

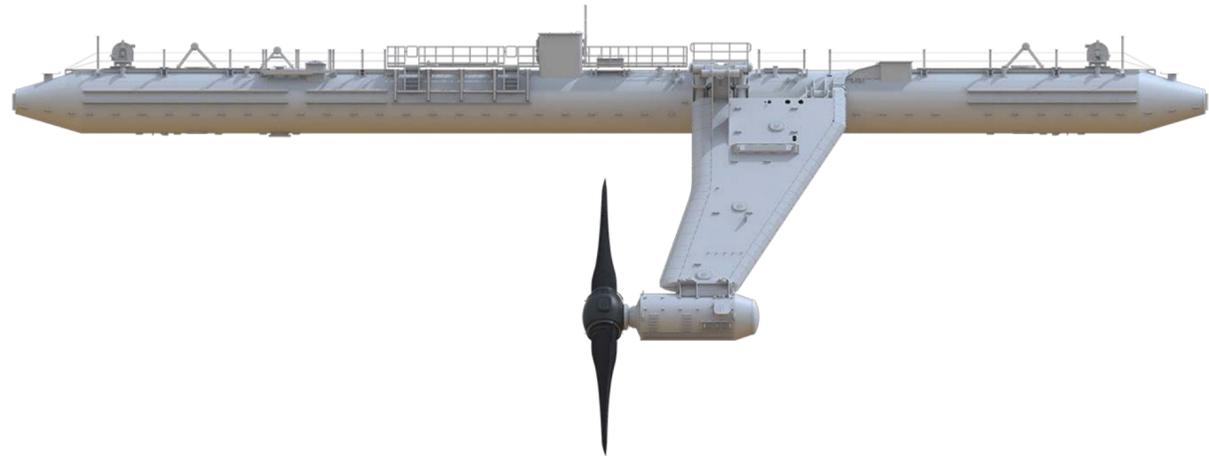


Pilot Tidal Energy Project



Pilot Tidal Power Project

Our approach focuses on stewardship and supporting the San Juan community with a renewable energy focus.

