Exploring Emerging and Innovative Transportation Solutions for Tahoe

Tahoe Regional Planning Agency

December 4, 2019
Background and Session Purpose

▪ **Context**
  ▪ Growing congestion
  ▪ Physical infrastructure constraints
  ▪ Rapidly evolving transportation technologies and business models

▪ **Approach**
  ▪ Goal – improve ability to easily and reliably reach destinations in Tahoe using shared travel options
  ▪ Opportunities – exploring new modes and innovative practices; public-private partnerships
  ▪ Assumptions – forward-looking and unconstrained

▪ **Obtain your feedback**
  ▪ Ideas
  ▪ Opinions
  ▪ Exchange
Agenda

▪ Emerging Transportation
  ▪ Micromobility
  ▪ Microtransit
  ▪ Automated Shuttles

▪ Innovative Approaches
  ▪ Resort and Regional Shuttles
  ▪ Marketing and Incentives

▪ Breakout Groups
  ▪ Scenarios
  ▪ Reporting
Poll Everywhere

- Using Poll Everywhere Tool throughout the session
Which sector best describes you?

Tourism/hospitality industry
Recreation providers
Other business community
Municipal or county government
Regional, state, or federal government
Other institutions (e.g., college or hospital)
Nonprofit or advocacy group
Not listed
Where in the Tahoe Region do you work?

North Shore
South Shore
Truckee
Other
Tag the approximate location of your workplace.
Emerging Transportation
Micromobility

*Lightweight low-speed vehicles (often shared and electric)*
Evolution of Micromobility

- **Paris**: Debut of modern station-based bike share
- **Washington DC**: Station-based bike share in US
- **San Francisco**: Electric moped sharing
- **China**: Debut of dockless bikeshare
- **DC**: Dockless bikeshare in US
- **Los Angeles**: Free-floating electric kick scooters
- **San Francisco**: Dockless pedal assist bikes
- **Various**: GPS-enabled “smart bike”
- **Paris**: Station-based pedal assist bikes
- **San Francisco**: Dockless pedal assist bikes
- **Various**: Seated e-scooters and high-speed e-bikes
- **Lake Tahoe South Shore**: Dockless bikeshare launched
- **Lake Tahoe South Shore**: E-scooters introduced
- **Lake Tahoe North Shore**: Station-based bikeshare established
Industry Trends

- Decline of dockless bikeshare, rise of e-scooters and e-bikes
- Rapid industry growth followed by recent contractions

Potential uses of micromobility include…

- Increasing access to opportunities, goods, and services for short-distance trips
- Transit connections
- Providing active and non-polluting alternatives to short driving trips
- Provide recreational options for residents and visitors
Trip Characteristics and Mode Shift

- **Trip Characteristics**
  - Trip types: 71% transportation / 29% recreation or exercise
  - Average trip length: 1.5 miles

- **Mode shift**
  - 34% of tourists replaced ridesourcing trip
  - 14% of tourists replaced personal vehicle trip
  - 45% of tourists replaced walking or biking

- **Trip Characteristics**
  - All but 9.4% of e-bike trips were utilitarian
  - Average trip length: 9.3 miles
  - E-assist “generate[s] more trips, longer trips, and different types of bicycle trips.”

- **Mode shift**
  - 62% of e-bike trips replaced trips otherwise taken by car
Lifecycle and Unit Economics

- **Lifecycle Emissions Assessment**
  - Good for environment if replacing car trips

- **Vehicle Lifespan & Usage**
  - Louisville, KY: average 28.8 days
  - 163.2 miles/ 92 trips.

- **Unit Economics**
  - $300 loss/scooter (lifetime)

- **Lifecycle Emissions Assessment**
  - Swappable batteries eliminates transportation to charging
  - Travel to charging was 40% of scooters’ emissions

- **Vehicle Lifespan & Usage**
  - 10K miles a year per bike (10x personal bikes)
  - 3 – 5-year lifespan.
Affordability and Accessibility

- Discounts for Eligible Users
- Access to Vehicles for Low-Income Users
- Access for Users with Limited Mobility

- Discounts for Eligible Users
- Access to Vehicles for Low-Income Users
  - ½ of all Jump bike trips begin/end in low-income neighborhoods (Sacramento and Austin)
- Access for Users with Limited Mobility
  - E-bikes more accessible for older adults and individuals with physical limitations
Speed, Traffic Law Compliance, and Crashes

- 14.5-18.6 mph (average)
- Traffic Law Compliance
  - Depends on infrastructure
- Crash Likelihood / Injury Severity
  - CDC: 14 injuries per 100K trips
  - Among injured 48% sustained head injuries (15% TBI)

- 14 mph (average)
- Traffic Law Compliance
  - More likely to travel with traffic and on the correct side of the road than regular bicycle riders
- Crash Likelihood / Injury Severity
  - E-bikes and traditional bike crashes equally likely
Emerging Options

Seated E-Scooters

High Speed E-Bikes

E-Mopeds
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How supportive would you be of efforts to provide new micromobility options in Tahoe?

