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Operations and Livability

Livable communities give people quality options regarding how they will travel to places of work, education, recreation, and commerce. In a livable community, options exist for pedestrians, drivers, public transit users, and bicyclists to all reach common destinations safely, within a reasonable amount of time and not at the expense of one over the other. An important aspect of livability is **providing access** to all of these necessary destinations, for travelers in all types of communities, from central urban cores to rural areas.

Transportation System Management and Operations (TSM&O) strategies offer a suite of solutions that, when combined, make traveling more efficient, easier, and safer, no matter which travel choice one makes to get to work, school, recreation, shopping, or home. Advantages of these strategies include decreased roadway congestion, reliable travel times, and fewer stops at traffic signals. These benefits extend beyond those who choose to drive their own vehicle – as pedestrians, bicycles, buses, light rail, and other transit systems frequently share the same roadways as cars.

By balancing the capacity and efficiency of our existing roadways, these strategies:

- Preserve community cohesion by minimizing the need for building new road capacity;
- Enhance economic prosperity by connecting people to their desired locations faster; and
- Enhance the quality of multiple choices of travel by reducing delays that affect all modes of transportation.

Strategies such as bottleneck relief, active traffic management, and incident management help reduce daily congestion and help keep traffic moving smoothly, making roadways available for all who need to use them. Making use of congestion pricing, tolled access to high-occupancy vehicle (HOV) lanes, and other demand management approaches ensures a consistent level of quality and travel time.

Intelligent Transportation Systems (ITS) technologies provide the support for these strategies. For example, traffic signal priority can improve door-to-door transit times for those riding buses, light-rail systems, or other transit modes that share the right of way on roads. For communities seeking to enhance facilities for active transportation, adaptive signal systems enhance the safety and practicality of bicycle and pedestrian travel

TSM&O measures enable access to **reliable and timely information** that allows travelers to make better informed choices about their trips while enabling transportation operators to manage the transportation system. Traveler information systems enabled by ITS technologies can provide people with valuable information to help make their travel choices based upon time, cost, and convenience. Pricing and demand management strategies can enhance transit over arterial routes by managing volume. When automobile travel remains an efficient and logical mode for trips, **providing quality travel** by making this option as efficient as possible serves the community. The full spectrum of congestion mitigation measures provides the system efficiency, while demand management programs can maintain these levels of quality.

Buses and other transit services that share the road with vehicles benefit from operational measures



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that reduce congestion and delay resulting from events such as crashes. Traffic incident management, planning for special events, mitigating congestion in work zones, and planning for weather events can all enhance the operations of fixed-route transit by making schedules more predictable and reliable.

An especially important aspect in creating a livable community for all of its members is enhancing **human service transportation**, such as transit for people with disabilities, older adults, and low-income populations. Operations strategies to reduce congestion can enhance not only general transit but also human service transportation modes, which often travel point to point to provide service. Additionally, ITS systems and proactive management to maximize efficiency of these systems can ensure that these vital modes of access provide the levels of service necessary to the community. Operations measures contribute to the comfort and reliability of trips.

Another important aspect of the livable community is ensuring **affordability for all people**. Costs of time lost in congestion are substantial and constrain the viability of alternative travel choices. The costs incurred by transit modes in congestion not only accrue to the general public but also to transit operators through the loss in marketability of transit. All congestion mitigation efforts can alleviate these costs.

Operations also has a role to play in **minimizing transportation systems lifecycle costs**. ITS technologies enable monitoring and system analysis, allowing transportation system owners to make the best possible decisions about maintaining, enhancing, and disposing of transportation assets. This provides a benefit to the livable community by enabling informed choices regarding the best way to invest in transportation facility enhancements.

Moving freight in a timely and efficient manner is essential to supporting a livable community. Without freight transportation, businesses cannot receive the products they need to sustain themselves, having a negative impact on the community. Logistics operations are greatly enhanced by predictable travel time, which comes from efficiently

operating the roads and minimizing delay from non-recurring sources of congestion such as work zones and traffic incidents. Traveler information and ITS routing allow freight traffic to travel in the most appropriate corridors. Effective transportation systems management, such as through having a coordinated traffic signal system, can improve freight transportation efficiency in locations that handle higher volumes of truck traffic due to the commercial and/or industrial development in those locations. Data analysis identifies where and when freight operates, and careful planning of freight movements and multimodal connections can create and preserve vibrant communities.

The effects of tailpipe emissions hamper livable communities. Besides **reducing total emissions** by relieving congestion, providing congestion relief in urban areas may decrease high concentrations of emissions in these densely populated areas. Furthermore, adapting to the weather effects of climate change necessitates planning for emergency events, and integrated regional traffic management centers enable the response necessary to ensure the safety of communities.

Measuring success of TSM&O in supporting livable communities is accomplished through:

- Travel time reliability;
- Reduction of localized greenhouse gas (GHG) emissions;
- Vehicle hours traveled;
- Fixed route transit reliability;
- Traveler information availability/timeliness/reliability;
- Availability of modal choices.

ABOUT NTOC

The National Transportation Operations Coalition (NTOC) serves as an important foundation for institutionalizing management and operations into the transportation industry. This alliance of national associations, practitioners, and private sector groups represent the collective interests of stakeholders at state, local, and regional levels who have a wide range of experience in operations, planning, and public safety.

For more operations benefits related to livability, visit the NTOC Web site at www.ntoctalks.com.