Hawaii statewide planning conference

Lisa Nisenson
Lead, Alta Planning + Design New Mobility Group
Change is Not Coming – It’s Here
What’s a planner to do?
1. Understand Benefits & Risks

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>BENEFITS</th>
<th>RISKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrians</td>
<td>Reduction in crashes since AVs automatically stop for pedestrians (also V2P – or Vehicle to Pedestrian technology).</td>
<td>Pedestrians will be highly regulated to avoid constant stop-and-go AV traffic.</td>
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<tr>
<td>Bicyclists</td>
<td>Reduction in crashes and increased bike-sharing options.</td>
<td>Attention to individual AV vehicles prioritizes road space for cars.</td>
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<tr>
<td>Cars</td>
<td>Reduction in car use and ownership with shared, autonomous fleets.</td>
<td>Increased car use as travelers eschew active modes and transit for the ease of AVs.</td>
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<tr>
<td>Transit</td>
<td>AVs feed more riders to transit.</td>
<td>Transit suffers as riders switch to shared-use ridesharing and AVs.</td>
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<tr>
<td>Streets</td>
<td>Excess street space can be converted to parks and open space.</td>
<td>Cities will need to invest heavily in street repair and maintenance to avoid false signals for AVs using roadways.</td>
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<tr>
<td>Parking</td>
<td>Shared AVs need fewer spaces and parking can be located in otherwise inconvenient locations.</td>
<td>AVs will clog streets as they circulate - using streets like parking. Higher VMT from cars circulating or relocating to distant parking.</td>
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<tr>
<td>Freight &amp; Deliveries</td>
<td>Faster deliveries for on-demand retail and lower delivery costs.</td>
<td>Job losses. Sidewalk congestion with driverless delivery pods.</td>
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<tr>
<td>Revenue</td>
<td>Cities can rethink revenue sources as gasoline tax remittances shrink. The new frameworks can include incentives for active and low impact modes.</td>
<td>Job losses. Loss of office and hotel taxes as drivers use vehicles for overnight trips and work. Loss of auto permits, tickets and parking.</td>
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<tr>
<td>Safety</td>
<td>Fewer collisions between cars and pedestrians and bicyclists.</td>
<td>AVs can be hacked. Ethical considerations for unavoidable crashes.</td>
</tr>
<tr>
<td>Equity</td>
<td>Travel options for mobility-impaired populations such as teenagers, the elderly. Greater options outside city centers.</td>
<td>Cars can be programmed to avoid certain situations and geographic locations.</td>
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### Cars

**Challenges**

- Increases costs
- Additional risks
- Security and Privacy concerns
- Induced vehicle travel and increased external costs
- Social equity concerns
- Reduced employment and business activity
- Misplaced planning emphasis
2. What Does Success Look Like?

Active Modes + Transit + Technology work together on a platform of great community design to increase access & mobility.
3. Implementing Innovation

Harness the benefits and limit risks at the earliest stages of planning to meet multiple community goals.
4. Understand Scenarios

**Business-as-Usual Scenario**
*20th Century Technology*

Through 2050, we continue to use vehicles with internal combustion engines at an increased rate, and use transit and shared vehicles at the current rate, as population and income grow over time.

**2 Revolutions (2R) Scenario**
*Electrification + Automation*

We embrace more technology. Electric vehicles become common by 2030, and automated electric vehicles become dominant by 2040. However, we continue our current embrace of single-occupancy vehicles, with even more car travel than in the BAU.

**3 Revolutions (3R) Scenario**
*Electrification + Automation + Sharing*

We take the embrace of technology in the 2R scenario and then maximize the use of shared vehicle trips. By 2030, there is widespread ride sharing, increased transit performance—with on-demand availability—and strengthened infrastructure for walking and cycling, allowing maximum energy efficiency.

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**Number of Vehicles on the Road by 2050**

- **Business-as-Usual Scenario**: 2.1 billion vehicles
- **2 Revolutions (2R) Scenario**: 2.1 billion vehicles
- **3 Revolutions (3R) Scenario**: 0.5 billion vehicles

**CO₂ Emissions by 2050**

- **Business-as-Usual Scenario**: 4,600 megatonnes of CO₂
- **2 Revolutions (2R) Scenario**: 1,700 megatonnes of CO₂
- **3 Revolutions (3R) Scenario**: 700 megatonnes of CO₂

www.itdp.org
5. Understand Planning - Current

Where are we now?

What do we want?

How do we get there?
5. How Planning is Changing

- What’s Happening?
- Where are we now?
- What’s likely here?
- What do we want?
- How do we test?
- How do we get there?
6. Pivotal policy decisions

Number & mix of driverless vehicles

Individual cars - owned/shared/operated by transit
Transit - buses, shuttles

Pricing Toolbox

Road use (VMT) & Curb use
Pricing per ride/mode - surcharges
Vehicle utilization - # passengers, packages
Congestion charges
Parking
Hawaii’s Top Opportunities

1) **Big pain points**: congestion, safety
2) **Assets**: Rail Transit, Shared-Use, Weather
3) **Moving** people, tourists, packages
4) **Mobility as a Service**
5) **Top**: Feeding passengers to transit
Design for Integrated Transit Access
Make connections safe and seamless

- Sidewalks
- Intersections
- Crosswalks
- Bike Lanes
- Amenities
Design for First/Last Mile Access to Transit
Make connections easy

Access Sheds

- Car
- Bus
- Bicycle

3+ miles

Access Sheds:
- 3/4 mile
- 1 mile
- 1.3 miles
- 2.3 miles
- 3 miles
- 1/2 mile
First/Last Mile & Beyond

Improved Access to Transit

• **Modes**
  - Active Transportation
  - Personal Mobility Devices
  - Shared-use
  - Planning for AVs

