

ADVANCED AIR MOBILITY (AAM) FOR METROPOLITAN PACKAGE DELIVERY: ECONOMIC, ENERGY, CLIMATE, AND COMMUNITY NOISE IMPACTS AND IMPLICATIONS

Speaker

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Abstract

The rise of Advanced Air Mobility (AAM) has opened up the possibility of using electric vertical takeoff and landing aircraft (eVTOLs) for package delivery in urban areas. However, there is a lack of understanding about the suitability and operation of an eVTOL-based package delivery system. In this talk, we will discuss our recent study on the economic, energy, and climate impacts of using eVTOLs for package delivery. We propose a two-leg system design that uses an integer programming model to specify eVTOL and ground vehicle types, their cost economics, and their energy use and CO2 emission characteristics. I will also present an operational planning framework for eVTOL-based package delivery to be both economically efficient and community friendly, in terms of the noise impact of eVTOL operations on people surrounding vertiports. We implement the models in the Chicago metro region and find that the attractiveness of eVTOL-based package delivery depends on various factors such as eVTOL and ground vehicle choices and key system inputs. Numerical results also reveal the cost-noise tradeoff and other operational insights about eVTOL-based package delivery.

Biography

Dr. Bo Zou is an associate professor in the Department of Civil, Materials, and Environmental Engineering at the University of Illinois Chicago. His research focuses on technology innovations in transportation systems, including Advanced Air Mobility and freight logistics. He has been funded by numerous agencies, including the US National Science Foundation and NASA. He is currently Director of Technology Transfer and Commercialization of the Center for Freight Transportation for Efficient and Resilient Supply Chain funded by US DOT. Prof. Zou serves as Associate Editor for Journal of Air Transport Management and Transportation Letters and is an editorial board member of Transportation Research Part B, C, and E, and Transport Policy. He received his Ph.D. from UC Berkeley and has degrees from Tsinghua University and Ecole Centrale Nantes in France.



17 May 2024
Friday



10:00 am - 11:00 am



Room 3598 (Lift
27/28), HKUST

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