Advancing Mode Options in Managed Lane Projects

U.S. Department of Transportation
Federal Highway Administration

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Introduction and Overview

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Traveler Expectations are Changing with New Modes Available

Sources (top to bottom): 511NY, Wisconsin DOT

Travelers increasingly expect to have **real-time, dynamic, actionable** information before and during their trip making

Source: Shutterstock

Travelers use more and different forms of transportation than ever before

Source: Shutterstock

Source: FHWA, Nice Ride Minnesota

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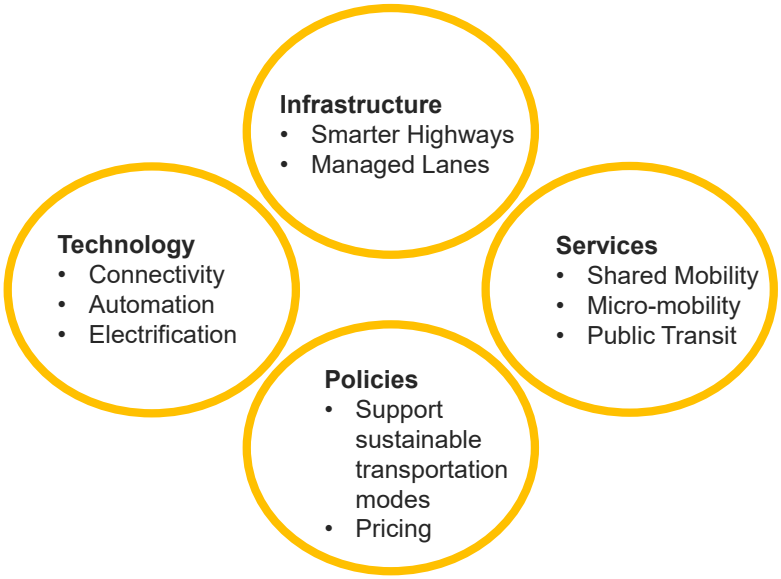
Travelers in the 21st century want real-time information and immediate action.

- Is there traffic on their current route? They want an alternative provided to them before they hit the traffic.
- Don't own a car? They'll rent one temporarily or take an Uber.
- Soon they won't even have to drive at all (while still being in a car).

So with travel changing at such a rapid pace, that means transportation management needs to adapt.

Emerging Mobility Innovations

- Convergence and integration of infrastructure, services, technology, and policies leads to…
- New options, choices and efficiencies in personal travel for both residents and visitors in a community



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- Convergence and integration of infrastructure, services, technology and policies.
- New options, choices and efficiencies in personal travel.

Emerging Mobility and Managed Lanes

- Role of new Mobility on Demand (MOD) services
- Role of High Occupancy Vehicles (HOV) modes
- Role of subsidies and pricing
- Role of enhanced information
- Role of new players (e.g., Transportation Network Companies (TNCs) such as Uber and Lyft)
- Ability to fulfill objectives
- Impact on finances

How can emerging mobility and contemporary approaches to systems management help fulfill managed lane objectives?

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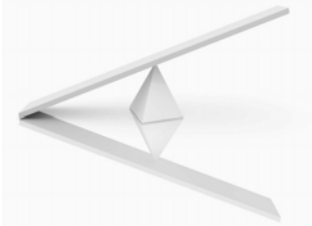
Balancing User Choices and System Efficiency

Users

- Choices
- Convenience
- Individual Delay
- Price
- Time Sensitivity
- Cultural/Societal Factors



Source: Shutterstock.

System Perspective

- Reliability
- Safety of Travel
- System Resilience
- Overall Delays
- System Efficiency
- Person capacity

Can emerging mobility options, enabling technology, and demand management enhance the overall effectiveness of managed lanes?

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There is tension between where you (the traveler) wants to go now and what's happening on the roadways (to make improvements for all travelers).

Services have to operate under a wide array of conditions (weather, incidents) – makes sense to manage. Not just tention of getting to a place, but construction/work zone, incident.

TDM vs. Traffic Management: Historical Perspectives: Shows the one-to-one contrast between the two.

