

Forum Proceedings

REDUCING TRAFFIC CONGESTION REAL OPPORTUNITIES FROM EUROPE AND THE U.S.

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Puget Sound Regional Council Board Room
Seattle, Washington

If transportation successes in Europe are any indication, technology and other proactive transportation techniques of Active Traffic Management (ATM) might be the wave of the future for reducing traffic congestion in the central Puget Sound region. Searching for new ways to manage increasing congestion through the region's most traveled corridors, a tour group of federal, state and local transportation officials recently traveled to England, Germany, Denmark, The Netherlands and Greece to see for themselves how some of the world's most innovative congestion management programs are working.

To view PowerPoint presentations assembled for the forum, log onto the PSRC's Web site: <http://www.psrc.org/boards/advisory/rtoc.htm>. Or you can hold you're arrow over the Power Point link and hit the Ctrl button and it will take you to the presentation online.



European scan tour participants

Recently several of those who participated in the European Active Traffic Management Scan joined transportation officials and professionals they met overseas for a forum in Seattle with numerous other Washington transportation stakeholders to consider new congestion management methods and tools for Puget Sound-area's major corridors.

"All of us on the trip came back kind of awed by what was going on in transportation in Europe," said Charlie Howard, Puget Sound Regional Council (PSRC) transportation director, to ***Reducing Traffic Congestion: Real Opportunities from Europe and the U.S.*** forum attendees. "Imagine a large freeway system that is entirely gantried (over-head sign bridges) and has a terrific communication system."

Sharing their national and international experiences, Howard and other presenters reported on real opportunities for reducing traffic congestion and discussed how those experiences might effectively translate to traffic concerns in the central Puget Sound region. Presenters also discussed their observations of international traffic innovations witnessed during the recent scan tour of Europe.

The speakers presented proven technologies that could make our major corridors more efficient. With state and federal funding, Washington State is making large capital investments in its urban freeways and additional investments are being considered for the region. Jointly hosted by the Washington State Department of Transportation (WSDOT), the Puget Sound Regional Council (PSRC) and the Federal Highway Administration (FHWA), the forum offered an understanding of options available to the region and provided a forum for discussing possible next steps.

[PowerPoint:](#)
[Active Traffic Management:](#)
[Current Practices in Europe](#)

Local context

Our Traffic Congestion Challenges & Opportunities

Presenter: Ted Trepanier, WSDOT traffic engineer and co-Director, Maintenance and Operations

[PowerPoint:](#)
[Our Traffic Congestion Challenges & Opportunities](#)

Traffic engineer Ted Trepanier opened the forum by offering a grim prognosis on the current and projected congestion growth on major Puget Sound highways. Ted Trepanier told the group the region is vastly more congested than anywhere else in the state. The effect isn't just millions of hours in additional travel time, but also hundreds of lives and thousands of injuries each year as traffic accidents increase dramatically along with congestion.

Key observations from the European scan

Birmingham, England

Facing traffic volumes projected to increase nearly 30 percent in 2010, the United Kingdom in 2004 established a long-term strategy for a modern, efficient, sustainable transportation system. The strategy focuses on providing a network for 2030 that can meet the challenges of a growing economy and increasing travel demand while achieving environmental objectives.

The Department for Transport and the Highways Agency established the National Traffic Control Center (NTCC), the information hub of the agency. The center has a staff that monitors a network of more 1,730 CCTV cameras and 4,450 traffic sensors 24/7.

ATM Strategies

- Speed harmonization improves traffic flow based on prevailing conditions by modifying the speed limits for sudden changes in driving conditions
- Lightweight gantries on the M42 in Birmingham include lane control signals, dynamic speed limit signals, dynamic message signs
- Digital enforcement technology
- Closed-circuit television cameras, enhanced lighting, roadway sensors, emergency roadside telephones
- Temporary hard shoulder running with emergency refuge areas
- Automated speed enforcement
- Congestion pricing: congestion is down 30 percent since a toll was established in 2004 for all traffic entering central London.

Highlights:

- Central Puget Sound experienced 370,000 vehicle hours (520,000 person hours) in daily delay in 2004.
- The congestion is 55 percent non-recurrent (road work, traffic incidents, weather, etc.) and 45 percent recurrent, including bottlenecks (40 percent) and poor signal timing (5 percent).
- Current technology and congestion management in the region includes vehicle detectors, ramp meters, High Occupancy Vehicle (HOV) lanes, signs and radio reports, a Transportation Management Center and incident response vehicles.