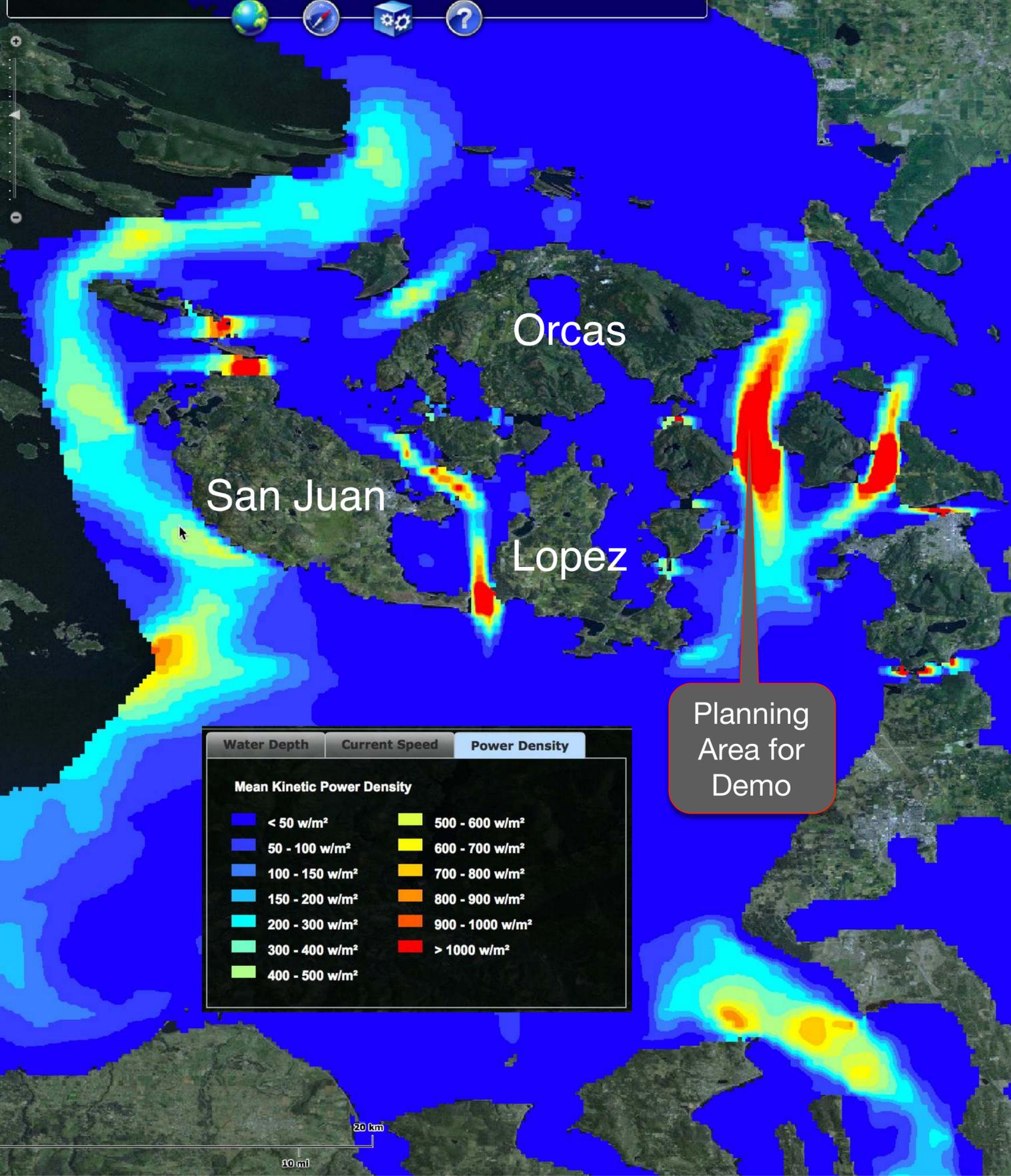


Floating Stream Tidal Generation

- ~2 MW Peak Output
- ~5 GWh of annual generation

Project Partners

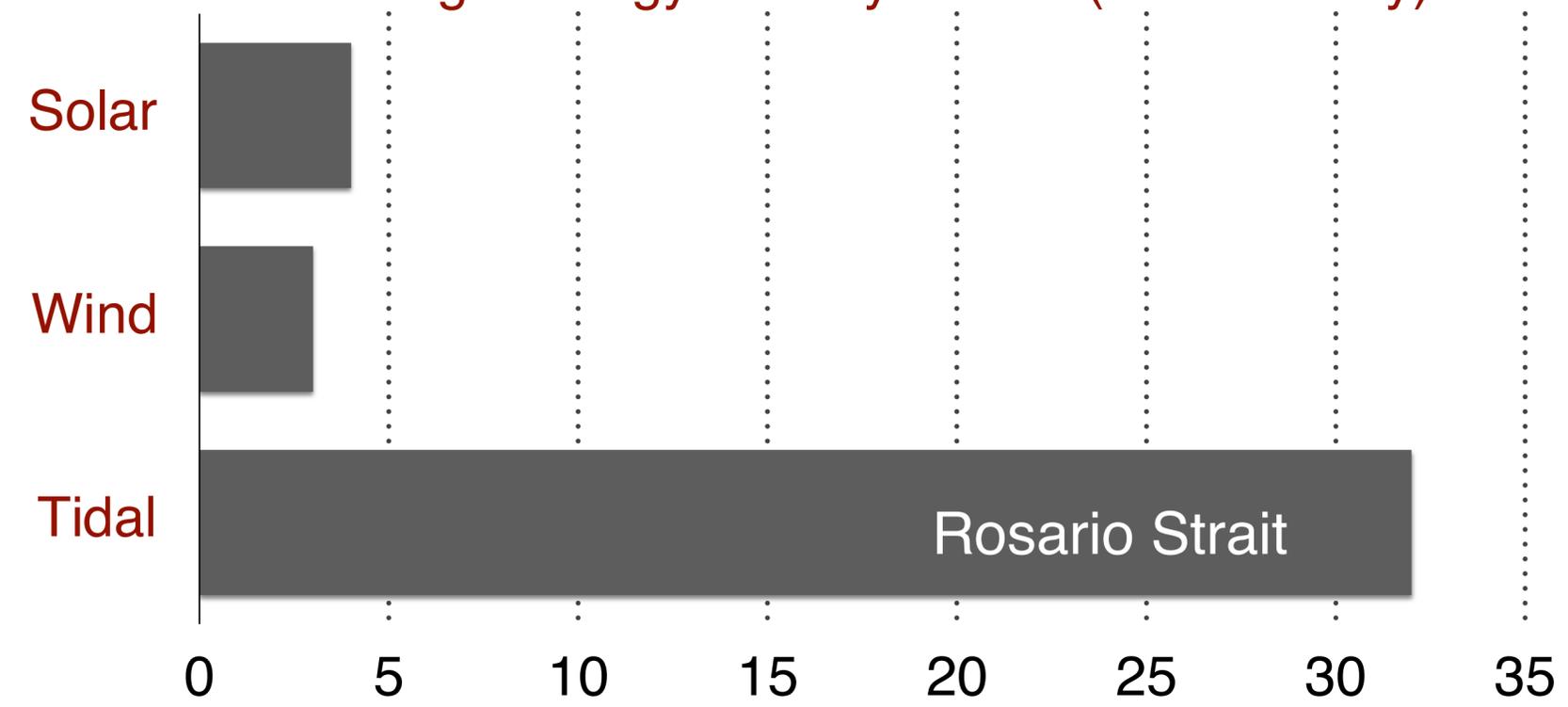
- Washington Dept. of Commerce – Clean Energy Funds for Preliminary Design
- Orbital Marine Power – Technology Provider
- Pacific Northwest National Laboratory



Pilot Tidal Power Project



Average Energy Density in SJC (kWh/m²/day)



Pilot Tidal Power Project: Site Assessment



- Pre-existing infrastructure
 - Empty conduits available at north and south of Blakely Island
- Lower local abundance of sensitive species
Examples:
 - SRKW (orca)
 - Humpback whale
 - Rockfish species
 - Salmonids
- Pilot project deploying one turbine
 - Location offers potential to deploy 2-4 turbine devices total



Pilot Tidal Power Project: Schematics

Currently, turbine in operation in Orkney Islands, Scotland

- 18+ months in-water

Dimensions (current design)

- Total Length – 243ft
- Total Width – 194ft
- Main Tube Width – 13ft
- Blades – 65ft Diameter
- Anchored at four points
- Concrete blocks or bolted to rocks

Orbital Marine Power

Our vision | How & why it works | Pedigree | Facts and figures | Annexes | Key contacts p.17 of 53

2020 – 2021 O2 Tidal Turbine

Aft mooring. Forward and aft mooring holds platform on station. Dynamic electrical cable exports power to shore. Forward mooring.

Service & Tow Mode
- Unique leg lift operation for water level servicing (Key IP)
- Low-cost access to all major components and systems

Operational Mode
- Rotor diameter: 20m
- Total swept area: 628m²

Variable pitch system rotates blades to capture flood and ebb tides.

74m steel hull body with integrated safe access and operational features.

At 2MW+ in unit rating the Orbital O2 specification sets a new standard in Utility Scale tidal power harvesting.

The revolutionary Orbital O2 design is a sophisticated blend of generator performance engineering combined with unrivalled understanding of operational requirements.

