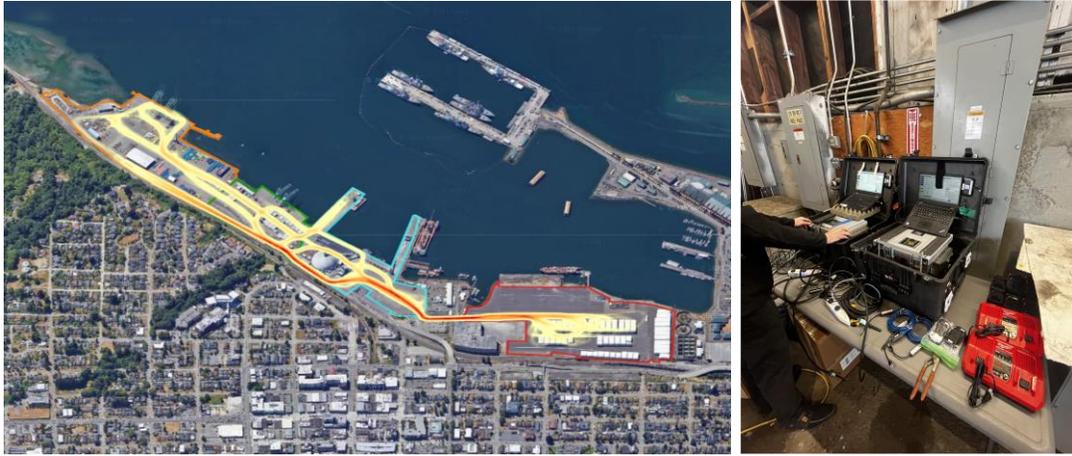




AAPA Lighthouse Award Project Highlight

Decarbonization Analytics for Port Equipment (DAPE) Pilot Project for Port Efficiencies | Port of Everett



Port of Everett
Everett, WA, USA

Project Overview

Decarbonization Analytics for Port Equipment (DAPE) pilot project for port efficiencies

Award Category: Excellence in Technology Solutions

Completion Date: 4/30/2025

Description: In partnership with Jacobs Engineering and IGO Solutions, the Port of Everett deployed a scalable, cloud-based system that integrates data from Portable Emissions Measurement Systems (PEMS) and telematics devices to deliver real-time insights. The DAPE platform monitors equipment emissions, movement, and health providing data and data visualization that can be used to optimize asset use, improve safety, and reduce turnaround times — without requiring new infrastructure. This groundbreaking deployment empowers data-driven decisions and provides a replicable model for ports of all sizes. By leading the DAPE project, the Port of Everett is advancing intelligent tools to tackle critical maritime industry challenges and improve operational efficiency and environmental impacts.

Inspiration

The DAPE pilot was initiated in direct response to a growing need for accurate, real-time emissions data to meet emerging federal and state greenhouse gas (GHG) regulations and more accurately benchmark emissions to develop targeted plans for future decarbonization projects.

As the maritime industry faces increasing regulations and a global movement toward decarbonization, traditional emission estimation methods — based on static, linear models — are predicted to become inadequate. These simplified estimation techniques, while providing a common baseline and repeatable methodology, are not very granular and often overlook key operational variables such as idle time, cargo load, and equipment variability across fleets, which are daily realities in port operations nationwide and have significant effects on cargo handling equipment emissions.

To address this data gap, the Port of Everett, in partnership with Jacobs Engineering and IGO Solutions, deployed PEMS and telematic devices on several assets at the Port's international seaport to determine

how these variables, not accounted for in traditional emission inventory methodologies, affect emissions. The pilot launched in January 2025 and was completed in April 2025 — setting an impressive benchmark for deployment speed in port technology innovation.

Challenges

As this is the first time, to the team's knowledge, that real-time telematic diagnostics and tail pipe emission data are being processed into a singular dashboard, the process was largely building from scratch. Oftentimes this meant the team needed to troubleshoot issues in real-time, all without impacting cargo handling operations. Sometimes this meant making physical alterations to the devices during short work breaks during cargo-handling activities.

Lessons Learned

The team quickly realized the importance of involving a wide range of operating groups – not just those focused on environmental performance indicators from the emissions study. By engaging maintenance, operations, and environmental staff, the group developed a more well-rounded product that revealed insights it may not have considered otherwise.

It was also valuable to think broadly about the potential outcomes we wanted than to let the data dictate which of those were truly achievable. With multiple streams of data, the possibilities for analysis are nearly limitless. The platform, which is highly adaptable, can be scaled to depict as simple or comprehensive of data as needed. Now that the team understands DAPE's capabilities, it can continue to identify future use cases. Looking back, it's clear that starting with an aspirational mindset is key – asking questions like, *'What data would make your job easier or your work more effective?'*

Value

DAPE represents a transformative advancement in port operations and environmental management. Unlike traditional systems that rely on estimated or averaged emissions, DAPE merges real-time PEMS data with telematics to offer a live snapshot of both equipment performance and environmental impact. Its plug-and-play design removes barriers to adoption because it requires no physical infrastructure changes. This makes it highly innovative in both design and implementation. The project advances industry standards by introducing an adaptable and scalable solution that redefines how ports monitor emissions, optimize operations, and meet regulatory requirements. This is a pioneering model for the global port community, developed with real-world operational realities in mind, putting the Port of Everett at the forefront of the intersection of technological advancements for both operational efficiency and environmental stewardship.

Quotes

"At the Port of Everett, we're always looking for innovative ways to utilize technology to gain efficiencies, plan for the future, and enhance sustainability. This smart technology pilot is an exciting step forward, giving the port industry a new tool for gaining real-time insights into equipment performance and can be used to support short, medium, and long-range decision making. This is a

great example of a modern-day port innovation.”
— Lisa Lefeber, Executive Director/CEO, Port of Everett

Additional Information

Key technical features of the DAPE platform include:

- **Real-Time Data Acquisition**
Integrated sensors and telematics systems continuously monitor port equipment operational efficiency and mechanical parameters like fuel consumption and exhaust outputs.
- **Operational KPI Integration**
A cloud-based analytics dashboard tracks efficiency, fuel consumption, idling, maintenance needs and utilization.
- **Enhanced Operational Visibility**
Actionable insights support data-driven decisions across port operations and long-term modernization goals.
- **Scalability and Resiliency**
Designed for all port types - including general cargo, multipurpose, and container ports—both in the U.S. and globally, improving operational and sustainability.
- **Supplier-Agnostic and Industry-Transferable Architecture**
Easily integrates with any equipment or system and is transferable to other fleet-heavy industries.

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Resources

Press release (Aug. 7, 2025): www.portofeverett.com/DAPE