Seven Traffic Management Centers monitor and coordinate state highway operations

What WSDOT can do about congestion?

- Optimize traffic signal timing
- Minimize impact of crashes and disruption
- Minimize weather impacts
- Manage traffic in construction work zones and during special events
- Provide traffic information and warnings
- Maximize system capacity through managed-lane approaches

Findings from the 2006 European Scan on Active Traffic Management

Presenter: Charlie Howard, PSRC Director of Transportation

A two-week whirlwind tour through England, Greece, Germany, Denmark and The Netherlands was an eye-opener for what having a commitment to Active Traffic Management can do, Howard said. But the key word is commitment. Innovations such as managed lanes, speed harmonization, temporary-use hard shoulders and

Frankfurt, Germany

Traffic Center Hessen established a proactive traffic management approach, a comprehensive framework that encompasses benchmarking of network performance; deploys and maintains ATM strategies; incorporates data management; and implements innovations to fight congestion.

The state of Hessen's efforts support the federal goal to have 80 percent of all trips on the motorway network served by standardized real-time traffic and traveler information by 2010. The Hessen system relies heavily on driver information displayed on cross-highway gantries at multiple points along major corridors.

ATM Strategies

- Communication, traveler information, data, and performance monitoring with inductive loop detectors, floating cars, video cameras, and other sensors
- Speed harmonization
- Queue warning: Gantries display pictographs to warn of congestion ahead and variable speed limits
- Temporary shoulder use: Hard shoulders opened to traffic in conjunction with speed harmonization to address capacity bottlenecks.
- Junction Control: A variation of the temporary shoulder, junction control employs a combination of ramp metering and lane control at on-ramps where the number of downstream lanes is fewer than upstream lanes
- Truck distance-based tolling

congestion pricing with electronic tolling aren't cheap and their benefits—reducing congestion and accidents won't be realized unless they are managed and operated over the long term.

“What we saw (in Europe) was really different,” said Howard. “This is a whole different level of commitment to the system; it's a commitment to operations. It's a huge commitment if we want to go that way. We need to understand that.”

The technology, such as gantries that support variable speed limit and information signs over each lane, enables drivers to be better aware of current driving conditions and instructs them to adjust their driving speed and lane use



A gantry with dynamic lane speed on England's M42.

to maintain the optimal traffic flow.

Once drivers' experience how this level of cooperation actually works, they become more willing to obey speed limits and enforcement is less of an issue, said Howard. In England, for instance, the variable speed and lane control compliance rate is at 80-90 percent.

“Good information tends to build a trust with the driving public,” he said. “We have the technology to do this. The real challenge now is to figure out if this is what our drivers want. I think it is worth taking a look at.”

Copenhagen, Denmark

Traffic volumes grew significantly across Denmark in the 1990s, and traffic is expected to grow at an average annual rate of 1.7 percent through 2010. The national vision for transportation in Denmark is to work collaboratively with all other players to provide a network that benefits all.

By the end of 2006, a Road Directorate opened an additional six regional road centers to monitor and support the future motorway network in the country. The directorate also deployed intelligent transportation systems (ITS) in major regions to monitor congestion inform drivers of traffic conditions.

The M3 reconstruction project through Copenhagen has focused on customer service and working with the affected communities, another mandate in the Road Directorate.

Traffic Management Strategies

- Speed Harmonization: Using traffic detection systems, CCTV cameras, and DMS, control center staff in the region monitor traffic and reduce speeds when congestion begins to build.
- Truck Restrictions: heavy trucks, buses, and vehicles towing trailers have been prohibited from passing on certain stretches of the Danish motorways. They also must travel at reduced speed limits.
- Traveler Information: Traffic Information Center improves roadway capacity by creating an intelligent road where users can get relevant information about the roadway network at any time

European Initiatives

Active Traffic Management in Hessen, Germany

PowerPoint:
Active Traffic Management
Experiences Made in Hessen

Presenter: Jürg M. Sparmann, former head of road and traffic authority in Hessen, Germany



A day after attending an international transportation forum in Washington, D.C., German transportation expert Jürg M. Sparmann traveled to Seattle to present the challenges in traffic congestion that faced engineers in Hessen, Germany; the dramatic changes they employed; and the successes they have experienced. By focusing on customer service, benchmarking and evaluation, Sparmann said, Hessen is on track for a 16 percent volume increase for passenger traffic and 60 percent increase for trucks by 2015.



Variable lane signalization in Hessen, Germany.

The Netherlands

In the Netherlands' national approach to congestion management, information is a primary resource in the overall traffic management architecture. The National Traffic Control Center coordinates the traffic activities and gathers data from five regional traffic control centers. It operates 24 hours a day, 7 days a week.

Travelers get real-time information via radio, television and electronic messaging on road-side signs and in the vehicle.

ATM Strategies

- Queue warning: Flashing lights and variable-speed/lane-control signs alert motorists to congestion and.
- Dynamic Route Information Panels: More than 100 gantries display panels providing en route information on queues, major incidents, and appropriate routes.
- Speed harmonization
- Temporary hard shoulder use with speed reduction
- Automated speed enforcement system
- Emergency refuge areas with automatic vehicle detection
- Advanced incident detection
- CCTV surveillance
- Incident management
- Ramp Metering

Germany's federal government has installed a highway network of about 12,000 km (about 7,500 miles) across 10 states—mostly four- and six-lane facilities— carrying an average daily traffic volume of about 49,000 vehicles. These federal roads carry about one third of all traffic across the country, yet they are just a small percentage of the entire German roadway network. While the federal government pays for the transportation infrastructure, it is the states that must manage and maintain the day-to-day operations.

German states establish freeway operation programs for their motorway networks with two primary objectives: first, to maintain or increase safety by harmonizing traffic flow; and second, to maintain and improve mobility.

With little potential for increasing road capacity, Sparmann said, Hessen had to consider a systemic change to address its increasing volumes and maintenance over 1,000 km of roadway. The state's system supports 22 billion vehicle kilometers per year with a 70 percent capacity problem and 23,000 hours in delays caused by congestion each year.

The €10 (about \$10 USD) million project's success has been two fold, Sparmann said. Advanced traffic information systems enabled speed harmonization and lane management and increased capacity by 5-10 percent. With reduced congestion, there has been a major reduction in collisions. Accidents have dropped 29 percent with heavy-damage accidents down by 27 percent.

Sparmann said that within two years, the system pays for itself in reducing traffic accidents alone.

More highlights from Sparmann's presentation:

- Installing gantries with variable speed limit indicators over each lane was expensive but effective in creating speed harmony.
- The system uses 50 km of temporary hard shoulder lane. Another 20 km being prepared for future use.
- Gantries include a variable message system that signals delays in minutes, traffic incidents, alternative routes, construction delays and best times to travel.
- With reliable information, German drivers use the information and follow suggestions.
- Maintenance vehicles are equipped with GPS to enable traffic controllers to track flow speeds.

In the near future, Sparmann said, transportation engineers in Germany will link intelligent road systems

Athens, Greece

Greece is experiencing significant economic growth largely as a result of joining the European Union. Most roadways across Greece are two lane and undivided, providing local access to users. Only recently has roadway expansion begun to increase mobility.

The 65-km Attiki Odos Toll Motorway in Athens opened in 2004 before the Summer Olympics. The first urban freeway in Greece, it runs from Elefsina to Markopoulo, providing access to the region around Athens, including the Athens airport. Also known as the Attica Tollway, it significantly aids in reducing congestion in Athens. The facility is instrumented with closed-circuit television cameras, dynamic message signs (DMS), lane control signals, and pavement sensors to monitor operations and measure performance.

Traffic Management Strategies:

- Tolling: Flat fee of €2.70 for passenger cars and light commercial vehicles discourages short-distance trips
- Variable Speed Limits: Used at tunnel entrance along with dynamic lane assignment signals to alert motorists if the advisable speed limits inside the tunnel and alert motorists to lane closures in the tunnel
- Active Traffic Management: A state-of-the-art traffic management center operates 24/7, monitoring operations and deploying technology

with intelligent vehicles. Trucks will use cruise-control systems that maintain their speeds at optimum levels for current conditions. Vehicles will warn drivers of potential hazards ahead.