Traffic vs. TDM

Real time vs. long term

All traffic vs. commuters

Move vehicles vs. move people

Improve reliability vs. reduce VMT/vehicle use

Non-recurring vs. typical day

Car (SOV) oriented strategies vs. non-car oriented strategies

Webinar Purpose

- Provide an understanding of contemporary approaches for enhancing alternative mode options in managed lanes projects
- Strengthen the linkage between traffic operators, travel demand management (TDM) professionals, private sector, and transportation planning professionals in these corridors to take advantage of emerging mobility models
- Elicit discussion on other ways to enhance choices

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Upcoming Presentations

- Overview of linking Emerging Mobility and Transportation Management
- Three regional examples that showcase various approaches to enhance travel options for travelers within managed lane corridors
  - Northern Virginia (I-66 and I-395) *presented by Ben Owen NVTC*
  - Los Angeles County (I-10 and I-110) *presented by Silva Mardrussian LA Metro*
  - San Mateo County (US101) *presented by Mary Thomasmeyer, commute.org*

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Thanks to National Operations Center of Excellence for hosting

FHWA Transportation Management Resources

TDM Publications and Reference Materials
https://ops.fhwa.dot.gov/tdm/ref_material.htm

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1. FHWA Integrating Demand Management into the Transportation Planning Process: A Desk Reference
2. FHWA Shared Mobility: Current Practices and Guiding Principles
3. FHWA Smartphone Applications to Influence Travel Choices
4. FHWA Expanding Traveler Choices through use of Incentives
5. FHWA Travel Behavior: Shared Mobility and Transportation Equity
6. FHWA Integrating Shared Mobility into Multimodal Transportation Planning: Improving Regional Performance to Meet Public Goals
7. FHWA Strengthening Linkages between Transportation Demand Management and Traffic Management
8. Active Demand Management Capability Maturity Framework Tool

9. **MOD Planning and Implementation Guide (under progress, should be done at the end of 2019)**

Other resources:

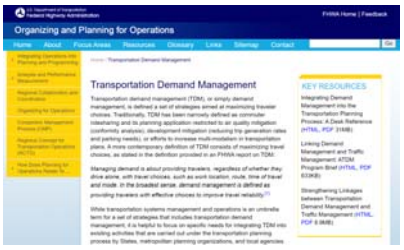
- Global Benchmarking Program Study on Shared Mobility Services (Shared-Use Mobility Center (SUMC))
- Mobility on Demand: Operational Concept Report (FHWA)

MOD Resources (should not necessarily be considered Demand Management Resources though)

- Shared Mobility Current Practices and Guiding Principles (already exists above)
- MOD Operational Concept Report
- MOD Planning and Implementation Guide (under progress, should be done at the end of 2019)

FHWA Transportation Management Resources

FHWA ATDM Webpage
https://ops.fhwa.dot.gov/atdm/



FHWA TDM Webpage
https://ops.fhwa.dot.gov/plan4ops/trans_demand.htm

Capability Maturity Frameworks
https://ops.fhwa.dot.gov/tsmoframeworktool/cmf_overview.htm

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Additional FHWA Resources

- Upcoming Webinar
  - Advancing Demand Management in Resort Towns and Communities
    - Thursday, July 23, 2020 11am-12:30pm ET
    - Register at: https://www.eventbrite.com/e/advancing-demand-management-in-resort-towns-and-communities-tickets-110664045138
- Available Grant Programs
  - Advanced Transportation and Congestion Management Technology Deployment Initiative (ATCMTD)
    - https://www.grants.gov/web/grants/view-opportunity.html?oppId=327953
  - Complete Trip ITS4US
    - https://beta.sam.gov/opp/09484974f0d04253b27f6469827ee4b5/view

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Opportunity for Leveraging Contemporary Demand Management and Emerging Mobility

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Managed Lanes

- Managed lanes in the United States
  - High Occupancy Vehicle (HOV) Lanes (96)
  - High Occupancy Toll (HOT) Lanes (31)
  - Express Toll Lanes (ETL) (22)
- Most provides some preferential treatment for HOV and transit
- HOT lane projects often involved conversion of underutilized HOV lane
- Treatment of carpools varies across projects

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Today we are focusing on the potential role of contemporary demand management strategies on improving the effectiveness of managed lanes. Throughout the US, HOV lanes have been converted to High Occupancy Toll or HOT lanes and other lanes have been constructed as Express Lanes, allowing SOVs to buy reliable travel times and providing free or discounted use to HOV users. However, the treatment of and experience with carpools in managed lanes varies.

To that end, we want to mention a new project being undertaken by FHWA entitled " Maintaining an HOV Emphasis for Managed Lanes Projects." Many of the issues discussed in this webinar will be addressed in that study. A report will available in 2021.

