



RV RESILIENCE

Stationed at the PNNL-Sequim campus, *Research Vessel (RV) Resilience* is the first hybrid vessel in the Department of Energy fleet. *RV Resilience* is able to operate on diesel engines or in a completely electric mode using onboard battery banks. These batteries can be charged with the diesel engines, at any marina, or through a rapid charging station at the PNNL-Sequim campus dock.

RV Resilience represents the next generation of technology supporting the blue economy, which the World Bank defines as **“the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystems.”** The vessel enables future research and testing to support ocean-based renewable power, as well as advance long-term opportunities for energy innovation and decarbonation of marine transportation.

When operating in battery electric mode, the vessel is nearly silent and without emissions, making it less intrusive for studying fish and other wildlife while simultaneously reducing air pollution and carbon dioxide emissions.

RESEARCH ENABLED:

- Marine power generation (installations, impacts)
- Environmental impacts and surveys
- Acoustic testing and surveys
- Marine mammal and bird observations
- Research diver support
- Autonomous vehicle launch and recovery
- Hybrid propulsion system research
- Electrified vessel charging system research



Photo courtesy of Snow & Company.

Specs and Details

Hull type	Power catamaran
Year built	2023
Travel range	360 nautical miles
Fuel capacity	840 gallons
Length	50 ft
Beam	16 ft
Draft	4 ft
Motors	<ul style="list-style-type: none">Volvo Penta D8 diesel enginesDanfoss Editron electric motors
Battery system	Spear power systems Trident battery (113 kWh capacity)
Charging modes	<ul style="list-style-type: none">110 VAC (30 or 50 A)208 VAC (100 A)Diesel engines (374 kW each)
A-Frame capacity (Safe Working Load)	5,000 lbs
Crane capacity	1,000 lbs
Speed, diesel engines	Cruise at 20 knots, max 23 knots
Speed, electric engines	7 knots
Displacement	39 grt
Endurance on electric power	4+ hours of research operations
Scientific spaces	<ul style="list-style-type: none">Dry laboratoryObservation stations on the flying bridge
Funding	DOE's Water Power Technologies Office
Production	Snow & Company (Seattle, Washington)

Learn More

To learn more about the Hybrid Electric Marine Research Vessel, scan the QR code below or visit <https://www.pnnl.gov/hybrid-electric-marine-research-vessel>.



PNNL Contacts:

Chris Meinig | Coastal Sciences Division Director
Pacific Northwest National Laboratory
1529 West Sequim Bay Road, Sequim, WA 98382
christian.meinig@pnnl.gov

John Vavrinec, PhD | Marine Operations Specialist
Pacific Northwest National Laboratory
1529 West Sequim Bay Road, Sequim, WA 98382
john.vavrinec@pnnl.gov