**The Netherlands:
From Reactive to Pro-Active**

Presenter: Craig Stone, WSDOT, Deputy Administrator, Urban Corridors Office

PowerPoint:
Active Traffic Management
The Netherlands

Like Germany, The Netherlands took a bottom-up approach to overhauling its transportation system operations with a focus on results and customer service, Stone said, reflecting on his experience during the European Active Traffic Management scan.

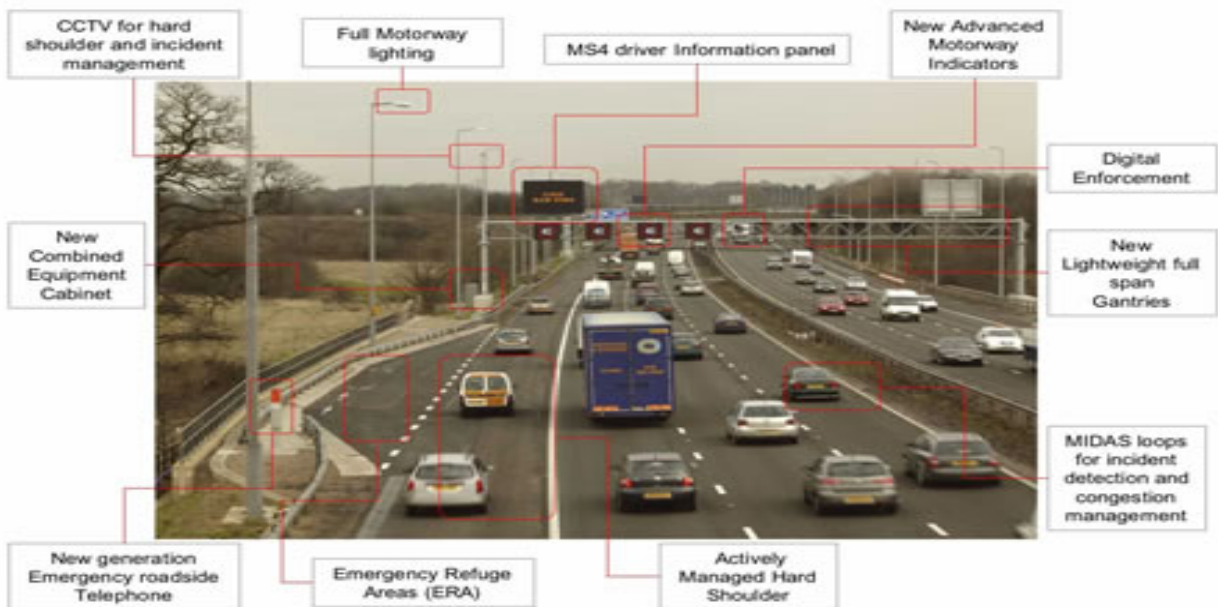


Managed lanes outside Rotterdam

Holland turned a reactive transportation system into a proactive traffic management operation. By erecting motorway gantries, the Dutch implemented 600 miles of managed lanes with dynamic speed limits and rerouting and message boards to inform the driving public of road hazards ahead. Temporary use of hard shoulders also helps maintain speed control.

The UK: Ready for the Future

PowerPoint:
Active Traffic Management
United Kingdom



In England, transportation planners predict 29 percent more traffic by 2010. Three years ago, the national Department for Transport established a long-term strategy for a modern, efficient, and sustainable transportation system supported by a high level of investment. The strategy focuses on providing a transportation network for 2030 that can meet the challenges of a growing economy and increasing travel demand while achieving environmental objectives.

Though it has been expensive, England has made congestion management advances in major metropolitan regions around cities like London and Birmingham. Since construction began in 2003, the transport department has installed hundreds of gantries that indicate variable speed limits, dynamic lane closures and signal "Queue Ahead." The English also use temporary hard shoulder lanes with reduced speed and emergency pull outs that automatically detect vehicles and send assistance.

"They went to a very high level here," said Stone of the British strategies. "People understand (the system). They trust the signs. When the sign indicates the two right lanes are closed, they understand it's in their benefit to clear the lanes."

Promising new data:

- Average journey times reduced by 30 percent.
- 13-15 percent of traffic uses temporary hard shoulder lane.
- Reliability and consistency are up.
- Compliance is high.

The UK reports more than 90 percent compliance after motorists became accustomed to the system. A tremendous number of CCTV cameras on the roadways helped, although not all of the cameras were wired for use.



