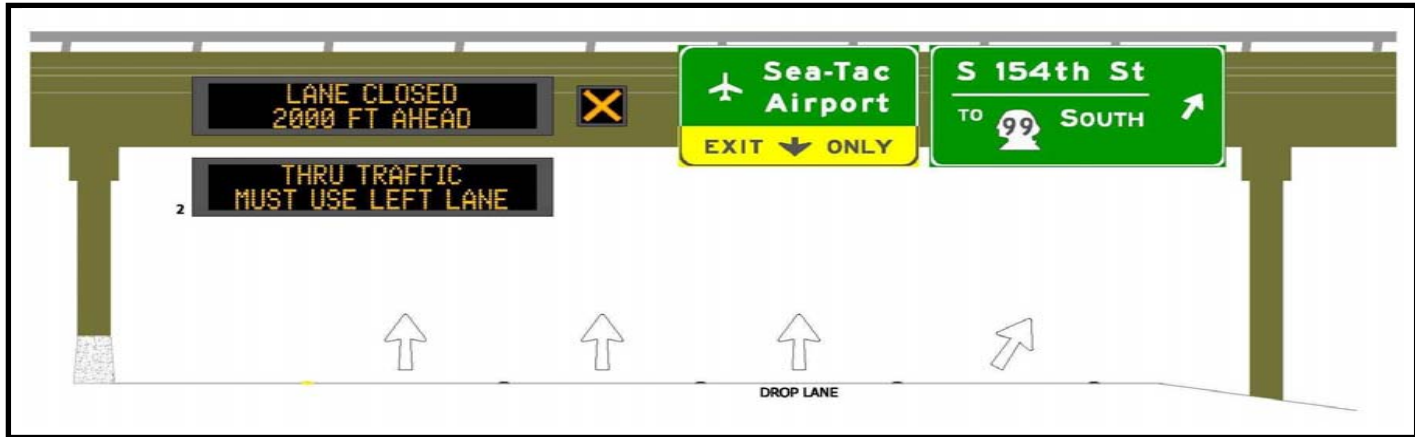


- 110 hours of reduced delay
- Collision Reduction
 - Primary collisions - 15 to 25 percent (assumed 15)
 - 21 fewer collisions per 3 year period.
- Potential Savings
 - Collision Avoidance = \$392,000/yr
 - Collision Delay = \$8,900/yr
 - Congestion Delay = \$128,000/yr
- Conceptual Planning-Level Cost Estimate:
 - \$0.5 to \$1.5 million depending on design concept

Workshop Findings

- Incorporate with speed harmonization
- Some limited independent applications
- Potential need for 24/7 operations center staffing
- Concern regarding liability if not a program commitment

Junction Control



- Collision Reduction
 - Assumed a range of 20 to 25 percent
 - 12 to 15 fewer collisions per 3 year period
- Potential Savings:
 - Collision Avoidance = \$181,000 to 264,000/yr
- Conceptual Planning-Level Cost Estimate:
 - \$1.5 million

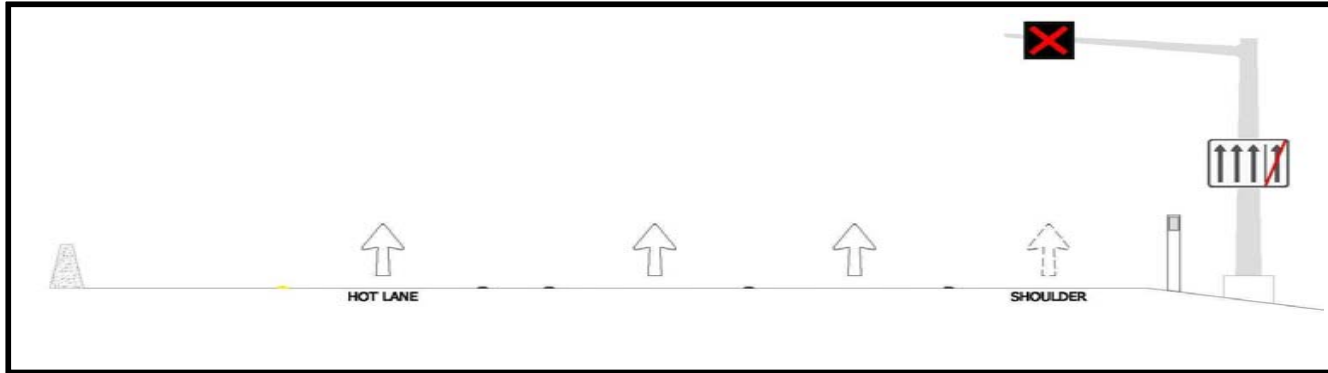
Workshop Findings

- Concerns regarding driver compliance
- Operational flexibility desired (advisory vs. regulatory)
- Need lane control for all lanes
- Works best with hard shoulder running
- Needs more study

