Hierarchy of Congestion Strategies

When choosing congestion management strategies, the region should follow a least cost planning methodology. Least cost planning is defined as, "*…a process of comparing direct and indirect costs of demand and supply options to meet transportation goals, policies or both, where the intent of the process is to identify the most cost-effective mix of options.*"[1] In a time were limited resources impact the decision making process, it is pertinent to address congestion in a cost effective manner. Therefore, the following hierarchy of congestion strategies should be considered:

1. Demand Management Strategies (least expensive);
2. Operational Management Strategies (moderately expensive); and,
3. Capital Intensive Strategies (most expensive).

When congestion is identified the first step should be to determine what demand management strategies might be implemented to address the issue. If an appropriate demand management strategy is identified, it should be implemented and evaluated prior to considering an operational management or capital intensive strategy. Capital intensives strategies to relieve congestion should only be considered as a last resort.

Demand Management Strategies

Car/Vanpooling

Ridesharing programs reduce the number of single-occupancy vehicles on the road. This can be achieved through carpooling programs where the participants use their own vehicles. Vanpools are typically organized by employers, non-profit organizations, or transit agencies. Ridesharing programs are typically self-supporting, and is especially effective in area with poor access to public transit service.

Flexible Work Hours

This strategy allows employees to have flexibility in their work schedules. If a normal work schedule is 8:00 a.m. to 4:30 p.m., an employer would allow employees to work from 7:30 a.m. to 4:00 p.m. and others to work from 9:00 a.m. to 5:30 p.m. This shifts the number of employees leaving work at peak-hour, spreads traffic out over longer time period, and helps to reduce peak-hour congestion.

Telecommuting

Telecommuting allows people to work remotely from home or other locations. Companies can offer this option to employee's that don't physically need to be at the office to perform their duties, and therefore removes vehicles from the road.

Parking Management

Parking supply and price are effective measure to reduce automobile travel and congestion. The right supply and pricing can lower traffic congestion, ensure that some on-street parking is available at peak-hours, and incentivize some drivers to shift to other modes of transportation.

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[1] 2009 Jobs and Transportation Act, Oregon Legislature (House Bill 2001).

Land Use Policies

Integrating transportation and land use decision is the best long-term strategy for dealing with congestion. When working to integrate land use and transportation more effectively, communities should focus infill development that is compact, mixed-use, and built using human scale principles. Land use polices should focus on providing a highly connected system of streets that are design to accommodate a variety of user. A high level of emphasis should be place on creating an attractive public realm, and priority should be place on designing pedestrian-oriented places. What this achieves is a built environment that creates a higher level of accessibility by places residents in closer proximity to the activities people frequent. This proximity coupled with the high quality public realm, incentivizes people to use alternative modes of transportation includes walking, biking, and public transit. This removes vehicles from the streets helping to alleviate congestion.

Operational Management Strategies

Traffic Operational Improvements

Traffic Operational Improvements, which include improvements in traffic signalization, channelization, and highway geometrics, have been used extensively by MPO member governments, especially at intersections. Such projects can provide significant congestion-related benefits with only small investments in time, money, and labor.

Access Management

Access management principles, which typically involve standards for driveway spacing and median openings, have customarily been incorporated into the design for construction of new streets and highways and improvements to existing streets. In 2004, the Center for Transportation Research and Education (CTRE) at Iowa State University completed the Development of the *Des Moines Access Management Plan*, which provided recommendations for possible improvements and best access management practices. The results of this study were shared with MPO member governments and agencies. Iowa DOT and MPO member governments created an access management agreement along U.S. Highway 6 (Hickman Road) to limit access along the corridor. Similar access management agreements have been reviewed for other corridors in the MPA.

Incident Management

Incident management includes various activities that help mitigate non-recurring congestion, such as rapid detection and response to accidents and stalled vehicles, provision of congestion-related information to drivers, management of construction and maintenance activities, and management of traffic for special events. In conjunction with the widening of I-235, the Iowa DOT implemented a freeway incident management system that includes a traffic management center (TMC), variable message signs, a Highway Advisory Radio station, a Highway Helper program, and video and communications equipment. The MPO's Transportation Management Advisory Committee (TMAC), a multi-disciplinary inter-agency group, provides coordination for the deployment and operation of the region's incident management plans and programs.

Intelligent Transportation System

ITS programs provide user services such as travel planning, traveler information, emergency management, and advanced vehicle control. Many of the activities associated with ITS also may fall into the Incident Management and Traffic Operational Improvements categories of the MTP. A Regional ITS Architecture was developed and the necessary infrastructure was put into place, prior to the reconstruction and widening of I-235. Currently, the Iowa DOT maintains an interactive traveler information website, where users can find updated information about traffic conditions on major travel corridors in the region. The TMAC provides coordination for the deployment and operation of the MPA's ITS programs. In 2006, the MPO programmed STP funds to assist in funding the Iowa DOT's TMC.

Ramp Metering

Ramp metering is an effective strategy to control the number of vehicles entering a highway from an on-ramp. This maintains a smoother flow of traffic onto the highway and helps to ease congestion. This strategy could be implement on I-235 to help smooth access during peak-hours.

Roundabouts

Congestion on urban streets is often caused by queuing at signalized or stop controlled intersections. Modern roundabouts provide a solution to congestion created at intersections. A modern roundabout's capacity is 30 percent greater than a signalized intersection and can reduce major injury and fatal accidents by as much as 90 percent.

Complete Streets

Ensuring that lane addition/widening projects consider integrating Complete Street practices in the design process can assist in congestion mitigation through providing additional opportunity for users to choose alternative modes of transportation.

Traffic Signal Priority

Transit vehicles can be equipped with traffic signal priority technology that limits the amount of time buses have to wait at signalized intersections. This improves the travel time of transit trips and helps to promote mode shift.

Capital Intensive Strategies

Lane Additions

Objective 3.2 of the MTP states that prior to consideration of capital improvements to alleviate congestion the MPO will consider the utilization of ITS and other operation improvements. However; when alternative methods are not feasible, adding through travel lanes has continued to be a widespread practice in the MPA for alleviating congestion and encouraging economic development.

Transit Capital Improvements

Transit capital improvements in the MPA mainly consist of the replacement of older buses in the DART fleet and procurement of additional buses for expanded DART services. Few, if any, roadway projects have been constructed with the intent of minimizing the impact of vehicle congestion for buses. No rapid transit services currently operate in the MPA. However, DART currently is studying the feasibility of BRT

as part of the DART Forward 2035 Plan and is constructing a multimodal transit hub in the Des Moines CBD. As noted in Chapter 5 of the 2035 Metropolitan Transportation Plan, the MPO did commission a commuter rail feasibility study in 1999, which concluded the service was technically feasible, but economically impractical at that time.