A bus lane on the M4

With consistent and reliable road information, Stone said he predicts compliance won't be a much greater issue in Seattle than it is in England. "We have to look at giving the motorist reason to look at the information and follow it," he said.

U.S. Initiatives

The USDOT Secretary's national strategy to reduce traffic congestion

Presenter: Dan Mathis, *Federal Highway Administration, Washington Division Administrator*

[PowerPoint:
USDOT's Congestion Initiatives](#)

Congestion is clogging urban travel corridors throughout the country and costing Americans billions of dollars, said Mathis. Recent studies indicate that traffic congestion was responsible for 3.7 billion hours in travel delays and \$2.3 billion in wasted fuel last year.

The annual cost of congestion delays adds up to almost \$200 billion, accounting for unreliability, inventory, and environmental costs across all transportation modes. In the central Puget Sound area, the annual cost is \$1.2 billion, which amounts to a virtual “congestion tax” of \$792 per year for each rush-hour driver.

What USDOT Brings to the Table for the Urban Partnership Program:

- \$ 707 million - FTA discretionary programs
- \$ 272 million - FHWA discretionary programs
- \$ 100 million - RITA discretionary programs

The problem hurts American families; so federal transportation officials have made reducing highway congestion a top priority. One strategy currently underway is the Urban Partnership Agreement, which awards metropolitan regions federal grant money to study and implement Active Traffic Management practices, including congestion pricing and managed lanes. Mathis calls this approach the four T’s: tolling, transit, teleworking and technology.

A total \$1.1 billion will be awarded to as many as five transportation regions that demonstrate performance-based decision making and a commitment to:

- Enacting public private partnership laws
- Developing new interstate highway and rail capacity through a “Corridors of the Future” competition
- Reducing bottlenecks at major freight gateways, including Southern California
- Finding and implementing solutions to border congestion
- Accelerating major airport capacity projects, reform airport pricing policies and overhaul the air traffic control system

The Lake Washington Urban Partnership proposal, which includes replacement of the SR 520 Bridge, recently was short listed to nine regions competing for the award. The Urban Partnership Agreements will be awarded August 8th. The grants will be announced September 15th.

Applying Active Traffic Management in the Region

Lake Washington Corridor Grant Application for SR 520

Presenter: Brian Smith, WSDOT Strategic Planning and Program Director

If central Puget Sound gets an Urban Partnership grant, the money will be used to alleviate congestion, improve the SR 520 corridor and replace the Evergreen Point Floating Bridge on SR 520, Smith said.

SR 520 is an important corridor and major commuter route between Seattle and high tech companies such as Microsoft on the Eastside. Currently the corridor is over congested with a 40 percent reduced capacity during peak hours. The SR 520 Bridge is nearing the end of its life span and vulnerable to earthquakes and windstorms.

Central Puget Sound's Urban Partnership proposal asks for \$160 million in all. Under the proposal the money would:

- Enhance transit facilities and equipment
- Develop tolling systems
- Pay for an Active Traffic Management system, including signage with variable pricing, real-time information, fiber optic enhancements, additional CCTV cameras and automated incident response

"This application takes a systems approach," Smith said, "and I think that's what makes it unique."

Active Traffic Management, the Central Puget Sound Study

Presenter: Les Jacobson, *Telvent-Farradyne, a WSDOT consultant firm*

[PowerPoint:
Active Traffic Management
Feasibility Study](#)

To examine how effective Active Traffic Management would be in central Puget Sound, WSDOT worked with a consultant team to study how it could be applied. Jacobson said the consultant team qualitatively assessed nine major corridors in the region, and decided to focus on the southern section of Interstate 405 (from I-90 near Factoria to I-5 near Tukwila) for further quantitative analysis.

The project team reviewed results from the European experience with ATM and applied the findings of their experience in collision reduction from speed harmonization to the selected I-405 corridor using an existing traffic micro-simulation model. Using the micro-simulation model to study the impacts of a collision that blocks one lane of traffic, the study team found that a collision that blocks one lane of traffic for 15 minutes was projected to result in 50 hours of delays and a 30 minute blocking collision resulted in 145 hours of delay.

Curbing the rate of traffic collisions using speed harmonization and associated active traffic management measure could reduce congestion related to collisions considerably. Implementing speed harmonization could reduce injury collisions by 30 percent and other collisions by 16 percent or nearly 200 collisions per year, resulting in as savings of over \$13 million per year in collision avoidance.

