Planning for the Future(s)

The FDOT Initiative to Develop Guidance about LRTP Impacts of ACES
AVs, CAVs, ACES: Same cards, different hands

- **Autonomous**: Capable of guiding itself with little or no human input
- **Connected**: Having systems linked to one another and the Web to improve vehicle safety/efficiency and currently require some human input
- **Electric**: Using one or more electric motors for propulsion and
- **Shared-use**: Vehicles used but not necessarily owned by more than one person or organization
ACES are coming ... when?

Adoption speed affected by:
- Availability
- Cost of features
- Local socio-economic factors
- Ownership and preferences
- Fleet turnover
- Needed infrastructure upgrades
- Liability & other legal issues
- Wildcard issues – social, economic, political, etc.

Source: October 2017 Online Survey of Florida MPOs
The FDOT ACES policy guidance

• Develop planning guidance regarding potential ACES impacts to consider during future LRTP updates.
• Help Florida MPOs/TPOS and local governments account for local ACES impacts in upcoming LRTP updates.
How the guidance is being developed

- Literature Review
- MPO Survey and Interviews
- Scenario Planning
- Travel Demand Model Testing
Key guidance elements

Please rank the following in terms of information or guidance you may need to better assess future transportation technology impacts?

- Goals and Objectives
- Mode Use Impacts
- Project Prioritization
- Project Needs Identification
- Public Engagement
- Socioeconomic data
- Traffic Operations
- Transportation Revenue
- Travel Demand Modeling

Source: October 2017 Online Survey of Florida MPOs
ACES-driven scenario planning

SCENARIO PLANNING: creating possible futures and assembling options

• Engages more diverse stakeholders
• Illustrates land use/transportation trade-offs
• Expands informed decision-making
• Helps develop performance measures and evaluate different policies’ impacts on targets
• Explores broad array of livability issues
Adapting existing models

Two models adapted based on regional characteristics and model type:

Gainesville
• Traditional 4-Step Model with mode choice and transit
• Area includes a mid-size urban area and a major university

North East Florida Regional Planning Model (NERPM)
• Activity Base Model
• Large multi-county area with diverse population
Adapting existing models

Socioeconomic Data Considerations

1. Shifts in Population components (i.e. aging population)
   - Older populations
     - less likely to embrace technology
     - more likely to have enhanced mobility

2. Shifts in Land use
   - The “Amazon” effect
   - Shift from Commercial Employment (SIC 50-55) to
     - Industrial Employment (SIC 01-39)
     - Service Employment (SIC 40-49, 60-93)
Adapting existing models

• Shift in average trip lengths
• Use of AVs increases tolerance for longer trips
• More impact on home-based work trips in areas with higher office employment
• Changes in capacity
• Restricted to limited access and high-level arterial facilities
• Limited on arterials by separation of bike/ped facilities.
Adapting existing models

• Changes in out-of-vehicle times (terminal times)
• AVs decrease out-of-vehicle time from vehicle to destination
• More likely in Downtown areas or areas with remote parking
• Changes in transit ridership
• Ride sharing or transportation network companies (e.g. Uber)
• Focus shift to premium transit
Close-up: Electric vehicles
Florida State Transportation Trust Fund
Fiscal Year 2015 - 2016 Receipts in $Millions

- Rental Car Surcharge
- Miscellaneous Revenue
- Reimbursement/Turnpike
- Documentary Stamps

Note: “Other” category includes interest on investments, aviation fuel taxes, reimbursement of expressway authorities, and reimbursement of DOT-owned toll facilities.

Source: Florida Dept. of Transportation
**EVs and their impacts**

Conditions affecting EV impact:
- Policy
- Incentives
- Declining vehicles cost
- Range and recharging limits
- Charging supply
- Competition from existing or alternative technologies

Average penetration of EV in light duty national vehicle stock:
- **2020:** 1%
- **2030:** 7%
- **2040:** 33%

*Sources: U.S. Energy Information Administration; OPEC World Outlook; Florida Solar Energy Center, et al*
### ACES Strategies and Tools

**Potential Impacts of an ACES future on Long Range Transportation Goals**

<table>
<thead>
<tr>
<th>Sample LRTP Considerations</th>
<th>Potential Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety &amp; Security</strong></td>
<td>- Safety</td>
</tr>
<tr>
<td>Increase in ACES increases safety for all modes. Technology security is a concern.</td>
<td>- Mode Choice</td>
</tr>
<tr>
<td><strong>Quality Infrastructure</strong></td>
<td>- Infrastructure</td>
</tr>
<tr>
<td>Safety can be incorporated into the rebuilding of current infrastructure to meet ACES needs.</td>
<td>- Freight</td>
</tr>
<tr>
<td><strong>Efficient &amp; Reliable Mobility</strong></td>
<td>- Land Use</td>
</tr>
<tr>
<td>ACES are expected to increase the efficiency of the transportation system and improve mobility for everyone.</td>
<td>- Revenue</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>- Capacity</td>
</tr>
<tr>
<td>ACES provides the opportunity to improve the safety of outdated infrastructure.</td>
<td>- Parking</td>
</tr>
<tr>
<td>May need high-quality dedicated infrastructure only accessible with ACES technology.</td>
<td></td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td></td>
</tr>
<tr>
<td>Changes in land use patterns will require safety and security to be rethought.</td>
<td></td>
</tr>
<tr>
<td>Decrease parking requirements in cities, which will free up land for high-density residential or mixed-use development.</td>
<td></td>
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<tr>
<td>Land use changes impact on travel efficiency and reliability is unknown. Travel models are currently being developed to research the potential range of impacts.</td>
<td></td>
</tr>
</tbody>
</table>
## Next steps and deliverables

<table>
<thead>
<tr>
<th>NOVEMBER</th>
<th>DECEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference input/feedback</td>
<td>11/13-15</td>
</tr>
<tr>
<td>Independent review (MPO National Experts)</td>
<td>11/13-15</td>
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<tr>
<td>Revisions to manuscript</td>
<td>11/16-21</td>
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<tr>
<td>First submittal to FDOT</td>
<td>11/22</td>
</tr>
<tr>
<td>FDOT comments received</td>
<td>12/6</td>
</tr>
<tr>
<td>Comments addressed and final version back to FDOT</td>
<td>12/8</td>
</tr>
</tbody>
</table>
Questions and discussion

Source: Mercedes Benz
(mbusa.com/mercedes/future/model/model-All_New_F015_Luxury)

Source: Buick Avista Concept interior
Florida Automated Vehicles