UTC Project Information	
Project Title	Modeling and Evaluating Multimodal Urban Air Mobility
University	University of South Florida
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: $176,257 USF: $88,129
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Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
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Brief Description of Research Project	Traffic congestion has been one of the leading issues around the world. The emerging concept urban air mobility (UAM) is expected to provide a new solution by making use of the three-dimensional airspace to transport passengers and goods in urban areas. UAM application is based on a new type of electric aircraft that is enabled to take off and land vertically (eVTOL) and embedded with advanced autonomous and distributed propulsion technology. Compared to traditional aircraft like helicopter, eVTOL will provide safer, more efficient, and quieter air transportation service in urban areas. One of the greatest identified challenges for UAM application is to build well-distributed infrastructures to support eVTOL aircraft operations. Those infrastructures are vertiports (or skyports), where eVTOL aircrafts takeoff and land, onboard or disembark passengers, and get charged. On the one hand, dense land use in urban areas, aircraft operation requirements and community acceptance among many other factors severely restrict the number of vertiports and make it impossible to provide door-to-door (DtD) services through pure air transportation. On the other hand, vertiport locations should be carefully selected with consideration of its impact on potential UAM demand and

	system performance. In this project, we plan to develop mathematical models to design operation network for on-demand UAM service. Specifically, we solve the problem of vertiport optimal location identification and user allocation to vertiports with consideration of interactions between vertiport locations and potential UAM travel demand. We will also incorporate UAM operation characteristics and users' travel mode choice behaviors into analysis. A case study based on Tampa Bay area will be conducted to demonstrate the effectiveness of the proposed model. Furthermore, we will build a noise modeling tool ad to estimate the noise level of UAM service at different altitude level for this case study. Lastly, noise and emission impacts of UAM will be quantified and scenarios with and w/o UAM service will be compared.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links • Reports • Project website	http://ctech.cee.cornell.edu/final-project-reports/