Implementation of an effective Active Traffic Management system in the central Puget Sound region could include:

- Comprehensive speed harmonization
- Flexible lane management
- Queue warning
- Driver information
- 24/7 operations

HOT Lanes, SR 167 & I-405 Express Toll Lanes

**Presenter: Patty Rubstello, WSDOT
Project Manager**

PowerPoint:
[SR 167 HOT Lanes Pilot Project & I-405 Express Toll Lanes](#)



SR 167 HOT Lanes A graphic simulation

WSDOT's Urban Corridors Office is evaluating additional congestion management tools that could be combined with the European Active Traffic Management technologies. They include:

- [SR 167 HOT Lanes pilot project](#)
- [SR 167 Corridor improvements](#)
- [I-405 Express Toll Lanes](#)

The SR 167 HOT Lanes Pilot Project, which is scheduled for completion in spring 2008, will utilize dynamic congestion pricing, with an average toll of \$2, for solo drivers who wish to use existing HOV-2+ lanes along nine miles of SR 167 between Renton and Auburn. Pricing is intended to maintain speeds of at least 45 mph in the HOT lanes.

Rubstello said the project was designed for more efficient use of the carpool lanes on SR 167. Modeling has indicated that HOT lanes could increase capacity of the whole SR 167 corridor by 10 percent. If the HOT lanes are running at peak capacity, then the adjacent lanes will realize improved operations resulting in the best productivity of the highway.

"It comes down to how we make those HOV lanes as productive as possible," Rubstello said.

Enforcement will be the key to making the program a success, she added. That's why WSDOT is funding two additional troopers to patrol the lanes during peak hours.

While there has been some criticism over the equity of tolling in the so-called "Lexus lanes," other metropolitan areas that already use HOT lanes report public support developed shortly after the lanes opened. In San Diego, for instance, 77 percent of HOT lanes users from all economic levels approve of the system. In Minnesota, drivers of higher income perceived a disparity toward low income drivers more often than low income drivers complained that the system was unfair.

"Getting to work and punching that clock on time means keeping the job," Rubstello said, "so paying a \$2 toll may be worth it."

Express Toll lanes on I-405 are being explored as an option as well. Unlike HOT lanes, however, all vehicles except



A map of the proposed I-405 Express Toll Lanes option

transit will pay a toll, which adjusts to maintain speeds of at least 45 mph.

Data shows the HOV lanes on I-405, from SR 520 to I-5, are under utilized mid-day, but congested during peak periods. Express toll lanes would preserve trip reliability for transit users, while providing a new option to other motorists who choose to pay a toll when lane capacity is available.

The tolling option being studied for I-405 would include two express toll lanes in each direction between SR 520 in Bellevue and SR 522 in Bothell, and one express toll lane in each direction between SR 522 and I-5 in Lynnwood. Another option to improve HOV traffic flow is to increase the HOV requirement from 2+ occupants to 3+; this would reduce the number of vehicles entering the system. Both options are being evaluated in the Environmental Assessment.

Compatibility with Federal, State and Regional Planning
Metropolitan Transportation Plan and Regional Traffic Operations Committee
Presenters: Mike Cummings and Robin Mayhew, PSRC

In the next 30 years there will be 1.7 million new people and 1.1 million new jobs in the central Puget Sound region. It is estimated that this will translate into 1.5 million new vehicles. Lined up at 15 feet each, that many vehicles would stretch for 4,260 miles, the distance from Seattle to New York City and then onto Miami. This does not include the estimated new trucks on the road. Parked bumper to bumper, the same 1.5 million new vehicles would require a roadway 142 lanes wide along the 30-mile facility we know as Interstate 405.

Improving the efficiency and safety will be a focus of PSRC's long-range transportation plan update process but we need to clearly understand the role that ATM might play in improving efficiency of our system in terms of costs and benefits; interrelationship of programs and where applied; and how they integrate with congestion pricing and capacity improvements.

A new committee called the Regional Traffic Operations Committee (RTOC) recently was established at the PSRC. Composed of local cities, counties and the WSDOT, the committee will promote a collaborative and coordinated approach to regional traffic operations, investments and practices in the central Puget Sound region with an emphasis on (1) Traffic signal enhancement and system coordination, (2) Regional traffic operations (Active Traffic Management) at the arterial and freeway levels and (3) Intelligent Transportation Systems (ITS).

