

Rural Safe Efficient Advanced Transportation (R-SEAT) Center

Research Project Name: Autonomous Electric Ferries (Autoferry)
Recipient/Grant (Contract) Number: Florida A&M University; University of Washington Tacoma
Center Name: Rural Safe Efficient Advanced Transportation (R-SEAT) Center
Research Priority: Improving Mobility of People and Goods
Principal Investigator(s): Heather Dillon, Mike McCourt, Cassandra Donatelli, Jeffrey Walters, Angela Kitali
Project Partners: WAV-C - Washington Autonomous Vehicle Cluster, Maritime focus; Numurus - Company focused on Autonomous Hardware and Software https://numurus.com/ ; Future Marine Inc.
Research Project Funding: \$98,258.19 (Federal request); \$49130 (Non-Federal cost share)
Project Start and End Date: 9/1/2024 to 12/31/2025
Project Description: Island and peninsula communities in the Puget Sound are often isolated from regional cities like Seattle and Tacoma due to large transit time by road. Regional ferry systems are large and expensive to operate, limiting the number of service times and access points. Most ferries operate only between larger regional towns and major cities, isolating smaller communities that often lack bus services as well. Autonomous electric ferries offer a unique and affordable option to better connect rural communities in the region. In recent years, the Washington state ferry system has struggled with staffing and maintenance of older diesel ferry systems. For example, the residents of Anderson Island and Ketron Island in the south Puget Sound region are served by one ferry that connects them to the mainland. For Ketron Island, the ferry runs only 4 times per day and was out of service for several days recently while it was being repaired. This project focuses on addressing key technical objectives with the autonomous ferries, including (1) autonomous docking procedures, (2) optimization of possible routes for weather and tidal events, and (3) building deeper partnerships with commercialization partners. Our methods include literature review, weather and tidal data collection, design and prototyping, and testing.
US DOT Priorities*:
Outputs: The overall objective of this project is to support the development of small, electric ferries that connect underserved communities in the Salish Sea. Supporting the development of an autonomous ferry network creates access for rural communities in the region. This year, our project team will focus on three objectives: (1) extend our analysis of possible ferry routes and docking locations to include weather and tidal data. This will build on work to map existing possible docks, (2) develop prototypes and docking procedures for autonomous operation of the ferries. Our project partners report this is a key area of need from the research community, and (3) build deeper partnerships with regional groups and stakeholders that support the development of the autonomous ferry network.
Publications
<ul style="list-style-type: none"> • Kalambay, P., Lipscomb, G., Sanchez-Sossa, J., Obico, G., Dillon, H., McCourt, M., Kitali, A., and Walters, J. (2026). "Mapping Locations for Autonomous Electric Passenger Ferries: A Data-Driven Analysis of Socioeconomic and Demographic Neighborhood Profiles," Proceedings of the 105th Annual Meeting of the Transportation Research Board, Washington, DC.

Rural Safe Efficient Advanced Transportation (R-SEAT) Center

- Sanchez-Sossa, J, Hauger, N, Nuxoll, N, Wilson, C, McCourt, MJ, Donatelli, C, Kalambay, P, & Dillon, H. “Preliminary Design and Testing of an Autonomous Foot Ferry Prototype for the Salish Sea.” Proceedings of the ASME 2025 International Mechanical Engineering Congress and Exposition. Volume 5: Dynamics, Vibration, and Control. Memphis, Tennessee, USA. November 16–20, 2025. V005T08A057. ASME. <https://doi.org/10.1115/IMECE2025-165082>.

Outcomes/Impacts: The successful implementation of this project is expected to yield the following outcomes: (1) research experiences for undergraduate research students that build skills and knowledge about transportation careers, (2) improved connectivity and accessibility for residents on islands and peninsulas, (3) reduced transportation-related costs and improved economic opportunities for residents with limited-transportation, and (4) promotion of more sustainable transportation systems within the region.

Final Research Report: Completed