FTP-SIS ACES Subcommittee Meeting

June 25, 2019

9:00 a.m. to 4:00 p.m. EST Florida's Turnpike Headquarters Turkey Lake Service Area 263 Florida's Turnpike, Ocoee, FL 32811

Meeting Objectives

The objectives of this meeting include:

- Receive status reports from partners on Automated, Connected, Electric, and Shared (ACES) planning, research, testing, and deployment activities
- Discuss and set priorities among long-term policy and planning issues related to ACES
- Discuss implications of ACES for Florida's Strategic Intermodal System

For meeting information, please contact Jim Halley at (850) 414-4817, Jim.Halley@dot.state.fl.us.

Meeting Attendees

Partners and Attendees

Marco Barbarossa, Jacobs Jeff Branch, Florida League of Cities Ken Bryan, Rails to Trails Conservancy Denise Bunnewith, North Florida TPO Tom Byron, FDOT Bryan Caletka, Broward MPO Jamie Christian, FHWA Holly Cohen, FDOT Frank Collins, FDOT April Combs, Florida Department of Agriculture and Consumer Services John Dohm, Florida Transatlantic Chris Emmanuel. Florida Chamber of Commerce Rickey Fitzgerald, FDOT Juan Flores, Jacobs Bob Frey, THEA Ming Gao, FDOT Steven Gayle, RSG Eric Hill, MetroPlan Orlando Larry Hymowitz, FDOT Xia Jin, FIU Christina Kopp, THEA Shi-Chiang Li, FDOT

Gabe Matthews, FDOT Brady Nepple, TEAM FL Jonathan Overton. FDOT Pat Steed, Central Florida RPC Michael Stewart, Jacksonville Aviation Authority Brad Thoburn, Michael Baker International (representing FPTA) Judith Villegas, THEA Brian Watts, FDOT Jim Wood, Kimley-Horn & Associates **FDOT Staff and Consultant Support** Romero Dill, FDOT Chris Edmonston, FDOT Macy Fricke, Kimley-Horn & Associates Jim Halley, FDOT John Kaliski, Cambridge Systematics Taylor Laurent, HDR Ashley Mahon, Cambridge Systematics Tanner Martin, HDR Briana Ozor, HDR Eric Plapper, HDR Jon Sewell, Kimley-Horn & Associates Huiwei Shen, FDOT Danny Shopf, Cambridge Systematics



Meeting Summary

Welcome and Introductions

Jim Halley welcomed the attendees to the meeting and prompted introductions. Jim Halley opened the meeting with an overview of ACES, its role in the FTP update and the structure of the ACES Subcommittee. Jim summarized several results of the 2018 Satisfaction Survey for Florida Residents related to ACES topics including common ride-share trip purposes, frequency of ride share, autonomous vehicle uses and perception, and electric vehicle concerns. More information about the Subcommittee and the presentation can be found <u>HERE</u>.

Partner Updates

Florida Chamber of Commerce

Chris Emmanuel gave a presentation on Autonomous Florida, a program of the Florida Chamber of Commerce. Chris identified three considerations for autonomous vehicles: deployments, policy assumptions, and basic needs. Chris also identified upcoming events related to ACES such as the Association for Unmanned Vehicle Systems International (AUVSI) Automated Vehicles Symposium in July, the Future of Florida Forum in October, and the FAV Summit in November.

Comments and Questions from attendees

- What additional infrastructure is needed for cloud computing for CV?
 - A fair amount can be handled over existing cell networks, which is permitted by state law. Moving towards 5G will improve data exchange.
- How many people are using the autonomous shuttle in The Villages?
 - Overall participation is low. Ten families are at full participation while 75 families are partially participating where they can access the shuttle by appointment only.
- Recently, news articles were published indicating that autonomous and connected vehicles increase radiation in urban areas. Is radiation exposure from ACES a concern?
 - There has been no conclusive evidence to suggest radiation is an issue with ACES.
- Has any 5G testing occurred at all?
 - A German engineering firm has been conducting some testing, but more research is needed.
- Curb development and management will not occur unless it is mandated due to how the real estate market operates.



 A group has reached out to FDOT to inquire how roads can be ready for AV and dynamic insurance.

