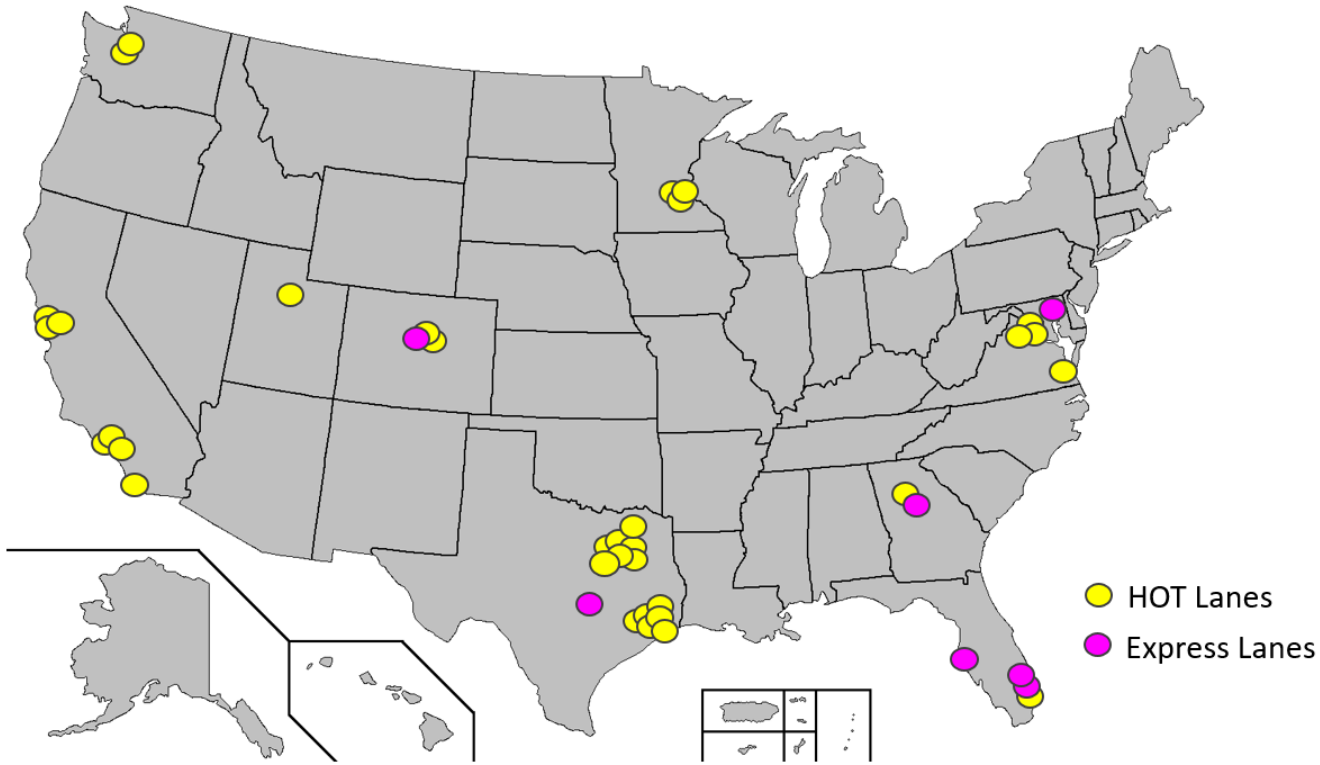
Congestion Pricing (Value Pricing)

- A way of harnessing the power of the market to reduce the waste associated with traffic congestion.
- Shifting some rush hour highway travel to other transportation modes or to off-peak periods
- By removing a fraction (even as small as 5 percent) of the vehicles from a congested roadway, pricing enables the system to flow much more efficiently, allowing more cars to move through the same physical space
- Congestion pricing projects can be grouped into two broad categories: (1) projects involving tolls and (2) projects not involving tolls

NATIONAL CONGESTION PRICING CONFERENCE

2018 National Congestion Pricing Conference: Managed Lanes, Pricing, & Operations Insights



By Patrick Vu, Partner

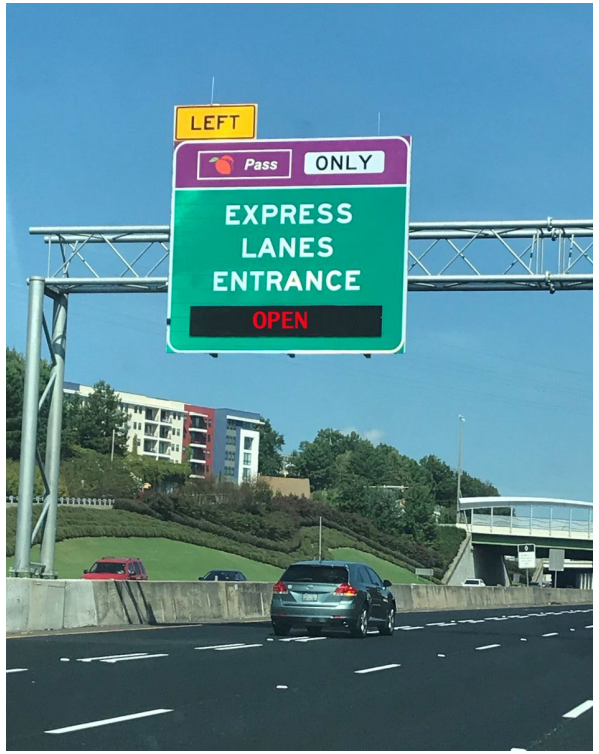
September 13, 2018

SILICON Transportation Consultants

Priced Managed Lanes

- Express Lanes/High Occupancy Toll (HOT) Lanes combines the principles of congestion pricing and lane management
- Over 40 priced managed lanes facilities

SR 91 Orange County – Operating since 1995



I-75NW Atlanta – Operating since Sunday

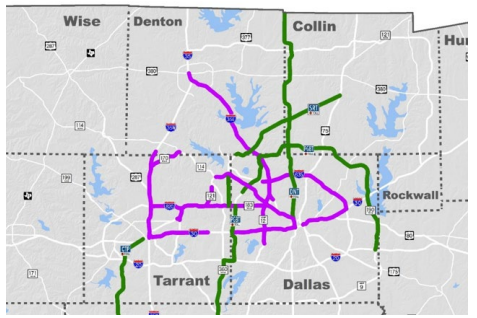
Managed Lanes Sessions

- **Moving from Projects to Regional Networks** – Nick Wood, Texas A&M Transportation Institute
  - **North Central Texas Council of Governments (NCTCOG)** – Dan Lamers
  - **Metropolitan Transportation Commission (MTC)** – Jim Macrae
  - **Florida Department of Transportation (FDOT)** – Javier Rodriguez
- **Challenges in Price Setting** – Patrick Vu, Silicon Transportation Consultants
  - **Virginia DOT (VDOT)** - Hari Sripathi
  - **State Road and Tollway Authority (SRTA)** – Annie Gillespie
  - **Carma** - Paul Steinberg

Managed Lanes Networks

1. Dallas/Fort Worth region is building a 160 centerline miles managed lanes network
   - NCTCOG formed a regional working group to develop a consistent set of regional policies
   - Continual work to defend against external threats
2. Bay Area is working on a 640 centerline miles managed lanes network
   - Informal 4 agency working group to coordinate
   - Consistency with signage and FasTrak toll account
   - Need to work on hours of operations, toll violation enforcement, Clean Air Vehicle, increasing occupancy from HOV 2+ to HOV 3+, adjudication of violations

