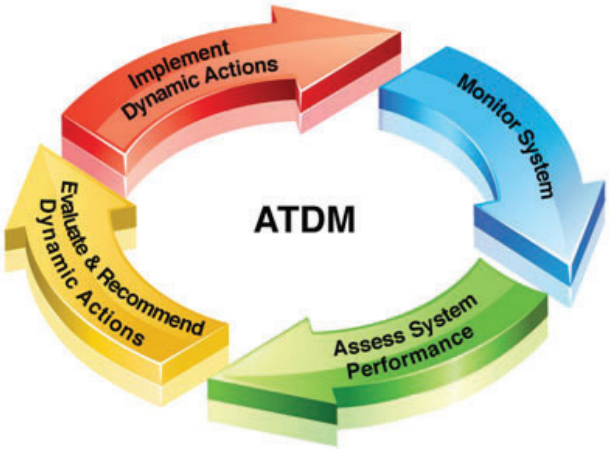
ACTIVE TRANSPORTATION AND DEMAND MANAGEMENT

ALDOT
STATEWIDE TSMO MASTER PLAN

Service Layer Brochure

Active Transportation and Demand Management (ATDM) is the dynamic management, control, and influence of travel demand, and traffic flow of transportation facilities (FHWA). The traffic is managed and traveler behavior is influenced in order to achieve set objectives such as reducing or preventing delay, promoting multimodal and shared-use transportation options, maximizing the efficiency of the transportation system, and improving safety. Through ATDM, ALDOT will strive to monitor, control, and influence travel and facility demand of the entire transportation system and dynamically manage a users entire trip throughout all of their mode choices. Multiple choices go into the users trip choice including Destination Choice, Time of Day Choice, Mode Choice, Route Choice, and Lane/Facility Choice. All of these choices can be dynamically impacted by decisions made in real time by ALDOT based on current levels of congestion experienced throughout the system. ATDM uses existing services and programs to compile and understand the current strain on the transportation system. Examples of these are using CCTV cameras to monitor arterials and freeway segments, using probe data analytics to understand congestion and speed on roadway segments, using GPS tracking on public transportation services to track ridership and delay, and compiling information from the work zone management program to better understand where and when congestion might occur near work zones. With this information, informed decisions can be made and ATDM strategies can be set into motion to achieve ALDOT



ATDM Strategies

ATDM strategies are used to help reach specific goals and objectives set by ALDOT including reducing congestion and improving safety. These strategies can be triggered automatically through time-of-day plans, queue responsive plans, or manually from the TMC based on observed conditions.

Reversible Lanes

Reversible lanes are used on constricted arterials that experience heavy inbound and outbound traffic patterns during peak hours. Allowing the use of an additional lane reduces speed variability and increases capacity when it is needed.

Dynamic Shoulder Lane

Allowing the use of a shoulder lane on highways during peak periods results in a system that is less prone to breaking down due to congestion. This tactic also incentivizes drivers to use the high capacity highways and not seek alternate routes.

Dynamic Speed Limit

Using an dynamic speed limit on arterials and highways allows ALDOT to restrict speeds when certain safety conditions are present or when congestion is occurring. This results in a safer and less frustrating drive.

Adaptive Traffic Signal Control

Adaptive signal control adjusts the cycle length and splits based off of real-time volume information. Automatically adjusting the cycle lengths helps keep traffic flowing during congested conditions.

Adaptive Ramp Metering

Implementing ramp metering at interchanges reduces the peak period congestion on the freeway by limiting on-ramp volumes. It increases the average speed and reduces potential for crashes at the ramps.

Queue Warning

Implementing queue warning systems in heavily congested areas increases safety by alerting drivers to the conditions ahead of them. This will also reduce driver frustration by alerting them to congestion ahead.

ATDM in Work Zones

ATDM and work zone management have a great deal in common and complement each other nicely to produce a work zone that maximizes the efficiency of the current laneage, creates a safe atmosphere for workers and motorists, and, in some cases, reduces project duration by increasing project efficiency. ATDM in work zone settings is typically temporary and uses portable changeable message signs like the one shown to the right. With proper planning, permanent ATDM infrastructure can be deployed in areas that experience frequent construction activities. Physical based strategies for using ATDM in work zones include queue warning systems, dynamic lane merge systems, real-time traveler information, and variable speed limits. These strategies work by alerting motorists to the upstream traffic conditions allowing them to make safer choices. Additional strategies that are not physically placed in the field include detour and construction planning, incentivizing alternate routes or modes, or adding capacity to public transit. These strategies rely on pre-planning for the work zone conditions and reducing the demand on the portion of the network as opposed to managing the current demand. A reduction in demand can help speed construction as more lanes can be closed at once. A mixture of the strategies is typically required for both major and minor construction projects.

Incentivizing Traveler Choices

Each trip choice a traveler makes is impacted on some level by the information they have on hand. Some of these choices (destination and time-of-day) are less flexible than others (mode choice, route choice, facility choice). ATDM strategies focus on the flexible options as they are more likely to change based on real-time information available to the driver. These strategies rely on a robust traveler information system. Several strategies that aim to impact the trip choices are listed and described below.

Active Parking Management

Active parking management adjusts the cost to park in certain locations based on real-time parking information or based on the time-of-day. Increased parking costs will incentivize travelers to choose a different mode for part of or their entire trip.

Variable Tolling

Variable tolling helps keep the speed of managed lanes above a set speed. Increasing the cost of the toll to access the managed lane will decrease the volume of travelers who choose this option.

Congestion Pricing

Congestion pricing is a strategy that helps reduce traffic volumes in urban centers and incentivizes other mode choices. This method also helps make travelers aware of their impact on the local environment by reducing noise pollution and emissions.

HOV Lanes

High Occupancy Vehicle (HOV) Lanes are managed lanes that are restricted based on the occupancy of the vehicle or, in some cases, the fuel source. Congestion is typically lower in managed lanes so travelers are incentivized to car pool and the overall vehicular volume is reduced.