Tampa Hillsborough Expressway Authority (THEA)

Bob Frey gave a presentation on the THEA CV Pilot Project. This pilot project is part of a larger USDOT project with other pilot sites in Wyoming and New York City. The project includes 1,200 privately owned vehicles, nine trolleys, 10 HART buses, and 44 roadside units. The next step is to build on the pilot project to include a mobility hub housing a C-AV rideshare shuttle fleet with the goal of reducing vehicle traffic in downtown Tampa.

Comments and Questions

- Do you anticipate incorporating bike racks into these services?
 - This is not specifically part of the pilot project, but THEA has explored inexpensive connectivity units for bikes and scooters.
- Has THEA used data collected in other ways?
 - Not yet, but the quality of the data is good and could be used to support future planning.

Florida Public Transit Association

Brad Thoburn provided an update on transit operators in Florida. Brad highlighted projects with Gainesville, Hillsborough Area Regional Transit, Jacksonville Transportation Authority, Central Florida Regional Transportation Authority (Lynx), and Pinellas Suncoast Transit Authority. Brad discussed considerations for ACES transit.

There were no comments or questions for Brad.

MetroPlan Orlando

Eric Hill provided an overview of the AV/CV market. Eric suggested benefits of CAV include improved safety, reduced congestion, enhanced mobility, and minimized environmental impacts. MetroPlan Orlando has formed a CAV Working Group to build technical, institutional, and policy capacity; leverage the benefits of deployment; address knowledge gaps; and support the USDOT efforts. Eric discussed the CAV impact areas as well as the National Framework for Regional CAV Planning. Eric introduced the MetroPlan Orlando CAV Readiness Study and concluded with additional considerations for CAV.

There were no comments or questions for Eric.

Florida's Turnpike Enterprise

Kelda Senior provided an update on the SunTrax facility. SunTrax is a 475-acre testing facility in Auburndale, FL, located in Polk County. SunTrax, which began from the need to test tolling technology for the Turnpike and has grown to include testing for ACES. SunTrax contains three stages of testing:



simulation, controlled track testing, and on-road testing. The high-speed oval is open for testing and the infield is expected to open for testing in the spring of 2021.

There were no comments or questions for Kelda.

Workshop: Preparing the SIS for ACES

The FDOT Systems Implementation Office (SIO) and HDR conducted a SWOT Analysis to consider the strengths, weaknesses, opportunities, and threats of ACES technology on the Strategic Intermodal System (SIS). The summary of this activity is included below.

Autonomous Vehicles (AV)

- The strengths of AV include:
 - Difference between Advanced Driver Assistance Systems and Highly Automated Vehicles.
 - Quality of infrastructure in Florida would improve with AV.
 - There is ample legislative support for AV technologies.
 - Florida's proactive engagement and testing could lead to earlier adoption.
- The weaknesses of AV include:
 - All infrastructure would require connectivity.
 - A significant amount of data is needed as well as security for the data.
 - Redefine road spaces for dynamic truck lanes.
 - Planning and training are needed for successful implementation.
- The opportunities of AV include:
 - o Technologies can help meet transportation goals without much FDOT oversight.
 - Partnerships for mapping, data sharing, and increasing public knowledge.
 - Curb redesign needed and the workforce is able to support these changes.
 - Freight trips could alleviate truck driver shortages.
 - Redefine commuting.
 - New funding opportunities to offset potential decreases in fuel tax revenues.
- The threats of AV include:
 - o AV testing.
 - Public knowledge is minimal currently.
 - Misuse of technology and security threats.
 - Uncertainty in the timing of when the technology is ready and implemented.
 - Potential for over-investment in certain areas.
 - Over-demand on current roadways.



- Other comments:
 - Is the decades-long transition period a threat?
 - Yes, the implementation period will be challenging.
 - Will we have the resources to address CAV off-SIS when the state's commitment to the SIS is pretty high? Do we need to think about rebalancing our resources?
 - Yes, we still have to address the rest of the state highway system, but SIS is the starting point. This project will help us identify what types of projects we may consider and how to increase capacity on the system.
 - This technology has the opportunity to enhance freight, transit and the multi-modal system.
 - Impact on the built environment will be both positive and negative. For example, parking garages and zoning requirements. With automation, warehouses have less on-site employees and less parking needs. Are extreme weather and other natural hazards potential threats or weaknesses? Can these systems detect a flood ahead or sinkhole?
 - Potential capacity increases?
 - SIS is the perfect place to employ speed harmonization technologies.

Connected Vehicles (CV)

- The strengths of CV include:
 - Efficiency in response time for emergency services.
 - Travel time and freight reliability.
 - o Safety improvements.
 - o Improved system maintenance.
 - Well-defined system and capacity flows.
 - Supports widespread adoption of AV.
- The weaknesses of CV include:
 - The transition to widespread implementation will be complicated.
 - o Privacy concerns related to connected devices and cybersecurity.
 - o Communication platform uncertainty.
 - Weather could impact the signal and connection.
 - o Rural versus urban equity.
 - Data management and storage needs.
- The opportunities of CV include:
 - o Leveraging the data.
 - Connectivity with other modes.
 - The opportunities for public-private partnerships.
 - o Competitiveness in different markets.
 - Better real time data.



- The threats of CV include:
 - There could be too much data to process.
 - Over-reactive policy.
 - Cybersecurity and risk exposure.
 - o Modeling uncertainty.
- Other comments:
 - Workforce impacts how many jobs are tied to driving?
 - o If FDOT isn't proactive, they might be stuck with how to do it.

Electric Vehicles

- The strengths of electric vehicles include:
 - o Environmental benefits from decreased emissions.
 - Noise pollution reduction as electric vehicles are quieter.
 - Proven technology.
 - Complimentary to AV/CV.
 - Big hubs are connected on one network.
- The weaknesses of electric vehicles include:
 - Range of vehicle battery versus the SIS coverage area how many miles can a charge take a user?
 - Lack of awareness.
 - Lack of vehicle variety ("my car isn't available as an EV").
 - o Lifecycle cost.
- The opportunities from electric vehicles include:
 - o Environmental benefits from reduced emissions.
 - Remove fuel trucks on highways.
 - o Utilization of rest stops for charging stations.
 - Electric buses during power outages can be used as generators.
 - o Increase in awareness.
 - V/W settlement dollars can help with implementation.
 - o Inductive charging.
 - Solar farms to charge cars.
- The threats of electric vehicles include:
 - Noise reduction can lead to safety hazard as pedestrians or cyclists cannot hear the vehicles.
 - Gas tax implications this is a large source of funding for many communities.
 - What are the implications to the petroleum supply chain?



- Hurricane evacuation can electric vehicles infrastructure support mass movement of population during emergency situations?
- Other comments:
 - 7 million vehicles evacuated during the five days leading up to Irma important to think about the return trips. Emphasis on early evacuation, need to convince people they don't all need to come back at the same time after the storm.
 - o SIS Resiliency Study to identify alternative routes and bottlenecks.
 - o Shared component of ACES more critical in an evacuation.
 - Longer time to recharge for electric vehicles compared to fueling up will have impacts to evacuation.
 - Electrification of trucks.
 - Pleasant experience for everyone outside of the vehicle, reducing negative feelings of living next to a roadway.
 - Combination of AV and EV.

Shared Mobility

- The strengths of shared mobility include:
 - Lower VMT with shared mobility.
 - Shared mobility can be available statewide not dependent on urban areas.
- The weaknesses of shared mobility include:
 - Culture of preference for personal vehicles and less dense populations.
 - Higher VMT as vehicles wait for passengers/idle.
 - Regulation and safety.
- The opportunities of shared mobility include:
 - Shift in culture from personal vehicles to shared mobility.
 - Support SIS to serve function of high speed and long-distance trips (could capture local network trips and take users off the SIS facilities)
- The threats of shared mobility include:
 - Equity (lack of smartphone availability in poor and rural areas).
 - Supplanting transit services.
 - Likely to concentrate in the urban core and less in the rural areas.
 - New operating model for hubs (also an opportunity)
 - Impacts to fuel tax.
 - Rideshare subsidies.
- Other comments:
 - Related to shared, micromobility? Safety related concerns for shared micromobility such as scooters; but also, a first/last mile connector opportunity. There is a need for objective safety studies.



- Transit agencies primarily transport the transit-dependent, opportunity for transit agencies to become TNCs and overcome equity issue?
 - Trips will still need to be subsidized; model set up not to make money
 - We subsidize our roads but not transit as heavily- need to rebalance?
 - Difference between supporting public versus private MaaS providers
- o Curb management issues with bikes and scooters left behind by users.
- Abundance of technology from private sector, if we artificially try to constrain, we will lose the benefits.
- There is the chance to collect and analyze data to optimize the system.
- Combining goods and people, shared vehicles can deliver goods at off peak passenger times but this will have an impact to USPS and other delivery companies.
- Advertising opportunity
- TNC and shared mobility has enormous impacts but few are on the SIS, most are off-SIS facilities. However, large impact to the ports example of recent funding eligibility criteria changes to allow for funding of curb reconfiguration
- Shared mobility hubs at intermodal hubs (Policy Plan update)
- Parking and revenue impacts with parking garages at airports. Opportunity for airports to repurpose parking structures.
- Shared component of ACES the main opportunity to reduce congestion, but people do not like sharing- behavioral issue to overcome if shared mobility will be the key for congestion relief.
- Also, a generational issue, younger generation more open to transit and shared vehicles. Attitudes and lifestyles evolving alongside technology changes.

Discussion: ACES Issues, Opportunities, and Values

Jim Halley introduced the next discussion by summarizing the seven major themes from the January 2019 ACES Subcommittee meeting. These themes became the structure for the ACES issues, opportunities, and values discussion. Each group (four total groups) discussed three of the seven major themes (no group discussed the Infrastructure and Design theme because the topic was covered during the previous exercise). Group discussions were focused on three prompt questions:

- Which issues are most important for addressing the opportunities and impacts of ACES? Are there other issues we should add to this list?
- How should these issues impact the goals and objectives of the FTP? What recommendations do you have for the FTP Steering Committee?
- What additional information would you like to have at future meetings?

Following the discussions, each group reported their findings with the large group. A summary of concepts and ideas identified by attendees during the discussion is listed below.



Technology and Data

- Some of these issues are being addressed at the national level. What top down decisions will impact us, and how should we be involved in those conversations?
- Security is a more significant issue, both for data and for the security of the system. We need to
 be prepared for cyberthreats as well as issues related to the interaction between older and newer
 systems.
- Should address the role of blockchain, and how that relates to cybersecurity.
- Need to address the complexity of technology related to private-public relationships.
- Need to address concerns about the privacy of personal data, particularly the need for public understanding of what data are shared for which purpose.
- Need to provide consistent communication, interoperability, and compatibility of systems,
- Need for policies related to data governance, consistency, and standards. Guidance is needed regarding data sharing related to new partnerships.
- Need a unified database of infrastructure (cable, broadband, etc.) implemented throughout Florida

Implications for the FTP

• Consider incorporating privacy, data security, and cybersecurity into objectives for the Safety goal.

Economic and Workforce Development

- How can ACES support anticipated population and visitor growth? We may see mode shares shift, but the overall level of travel will still be larger.
- Should consider opportunities for partnerships with utilities to support deployment of technology. The utilities also play a key role supporting economic development.
- More widespread deployment of broadband would support more telecommuting. What are the impacts on economic development and the location of jobs?
- Should pay more attention to public health impacts of new technologies for example, health impacts of more people riding bikes or scooters without helmets or the mix of pedestrians and people on scooters and bikes on sidewalks.
- Should also pay more attention to how public right-of-way, curbs, and sidewalks are used. This has implications for economic activity particularly in urban areas.
- Should prepare for shifts in the trucking industry workforce. Trucking is a big source of jobs statewide. We may need fewer truck drivers but more logistics or technology managers. Bigger issue of the impact of technology and automation on jobs. What are the opportunities for retraining of hospitality service industry workers to move into other occupations? ACES and technology could reinforce a shift in Florida's primary industries from agriculture, tourism, and



construction to more technology-based industries. Are we prepared for job growth in those industries, as well as the transportation demands of those industries?

- How can we attract technology companies to move to Florida?
- Greater emphasis on spaceports and supporting technology.
- What are the blue collar jobs of the future, and how we do prepare for them? Should we have apprenticeships in some of these technology industries? Where are partnerships needed with workforce development programs and schools?
- How would technology impact both interstate and intrastate travel as well as how businesses function? Will we see more remote monitoring of Florida operations from other states?

Implications for the FTP

- Need to emphasize workforce retention and promotion of blue collar jobs in the FTP strategies.
- Should add greater emphasis on technology as an emerging industry in Florida.

Partnerships

- Partnerships are foundational to the FTP as well as to everything we do.
- Important to recognize the diversity of communities across the state.
- FDOT should provide an ongoing forum for ACES discussion.
- Strategies related to partnerships should address data sharing.
- Some additional partners could be added to the list, such as fire and rescue services. Need to
 recognize the need for more specialized equipment to handle an electric vehicle. Need more
 emphasis on public engagement and outreach.
- Need for strategies on promoting public-private partnerships and reducing the barriers associated with them, such as procurement, grant requirements, and Sunshine laws. Are there some areas that should be identified for future study or legislative change?
- Need to define the role of the MPOs how MPOs can enhance scoring of ACES projects in prioritization processes, and how MPOs can provide a forum for ACES discussions.
- Need to define the role of local government in providing ACES infrastructure.
- Role of FDOT and the federal government on ACES policy.
- Need to address equity issues between urban and rural.
- Coordination across modes.

Implications for the FTP

• FTP should define the roles of FDOT, MPOs, and local governments in ACES.

Customers

• Most significance issues for customers are safety, equity, and user experience.



- From a customer perspective, infrastructure is changing it's not just pavement anymore but also includes communications, connectivity, etc.
- Customer focus applies to all FTP goals.
- Need for more public education and awareness of ACES. Should include both residents and visitors, because technology should work across state lines.
- Need to reassure customers that systems are safe and secure.
- Equity has multiple dimensions and we need to be aware of all of these.
- Need to provide an efficient use of funds. Should determine where technology is a better investment than physical infrastructure.

Implications for the FTP

• Incorporate greater emphasis on equity and user experience in FTP objectives and strategies.

Planning and Project Development

- FDOT operates on a long planning horizon but the technology is changing quickly. Where is it appropriate to have a longer-term horizon, and where is it appropriate to have a shorter term horizon?
- Partnerships will likely change in the future less interagency and more private/public partnerships.
- Need to address data sharing and how we can use data to support planning.
- Need to recognize the value of current planning process, which helps focus on decisions supporting specific goals and insulates the decisions from politics. Look at how we can provide more flexibility to the existing process to address technology change.
- Should focus on how we can achieve better short-term strategic planning so we make good decisions in the context of the best information available as well as long-term goals and avoid chasing new technologies.
- "Agile and resilient" is a wonderful goal but difficult to implement. Existing planning horizon helps to encourage collaboration and smart use of funds because projects span over many years/political administrations.

Implications for the FTP

• Promote flexibility in the planning process to adapt to changing needs in the FTP.

Funding

- Need a more strategic approach to funding technology. Improve strategies for identifying P3s and alternative, innovative funding sources.
- Reevaluate priorities for allocating funding between capacity and operations.
- Consider a new funding source for shared mobility.



- Need policies for how to address operations and management of technologies, including those related to private-public partnerships. Funding is not mentioned in the current FTP. Would suggest language focused on action rather than further study.
- Address flexibility and agility of work program to keep pace and fund ACES.
- Consider allocating a small percent of work program funding toward technology investments/pilots. Or, should technology be an available use of all funding categories if it is the best solution for addressing program goals.
- Need to be aware of the potential impacts on toll and transit authority ability to repay bond covenants if technology shifts travel demand and impacts revenues.

Implications for the FTP

• Greater emphasis on funding is needed in the FTP.

Topics for Next Meeting, Wrap Up, Next Steps

Jim concluded the meeting with a discussion on next steps. The next FTP-SIS Steering Committee meeting is scheduled for July 9-10, 2019 in Bonita Springs. An ACES Subcommittee teleconference will be scheduled for August 2019 and the next in-person meeting will be in conjunction with the FAV Summit on November 20, 2019.