Dallas/Fort Worth



San Francisco Bay Area

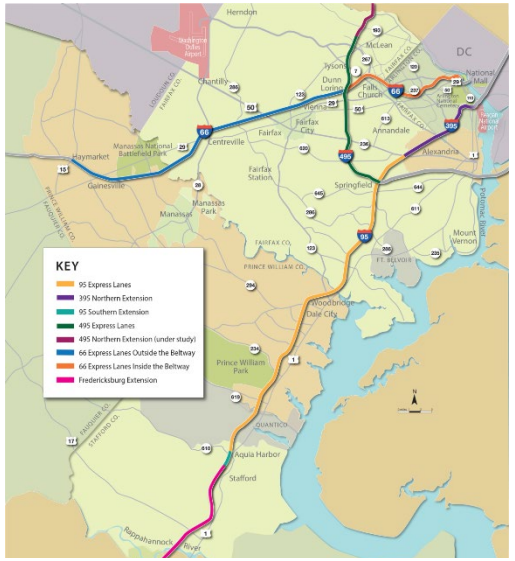
Managed Lanes Networks

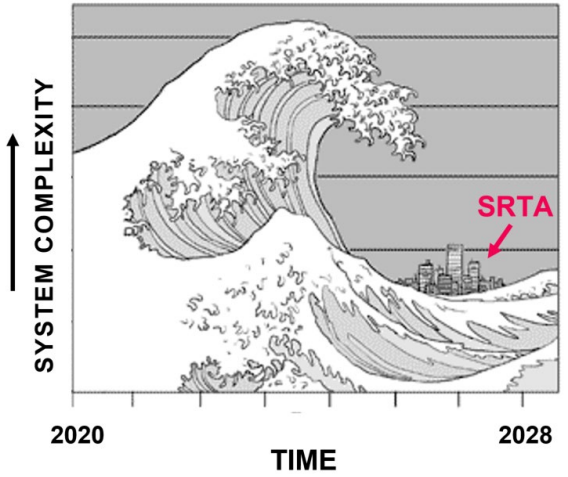
3. South East FL region is building a 267 centerline miles managed lanes network
   - FDOT began developing a Regional Concept of Transportation Operations (RCTO) Handbook
   - One project can impact the network

- Common Network Themes
  - Coordination between regional operators/stakeholders key
  - Strive for regional consistency
  - Continual improvement needs

Pricing and Operations Insights

1. Dynamic pricing, where the toll rate change according to traffic conditions, has been widely adopted
2. VDOT has been able to manage demand and capacity effectively with dynamic pricing on its express lanes
3. As SRTA deploys their managed lanes network, they are challenging the need for dynamic pricing in order to simply customer messaging and operations





Pricing and Operations Insights

4. Carma's experience is that commuters make carpooling decisions before they leave not when looking at rate signs

- Future use of dynamic pricing ultimately depends on agency goals
  - If focusing on roadway demand/capacity management, then keep doing dynamic pricing
  - If looking at travel managing demand (ie mode shift), then want to look at new pricing schemes, ie reservation system or other incentives like rebates

Any Questions?

Patrick Vu, pvu@silicontc.com, (617) 448-8611

Thank you Nick, Dan, Jim, Javier, Hari, Annie, Paul!

National Congestion Pricing Conference: Urban Track Highlights

Rachel Weinberger, PhD

September 13, 2018

U.S. Department of Transportation
Federal Highway Administration

Weinberger & Associates, LLC

“Urban Track”

- Performance Parking Pricing Innovations
  - Sf*park*
  - parkdc
  - Rethinking performance based parking pricing
  - AVI sensor networks
- Commuter Incentives
  - Parking cash-out & transit benefit ordinances
  - Access MIT
  - BART Perks
  - Making cities less congested and more connected

Performance Parking Pricing Innovations

SFpark
CIRCLE LESS, LIVE MORE

- 6 pilot areas with new policies, technology, and significant data collection
- 2 control areas with no new policies or technology, and significant data collection
- 6,000 metered spaces (25 percent of the city's total)
- 12,250 off-street spaces (75 percent of off-street spaces managed by the SFMTA)
- Pricing by time of day
- Demand responsive price adjustments
- Real time parking information

U.S. Department of Transportation Federal Highway Administration

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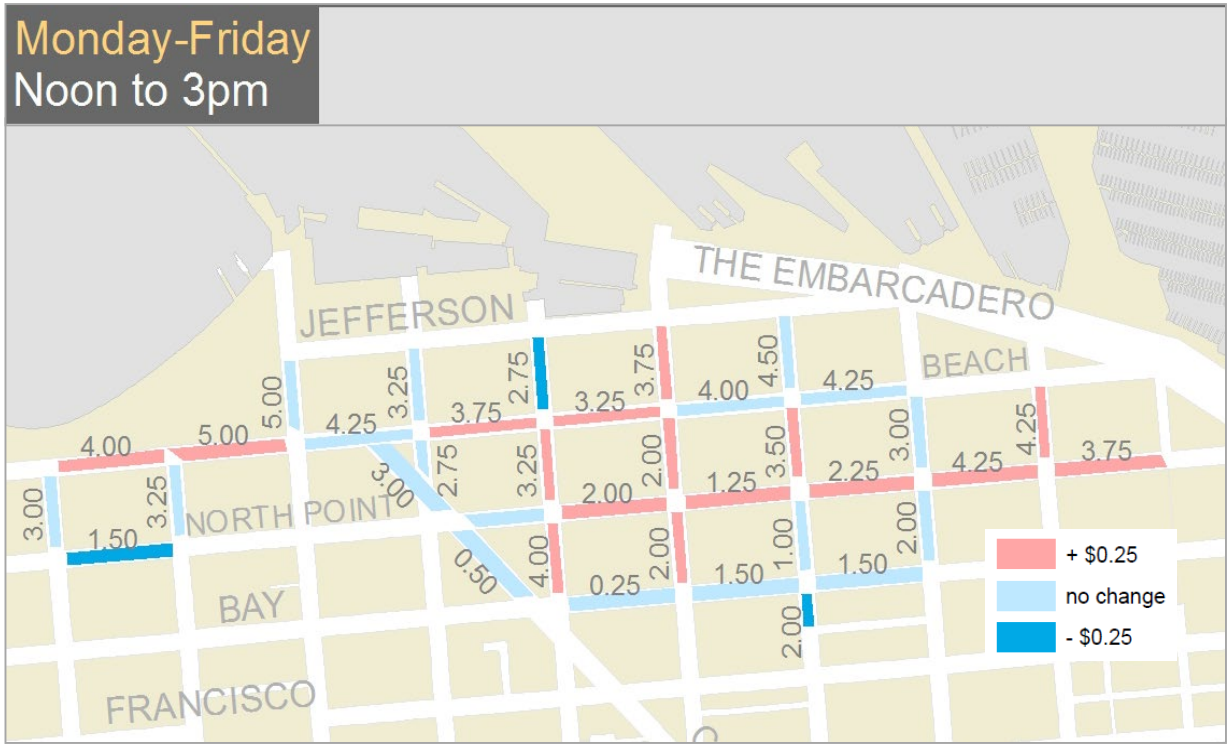
Performance Parking Pricing Innovations

SFpark
CIRCLE LESS, LIVE MORE



Demand Responsive Rate Adjustments By time of day

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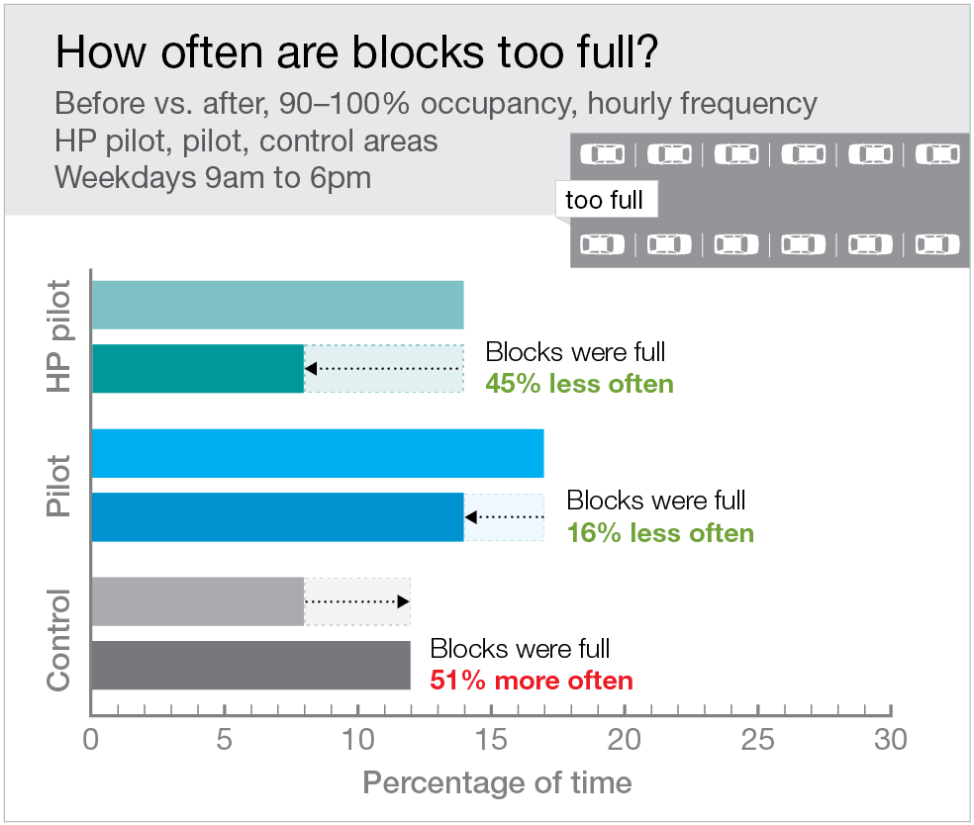
Performance Parking Pricing Innovations

SFpark
CIRCLE LESS, LIVE MORE



HP pilot = High payment compliance

Was it easier to park?

U.S. Department of Transportation Federal Highway Administration

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Performance Parking Pricing Innovations

Rethinking Performance Pricing

- ***proactive*** parking pricing instead of ***reactive*** pricing
  - Present occupancy
  - Price
  - Occupancy of nearby blocks
- Set the price of parking on a ***collection*** of blocks instead of ***individual*** blocks.

Fabusuyi, T., & Hampshire, R. C. (2018). Rethinking performance based parking pricing: A case study of SFpark. Transportation Research Part A: Policy and Practice.

Performance Parking Pricing Innovations

- 114 block faces
- 1,000 metered spaces
- 30 loading zones
- Asset lite & multi-modal (monitoring ratio 1 sensor for two spaces)
  - *Data fusion:*
  - *Paid versus occupied*
  - *Meter mobile payments*
  - *In-ground meters*
  - *Cameras & area sensors*
- Data intensive –drive to "minimum viable product"
  - *real time information availability*
  - *Pricing engine*

U.S. Department of Transportation Federal Highway Administration

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Performance Parking Pricing Innovations

- Moving in the right direction:
  - Occupancy and turnover
  - Placard usage
  - Public reaction (survey of businesses, customers, delivery drivers)
  - Double parking
  - Modal Shifts
  - Meter Revenue
- Could do better on:
  - Impact on economic activity
  - Roadway operations
- To be determined
  - Time to find parking
  - Citations and payment compliance
  - Cruising

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Performance Parking Pricing Innovations

AVI sensor networks (parkDC deployment)

Low-cost automatic vehicle identification (AVI) sensors

Dense, ubiquitous sensor network deployments

Reconstructed vehicle routes

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Commuter Incentives

Expected Impacts of City-Level Parking Cash-Out and Transit Benefit Ordinances

Scenarios

1. Monthly cash-out
2. Monthly transit/vanpool benefit
3. Monthly cash-out with daily cash-out incentive
4. Monthly cash-out with pre-tax transit option
5. Incentive to eliminate subsidized parking with transit/vanpool benefit
6. Peak parking surtax

Commuter Incentives

Expected Impacts of City-Level Parking Cash-Out and Transit Benefit Ordinances

Key Outputs

1. Reduction in VMT
2. Reduction in congestion
3. Reduction in emissions
4. Reduction in parking infrastructure costs

Commuter Incentives

Expected Impacts of City-Level Parking Cash-Out and Transit Benefit Ordinances

Scenarios ranked by effectiveness*

1. 3. Monthly cash-out with daily cash-out incentive
2. 4. Monthly cash-out with pre-tax transit option
3. 1. Monthly cash-out
4. 2. Monthly transit/vanpool benefit
5. 6. Peak parking surtax
6. 5. Incentive to eliminate subsidized parking with transit/vanpool benefit

*represents general trend but outcomes varied by context

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Commuter Incentives

AccessMIT

- Staff: 11,000
- Parking spaces: 4,000
- Parking subsidy 2017: 38% or $1,100 per permit
- Cost to build new parking $200,000/space

Commuter Incentives

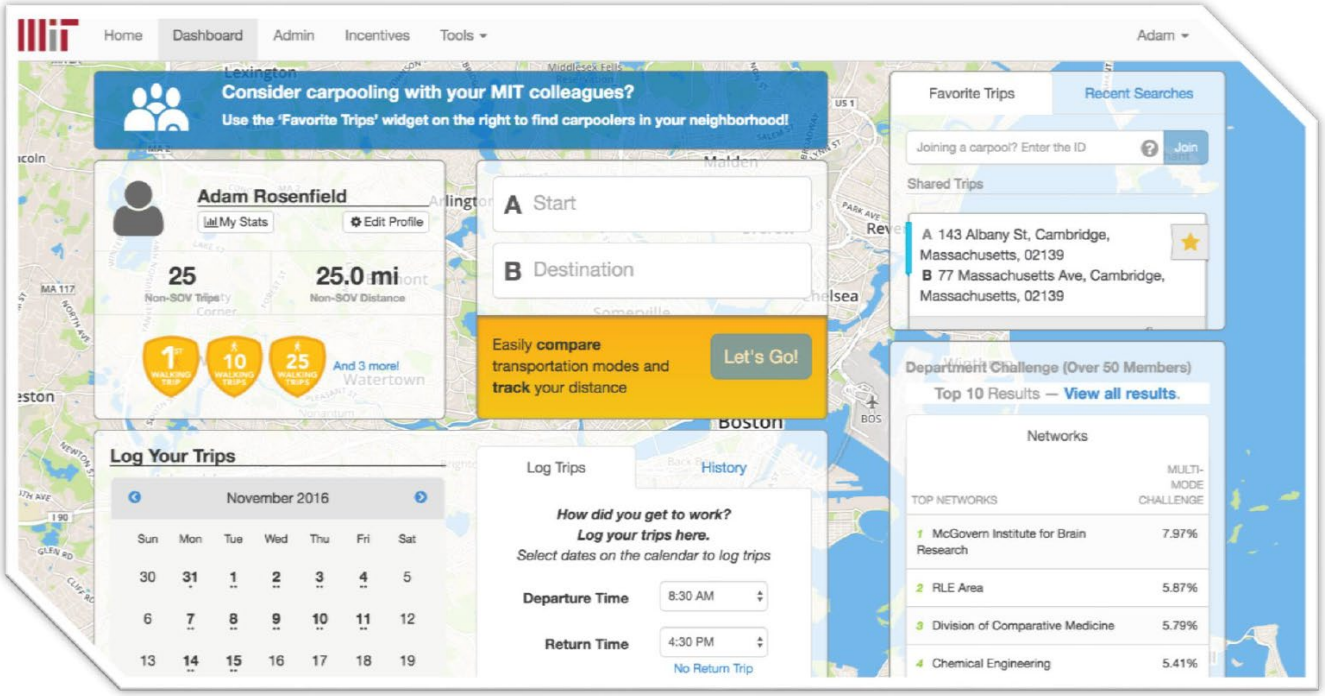
AccessMIT

Features

- Shift to daily pricing
- Free bus/subway passes
- Increased commuter rail subsidy
- New parking subsidy at transit stations
- Online commuter information dashboard
- Major marketing effort

Commuter Incentives

AccessMIT: Dashboard



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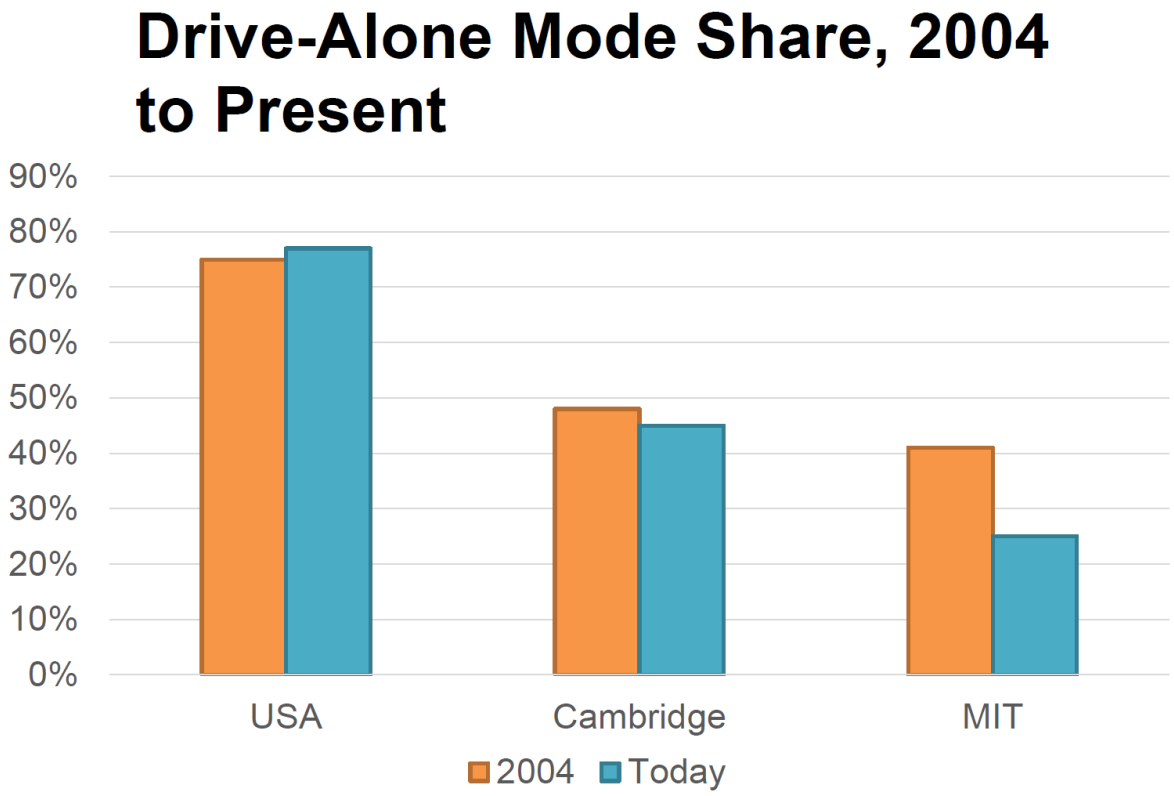
Commuter Incentives

AccessMIT



Source: US Census & ACS; MIT Commuter Survey

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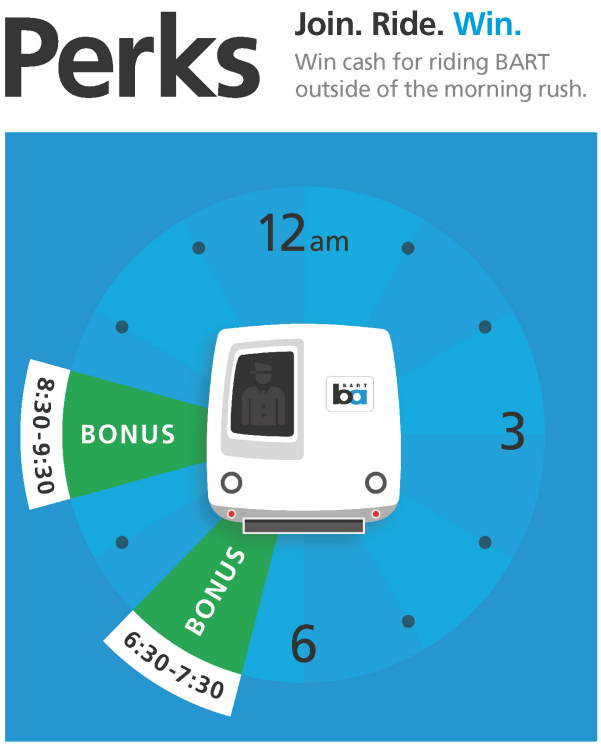
Commuter Incentives

BART Perks



Visit BARTperks.com to learn more.

Commuter Incentives

BART Perks

Participants

- Not regular morning commuters
- Not peak hour commuters
- Regular, but not transbay, commuters
- Transbay peak hour & sometimes transbay/sometimes peark hour

Commuter Incentives

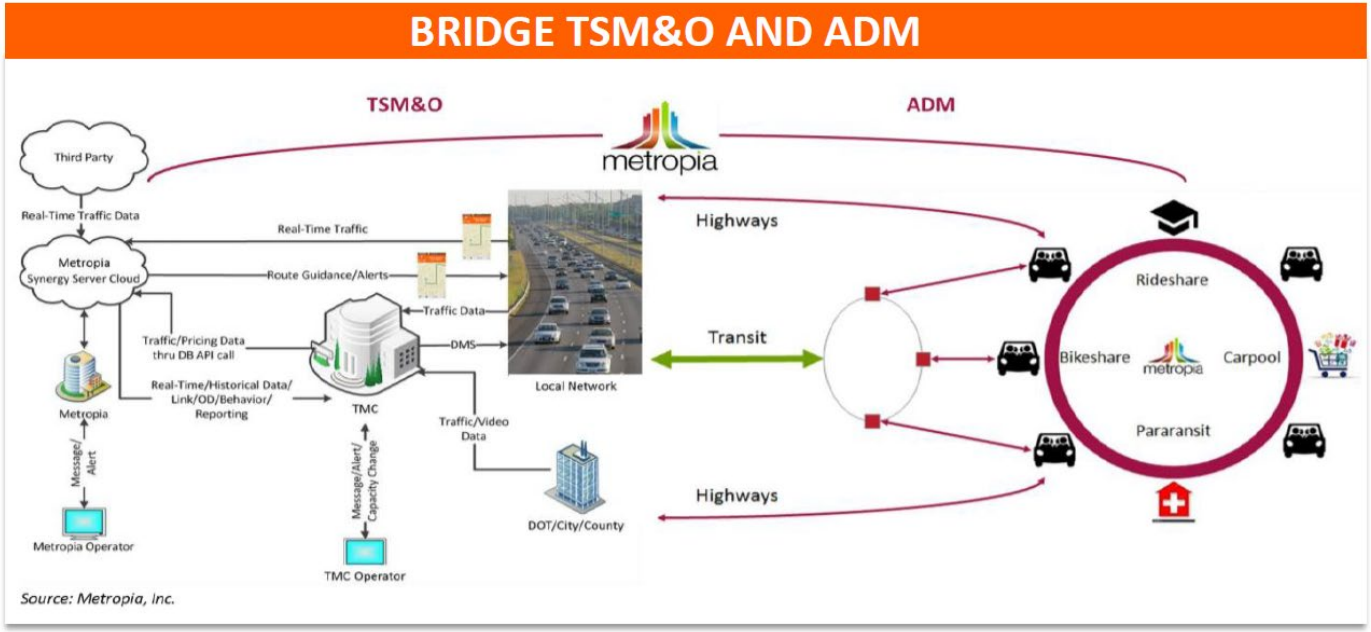
BART Perks

Outcomes

- Some mode shifting which persisted
- Didn't reach the "right" riders
- Those who "spun the dial" were engaged in the [app] game and more likely to shift behavior

Commuter Incentives

Making cities less congested and more connected (Metropia platform)



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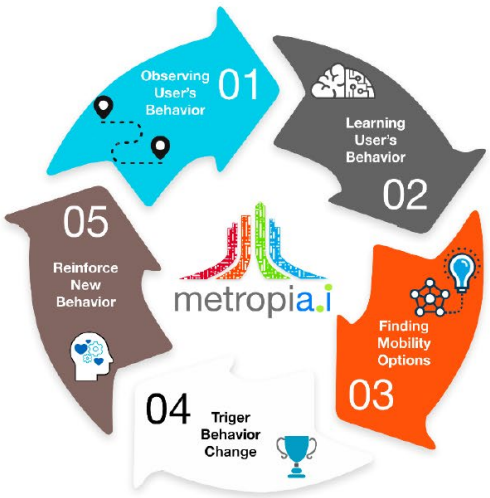
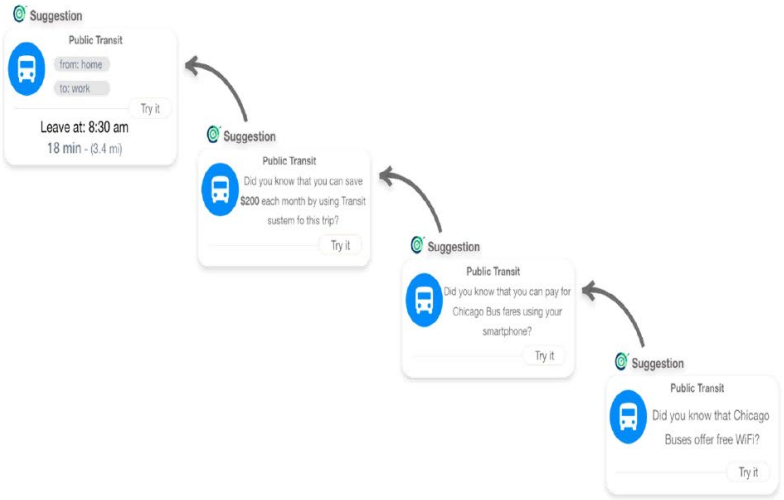
Commuter Incentives

Making cities less congested and more connected: taking baby steps

TRIGGERING BEHAVIOR CHANGE





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Summary

Eight really interesting presentations with some common themes:

- Need to get people's attention
- Sometimes you can using gamification
- Pricing matters and pricing in finer increments (daily cash-out versus monthly) can be more effective
- Information crucial

THANK YOU!

I’m Rachel Weinberger and this is my life..

Reach me here:

rachelw@weinbergerand.com

U.S. Department of Transportation
Federal Highway Administration

Weinberger & Associates, LLC

Congestion Pricing Webinar: Lessons Learned from the 2018 National Congestion Pricing Conference

PUBLIC ACCEPTANCE

Mia Zmud, MZ Insights

September 13, 2018

MZinsights

Overview

- Cross-cutting themes and observations
- Presentation highlights
- Summary of lessons learned

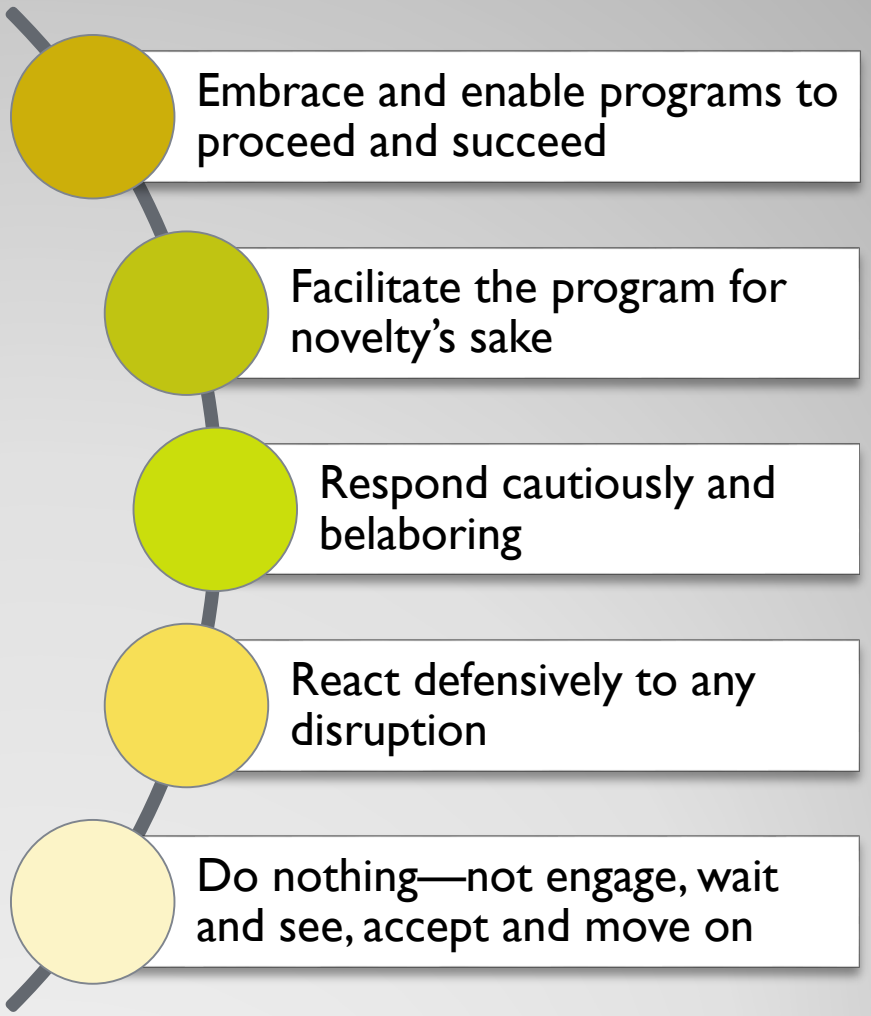
Cross-cutting Themes

- Public acceptance of congestion pricing is a major challenge
- While customers readily accept premium pricing in many areas of their lives (hotel, air travel) they are warming to the concept for paying for road travel as well
- Communications and public education is essential in overcoming barriers to acceptance
  - Open and honest
  - Customer and data centric
  - Integrated marketing campaigns, social and online
  - Collaboration is key

Roadblocks to Public Acceptance

Diversity & Complexity of Congested Pricing Programs	Role of Congested Pricing to Support Multimodal Travel Options	Expectations from the Public Perspective
Not all programs are created equal and rules can sometimes change	Multiple-messaging designs can confound how they are received	Anticipated benefits should align with actual experiences

What Might Public Posturing Look Like



MZINSIGHTS

SESSION HIGHLIGHTS

Communications and Public Acceptance

Renee Hamilton VDOT

The role of effective communication when advancing congestion pricing along the I-66 corridor in Northern Virginia

Emily Glad WSDOT

The creation of an integrated communications program, guided by market research, for the I-405 Express Lanes

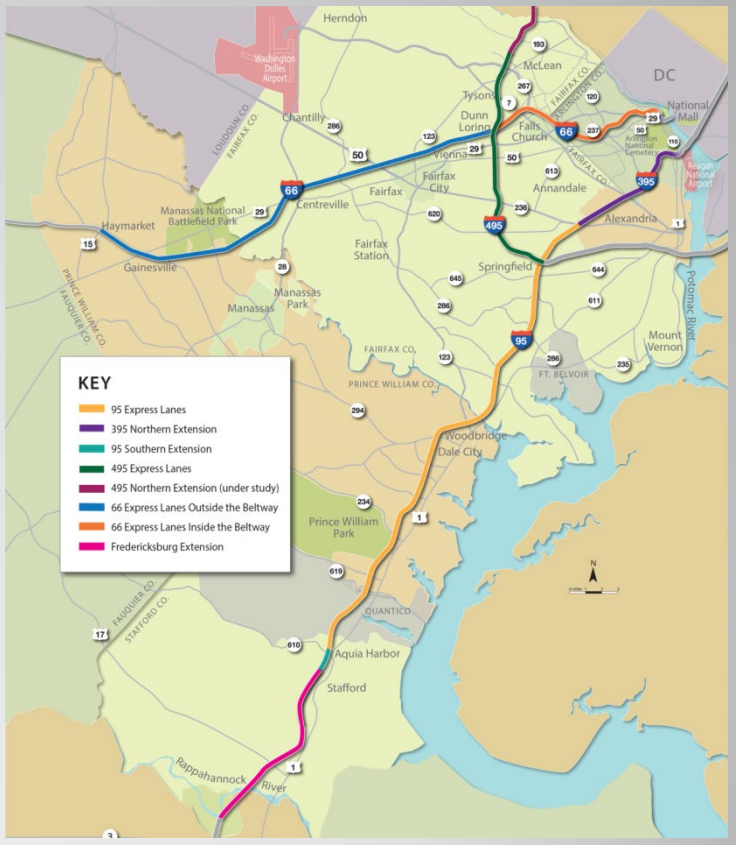
Megan Castle CDOT

Addressing operational challenges of the I-70 Mountain Express Lane through public education

VDOT: Communications and Public Acceptance of Transform 66 Program

Transform 66 Program

- Introducing nation's first peak-period, all lanes, dynamically-tolled roadway
- Inside & Outside the Beltway
- Goals:
  - Improve multimodal mobility by providing diverse travel choices in a cost-effective manner
  - Enhance transportation safety & travel reliability
  - Reduce congestion
  - Increase ridesharing & transit use

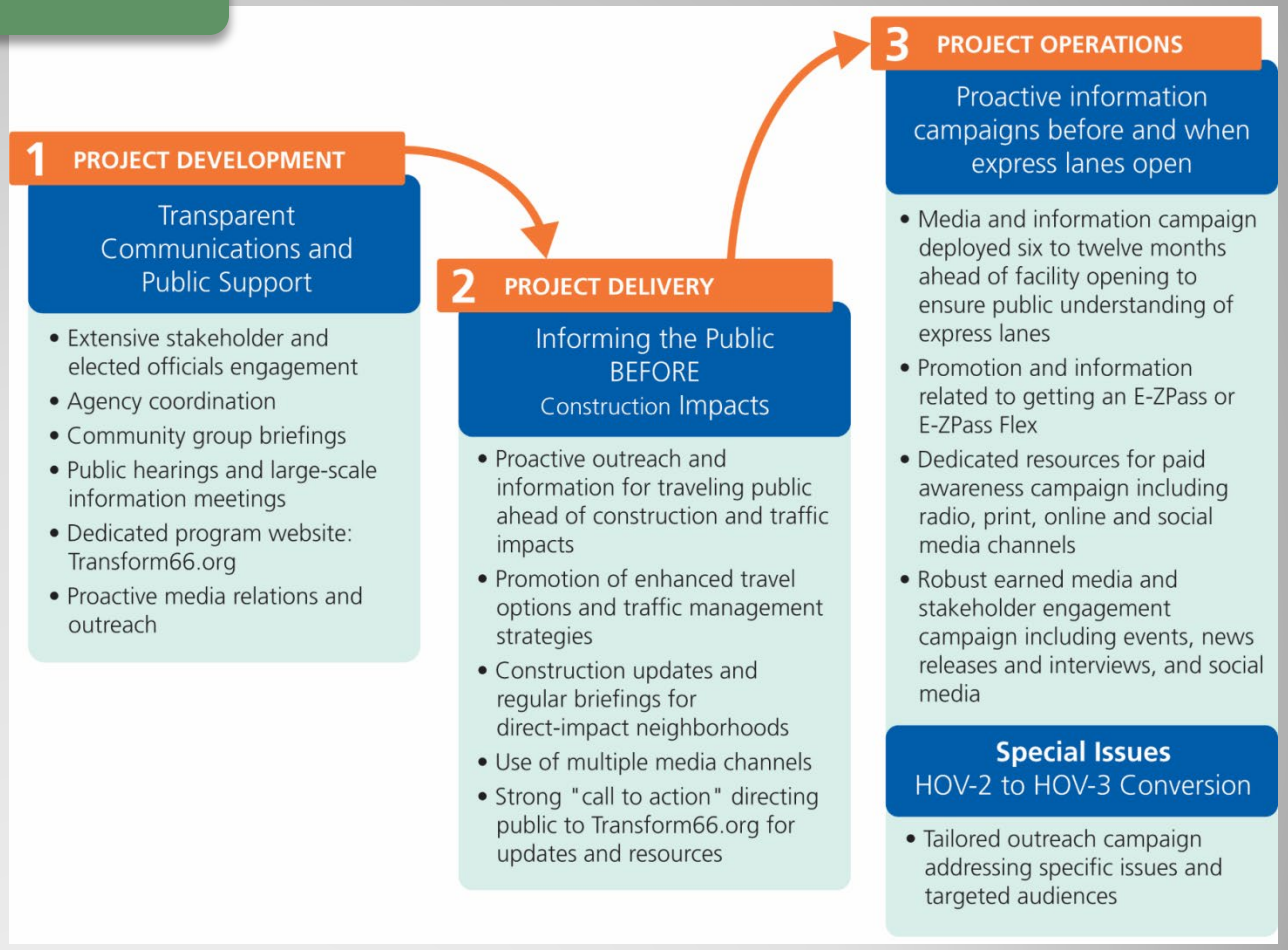


MZINSIGHTS

VDOT Approach

Highlights

- Understand context of project location from customer impacted
- Involve public / stakeholders in goal setting in all stages
- Integrated media campaigns
  - Tolling information
  - Performance Updates
- Investment in multi-modal projects moving forward



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WSDOT: I-405 Express Toll Lanes

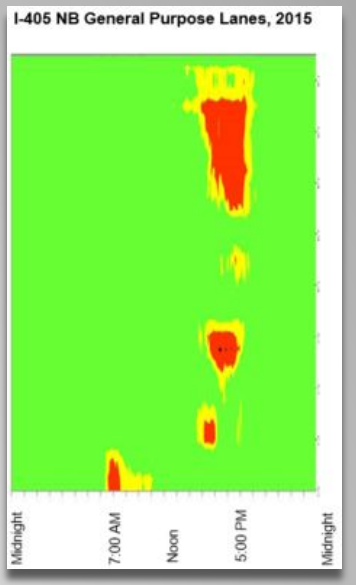
- One of the fastest growing regions in country
- One of Washington's most congested corridors
- Solution & Challenges: Different rules than existing WA toll facilities and limited access points vs. continuous access

MZinsights

WSDOT Approach

Highlights

- Operational Challenges: Heavy demand for EL; Travel improved for many, but shifts in traffic created new bottlenecks
- WSDOT data showing improved travel didn't match driver experience, resulting in public skepticism of WS data
- Sharing of raw data through WSDOT BLOG and API for third-party developers to use/analyze
- Lessons learned:
  - Set expectations about project benefits
  - Ensure data matches driver experience
  - Be prepared for public feedback and have a proactive plan to respond
  - Support will grow over time as drivers experience the benefits of the lanes



WSDOTBLOG

Thursday, January 21, 2016

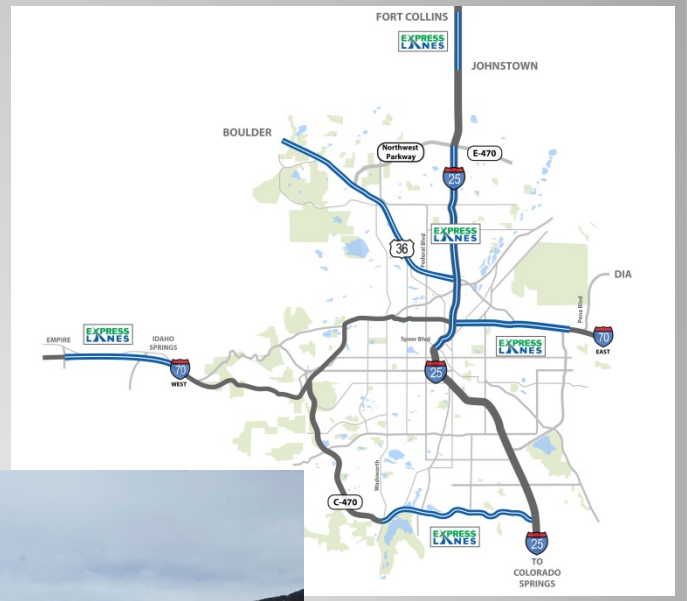
You want it? You got it.

Feedback-driven changes ahead on I-405

MZinsights

CODOT: Setting toll rates for the I-70 Mountain Express Lane

- One of the most congested corridors in the nation and connecting Den to mountains
- Solution & Operational Challenges:
  - Recreation travelers vs commuters
  - Terrain; winter weather
  - State's first use of Dynamic pricing
  - Open weekends and holidays;
  - Eastbound only; used as a shoulder other times

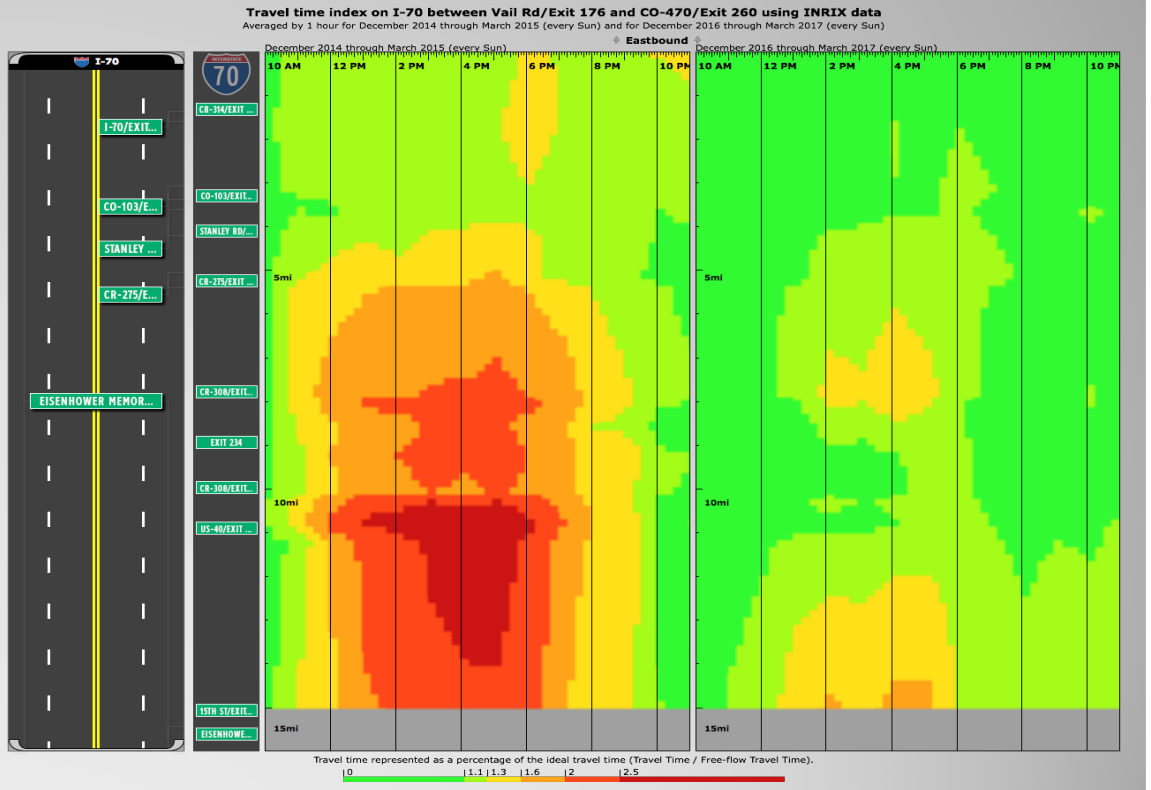


MZINSIGHTS

CODOT Approach

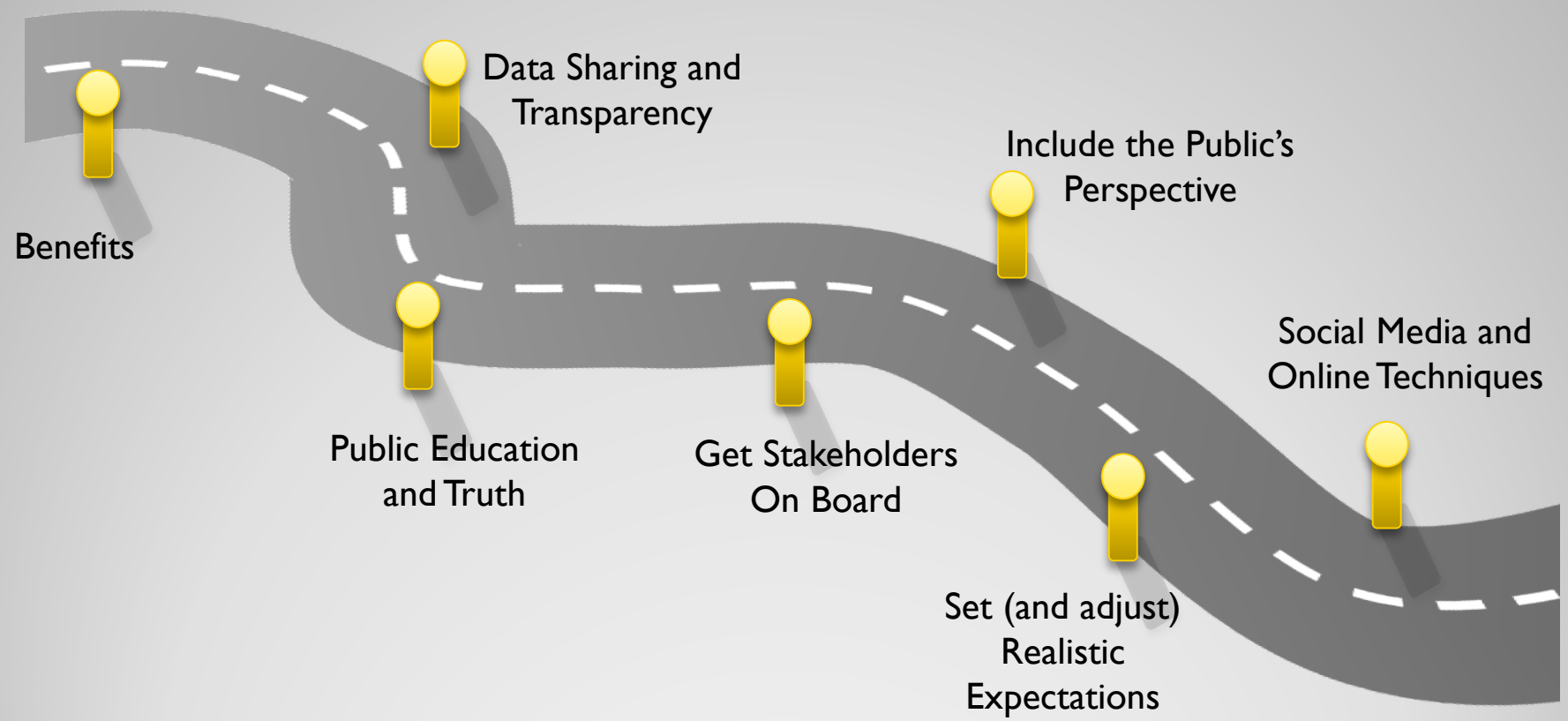
Creating & Building Public Acceptance

- Protocols for public outreach to mitigate operational challenges
- Social traditional and paid PR
  - Virtual town halls (attracting 3k-5k attendees)
- Stressed "Express Lane Brand" to emphasize difference from other toll roads in the region.
- Results drive acceptance: Travel time savings up to 20-50% for all lanes (including non-tolled general purpose lanes)



MZINSIGHTS

The Road to Public Acceptance



MZINSIGHTS

Summary & Questions

- Communications is essential
  - Prepare for CP and program nuances and adjust expectations (attitude adjustment)
  - Brand to differentiate from other toll projects
  - Inform for behavior change
  - Involve in setting objectives
- Honest, open and transparent
  - Plan / protocols for outreach
  - Results can drive acceptance
  - Share (raw) data publically
- Collaborate & involve
- Integrated campaigns and leverage social and online

TRB
TRANSPORTATION RESEARCH BOARD

Innovations in Pricing: Road Usage Charging

Summary of 2018 Congestion Pricing Conference Proceedings

Trey Baker
Consultant, Advisory Services, WSP USA
Chair, TRB Standing Committee on Congestion Pricing

Road Usage Charging (RUC)

- Levies fees based on distance travelled
  - *Numerous reporting and assessment options*
  - *Numerous policy options*
- Evaluated primarily as a revenue source
  - *More sustainable than fuel taxes*
  - *Arguably more equitable than fuel taxes*
  - *Growing interest in the application of congestion pricing*
  - *Could be levied in conjunction with other fees and/or services*
- Concept is viable, but challenges remain
  - *Administrative cost and enforcement*
  - *Addressing driver concerns (privacy & fairness)*
  - *Multi-state interoperability*
  - *Leveraging emerging technologies*

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  - *Leveraging emerging technologies*

Discussed in more detail at conference panel

The Panel

— Moderator: Trey Baker, WSP
"Road Usage Charging: Update on Activities in the US"

— Panelist: Dr. Patricia Hendren, I-95 Corridor Coalition
"Bringing MBUF Exploration to the East Coast"

— Panelist: Ken Buckeye, Minnesota Department of Transportation
"Distance Based User Fees: Minnesota's Approach"

Recently Completed Efforts

- California Road Charge Pilot Program
  - *5,129 participating vehicles (including 55 heavy vehicles) over 9 months*
  - *Multiple reporting options*
    - 79% chose an automated option
    - 62% chose a location-based option
- Colorado
  - *Nearly 150 participants from 27 different counties*
  - *3 mileage reporting options*
    - Manual odometer reading option
    - GPS and non-GPS enabled mileage reporting device.
  - *Participants who chose technology options had higher levels of satisfaction (93%) than relative to the manual option (55%).*

Ongoing Efforts

- OReGO
  - *Nation's first RUC implementation*
  - *Structured as a voluntary fuel tax replacement*
  - *Relies on private account managers to provide devices and administer accounts (with a state-based optio*
- Washington State
  - *Initiated in 2018*
  - *Target of 2,000 participants over 12 months*
  - *Two service providers, multiple reporting options*
    - Mileage permit
    - Odometer reading
    - "Plug and Play"
    - Smartphone app

Ongoing Efforts

- Oregon DOT Open Architecture Tolling
  - *Tolling evaluation underway for I-5 and I-205 in Portland*
  - *ODOT developing an open architecture approach to tolling*
    - Standards-based
    - Technology agnostic
    - Multiple vendors
    - Interoperable
  - *Future integration with OReGO and mobility services*

Upcoming Initiatives

- RUC West Regional Pilot
  - *Multi-state effort between Oregon and California*
- Hawaii
  - *3-year demonstration will test manual and automated methods*
  - *Manual option will target 1.1 million vehicles owners*
  - *Follows a 2015 feasibility study*
- California
  - *Assess administrative costs of a statewide-mandated system*
  - *Assess the impact of changing technology, and*
  - *Evaluate compliance and enforcement approaches.*
- Colorado
- Utah
- Missouri

Wester Road Usage Charging Consortium (RUC West)

- Formed in 2013
- Voluntary coalition of 14 western state DOTs
- Committed to
  - *collaborative RUC research and development*
  - *build public sector organizational capacity for, and expertise in, RUC systems and the associated policy, administrative, and technology issues*
- Over $800,000 invested in various research efforts

I-95 Corridor Coalition Pilot

- I-95 CC is composed of 16 states and the District of Columbia
- Funding received through the Surface Transportation System Funding Alternatives (STSFA) program
- Purpose: Explore the feasibility of replacing the gas tax with a mileage-based user fee program in a multistate environment.
  - *How to address out of state-of-state mileage?*
  - *What is the relationship between tolling and MBUF?*
  - *How and where do trucks fit in?*
  - *How can value added services increase public acceptance*

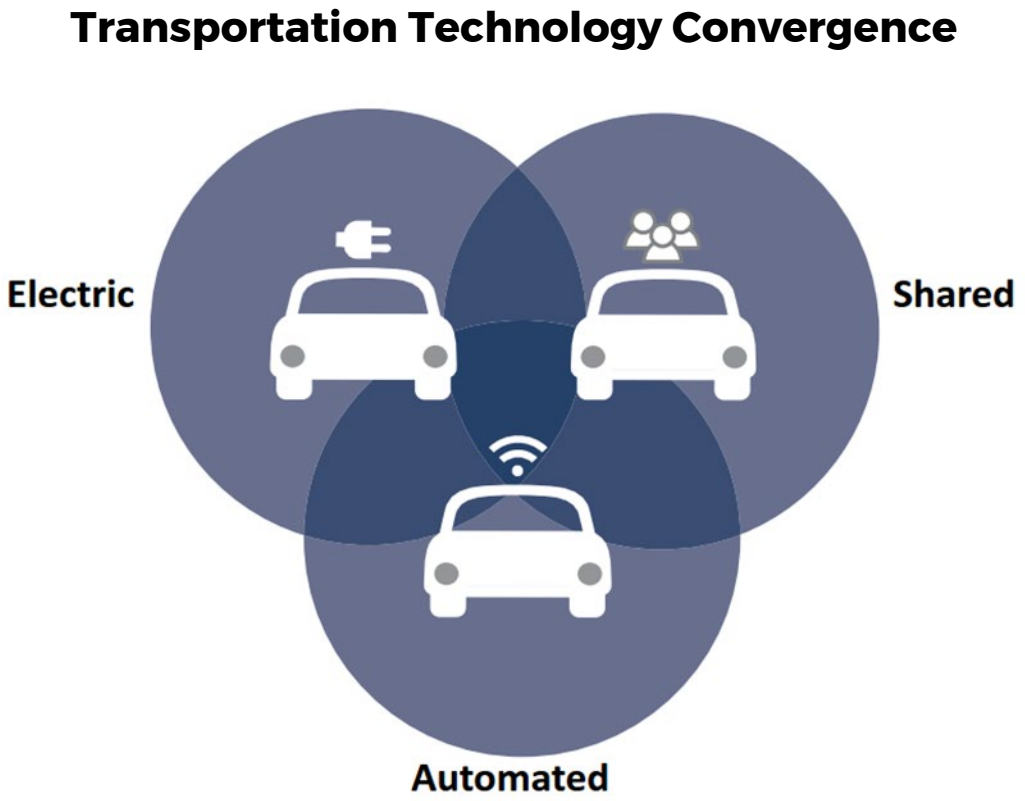
I-95 Corridor Coalition Pilot Summary

Passenger Vehicles	Commercial Vehicles
Phase 1 kicked-off on May 1st	Planned for later in 2018
138 enrollments as of July 31st	50 vehicles equipped with EROAD
Technology: OBD-II device, smartphone, GPS location (optional), cellular communication	**Technology:** In-vehicle hardware, GPS location, cellular communication
Value Added: Geofencing, battery health, emissions, engine diagnostics, trip logs, driver scores, gamification	**Value Added:** Tax reporting, fleet management, permitting, overweight, fuel tracking, insurance

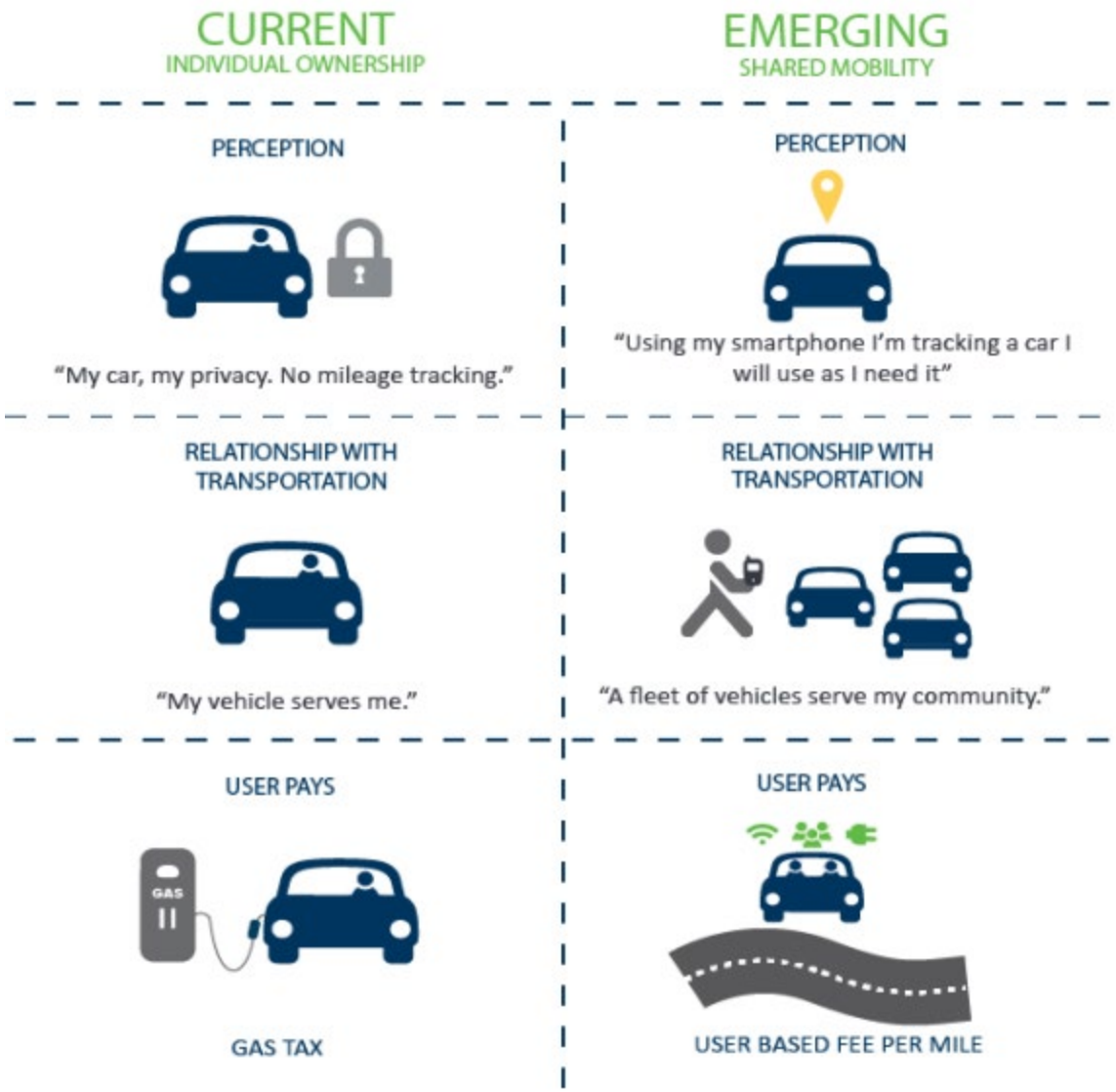
"Turning vehicles into a transportation Fitbit"

Minnesota Distance-based User Fee (DBUF)

- Initiated in 2018
  - *Funding from the Federal Surface Transportation System Funding Alternatives (STSFA) program*
- Recognition of the “interim” nature of technology
- **Objective:** Prove that on-board embedded technology on Shared Mobility vehicles can be used to efficiently and effectively collect distance based fees



Minnesota Distance-based User Fee (DBUF)



Objectives

- Starting with car sharing services
- Research and development
- Develop a reliable and secure DBUF model that can be integrated with state fee collection systems
- Establish appropriate pricing
- Ensure efficiency of implementation and administration
- Chart a path forward for wider implementation

Conclusions

- Consumer technology has made people more comfortable with the idea of sharing location
  - *Pilot participants prefer location-based technology approaches*
- Consumer technology has made collecting a mileage-based fee easier than before
  - *More vendors*
  - *More technology options*
  - *More data*
- Continually re-emphasize the importance of education:
  - *Transportation system costs*
  - *User costs*
  - *Transportation system needs*
  - *Current funding approaches and their limitations*

"RUC re-establishes the relationship between cost and how much you drive." → **More equitable** → **More sustainable**

Thank you for your time!

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