FMTF Model Advancement Committee Meeting Minutes

Date: **Friday, October 4, 2019**

Time: **10:00 A.M. – 11:00 A.M. EDT**

Where: **Web Conference**

Attendee	Agency
Sarah McKinley (Chair)	Hillsborough MPO
Terry Corkery	FDOT Central Office
Thomas Hill	FDOT Central Office
Vladimir Majano	FDOT Central Office
Frank Tabatabaee	FDOT Central Office
Christopher Simpron	FDOT District 1
Scott Clem	FDOT District 2
Josephine Medina	Collier MPO
Chelsea Favero	Forward Pinellas
Mike Escalante	Gainesville MTPO
Suraya Teeple	JTA
Nick Lepp	MetroPlan Orlando
Denise Bunnewith	North Florida TPO
Edward DeFini	St. Lucie TPO
Mohammed Hadi	FIU
Cesar Segovia	AECOM
Yew Song	AECOM
Sung-Ryong Han	BCC Engineering
Danyu Shi	BCC Engineering
Yifan Zhang	BCC Engineering
Ramachandran Balakrishna	Caliper
Sheldon Harrison	Cambridge Systematics
Heather Lupton	Cambridge Systematics
Tom Rossi	Cambridge Systematics
Krishnan Viswanathan	Cambridge Systematics
Katie Brinson	Citilabs
Ahmed Mohideen	Citilabs
Hui Zhao	Connetics

Srin Varanasi	Corradino Group
Rob Schiffer	FuturePlan
Jeanette Berk	Gannett Fleming
Makarand Gawade	HDR
Dan Beaty	HNTB
Andrew Young	HNTB
Li Jin	KIttelson & Associates
Heejoo Ham	Stantec
David Schellinger	Stantec
Jerry Graham	Traf-O-Data

Item 1: Welcome

- The purpose of this meeting is to discuss items brought to the Model Task Force (MTF) by Dan Beaty in relation to Automated, Connected, Electric, and Shared-Use Vehicles (ACES)
  - o In July, the MTF made a motion for Dan's proposed ACES guidance to be adopted as a standardized procedure for FSUTMS, while recognizing that there is still more to do to make the work more robust
  - o Encourage everyone to read through the report, particularly the section on modeling.
    - Once everyone has read the report, the committee can make a motion on whether or not to adopt this modeling guidance as a temporary measure while we further investigate some of the attributes associated with the process.
      - A motion needs to occur before the next MTF meeting.

Item 2: Autotomous/Connected Vehicle Guidance Presentation by Dan Beaty

- Purpose & Approach
  - o Conducted a literature review and surveys
  - o Examined the Federal Highway Association (FHWA) scenarios
  - o Determined how to implement some of the information provided into travel demand modeling.
- ACES Planning Process
  - o Three main trajectories
    - Enhanced driving experience
      - A managed autonomous lane network with AV lanes and AV travel at a large scale with significant consumer adoption.
    - Slow roll

- Accounts for advances in safety technology, Transportation Systems Management & Operations (TSM&O), and mobility services.
    - ▪ Driver becomes mobility consumer
        - Niche service growth looking at high Automated Vehicles/Connected Vehicles (AV/CV) in certain areas, where many pilot projects are beginning to take shape.
        - Competing fleets
            - o Automated fleets are now competing against each other within level four automation.
        - RoboTransit
            - o Automated mobility as a service with strong public-private partnerships
- Considerations for Modeling
    - o Modifying the trip table, terminal times, and friction factors
        - ▪ Terminal times
            - Used as a starting point in determining changes to the model to reflect ACES.
            - Range 1-2 minutes in Central Business District (CBD) and CBD fringe only.
                - o Range was created through internal discussion about experiences when traveling using Transportation Network Companies (TNCs), given that there is not a lot of research on the topic.
            - Looking at rural areas isn't as important when looking to modify terminal times as they are more spread out and less dense than the CBD and CBD fringe.
        - ▪ Friction factors
            - More focused on the automated vehicle portion of AV/CV.
            - Home Based Work (HBW) trips increased by 2.5% and 5%
            - Considers the possibility of individuals living further away from their jobs (depending on their job)
                - o White collar vs. Blue collar jobs
            - Given the potential ability to do other things while commuting (rather than driving), individuals may be willing to live further away and spend more time in a vehicle.
        - ▪ Mode choice
            - Automated vehicles would be introduced as a mode within the model.
            - However, instead decided to focus on trip table manipulation to achieve AV/CV simulation. Manipulated the following:
                - o Auto trip table
                - o Transit trip table