- Very supportive
- Somewhat supportive
- Neither supportive or unsupportive
- Somewhat unsupportive
- Very unsupportive
Microtransit

On-demand, dynamically-routed transit systems.
Microtransit Operational Models

1. Technology provider

- Software as a service (SaaS) for agencies who want to use their own vehicles and operators

2. Turnkey solution

- Transit as a service (TaaS) for agencies who want a turnkey solution that includes technology as well as drivers, vehicles, and operations management

- Technology provider
- Manages operations
Early Adoption: Chariot in South Lake Tahoe

Successes
- Data collection
- Local agency and business partnerships
- Inter-state operation
- Hiring drivers

Lessons Learned
- Connectivity and lack of existing transit
- Operating speed and frequency
- Technology and app issues
- Marketing
- Sustainability of business model
- Seasonality
Microtransit has been used to...

- Improve congestion and parking conditions in dense areas
- Serve low-density areas
- Provide alternatives to ridesourcing trips (Uber and Lyft)
- Connect to or replace fixed bus or transit routes
- Serve popular destinations:
  - Airports
  - Downtown areas
  - Recreational destinations (e.g., casinos, beaches, trails, mountains)
Via to Transit – King County, Seattle

Connection to fixed-route transit

- Partnership between King County and Via
- Separate service areas for different transit stops
  - Clear connections to mainline transit
- Riders can pay with ORCA card (public transportation card), Transit GO Ticket, or credit/debit card through Via app or call center
Via Rideshare – Arlington, Texas

*Microtransit replaced fixed-route transit*

- Partnership between City of Arlington and Via
- Replaced one bus line of transit
  - Largest city in the U.S. without fixed-route public transit
- Service zone has expanded three times since launching in 2017
  - Expansions built into contract with Via
**Downtowner- Aspen, Colorado**

*On-demand circulator connecting key destinations*

- Partnership between City of Aspen and Downtowner
  - Same technology provider as Mountaineer (Squaw Valley)
- Electric vehicles equipped with heaters, ski racks
- Operating hours: 8am-11pm
- Working with local taxi companies
- Other efforts to improve travel downtown:
  - Increase parking costs
  - “Drive Less” marketing campaign
  - Expanded bike-share system
How supportive would you be of efforts to provide new microtransit options in Tahoe?

Very supportive
Somewhat supportive
Neither supportive or unsupportive
Somewhat unsupportive
Very unsupportive
Automated Shuttles

Low-speed driverless vehicles operating on fixed or dynamic routes
Vehicle Automation: State of the Industry

Ford to introduce AV technology at a SAE Level 4

Source: Ford
Features

▪ Fully Automated (SAE Level 4)
▪ Constrained operating area (geo-fenced)
▪ Low speeds
  ▪ Top speeds: 25 – 35mph
  ▪ Cruising speeds: 10 – 12mph
▪ Passenger capacity
  ▪ 4 – 8 seated
  ▪ 10 – 15 total
▪ Range
  ▪ 5 – 10 hours
  ▪ 30 – 60 miles

Source: University of Michigan
Automated Shuttle Manufacturers

Source: CB Insights.
Uses for Automated Shuttles

- 155 projects and counting (July 2019)
- Public transit routes
- Connections to transit
- Circulators
- Business cases –
  - Universities
  - Health care services
  - Entertainment and retail areas

Source: Regional Transit District (Denver).
Other Considerations

▪ Accessibility
  ▪ New models include automated ramp and ADA wheelchair anchor points

▪ Workforce issues

▪ Large scale deployment challenges
  ▪ Costly vehicles
  ▪ Vehicle attendees

▪ Weather
  ▪ Often deployed in temperate conditions
  ▪ Inclement conditions R&D underway

▪ Infrastructure
  ▪ Quality and consistency
Houston Metro University District AV Project

*Closed-circuit campus shuttle*

- Launched June 2019
- Vehicle vendor: EasyMile
- 1-mile loop
- Serves university students and ADA eligible
- On-board operator
- University partnership for research and testing
- Planned transition to operating in mixed traffic/light-rail connection

Image: Houston Metro.
MnDOT AV Shuttle – Minnesota

Winter Conditions and Event Operations

- **Vendor:** EasyMile
- **Phases**
  - 1: Testing at private facility
  - 2: Operating during Super Bowl Week (1300 riders)
- **Results**
  - 1: Vehicles cautious with winter weather hazards, but generally operated well on snow covered roads
  - 2: 80% of riders had positive interactions
How supportive would you be of efforts to bring an automated shuttle(s) to Tahoe?