Enhancing Alternative Mode Options in Managed Lanes

- Why Enhance Alternative Mode Options?
  - Person Throughput
  - VMT reduction
  - Emission reduction
  - Maximize choice
- How to Enhance Choices with Emerging Mobility
  - Information technology (traffic, mode/route options)
  - Rideshare apps
  - First/last mile solutions
  - Reward programs

Source: LA Metro

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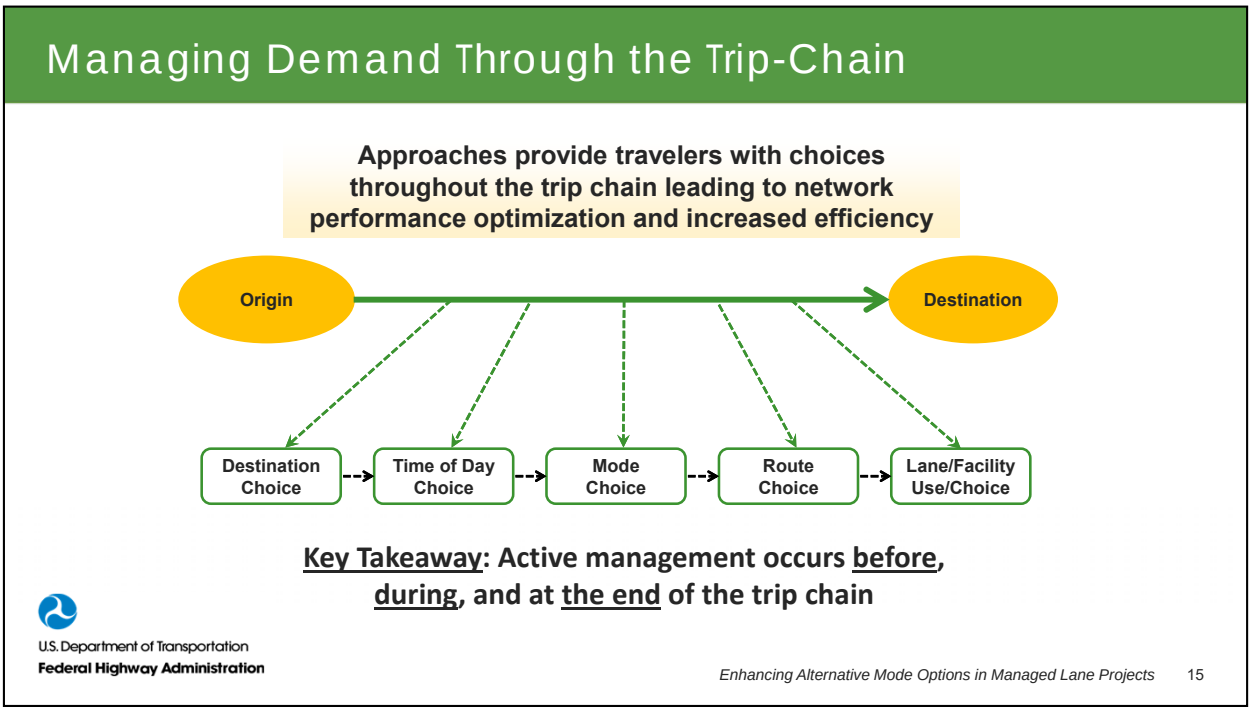
Why should we encourage alternative mode use in managed lanes? Largely to increase person throughput, more people in fewer vehicles. We also want to maximize traveler choices and I'll talk about that in a minute. There is also some question as to the environmental impacts of managed lanes and increasing vehicle occupancy can reduce VMT and therefore help mitigate emissions.



This slide describes how we can manage demand across the entire trip process in a dynamic manner.

Key Messages:

- We can or should be dynamically managing demand to impact destination, time, mode, and facility choice.
- Currently we rely on the state of supply to influence demand (e.g. travel time).
- **Destination Choice.** Decision on whether to make the trip and where to go. Part of Travel Demand definition. Traditionally, this is a long-term choice but day to day or even hour to hour impacts are possible.
- **Time of Day Choice.** Decision on when trip is to be made. Defines Travel Demand as a function of time, also helps define Transportation Demand, as decisions on what mode to use may depend on the availability of particular services at a particular time. Real-time traveler information for example can affect this choice on a direct hour to hour basis
- **Mode Choice.** Decision on how trip is to be made, including decision to drive alone, carpool, use a form of public transport, or some other form of rideshare (e.g., slug lines). Can dynamic information such as comparative travel times, real-time arrivals/schedule disruption/event/incident information, etc., play a role in a more fluid mode choice scenarios?
- **Route Choice.** Decision on what road or transit route to be taken, based on the most direct, fastest, or most cost-effective option. As mode of travel is already defined, the route decision helps determine Facility Demand, typically represented by vehicles on the road network, and by passengers for transit services.
- **Lane / Facility Choice.** This decision is influenced by current operational conditions on the travel route, and may involve options related to higher cost / better level of service in comparison with normal costs and normal/substandard level of service, including toll lanes / HOT lanes.