• **Improved Infrastructure**
  - Sidewalks & Cut-Throughs
  - Streets & Bike Lanes
  - Station/Stop Design
  - Mobility Hubs
Design Adaptable Arterial Streets

- Pick up & Drop off for Rideshare & Deliveries
- Smart Streetlights
- Transit still needed for high capacity
- Programmed Lanes
- Green Infrastructure
- Active Transportation
Manage Sidewalks & Curbs

Planning for Competing Uses
• Pedestrian Travel
• Shared-Use Curbs
• Signs & Wayfinding
• Commercial Uses
• Digital Infrastructure
• Green Infrastructure
  • Urban Heat Island
  • Storm Water Reduction
Infrastructure as a Utility

Micro charges
- Pick-up & Drop-off
- Deliveries & ground drones
- Incentives

Airspace
- Drones

Sensors
- “real estate” for tech
- data
Integrate Freight and Delivery

Logistics & Deliveries Planning “First/Last 500 feet”

- Active Transportation
  - Cargo Bikes
  - Bikeway Infrastructure
- Autonomous (Ground Drones)
  - Management Plans
  - Audible warnings?
- Drones
  - Airspace Management
- Ubiquitous Warehouses
Parking: Future

1. GARAGES EVOLVE... into residential, office, recreation and entertainment spaces.
2. DRONE PACKAGE DELIVERY: With delivery vehicles off the road, buildings adapt to accept packages.
3. CHARGING FLOOR: Vehicles automatically charge when not being driven.
4. VEHICLE RETRIEVAL ZONES: Users call cars via personal mobile devices.
### Plan for Parking Transitions

#### Timeline: Planning for Parking with Autonomous Vehicles

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<tr>
<th>NOW</th>
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<tbody>
<tr>
<td><strong>TECHNOLOGY</strong></td>
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<tr>
<td>Payment apps</td>
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<tr>
<td>Navigation, sensors &amp; apps</td>
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<tr>
<td>Smart parking meters</td>
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<tr>
<td>Carshare</td>
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<tr>
<th>PARKING</th>
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<tr>
<td>Designated carshare parking</td>
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<td>Guide drivers to spots</td>
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<td>Payment-by-app</td>
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<th>PLANNING</th>
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<td>TDM</td>
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<tr>
<td>Valets</td>
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<tr>
<td>Dynamic pricing</td>
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<tr>
<td>Parklets, Streateries, Corrals</td>
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<th>TRENDING</th>
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<td><strong>TECHNOLOGY</strong></td>
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<tr>
<td>Autonomous Parking</td>
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<tr>
<td>Shared Use Mobility</td>
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<td>Microtransit</td>
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<td>Electric charging</td>
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<tr>
<td>Pickup/Drop off zones (passengers &amp; deliveries)</td>
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<td>Smart garages</td>
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<tr>
<td>Queuing</td>
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<td>On-street space reallocation</td>
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<td>Parking districts</td>
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<tr>
<td>Flexible garage design</td>
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<td>Ubiquitous charging stations</td>
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<tr>
<td><strong>TECHNOLOGY</strong></td>
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<tr>
<td>Autonomous Shuttles (1st fixed route, then demand-response)</td>
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<tr>
<td>Mobility-as-a-Service (MaaS)</td>
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<td>Off-site parking</td>
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<td>Shared, automated, district parking</td>
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<tr>
<td>Shuttle route planning</td>
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<td>Transition (driver/driverless)</td>
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<tr>
<td>Coordination with transit</td>
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<tr>
<td>Repurposed garage spaces</td>
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<th>FUTURE?</th>
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<tr>
<td><strong>TECHNOLOGY</strong></td>
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<tr>
<td>Individual cars - % of fleet?</td>
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<tr>
<td>Owned or shared? Publicly or privately operated?</td>
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<td>What are the best parking locations to balance demand-response with lower congestion &amp; VMT?</td>
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<tr>
<td>How should parking be priced?</td>
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<td>How should cities retool parking revenue?</td>
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Mobility-as-a-Service (MaaS)

Support + Mobile + Modes
How to Start: Resolutions

Start community conversations on mobility changes

- What’s happening?
- What’s likely to happen
- What systems do we want?
- How do we get there?

1. Resolutions
2. Starter language in Comprehensive Plans
Managing Change: Playbook

Plan for Transportation Technology & Autonomous Vehicles

- Stakeholder Engagement
- Scenario Planning Session(s)
- Opportunities, Risks, Levers
- 2 year Playbook for action
Implementation: Pilot Projects/RfIs

Pilot Project Design to test and scale new mobility + land use options
Implementation: Master Plans

Small scale area plans
- Sector plans
- Corridor plans
- Station area plans

Small scale transportation plans
- Bike Share
- Shared-Use Mobility
- First/Last Mile
- Freight & Deliveries
- Transportation Technology
Final Thoughts

How do we get the communities we want?

How do we plan amidst multiple lines of disruption?

What skills will planners need?
Let us know how we can help?

New Mobility Advisory Services
Integrated Smart Mobility Plans
Planning for Autonomous Vehicles
Roadmaps for action plans & plan updates
   (includes scenario planning, next steps)
Pilot Projects (Design, Implementation, Scale)
Smart City Technology Recommendations

Planning, Design & Engineering
Analytics, Data, Surveys, and Analysis
Multi-Modal Transportation Planning: Bike, Ped, Access to Transit
Complete Streets & Infrastructure: Streets, Curbs, Sidewalks, Trails
Placemaking & Mobility Hubs
Programs, Education & Encouragement

Lisa Nisenson, Lead, Alta Planning + Design New Mobility Group
lisanisenson@altaplanning.com
202-744-6854