The RTOC's first project will be a ***Regional Concept of Transportation Operations***. The goal of this work will be to establish a regional approach for addressing operations through agreed-to standards, procedures and performance. Through documenting the fundamental operational standards required to deliver performance of the transportation system, the project will reinforce the importance of operational investments in the safety and effectiveness of the transportation system.

Next Steps

Craig Stone, WSDOT and Robin Mayhew, PSRC facilitated an afternoon discussion related to next steps, obstacles and opportunities.

Where do we go from here?

The Active Traffic Management Feasibility Study is nearing completion; there are still many hurdles to clear to develop an Active Traffic Management program in the central Puget Sound region.

The forum concluded with a discussion of the potential next steps to be taken toward development of an effective ATM program. The following points were made:

- Develop an informative customer orientated folio on ATM and potential benefits.
- Begin Phase 3 in the ATM feasibility work developing conceptual engineering plans for major projects such as I-405, SR 520, I-90, I-5/Alaskan Way Viaduct. This would include benefits, costs, and timing, how does it will fit with major capital projects and how it will fit with construction traffic control schemes.
- ATM can be implemented in the near-term. With investments of \$5 Billion in the freeway systems in King County and another \$5 Billion possible if RTID passes, now is the time to consider moving forward with ATM.
- Develop educational materials to inform customers about the benefits of ATM so that they support/demand ATM.
- The Destination 2030 Plan Update and the statewide Washington Transportation Plan should incorporate recommendations for ATM funding for both the operations and capital expenses needed to support an effective, 24/7 ATM system.
- Provide and maintain informative communication with the legislature.

Legal and legislative requirements

- Obtain the approval for experimental use to permit non-standard signage and lane control from FHWA and the Manual on Uniform Traffic Control Devices.
- Acquire additional state funding above and beyond the standard Intelligent Transportation Investments already funded in the projects.
- Obtain a commitment form the Legislature for long-term funding and staffing of ATM projects and 24/7 operation.
- Explore and resolve any legal issues that may arise with variable speed limits and speed harmonization.

Obstacles

- A long term financial and policy commitment from all parities needs to exist to be successful.
- Funding sources for capital, operating and maintenance of the system.
- A technique for estimating operating cost needs to be identified.
- New ATM signage would require cultural change for drivers.
- The amount of new technology and information can be overwhelming to drivers.
- Some ATM concepts may face difficulty winning public acceptance with drivers such as speed harmonization.
- Pilot projects must be done in timely manner – need this information now.
- Federal and state regulations may be a challenge. Need to be flexible to allow for speed and signage modifications that come with ATM techniques.

- ATM concepts will introduce new liability issues.
- Configuration of the existing system may limit applicable ATM applications.
- Funding resources keep moving further out to later years while the opportunity and need to act is in the short term.
- Privacy issues and concerns of the public need to be addressed.
- How will the system be enforced initially before there is more public trust and driver acceptance.
- Public trust must be earned to be successful in building a system with new technology and traffic control techniques.
- The message must be managed with a “SHOW ME” the benefits in mind.

Opportunities

- The public is more accepting of traffic modifications during construction.
- Implementing during construction can save money.
- ATM may be implemented now.
- An ATM Pilot is an opportunity to demonstrate (“SHOW ME”) the benefits.
- ATM has significant benefits over the costs.
- Educate the public and press about the benefits of ATM such as speed, harmonization. For example, the NW Region did a good job promoting ramp meters to gain public acceptance.
- Share the benefits of ATM through public education efforts focusing on RELIABILITY, CHOICES, and SAFETY.
- Co-located agencies could be an opportunity for implementing ATM.

FORUM PRESENTERS

Craig Stone, WSDOT Deputy Administrator, Urban Corridors Office
 Charlie Howard, PSRC transportation director
 Ted Trepanier, WSDOT traffic engineer and co-Director, Maintenance and Operations
 Jürg M. Sparmann, German consultant
 Dan Mathis, Division Administrator, FHWA
 Brian Smith, WSDOT Program Director
 Les Jacobson, Telvent-Farradyne
 Patty Rubstello, WSDOT Project Manager
 Mike Cummings, PSRC
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 Rick Olson
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Mayor Pro Tem Sue Singer, City of Auburn
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