Mobility on Demand (MOD): The Vision

"MOD envisions a safe, reliable and carefree mobility ecosystem that supports complete trips for all, both personalized mobility and goods delivery."

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- The transportation mobility landscape is changing with the emergence of the concept of Mobility on Demand (MOD), supported by changing infrastructures, capabilities, and technologies.
- MOD can encompass the concepts of Shared Mobility and Mobility as a Service (MaaS).
- This concept, when applied to managed lane projects can help conceptualize how to adjust to this changing landscape and maximize traveler choices.

MOD Definition

Mobility on Demand (MOD) – USDOT's **VISION** for Future Mobility

The United States Department of Transportation (USDOT) uses the term Mobility on Demand (MOD) to represent its vision for future mobility. **MOD envisions as a safe, reliable and carefree mobility ecosystem that supports complete trips for all, both personalized mobility and goods delivery.** USDOT achieves this vision by leveraging innovative technologies and facilitating public private partnerships to allow for a user-centric approach that improves mobility options for all travelers, and delivery of goods and services.

Providing Choices to Travelers

- Active transportation infrastructure
- Microtransit/On-demand shuttles
- Dynamic parking management
- Priority treatment for transit and carpooling
- Automated shuttles
- Incentives and Marketing

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So how can we provide more and better choices to travelers? First, actively managing the system and a given facility can help to dynamically respond to varying types and levels of demand. Second, micro-transit and other on-demand services can help address first and last mile issues. Dynamic parking management can also help manage demand at the destination. Priority treatment of carpools and transit, via HOV and HOT lanes, can provide travel time savings for these travelers. We even can envision the use of automated shuttles to help feed transportation terminals. However, the most common way to promote alternative modes have proven to be incentives and targeted marketing. We will hear from each speakers about how they do this.

For Choices to be Effective

- A traveler or a potential traveler must
  - Be aware of available choices
  - Be able to make a choice in a convenient manner
  - Be able to trust in the reliability of the choice

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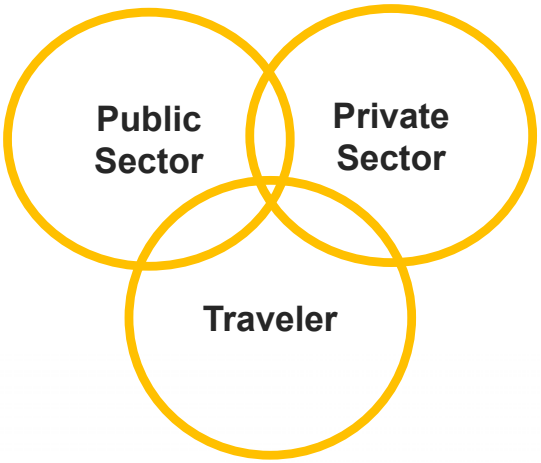
- A traveler or a potential traveler must
  - Be aware of available choices (do I know what parking is available at my workplace? Do I know that bikeshare exists? Do I know that there is an airport shuttle to my hotel, so I don't need to rent a car?)
  - Be able to make a choice in a convenient manner (how far do I need to walk from my hotel to the beach shuttle?)
  - Be able to trust in the reliability of the choice (will a bikeshare bike be available after my work shift?)

Effective Choices Depend on Partnerships



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Public – Public
- DOT/DOT Coordination
- DOT/Transit Coordination

Public – Private
- First and last-mile solutions
- Incentives

Public – Traveler
- Citizen Engagement

Private – Traveler
- Shared Mobility
- New Travel Options
- Incentives

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But effective choices requires new and improved partnerships to make this happen. Here are some examples of what these various partnerships can produce.

The Opportunity

- Provide reliable and safe travel choices in an equitable manner
- Leverage synergies between programs that are historically silo-ed
- Adapt to changing environment that is blurring the lines
- Provide a framework for advancing integrated, holistic transportation management programs

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- So, using this contemporary view of demand management can provide many opportunities.
- Provide reliable, safe, travel options, choices in an equitable manner.
- Leverage synergies between programs that are historically siloed.
- Adapt to changing environment that is blurring the lines.
- Provide a framework for advancing integrated, holistic travel management programs.