Request for Research Funding for FY 2021-2022			
Requesting Office	State Traffic Engineering and Operations Office	**Priority**	3 of 15
Proposed Title	Exploring Micromobility Services		
Justification	The Florida Department of Transportation (FDOT), through its Connected and Automated Vehicle (CAV) program, has deployed some of the most innovative emerging technology applications in the country. The FDOT's CAV program aims at achieving the safety and mobility goals by collaborating with the industry, communicating on the policy objectives, coordinating for effective service delivery, and consulting while developing programmatic frameworks. The FDOT's CAV initiatives have been expanded to include electric and shared-use vehicles, leading to the term ACES, which stands for *Automated, Connected, Electric, and Shared-use* vehicles. Shared micromobility, one of the rapidly growing emerging transportation strategies, involves shared-use electric vehicles and is considered part of ACES. In Florida, at least 16 shared micromobility systems are currently operational through public-private partnerships, and a few more deployments are in the planning phase. However, agencies face two major issues: (a) lack of data-driven tools to measure the operational and safety benefits of these shared micromobility systems; and (b) lack of guidance on integrating shared micromobility in the planning and design of urban and suburban transportation systems. This research aims to develop a toolkit to assist agencies in considering the deployment of shared micromobility systems. The objectives of this project include: • Develop criteria for deploying shared micromobility systems. • Create performance metrics for evaluating mobility and safety benefits of micromobility systems. • Examine human factors related to the use of various shared micromobility systems. • Explore the integration of shared micromobility within CAV by leveraging the existing CAV communication infrastructure. The research objectives will be achieved through a data-driven and field-based study. The research team will include two universities (University of North Florida & Florida International University) and an automobile original equipment manufacturer (AOEM). The research team will leverage the existing shared micromobility deployments and consider various urban settings, including urban retirement communities, university campuses and central business districts. To the extent possible, the research team will prioritize sites near the existing CAV deployments. In summary, shared micromobility has the potential to revolutionize the conventional project development process for urban and suburban transportation projects, which currently considers traditional modes of transportation only. It could improve connectivity to other modes to provide efficient last-mile access improving mobility, safety, and public health by reducing congestion and emissions. Agencies can leverage the already existing provisions for non-motorized modes to promote shared micromobility, potentially leading to a modal shift to environmentally friendly efficient means of transportation for urban areas. This project will provide the necessary guidance on deploying these systems, along with the operational and safety performance metrics to inform the deployment evaluation process.		

Impact	This study extends FDOT efforts to integrate electric and shared mobility into the existing CAV initiatives, promoting ACES in its entirety. The study results will help FDOT and local agencies to quantify the mobility and safety benefits of shared micromobility systems. The developed guidelines and criteria can be used as input in future versions of several FDOT resources including the FDOT's CAV Business Plan, the FDOT's Transportation Systems Management and Operations (TSM&O) Strategic Plan, Florida's Strategic Highway Safety Plan, and the FDOT's Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric and Shared-use Vehicles.		
Affected Offices	Traffic Engineering and Operations Office and District Traffic Operations Offices		
Existing Work	There is no existing work on micromobility that connects back to the CAV program and AOEM partnership in Florida.		
Keywords Used In Existing Work Search	Shared use micromobility; disabled users, elder road users, urban and suburban environment		
Related Contracts (Give contract numbers)	None		
Funding Request	$250,000	**Anticipated Duration**	18 months
Project Manager	Raj Ponnaluri, PhD, PE, PTOE, PMP	**Contracting Method**	Direct contract with the University of North Florida (UNF) (Dr. Sando)
Urgency	1	Shared micromobility services are growing rapidly across the United States. Florida agencies urgently need guidance on evaluating the suitability of various shared micromobility systems to curb congestion and safety problems in urban and suburban areas.	
Implementability	1	The results of this study will be practice-ready and prepared for immediate implementation. The research team will engage FDOT districts and local agencies to ensure that the outcome of this project is transferable throughout the state.	

Project Benefits (Succinct, complete explanation) This project implementation aims to provide the following benefits:

- Accessibility: Micromobility services can facilitate first- and last-mile connectivity for transit and parking or serve entire trips. More than half of car trips in the United States are under five miles, making them potentially well suited to be served by micromobility services. Also, shared micromobility will potentially increase the accessibility and mobility of elderly travelers and persons with disabilities.
- Modal shift: By connecting to transit and serving entire trips, micromobility has the potential to serve a considerable portion of the market for short trips, reducing congestion on urban streets.
- Sustainability: Most of the micromobility modes are powered by electricity with zero direct carbon emissions.
- On-Demand Serviceability: Micromobility services can be leveraged for on-demand services facilitated by application-based or web-based services.

Project Benefits (Select all that apply and explain)	Quantifiable Benefits (units, dollars, etc…if applicable)	Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits
○ **Materials Enhancement**		
○ **Materials Savings**		
✓ **Time Savings**	Enhancing mobility by reducing delay	The developed guidelines will increase shared micromobility systems in Florida, which will reduce congestion in the urban core and improve mobility.
✓ **Lives Saved/Injuries Prevented**	Increase safety for Florida residents included elderly road users	The project will develop metrics for mobility and safety evaluation. The outcome of this study will inform local agencies on the potential safety benefits of shared mobility deployments given different site conditions.
✓ **Productivity**	Increased innovation	This project will improve productivity for FDOT and local agencies by equipping them with tools to effectively and efficiently evaluate needs for implementing shared mobility systems for mobility and safety improvements.
✓ **Other (Explain)**	Environment preservation	The tools developed in this research will lead to increased use of shared micromobility in Florida, reducing emissions, and improving the environment.

*Comments should explain and support urgency, financial benefit, and implementability scores