- o Socioeconomic data
    - Market penetration in certain zones
    - Age, income, disability and other factors by TAZ
    - Effects of capacity on arterials
- o Value of time (VOT) in regional travel characteristics surveys
    - VOT is typically associated with income within models, but it may need to be reexamined with the introduction of ACES.
    - Include questions relating propensity to use automated vehicles and if their use would affect VOT
- o ACES impacts on Vehicle Hours Traveled (VHT), Vehicle Miles Traveled (VMT)
    - Could affect network speeds.
    - Depends on the FHWA scenarios as to how that can influence planning goals and objectives.
    - Capacity improvements with the introduction of ACES could have an affect on speeds, and ultimately VHT and VMT.
- o Tested on the Gainesville Urban Area Model (Daily) and the Central Florida Regional Planning Model (CFRPM) (Daily)
    - Wanted to determine if the parameters made sense from scenario to scenario in regards to VMT/VHT, average network speed, and congested speed.
    - Focused on freeway lanes and arterials in each model because most individuals believe ACES will have the biggest impact on these roadways.
    - Using the scenario keys within Cube to make modifications to the model to help it reflect ACES technology.
        - Placed examples of what the ranges should be within the keys
            - o Auto trip purpose, transit trips shift to auto? (yes or no), AV zones trip table percent increase, etc.
    - The larger the model, the more care needs to be taken as to how this is done and where changes are going to be identified within the model
        - Ex. While using the CFRPM, if changes are made to downtown Orlando, only a few zones will be modified, having little impact on the model as a whole.
    - District 1, CFRPM, and Tampa are looking to introduce this guidance into their models.
- Considerations for Policy
    - o Coordinate with local governments on land use and parking policies to achieve local and regional goals
        - Will have an effect on the design of developments, roadways, etc.
- Consideration for Project Generation and Prioritization
    - o Build consensus with MPO members regarding how to account for ACES in project development and prioritization.
        - One of the main goals of this report and research was not to dictate to people what to do or how to do it, but rather provide generalized

guidelines to promote this topic in their long-range plans and aid in decision-making.

   o Increased road marking implementation and maintenance for machine vision

Item 3: Discussion

- The assumptions being made are not by the modeler, but the MPO, the steering committee, and the board of the committee.
- North Florida TPO has chosen to examine the extremes in order to determine potential impact of these technologies
- This guidance needs to be used to guide the governing boards on policy decisions
   o Not to be used as all or nothing, but rather to get the ball rolling
      ▪ Need a repository for "lessons learned" in the process of modeling/planning AV/CV impacts
      ▪ May be good to host a roundtable at a future MTF meeting for the modelers with each of the MPOs that have completed their long-range transportation plans to discuss their approaches to ACES.
- Central Office is working on an ACES business model to examine impacts on the SIS system, but is the modeling office coordinating with them? Will the Districts have access to this document?
   o Thomas Hill: Yes, we could have them present to the committee on a future agenda.
- The socioeconomic variables mentioned have not previously been considered. Is there a document stating how the percentages were developed for the demographics?
   o Demographics can change drastically, so we need to ensure that the trip tables being modified/created are sensitive to the demographics.
- A comprehensive list of ACES projects/documents on FSUTMSOnline would be a helpful resource.
   o Thomas Hill: If it is a desire of the committee, we could look into it. FDOT has a dedicated AV/CV webpage
- We will post the document on FSUTMSOnline after this meeting, have all members of the committee review it, then hold another meeting to move on its adoption.

Item 4: Future Topics

- A survey was conducted years back to determine the priorities of the committee.
   o Activity Based Models (ABMs) and Dynamic Traffic Assignment (DTA) guidelines for effective modeling techniques and improving route choice were among the priorities.
   o Would like to discuss with the committee to work toward refreshing the list of priorities and new topics to work on over the upcoming years.
- ActivitySIM
   o Would like to request a MTF presentation on the work done for FHWA on modeling automated vehicles using the North Florida TPO models (Daysim and Transmodeler) and on ActivitySIM, the new open source activity based modeling

platform being developed by RSG in an effort funded by several MPOs throughout the nation.

- Parking
    o Parking may be a manageable portion of models that need more attention to with TNCs having a potential impact on mode choice.
    o Perhaps in some kind of analysis that could be done regarding the way that parking has been handled over the years and its shortcomings.
    o Need to consider that parking will look a lot different.
        ▪ Not only might cars go home after dropping off a passenger, but will depend on not only parking nearby but also on the passenger's length of activity or whether the car may be needed at home by another member of the household.
            • Assumes a consumer-owned autonomous vehicle system, rather than a fleet system.
- Standardization
    o Network attribute standardization, in particular
    o Tom Rossi has examined model attribute standardization within the FSUTMS structure.
        ▪ Working with Central Office to update these standards to reflect current needs.
        ▪ These standards help to provide legal protections and make the program more universal to users and developers throughout the state
    o Also need standardization for ABMs
        ▪ What should be driving ABMs?
            • CT-Ramp? DaySIM? ActivitySIM? Or something else?
- Turnpike
    o Working on the next generation of the statewide model and trying to find a number of ways to collaborate with Central Office and the Districts regarding how to develop databases, input data, and using all available household travel surveys.
- Data
    o A lot of unknowns in regards to data needs for model advancement around AV/CV.
        ▪ How do we change our surveys?
        ▪ How do we start doing proper data collection?

Action Item

- **Read through the ACES Guidance document presented by Dan Beaty in preparation to make a motion on whether or not to adopt the modeling portion into the FSUTMS standardized documents. To access the document, follow the link: https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/metrosupport/resources/fdot_mpoguidebook_20181005.pdf?sfvrsn=7d194ed6_2**