O2 Key Specifications
Peak power rating: 2MW
Rated speed: 2.5m/s
Operational draught: 24m
Tow / Service draught: 2.1m
Turbine displacement: 680 ton
Export voltage: 11kV
Array compatible

Pilot Tidal Power Project: Environmental Care

Evidence from around 10,000 hours of wildlife observations at EMEC's sites has indicated **no significant long-term changes in the distribution of birds or marine mammals** due to the presence and operation of wave and tidal devices. Monitoring programs around the OPALCO project will advance the understanding of the ecologies around the tidal devices.

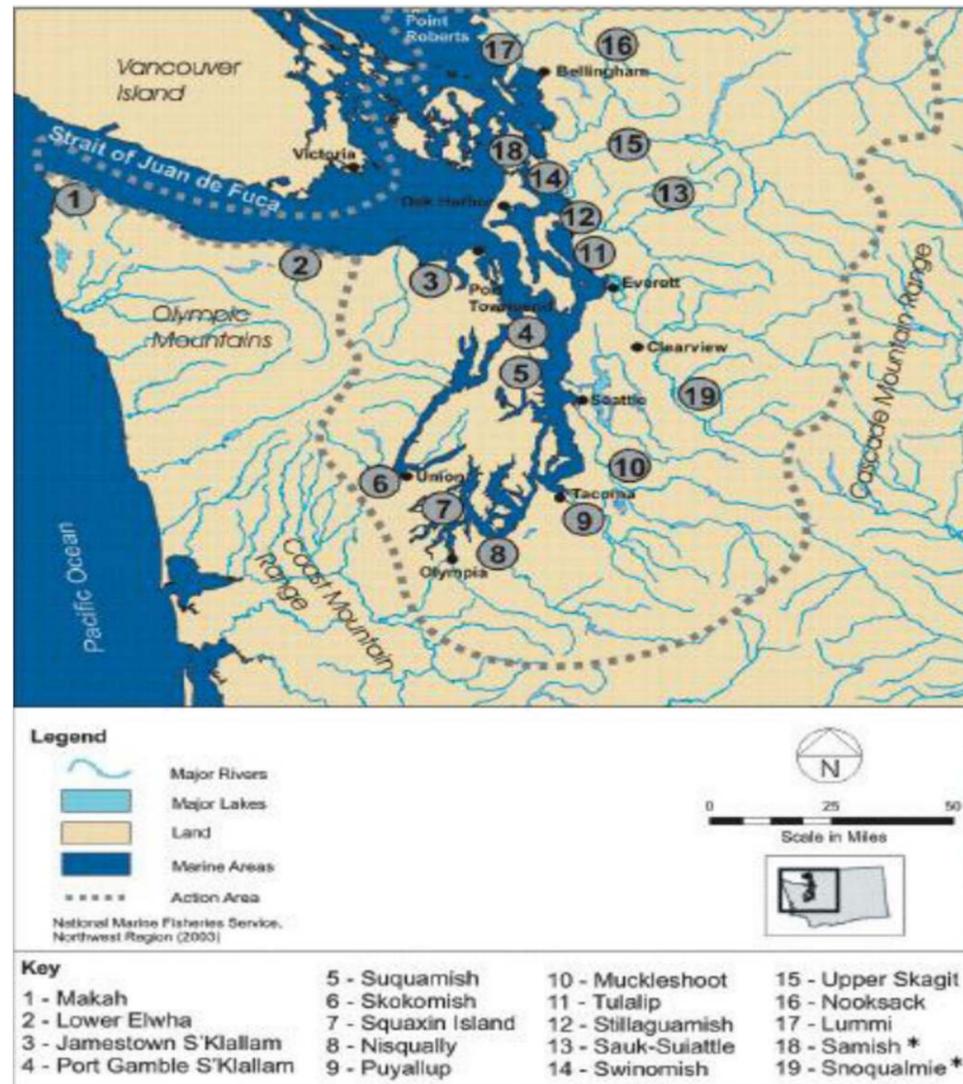
The OPALCO/Orbital team is committed to increasing the understanding of **potential environmental interactions** associated with the large-scale deployment of tidal stream technology.



