Adaptive Ramp Metering

Ramp metering uses traffic control signals to meter the flow of vehicles entering a freeway or expressway.

TSMO
MARYLAND TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

PICTURED: RAMP METER FROM MILLER PARK WAY TO I-94 EAST IN MILWAUKEE
PATRIARCA12, WIKIMEDIA COMMONS

HOW WILL THIS HELP?

- Restricting the flow of vehicles from on-ramps reduces the adverse effect of merging vehicles on mainline traffic.

HOW DOES IT WORK?

- Ramp meters are installed on ramps and operate to reduce main line delay during peak periods of congestion
- Can be implemented by time of day, using traffic sensors, or through central control.
- Depends on the efforts of transportation professionals to monitor operations and evaluate performance
- Law enforcement officers are used to ensure motorists' compliance

CONSIDERATIONS

+ CONSULT WITH ARTERIAL ROAD OPERATORS TO DETERMINE THE BEST WAY TO AVOID QUEUES ON THE FEEDING ARTERIALS.
+ PROVIDE MAXIMUM AVAILABLE APPROACH LANE FOR VEHICLE STORAGE TO AVOID BACKING UP ONTO INTERSECTING ARTERIALS.
+ RAMP WIDENING IS REQUIRED IF DEMAND VOLUMES EXCEED 900 VPH FOR SINGLE LANE RAMPS. MAXIMUM QUEUES SHOULD BE ANALYZED TO DETERMINE IF ADDITIONAL WIDENING IS REQUIRED.
+ PROVIDE NECESSARY DISTANCE AFTER THE SIGNAL TO ACCELERATE UP TO A SAFE MERGE SPEED.

TRANSPORTATION NEEDS ADDRESSED

- Capacity and Demand
- Travel Time
- Reliability
- Mobility
- Safety
- Economic Development
- Incident Response
- Special Events

COST MAGNITUDE

Capital Cost	$
Operation and Maintenance Cost	$

WHEN TO CONSIDER THIS STRATEGY

- Arterial corridors with recurring or nonrecurring congestion.
- Arterial corridors with high crash rates

COMPLIMENTARY STRATEGIES

- Dynamic Speed Limit
- Queue Warning
- Integrated Corridor Management

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION