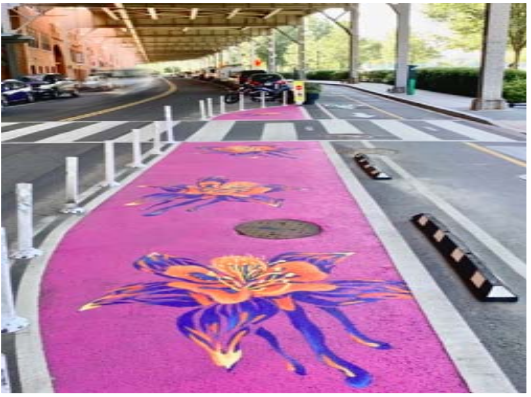
PILOT PROJECT TRAINING

COMPASS



WGI
INSPIRED BY DESIGN

TOMORROW'S INFRASTRUCTURE SOLUTIONS TODAY

WHAT WILL WE COVER?

The What & Why of Pilot Projects:
Focus on Mobility Technologies

Summary Pilot Project Design

Examples

Success Factors in Designing & Scaling Pilots

Emerging Issues

Exercise: Outlining an Autonomous Shuttle Pilot

DEFINITION

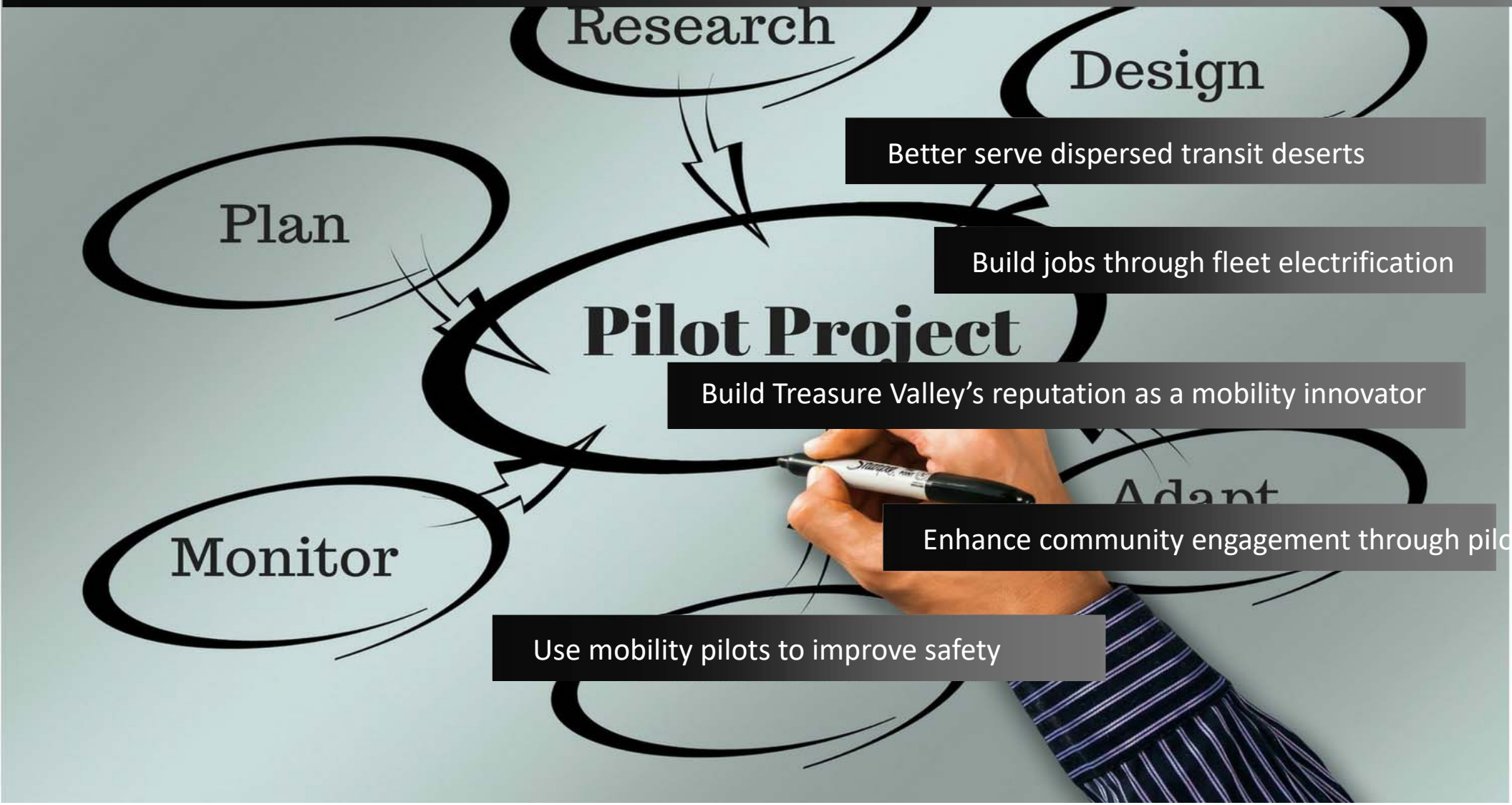
AKA: demonstration, pilot study, prototype, test, or trial

A small scale … preliminary study …. conducted to evaluate:

- Feasibility
- Time
- Cost
- Adverse events

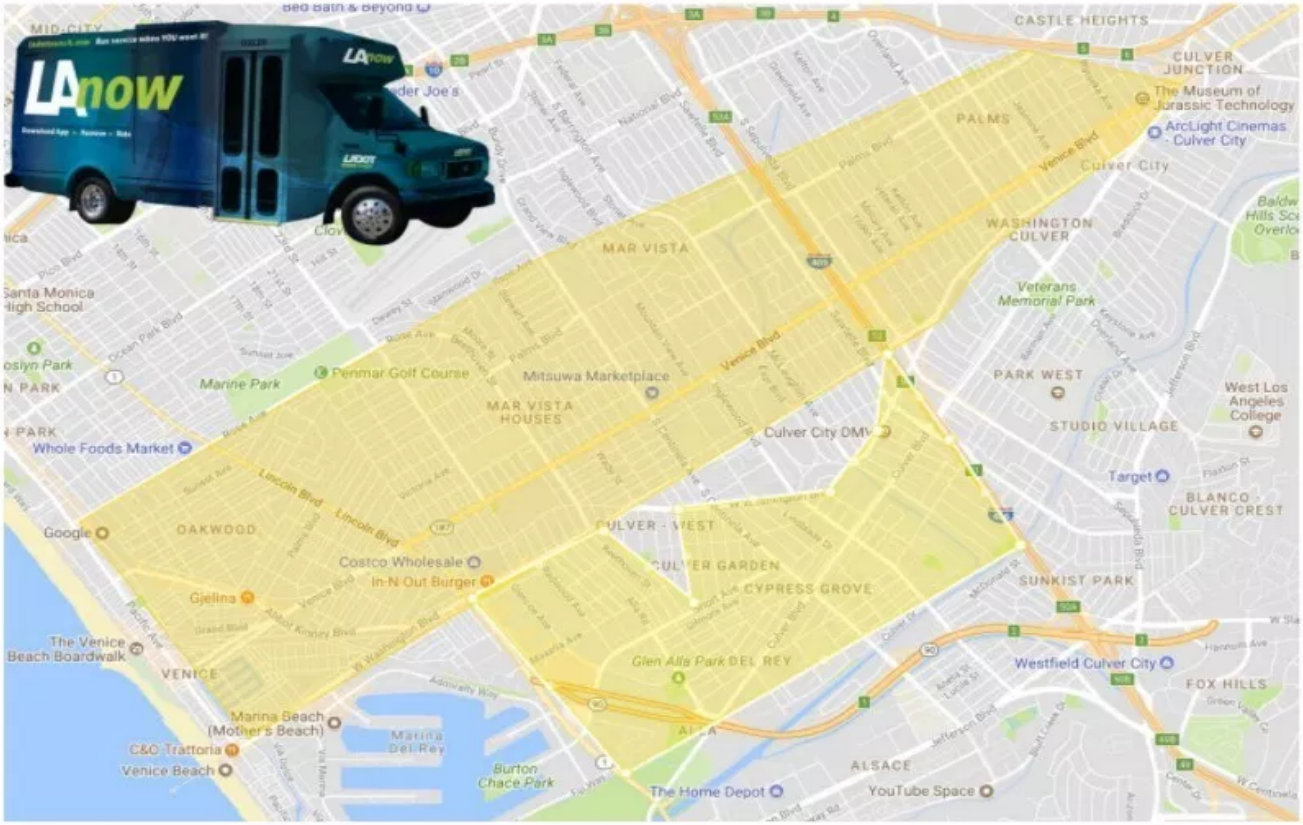
… and improve upon the design prior to full implementation

JOB #1: GOALS AND DEFINITION OF SUCCESS



- Better serve dispersed transit deserts
- Build jobs through fleet electrification
- Build Treasure Valley's reputation as a mobility innovator
- Enhance community engagement through pilo
- Use mobility pilots to improve safety

MICRO TRANSIT PILOT PROJECT ON WESTSIDE



- Length of Time
- Geographic Area(s)
- Budget
- Staffing

LADOT TRANSIT

March 28, 2018

MARKETING & BRANDING THE PILOT

How to Promote the Service?

- **Community**: schools, Walmart, social services, senior residences, extended stays, management offices, library, rec center
- **Commuters**: reverse commute; TMO; residential; station
- **Competitive/Complementary Services**: employer or government shuttles
- **Direct marketing**: mail, flyers, direct contact, associations, municipalities, transit vehicles

Office Park

Target Eventual Service Users

Design & Test for Clarity

Design & Test Seamless Journeys

Stories of How Service is Life-Changing

On-demand flexible shuttles in specified geographies

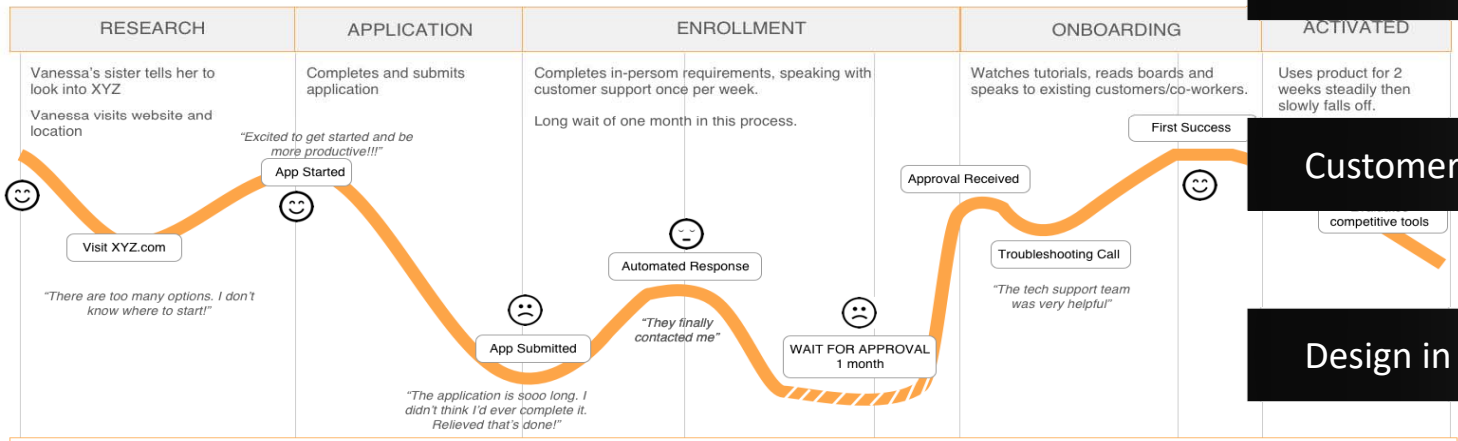
RTD

SEAMLESS SERVICE: ON-BOARDING CUSTOMERS

Customer Journey Map

Vanessa Smith

Persona Details	Scope Summary	Goals
Bio of key attitudes and behaviors	Detail the scope of the journey being detailed below	List the motivations driving this particular persona within the scope detailed



Opportunities				
Improve information on website and customer service.	Streamline process. Reduce steps and take online.	Reduce wait time by optimizing internal processes. Improve wait communications.	Accelerate time to get to first successful goal.	Improve the contextual help and cues for taking next steps.

Treasure Data Blog

Develop User Journey Maps

The First Use

Customer Service

Design in Feedback

COMPASS COMMUNITY PLANNING ASSOCIATION

WGI

DATA FOR PILOTS

Goals -> Metrics (KPIs) -> Data Needs

- Best Way to Collect & Analyze?
- Data Ownership, Access, Reporting
- Communicating Security & Privacy

SharedStreets

DATA FOR PILOTS: A ROLE FOR MPOS?

General Bikeshare/Transit Feed Specifications -> Mobility Data Specifications

Ability to aggregate standard data on all shared modes versus privacy considerations & ability to scale

Third party data stewards: Universities, private companies (Remix, SharedStreets, Ride Report

Translink

Path Forward: Data Standards

GBFS is the present. An MDS-like standard is the future.
How should TransLink navigate this evolving landscape?

1. Require one GBFS feed for all of Metro Vancouver

As new municipalities adopt micromobility services, require one aggregate GBFS feed for all of Metro Vancouver rather than individual municipal feeds. This will also set the precedent for future data sharing activities. While not technically challenging, this mandate will require municipal cooperation. However, this feed does not support ridehailing

2. Gauge technical feasibility/cost of MDS adoption

Review TransLink's in-house Information Technology and Analytics capabilities. Determine if there are sufficient resources/expertise and cooperation with area municipalities to create an aggregate Metro Vancouver MDS feed. Explore the options of using third-party transportation data companies (such as Remix, Populus, or Ride Report) to determine cost of using their platforms for any analysis needed.

Based on the outcome of these findings, there are three primary options:

a. Adopt MDS in-house (Portland model)

- Create internal systems for MDS data storage and analysis.
- Contribute to the MDS Github to ensure TL's requirements and interests, such as standards for ridehailing, are met
- *Ambitious project*; likely will require labor of at least one skilled employee full-time

b. Adopt MDS with third-party (LA model)

- Use third-party's systems for MDS data storage and analysis.
- Contribute to the MDS Github to ensure TL's requirements are met
- *Large project*; likely will require at least 50% of one skilled employee's time

c. Wait to adopt MDS (DC model)

- Wait for technology to improve and ease of adoption to increase.
- Require GBFS feed and regular static reports
- Determine if a third-party's dashboard/tools is viable for static report analysis

KPIs: A ROLE FOR MPOS?

Micro-Transit Pilot Program *Page 3*

Productivity - The key metric for ridership will be boardings per revenue hour. This is consistent with how productivity is measured on the bus and rail services. Data to calculate this measure will come from reports in the TransLoc software. The target at the end of the first year of service will be six or more boardings per revenue hour.

Cost-Effectiveness - The key metric for cost-effectiveness will be subsidy per boarding. This will be measured using actual costs and revenues received. The target at the end of the first year of service will be $9.00 or less subsidy per boarding.

Shared Rides - The key metric for vehicle occupancy will be percent shared rides. Data to calculate this measure will come from reports in the TransLoc software. The target at the end of the first year of service will be 25 percent shared rides.

Connecting transit trips - The key metric for connecting transit trips will be percentage of trips to/from transit hubs. Data to calculate this measure will come from reports in the TransLoc software. The target at the end of the first year of service will be more than 25 percent of trips to/from transit hubs.

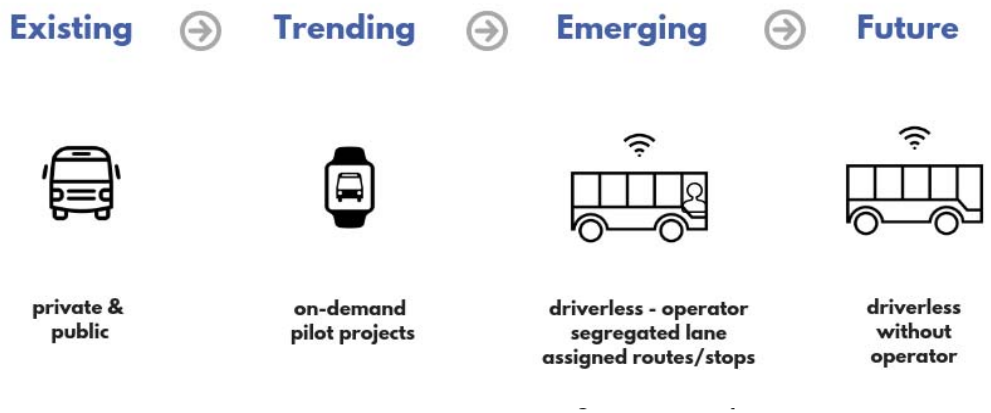
Customer satisfaction - The key metric for customer satisfaction will be the percent of passengers satisfied with the service. Data will be collected using a statistically valid survey conducted by the driver. The target at the end of the first year of service will be more than 85 percent of passengers will indicate that they are very or somewhat satisfied with the micro-transit service.

TransLoc & CALCOG

Santa Monica CA

Anticipatory Scenarios

WHAT IS ANTICIPATORY SCENARIO PLANNING?



Driving forces for on-demand

bus network redesign
first-last mile demonstration
grant for P3

Tipping Points for limited AV transit

successful pilot - private lanes
successful pilot - public streets
safety protocol
pedestrian interaction
ridership goals
service efficacy

Tipping Points for full scale AV transit

pilot - scaled, on-demand
safety protocol
cybersecurity
congestion metrics
equitable service metrics
financial projections
supportive land use/mobility hubs

Edge Cases & Contingencies

SCENARIO PLANNING & TRADE-OFFS?

External Forces

FUTURE NAME	IMMIGRATION AND TRADE	NATIONAL TAXES AND FUNDING	NATIONAL GROWTH	LAND USE PREFERENCES	NATIONAL ENVIRONMENTAL POLICY	NEW TECHNOLOGIES	NATURAL DISASTERS
Rising Tides, Falling Fortunes	**Reduced**	**Lower funding** due to tax cuts	**Limited**	Housing: more **urban** Similar to today	**Relaxed regulations** (3' SLR)	More **limited**	Magnitude 7.0 Hayward Fault earthquake
Clean and Green	Similar to today	**Higher funding** via carbon tax	Similar to today	Housing: more **urban** Jobs: more **dispersed**	**Stricter regulations** (1' SLR)	**Widespread**	Magnitude 7.0 Hayward Fault earthquake
Back to the Future	**Increased**	Similar to today	**Rapid**	Housing: more **dispersed** Jobs: more **urban**	Similar to today (2' SLR)	**Widespread**	Magnitude 7.0 Hayward Fault earthquake

MTC

PILOT IMPLEMENTATION DESIGN

Santa Monica CA

- Impact Assessments on Plausible Scenarios
- Fees & Bonding Requirements
- Workplan by Week & Training Plan

PILOT TRACKING & EVALUATION

Midpoint Evaluation For Powered Scooter Share Pilot

Share this: Facebook Twitter Email

Tuesday, April 16, 2019

SFMTA

- Tracking & Evaluation Process
- Mid-Pilot Reviews
- Action Triggers
- Root Factors

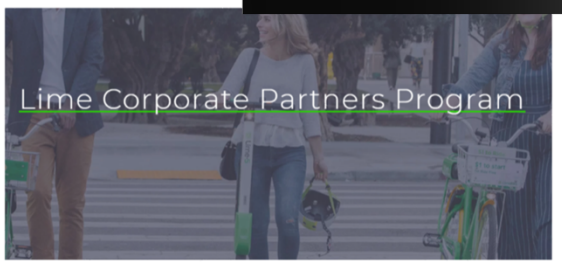
ROOT FACTORS: THE WHOLE PRODUCT WHEEL

PILOT CLOSE OUT

Lime

UPGRADE YOUR PROPERTY
WITH SMART, SHARED
MOBILITY

Host Lime Scooters and Bikes at Yo
Small Business



FASTER, HEALTHIER MOBILITY
FOR YOUR EMPLOYEES

Decision to Proceed

Pilot Project Pivot

Close Out

MPO ROLES

TIPS

Infrastructure

Services

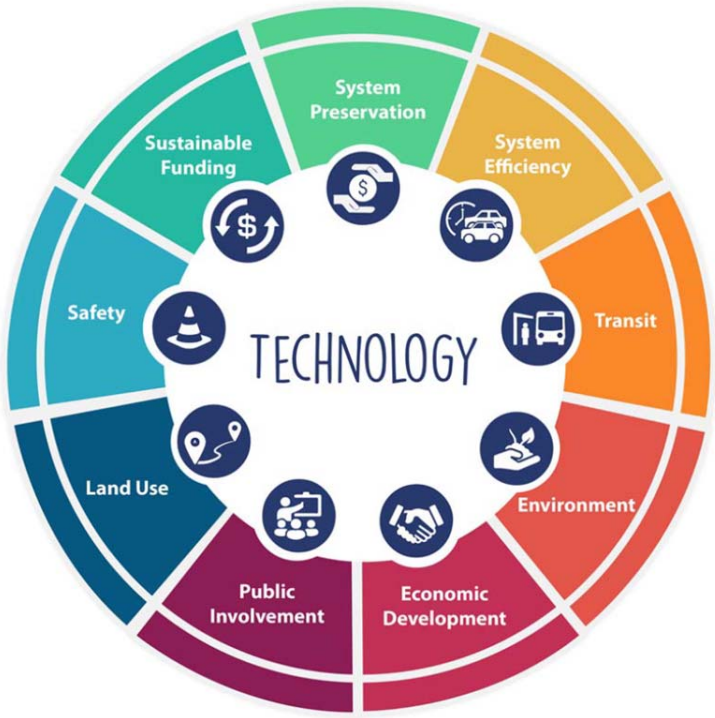
LONG RANGE TRANSPORTATION PLANNING

PILOT PROJECTS & PROGRAMS

Travel Demand Modeling

Congestion Management

Freight



QUESTIONS & DISCUSSION

PARKING & CURBSIDES: TRENDS

Hmag

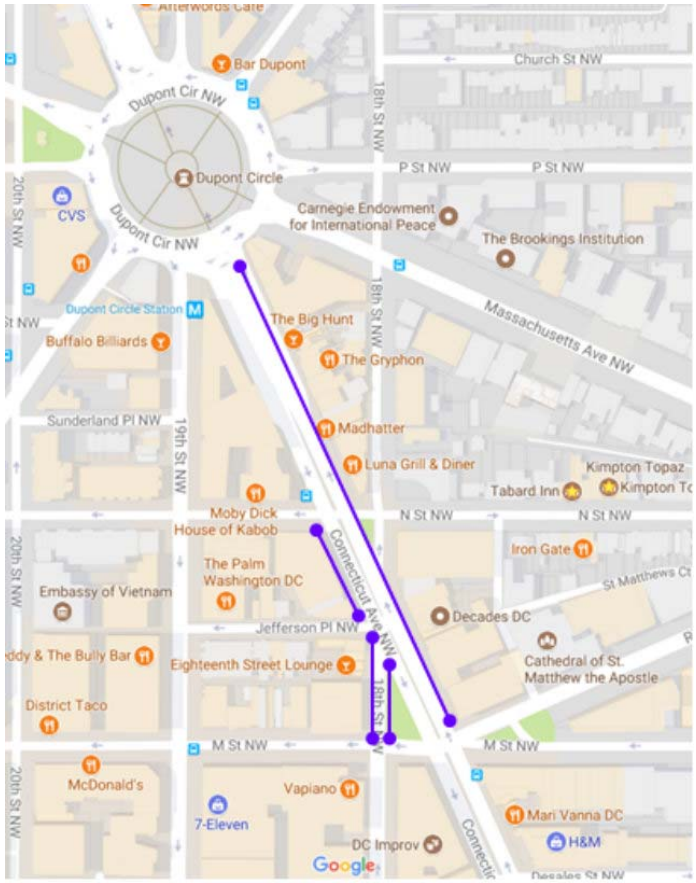
DDOT

Dynamic Parking

TNC Pick-up & Drop-off

Curbside Management for Deliveries

PARKDC EXPANSION: DESIGNATED TNC ZONES



DDOT

Replace parking with TNC pick-up & drop-off

Goals: (1) Reduce congestion in entertainment zone, (2) Reduce drunk driving, (3) increase pedestrian safety

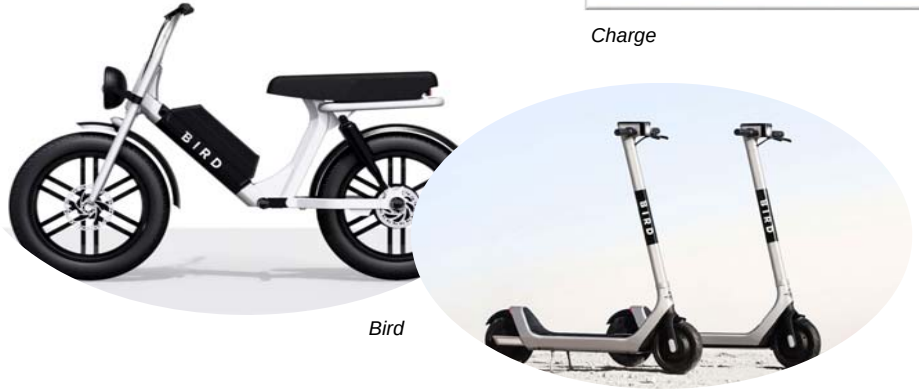
Results: (1) Positive reviews from businesses and enforcement, (2) Unofficially been advised of increase in customer uptake, reduction in dwell times

Pivot: Continued issues with wayfinding and signage to prevent parking.

MICROMOBILITY: TRENDS

Lime

Charge



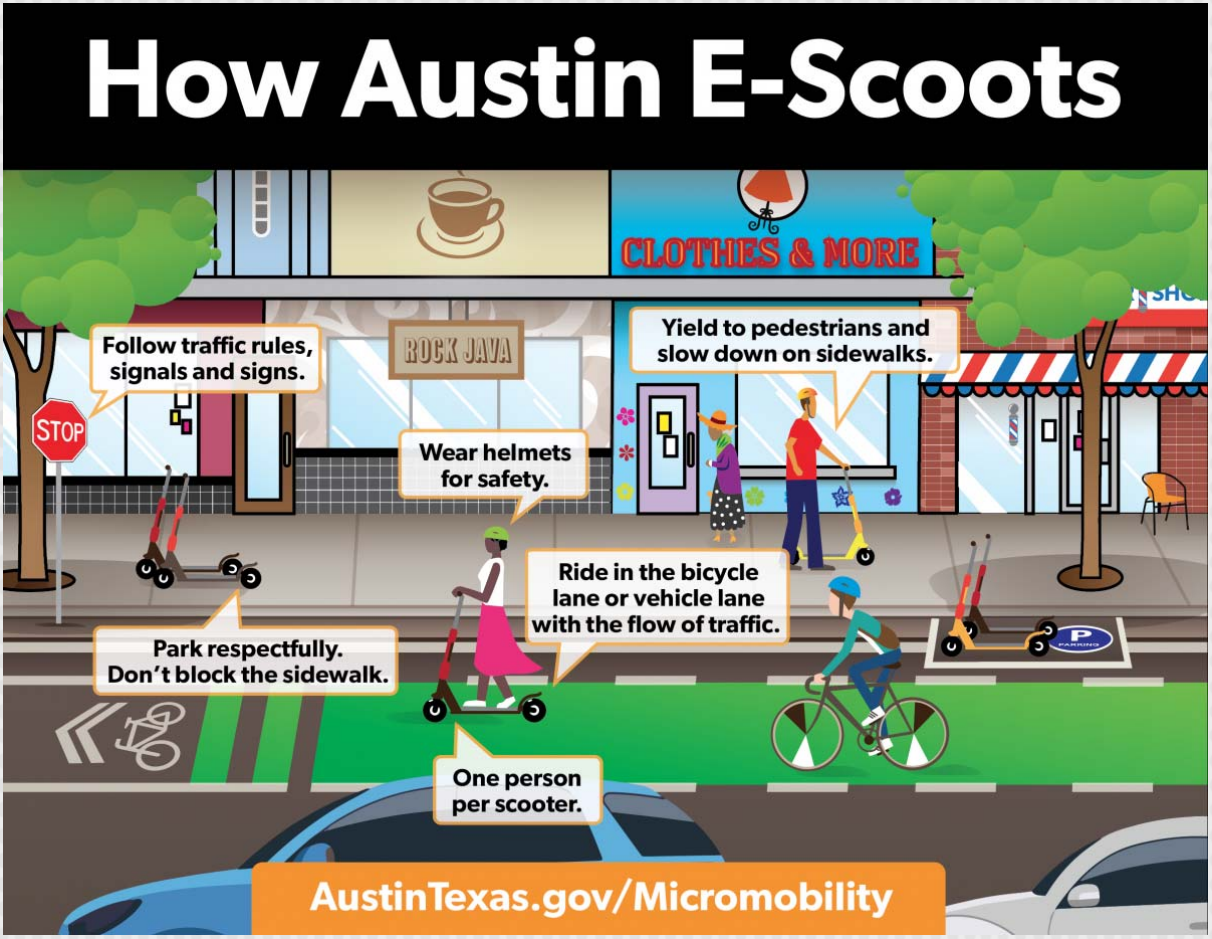
Bird

Increased Concerns over Safety

Move to Fleets

Sustainable Business Models

MICROMOBILITY EXAMPLE: AUSTIN TEXAS PERMIT PROGRAM



Guidelines: (1) Pedestrians First, (2) Park Responsibly, (3) Stay on Right of Way, (4) Know What You're Sharing, (5) Right and Report

Details: Nov 2018 re-launch: 8 licensed operators with maximum of 500 vehicles. Additional units allowed for higher performance

Results: Tracking (1) reduction in auto trips, (2) activity locations, (3) access to transit, (4) costs, (5) safety

Pivots: Expanded from Dockless to Micromobility Program, Hired CDC to conduct crash study

COMPASS

AUSTIN TEXAS DOCKLESS DATA EXPLORER

Dockless Mobility Overview

Month

June 2019

All Modes

Total Trips	Total Miles	Average Miles	Average Minutes
425,064	489,997	1.15	11.99
Updated today at 03:33 PM | Data	Updated today at 03:33 PM | Data	Updated today at 03:33 PM | Data	Updated today at 03:33 PM | Data

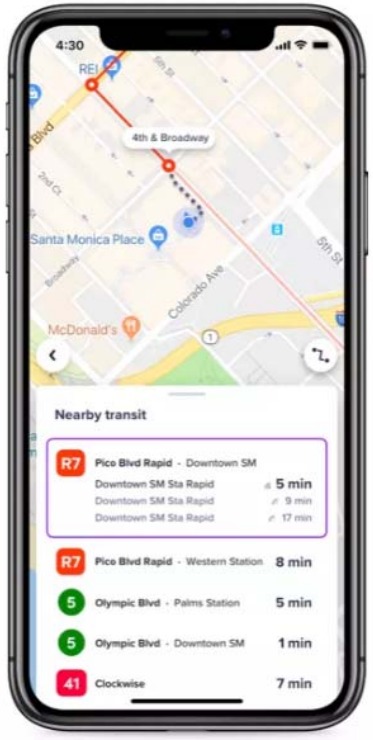
Total Devices	311 Service Requests
16,630	723
Updated today at 03:33 PM | Data	Updated today at 03:52 PM | Data

Dockless Scooters

Scooter Trips	Total Miles	Average Miles	Average Minutes
391,581	430,001	1.10	11.51
Updated today at 03:33 PM | Data	Updated today at 03:33 PM | Data	Updated today at 03:33 PM | Data	Updated today at 03:33 PM | Data

Total Devices
15,516
Updated today at 03:33 PM | Data

MICROTRANSIT & RIDEHAIL: TRENDS



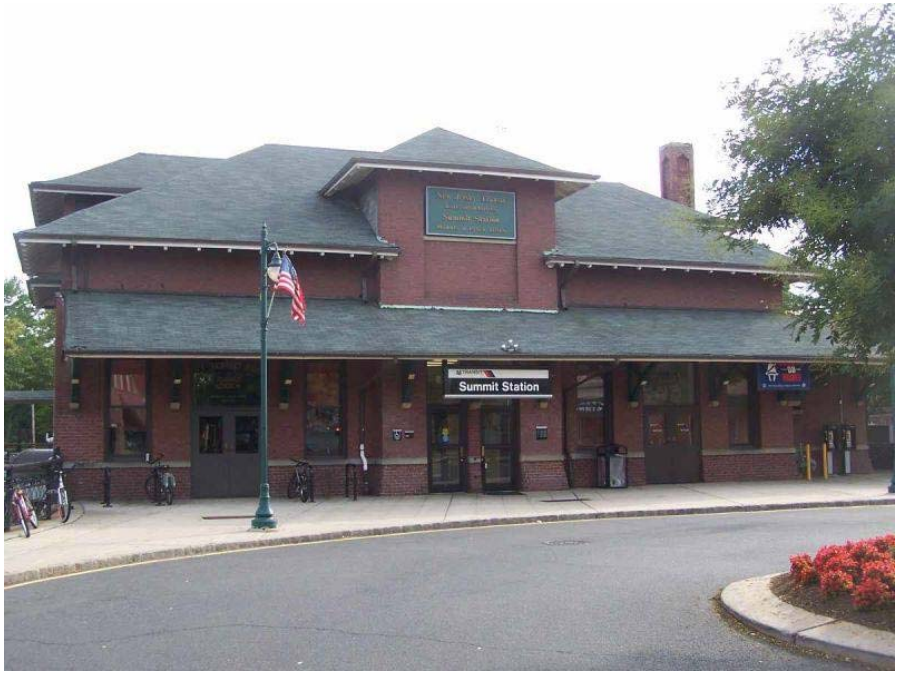
Lyft

FreeRide

Downtowner

- TNCS under scrutiny for negative impacts
- Microtransit popular, but success mixed
- Moving to Mobility-as-a-Service model

EXAMPLE: SUMMIT NEW JERSEY TNC PARTNERSHIPS



Parking congestion downtown/train station

Goals: (1) Alternatives to inadequate parking, (2) Avoid cost of new parking structure

Results: Waitlist for service

Pivot: (1) Switched vendors to allow riders to pre-schedule rides up to a week in advance, (2) Extended hours, (3) Extended area serving downtown workers

EXAMPLE: KING COUNTY WASHINGTON

First/Last 1-3 miles to transit stations

Goals: (1) Alternatives to inadequate parking, (2) Increase transit ridership, (3) streamline service with pick up points

Results: Several microtransit routes connecting riders to outlying transit stations.

Pivots: Ford discontinued its Chariot microtransit business, so service now through Via. Added mobile app. Continuing to expand service to all transit hubs.

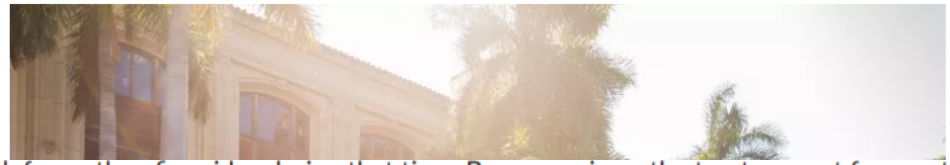
EXAMPLE: PINELLAS DIRECT CONNECT

STREETSBLOG USA

Podcast / Transit / Bike/Ped / Smart Growth

Are Uber and Lyft the Future of Transit? Not So Fast

By Aaron Short | Jul 22, 2019 | 7



60% of them took fewer than five rides during that time. By comparison, the top ten most frequent users had each taken at least 40 rides, as many as 75 times for two riders, and alone represented 40% of all rides. Trips through United Taxi followed a similar trend through the last point of analysis

This is a PTSA bus. Photo: City of St. Petersburg

rotransit to replace failing bus route

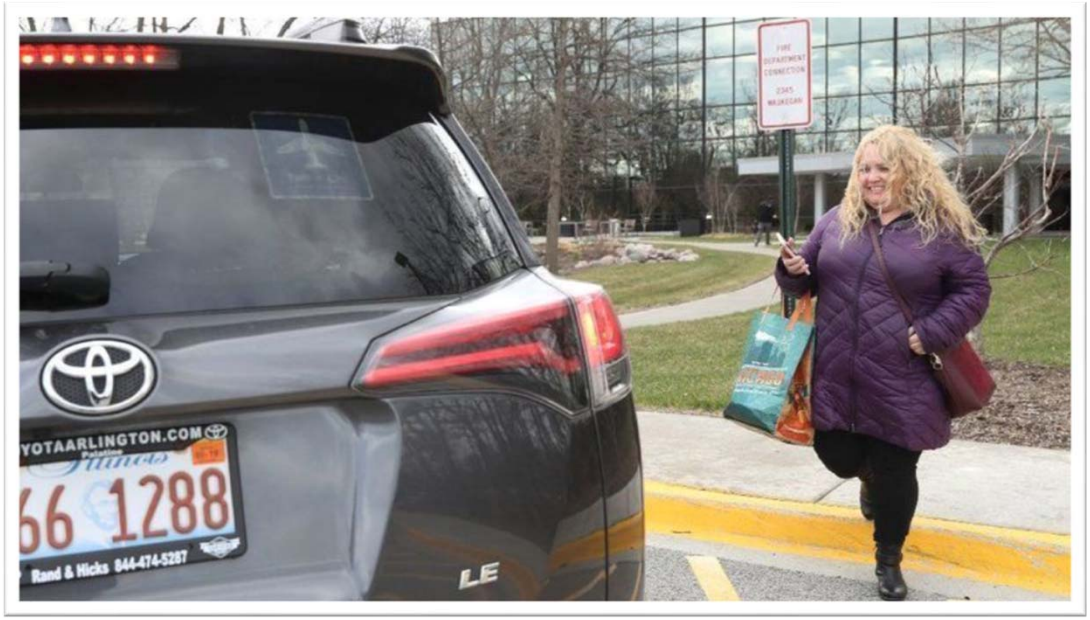
sts of poor performing bus route
mile access to transit
ransit ridership

subsidies
d zone system
l stops

COMPASS COMMUNITY PLANNING ASSOCIATION of Southwest Idaho

WGI

EXAMPLE: RTA, LYFT AND BANNOCKBURN LAKES - CHICAGO



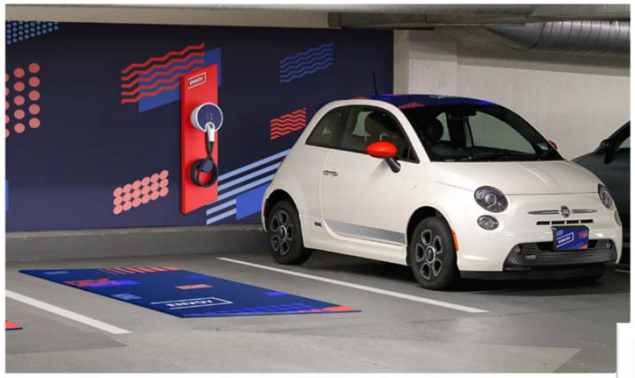
Chicago Tribune

Microtransit for reverse commuters – 2 year pilot

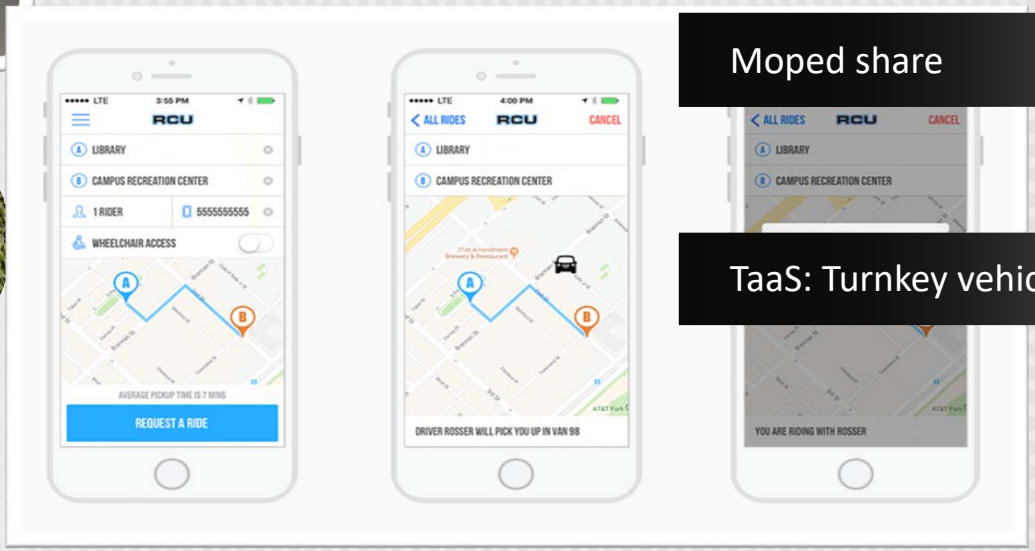
Goals: (1) fill vacant suburban office space, (2) eliminate cost of corporate shuttle, (3) connect office parks, (4) Access to transit

VEHICLE SHARE: TRENDS

ROUND TRIP, POINT TO POINT, PEER TO PEER, AMENITY FLEETS



Amenity fleets for individual buildings



Moped share

TaaS: Turnkey vehicle share platforms

Envoy TechnologiesIONEX/Ridecell

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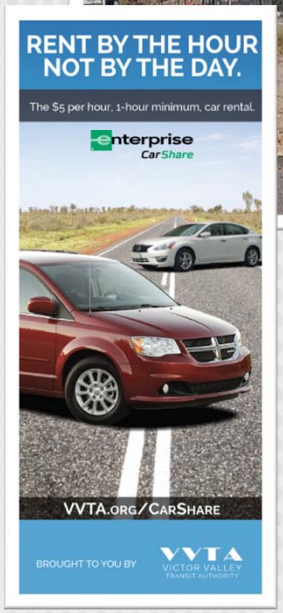
EXAMPLE: VICTOR VALLEY TRANSIT AUTHORITY CARSHARE PILOT



Small car share program

Goals: (1) Increase mobility in low income, rural district, (2) Access to fresh food, (3) use existing partnerships for financial sustainability

Results: (1) High utilization rates, (2) Nissan Altima and Dodge Caravan: $5/hour including insurance and fuel, (3) Revenues cover 70% of program costs

Pivot: None - the program is permanent

EXAMPLE: BlueLA CAR SHARE

BlueLA

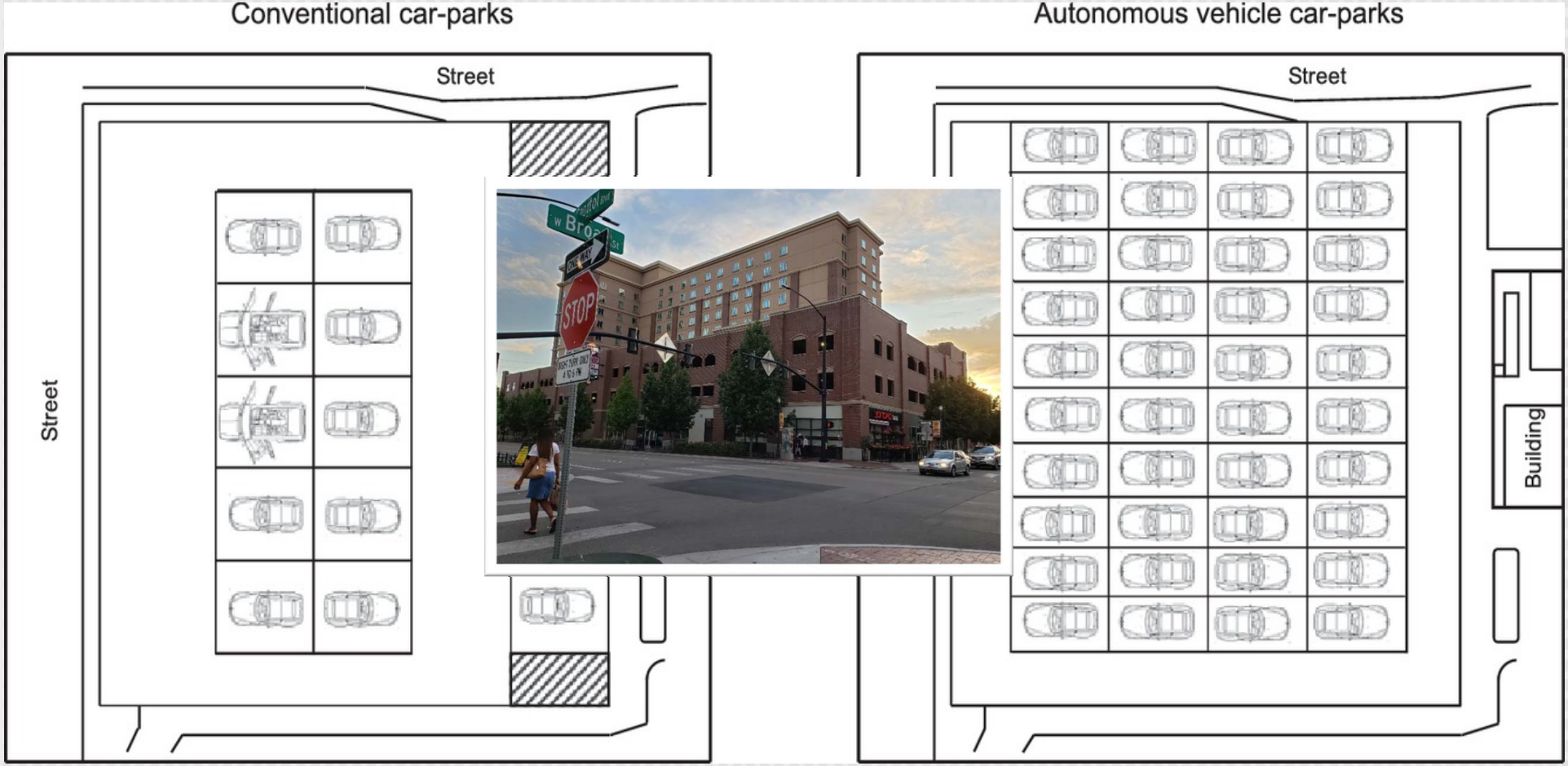
Electric car share – affordable housing

Goals: (1) Increase mobility in low income, residents, (2) Lower impact cars, (3) scalability

Results: (1) 68 vehicles circulating among 110 charge points at 22 stations, (2) 1,367 BlueLA members, (3) Mix Standard & Community memberships

Pivot: Phase 2: increase fleet number of charging points, new payment & service model

PARKING & TECHNOLOGY



Mehdi Nourinejada, Sina Bahramib, Matthew J.Roordab

PARKING & TECHNOLOGY

NOW

TECHNOLOGY
Payment apps
Navigation, sensors & apps
Smart parking meters
Carshare

PARKING
Designated carshare parking
Guide drivers to spots
Payment-by-app

PLANNING
TDM
Valets
Dynamic pricing
Parklets, Streateries, Corrals

TRENDING

TECHNOLOGY
Autonomous Parking
Shared Use Mobility
Microtransit
Electric charging

PARKING
Pickup/Drop off zones (passengers & deliveries)
Smart garages

PLANNING
Queuing
On-street space reallocation
Parking districts
Flexible garage design
Ubiquitous charging stations

EMERGING

TECHNOLOGY
Autonomous Shuttles (1st- fixed route, then demand-response)
Mobility-as-a- Service (MaaS)

PARKING
Off-site parking
Shared, automated, district parking

PLANNING
Shuttle route planning
Transition (driver/driverless)
Coordination with transit
Repurposed garage spaces

FUTURE?

TECHNOLOGY
Individual cars - % of fleet?
Owned or shared? Publicly or privately operated?

PARKING
What are the best parking locations to balance demand-response with lower congestion & VMT?

PLANNING
How should parking be priced?
How should cities retool parking revenue?

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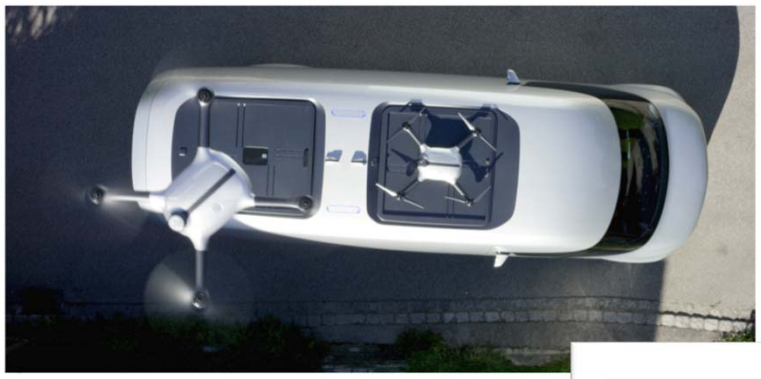
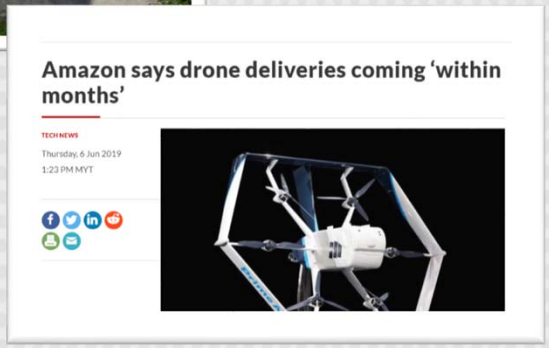
DELIVERY TECHNOLOGY - TRENDING





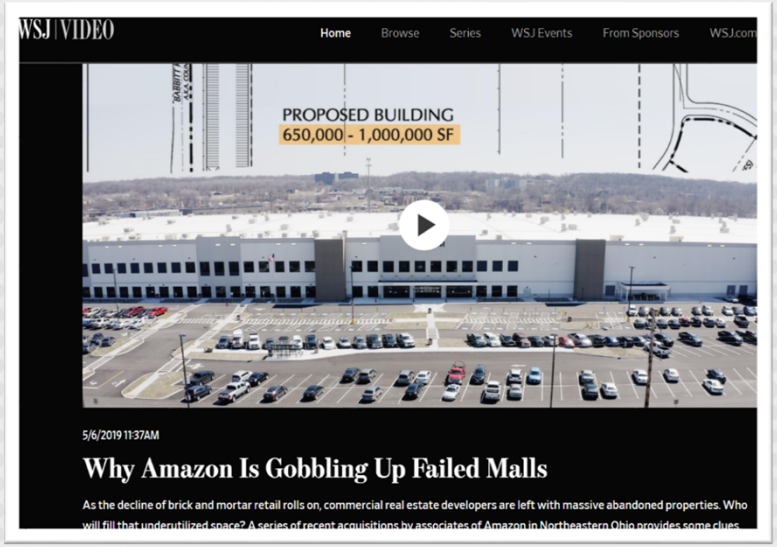
Rise in e-commerce changing logistics

Real estate responding: warehouses & lockers

Automated delivery at all scales

Visit Addison/ Daimler

DELIVERY & LAND USE - TRENDING



[Wall Street Journal Video]

- Amazon buying malls
- Delivery & Return Partners
- Travel Demand Modelling?

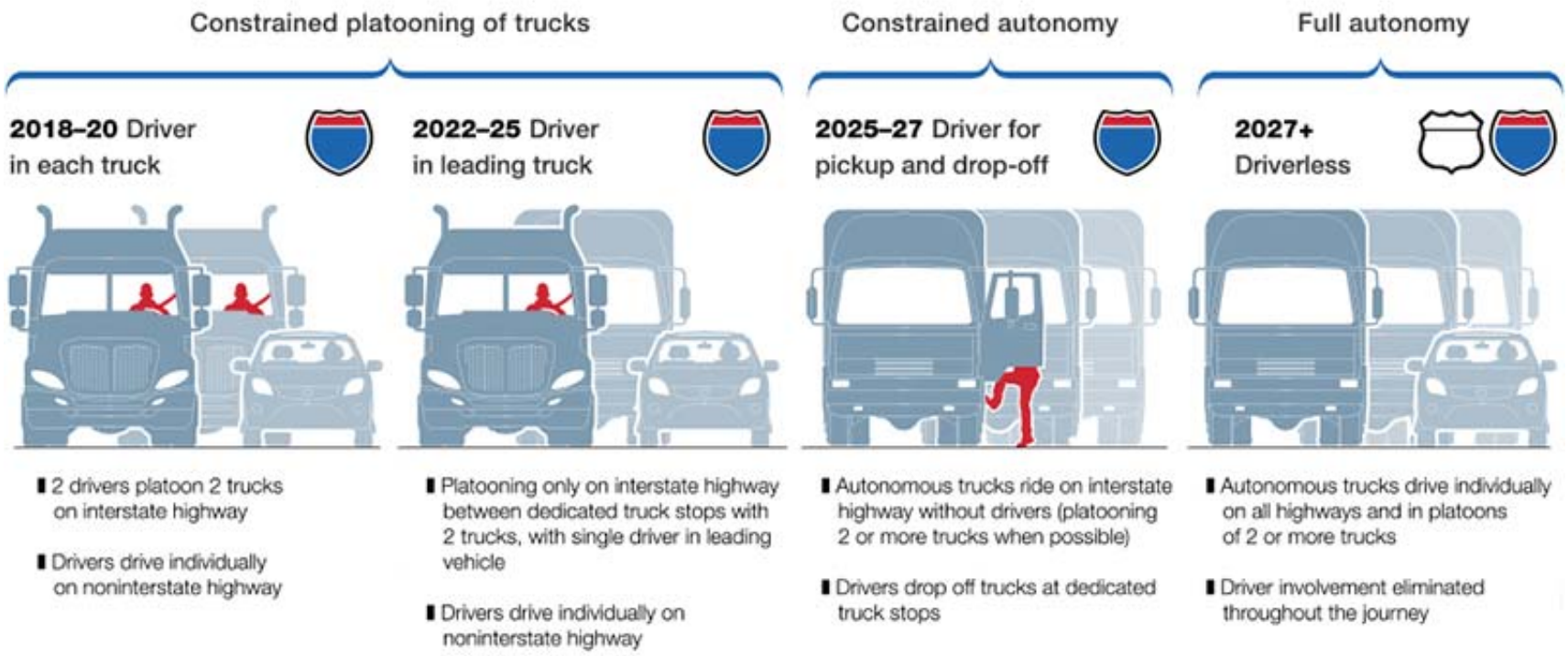
RETAIL

Kohl's is going to accept Amazon returns in all of its stores across the country, starting in July

PUBLISHED TUE, APR 23 2019 • 9:09 AM EDT | UPDATED TUE, APR 23 2019 • 12:54 PM EDT

CNBC

Autonomous trucks will likely roll out in four waves.



McKinsey

AUTONOMOUS TECHNOLOGY- TRENDS

Automated shuttles & trucks seem to have traction

Automated cars in ridehail or car share model

Automated deliverybots (air & ground)

GM/Local Motors

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AUTONOMOUS TECHNOLOGY-DETAILS

Local Motors

- Educational Campuses
- Service to Hubs (e.g., transit, downtown)
- Health Care Services
- Employment
- Entertainment & Recreation
- Retail and Restaurants/Downtown Business Centers
- Parking Shuttles
- Residential developments & Retirement Communities

Service types that could be used for various use cases:

- Fixed route and schedule
- On-demand
- Pre-arranged route or zone-based
- Flexible route-based services
- Private property services

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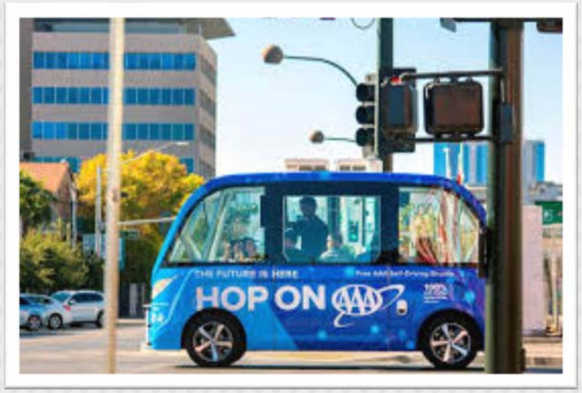
AUTOMATED SHUTTLES: OPERATIONAL DESIGN DOMAIN



Service types that could be used for various use cases:

- Exclusive Off-street Guideway
- Off-street, Multi-use Pathway
- On-Street Pathway with Dedicated, Low Speed Lane
- On-Street Pathway with Dedicated Transit Lane
- On-Street, Mixed Traffic

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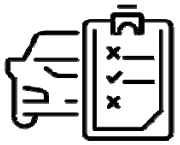
PILOT READINESS: AUTOMATED SHUTTLE PILOT

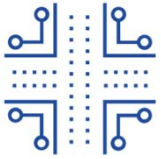
Technical Partnerships



Technical Requirements

Feasibility

Financial & Funding

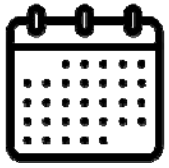


Infrastructure Partnerships

GOALS

REGULATORY READINESS

Geographic Boundaries



Pilot Length

EXAMPLE: MILO SHUTTLE ARLINGTON TEXAS

Early automated shuttle

Goals: (1) Reduce fuel costs and increase safety, (2) increase public awareness, (3) collect data, (4) enhance Arlington's reputation for innovation, (5) attract research and development funds, (6) connect remote parking

Results: (1) Able to move from private roads to public rights of way, (2) Attract CMAQ grants, (3) 99% riders satisfied, (4) 97% reported they support AV technology.