Observations

- Roadway and volume conditions are key for effective operations
- Limited application
- Mostly in locations outside Phase 2 study area

Hard Shoulder Running



Observations

- Location of shoulder running segment must extend beyond roadway bottleneck
- Benefits – clear increase in capacity and decrease in congestion
- Implement as a first phase of a long-term improvement project/strategy

Workshop Findings

- Limited application
- Need to sweep for disabled vehicles prior to opening
- Need freeway service patrols for quick incident clearance
- Include core hours
- Needs dynamic, positive signing and lane use control
 - Reduced speeds
 - Edge of pavement striping
 - In conjunction with speed harmonization
- Need continuous lighting

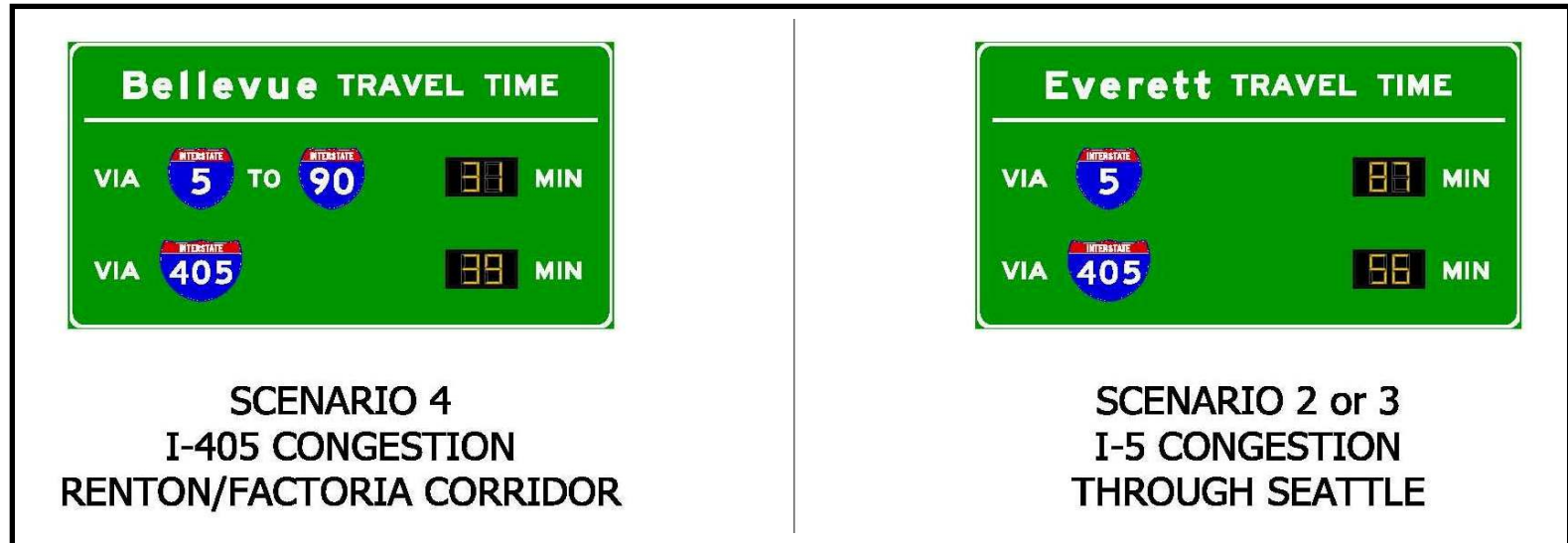
Dynamic Re-Routing



Observations:

- Traveler information more effective
- Limited opportunities
- Roadway system not conducive to dynamic re-routing
 - Linear vs. ring road system

Traveler Information



Observations:

- WSDOT currently provides travel times via variable message signs
- Additional locations would be beneficial
- Special purpose signs more cost effective

ATM Technique Implementation

- Coordinated system of location specific ATM techniques
 - Key to effective and optimal system management
- Comprehensive speed harmonization system can incorporate elements of queue warning and junction control for synergistic operations
- 24/7 operation of the system needed to provide greatest efficiency and effectiveness
- Can work in conjunction with tolling and HOT lanes – coordination and integration is key

Next Steps – Phase 3

- Present identified ATM techniques to I-405 team
- Enhance productivity of existing / future systems
- Build in operational and policy flexibility
- Implementation beyond mega project corridors
 - PSRC coordination
- Future program funding
 - Capital and operations