

Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Modeling the Environmental Impact of Urban Air Mobility: Case Study of Tampa Bay Region
University	University of South Florida
Principal Investigator	Yu Zhang
PI Contact Information	yuzhang@usf.edu 813-230-9842
Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: \$53,094 USF: \$31,547
Total Project Cost	\$84,641
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	■ Start date: 10/01/2020 ■ End date: 09/30/2021
Brief Description of Research Project	<p>Urban Air Mobility (UAM) is an emerging concept proposed in recent years that uses electric vertical take-off and landing vehicles (eVTOLs), which is expected to offer an alternative way of transporting passengers and goods in urban areas with significantly improved mobility by making use of low-altitude airspace. Our previous study answered planning questions in terms of optimal vertiport locations and estimation of diverted demand from ground transportation by combining network design and travel mode choice models. Although eVTOLs generate zero air pollutant emissions during operations, the impact to the region will be dependent on the energy resources of local power companies while generating the electricity and if eVTOLs are operated efficiently to serve passengers.</p> <p>Thus, in this study, we will take Tampa Bay Region as our study case and model the environmental impact of UAM implementation.</p> <p>First, we will extend our previous study to identify optimal vertiport locations and estimate UAM demand for Tampa Bay Region, which include 4 counties in FDOT District 7 and 2</p>

	<p>counties in District 1, by using state-wide census tract level travel demand data.</p> <p>We will then estimate the total operations of eVTOLs to serve the region.</p> <p>Third, we will work with local power companies to understand their sources of electricity generation and calculate the greenhouse gas emissions for supporting the operation of eVTOLs.</p> <p>Fourth, we will use EPA MOVES model to obtain the emission rates of CO₂, NO_x, and VOC emission rates in the 6 counties and calculate the air pollutant emission changes caused by UAM.</p> <p>Lastly, we will apply scenario analysis to model the environmental impacts of UAM in Tampa Bay Region under different scenarios and apply sensitivity analysis to test how the parameters in the modeling will affect the research outcomes.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>https://ctech.cee.cornell.edu/final-project-reports/</p>