- Very supportive
- Somewhat supportive
- Neither supportive or unsupportive
- Somewhat unsupportive
- Very unsupportive
Innovative Approaches
Shuttles

Notable examples from other regions and resort mountain towns
Shuttle Landscape

Microtransit
- On-demand, *dynamically-routed* transit system

Shuttle
- Regular service between two locations or a service area
- May be on-demand or scheduled
- May be fixed or flexible route
- Might use technology
The Gant- Aspen, Colorado

*On-demand resort shuttle*

- Partnership with Downtowner to provide shuttle service through mobile app
  - Mountaineer (Squaw Valley) uses Downtowner technology
- Utilizes existing hotel shuttle fleet
- Service also available by calling phone number
- Operates 7am-11pm

Source: The Gant
Summit Stage Free Bus- Summit County, CO

*Free, fixed route shuttle to ski resorts*

- Funded by resort partnership beginning 1977
- Operated by Summit County government since 1989
- Free service – paid by 0.5% sales tax
- Regional service to ski resorts
  - Breckenridge, Dillon, Frisco, Silverthorne, Blue River, Arapahoe Basin Ski Area, Breckenridge Ski Resort, Copper Mountain, and Keystone Resort
- 1.9 million annual ridership
Breck Free Ride- Breckenridge, CO

*Free, fixed-route circulator*

- Overlapping service area with Summit Stage free bus provides connections for riders

Source: Columbia Gorge Express
Trailhead Direct – King County Metro + Seattle

* Longer-distance shuttles to recreation *

- Public Private Partnership (P3) between King County Metro and King County Parks, with funding from Seattle DOT and REI Co-op to expand routes
- Weekend shuttle service between Seattle and hiking trails (April – October)
- 2018 inaugural season served 10,000+ hikers

Source: Trail Head Direct
How supportive would you be of efforts to increase shuttle options for travelers?

- Very supportive
- Somewhat supportive
- Neither supportive or unsupportive
- Somewhat unsupportive
- Very unsupportive
Marketing and Incentives

Notable examples from other regions and resort mountain towns
Marketing and incentives have been used to...

- Improve congestion and parking conditions in dense areas
- Provide traveler information
  - Advertise new, expanded, rerouted systems
- Encourage travelers to choose sustainable transportation modes
- Support local businesses
  - Incentives toward products, services, discounts
Strategies

- App-Based Incentives
- Marketing
- Traveler Information
- Parking Management
App-Based Incentives
R.I.D.E. App- Snowbird Resort, Utah

- Mobile app trip tracking
- UTA Ski Bus schedule incorporated into the app
- Carpool or transit option
- Points for checking in through app at Snowbird
  - Redeem points for prizes
- VIP parking for 3+ in carpool

Source: Snowbird
App-Based Incentives
Metropia App

- Everyday incentives for commuters
  - Austin Don’t Rush mobility challenge
- Special events promotions for visitors
  - SXSW
  - Tucson Festival of Books

Source: Mayor Adler
Marketing
Trailhead Direct- King County Metro, Seattle

- Released Media Toolkit to crowsource advertising for the 2019 service season:
  - Brochures, trail maps, social media campaign
  - Translated to Chinese, Nepali, Spanish, Swahili, Vietnamese
- Trail Head Direct Specific Parking Signs
- Holiday-specific promotional materials

Source: Public Trailhead Direct Media Toolkit
Marketing
Trailhead Direct- King County Metro, Seattle

Source: Trail Head Direct

Source: Trail Head Direct
Traveler Information
Tree Hugger Challenge- Breckenridge, CO

- Online educational video series
- Participants complete lessons and receive certificate for a prize (sticker) at the Visitors Center

Source: Tree-Hugger Challenge
Traveler Information
goDCgo Initiative - Washington, D.C.

**Capital Bikeshare Bulk Passes**
24-Hour and 3-Day Capital Bikeshare passes that can be offered to guests as a complimentary amenity.

**Brochure Ordering**
Complimentary ordering and delivery of maps and brochures for your concierge and front desk.

**Custom Marketing Materials**
Custom Get Around Guide detailing transportation options near your hotel and messaging for your website and marketing materials.

**Education & Workshops**
On-site training to educate concierge and guest services staff about transit options, including Capital Bikeshare.

**Transit Displays**
Digital displays providing real-time transit details to keep visitors informed of all nearby transportation options.

**Event Travel Coordination**
Consultation on event travel coordination from permitting to valet bike parking and Capital Bikeshare Corral Service.

Source: goDCgo
Parking Incentives
Aspen, Colorado

- **Parking Management Program**
  - Seasonal parking pricing, residential permit program, increased on-street prices, reduced off-street facility prices

- **City council allowed public vote only after all of programs’ elements were in place for 3 months**
  - Initial negative public reaction
  - 75% voter approval to continue the program
How supportive would you be of efforts to increase marketing and incentives in Tahoe?

- Very supportive
- Somewhat supportive
- Neither supportive or unsupportive
- Somewhat unsupportive
- Very unsupportive
Breakout Groups
Tag the area that you believe has the greatest potential for applications of emerging or innovative transportation solutions.
Break

Five minutes
**Scenario:** Fourth of July traffic is expected to be record breaking this year. Visitors and residents have been expressing frustration with the traffic and lack of options to reach their desired destinations.

**Prompt:** Your team has been given a blank check to address this issue. How might you apply some of the shared travel options presented today or others you may be aware of to improve transportation in Tahoe?
Scenario: You work with a marketing firm hired by the Tahoe region to encourage sustainable transportation choices.

Prompt: How do you get the word out about the shared travel options your group selected in the previous exercise? How do you promote these options to residents and visitors?
Report Out by Group