TREND: AUTONOMOUS BUS RAPID TRANSIT

Variety of Geographies

Cold Weather
Desert
Hot and Humid
Rainy

Variety of Applications

Bus Rapid Transit
Shuttle Service
Arterial Rapid Transit
Express Service
Fixed-Route Service

Variety of Vehicle Options

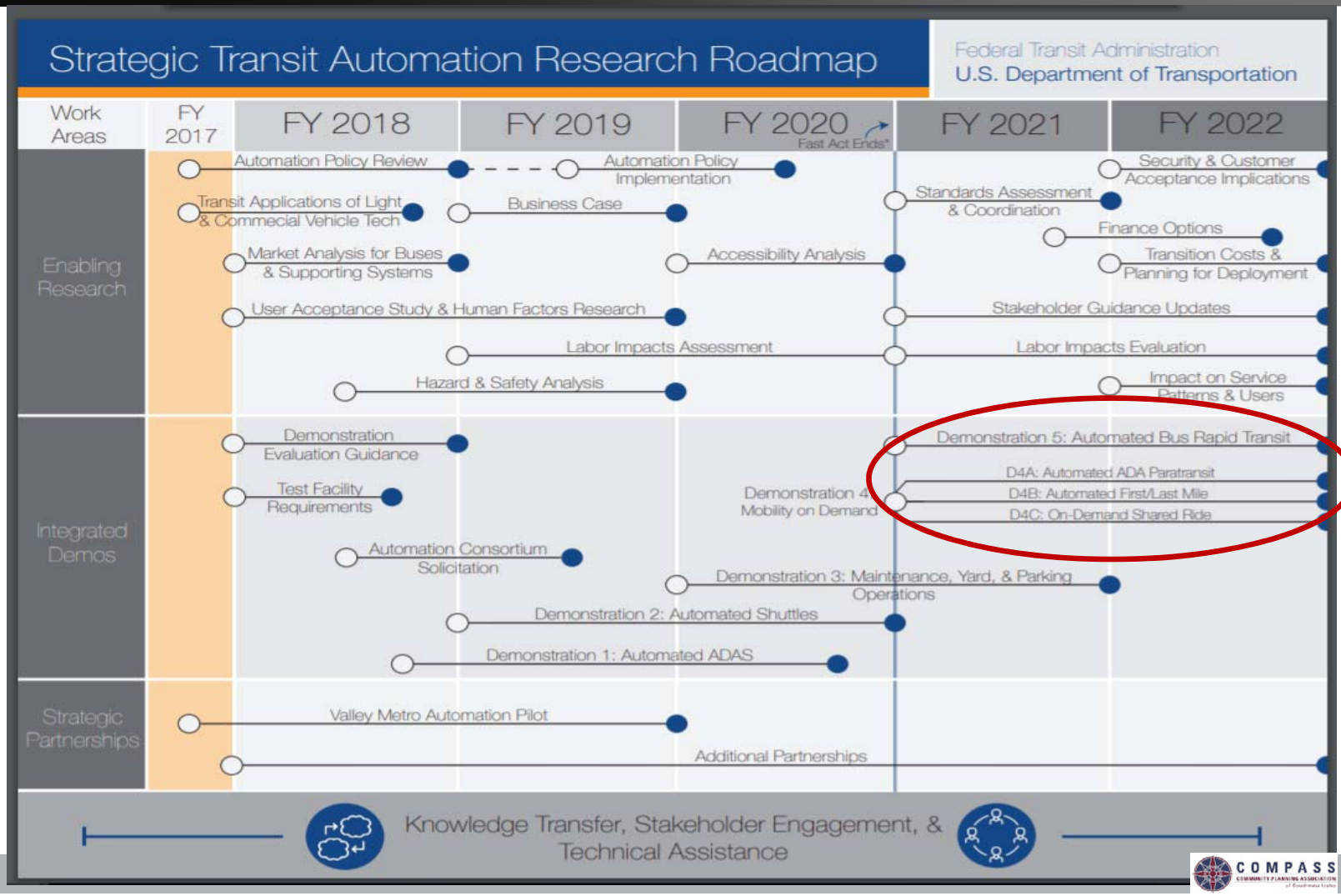
New Vehicles
Retrofit Kits for Existing Vehicles
Zero Emissions Vehicles
Traditional Propulsion

ABC Automated Bus Consortium ACCELERATED BY AECOM

COMPASS COMMUNITY PLANNING ASSOCIATION of Southeast Idaho

WGI

FEDERAL TRANSIT ADMINISTRATION: STAR GRANTS



EXAMPLE: POPUP MANGO IN SANTA MONICA CA

Melendrez

"Living Preview" of Traffic Calming Options for a Michigan Avenue Neighborhood Greenway (MANGO) 2013

Goals: (1) Gain Public Feedback, (2) Improved visuals of possible techniques, (3) Create a festival to attract more people, (4) Collect data on preferences.

Results: (1) Positive Feedback, (2) Improvements over earlier efforts that were not as attractive and not part of an event, (3) more support for a roundabout, (4) Santa Monica adopted Phase 1 improvements 2015.

TREND: MOBILITY HUBS

SUMC

Tesla claims it can deploy an emissions-free 250 MW, 1 GWh power plant in less than three months

EXAMPLE: RETROFITTING CORRIDORS

EXERCISE: PLANNING FOR AUTONOMOUS SHUTTLES

John Good

- Service to Hubs (e.g., transit, downtown)
- Educational Campuses
- Health Care Services
- Employment
- Entertainment & Recreation
- Retail and Restaurants/Downtown Business Centers
- Parking Shuttles
- Residential developments/Retirement Communities

SOLVES PROBLEMS… & CREATES PROBLEMS

- Expanded mobility
  - The Elderly
  - Youth
  - Travelers with Disabilities
- Ability to Lower Tailpipe Emissions
- Feeders to Transit
- Automated Transit
- Economic Catalyst
- Potential to Lower Costs

- Privatization of Personal Data
- Cybersecurity
- Lack of Consumer Trust
- Preference for Vehicle Ownership
  - Subjugated Walk/Bike Modes
- Biased Algorithms
- Federal/State Preemption
- Cost of Mass Electrification

NEW MOBILITY: NEXT GENERATION PROCESS

Normative Scenario Planning
Growth/4 Futures
What is preferred scenario?

Exploratory Scenario Planning
What are **change drivers**?
Alone & combinations?
What's possible/probable/likely?
Impacts: positive/negative/mixed?

Predictive or Anticipatory Scenarios
What are the **phases**?
What **levers** do we have?
To what degree do we control levers?

Strategic Planning
What are **priority activities** for moving forward?

Which policies &/or bundles are most effective & deliver **multiple benefits**?

Performance-Based & Pilots
How do we test?
When do we approve pilot expansion?
How do we master a program for multiple pilots & multiple technologies?

Contingency Planning
How do we plan for
low probability/high risk events?

SUMMARY OF MPO ROLES: PAGE 8

Data: Supply data to determine where pilots would serve a need

Funding: Provide funding or a cost matching pool of funds for pilots.

One Stop Resource and Single Point of Contact: Host a one-stop resource to track multiple pilot projects, including permitting, MOUs, data collection, reporting, and pilot analysis

Coordinate Public-Private Partnerships: Most pilots involve assets and resources from multiple sources. Coordinating roles, responsibilities and resources is a critical aspect in pilots.

Plans: Include pilot activities in Long Range Transportation Planning

Pursuing Pilots: MPOs can themselves pursue pilots with widely applicable outcomes, products and services

Analysis: Use Pilots to stress test and enhance forecasting and planning models

Next Generation Planning Support: provide training in Exploratory Scenario Planning, Performance-Based Planning and Pilot Project Design

Monitoring: Start data collection initiatives to monitor emergent trends in technology/services adoption and shifts in travel behavior patterns

Planning "Triggers:" Establish potential "dates of decision" for making policy changes to planning/forecasting procedures once technologies reach a certain point of adoption or if there is a noted trigger event.