Pilot Tidal Power Project: Stakeholder Outreach

Permitting: As part of the permitting process, OPALCO has commenced engagement with the following groups:

- Tribal Community
- U.S. Army Corps of Engineers
- Federal Energy Regulatory Commission
- U.S. Coast Guard
- U.S. Fish and Wildlife
- National Marine Fisheries Service
- Washington Department of Fish and Wildlife
- Washington Department of Ecology
- Washington Department of Natural Resources



Next Steps

Incorporate stakeholder feedback

- Project design will evolve

Funding

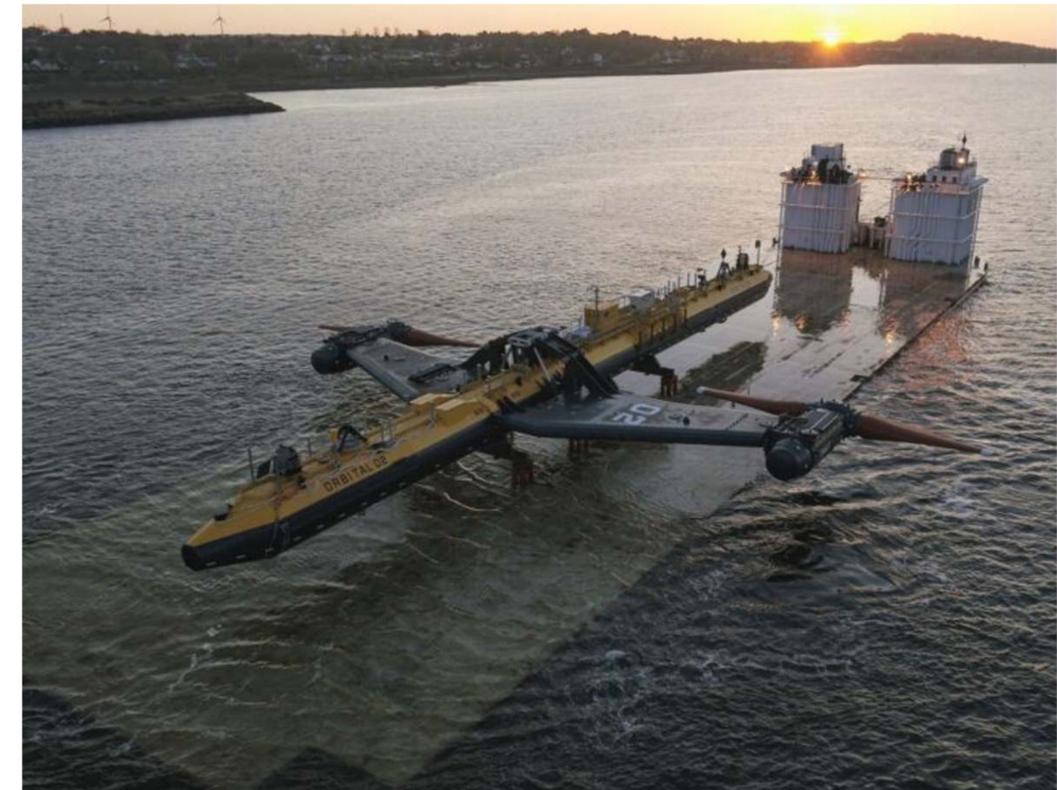
- TBD
- U.S. Department of Energy grant funding

Projected Timeline

- Unknown at this time and will be based on regional feedback and grant funding.



The Orbital Marine floating tidal turbine has a 245-foot hull with suspended rotors underneath that can be raised for on-site service. The turbine is anchored to the seafloor with mooring lines. Floating approximately 5 feet above the waterline and 7.5 feet below, the unit houses two turbines with a combined output of ~2 MW. The device is 165 feet wide including the span of the blades underwater. This technology has been deployed in the Orkney Islands, Scotland for operational and commercial demonstrational purposes.



Thank You!



THE ISLAND WAY

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