

## Tidal Power from the Seafloor of Admiralty Inlet, Puget Sound

- Narrator: Under the sea, powerful currents waiting to be tapped to power hundreds of homes. Admiralty Inlet on Puget Sound, APL scientists are regular visitors. The APL research vessel *Jack Robertson* is a regular site in these waters, along with ferryboats and the occasional Trident submarine. Scientists aboard the *Robertson* are working to determine the environmental feasibility of tidal power.
- Jim Thomson: "What we're out here doing today is collecting measurements to inform that effort. It is a baseline study — trying to understand what the environment is like right now, and in the long term the intent is to understand how this new technology operates in that environment. Are there environmental effects and how well does it perform? Is it worth doing? This is a water sampler that we lower from the ship to collect samples at different depths."
- Narrator: Supported by the Department of Energy, the APL team is focused under the surface, a surface rippled by powerful forces below.
- Jim T.: "That turbulence is one of the reasons we're out here. The whole area has very strong tides with a lot of energy."
- Brian Polagye: "The water here, even though it looks pretty calm, is actually moving at about 3 meters per second right now."
- Narrator: That's about 6 miles per hour, fast for Puget Sound.
- Brian P.: "That's very fast! Oceanographers get excited at 1 meter per second currents, but 3 meters per second is really moving."
- Narrator: The surging water below is generated by the predictable and dependable ebb and flow of the tide. This begs the question: Can this natural energy be harnessed? Working with APL and the University of Washington, Snohomish County intends to find out. Public Utility District plans call for two 33-foot tidal power turbines to generate electricity by 2011, enough power for 700 homes. But before the turbines are lowered into Admiralty Inlet, APL researchers are compiling an intensive profile of the proposed turbine site.
- Jim T.: "We're trying to determine the current water quality in Admiralty Inlet so that when a tidal power device is installed we can have a baseline to compare whether there was any effect — changing the mixing of the water coming in through Admiralty Inlet. So we'd like to know the quantities like salinity, temperature, and dissolved oxygen being exchanged from the Juan de Fuca Strait to Puget Sound. And this is how we make that measurement."
- Narrator: This remote-controlled vehicle descends to the bottom of the Sound and sends back live video to the *Robertson*.
- Brian P.: "This allows us to see what's down there — rock, cobbles, vegetation, possibly marine life."
- Narrator: So far the APL survey finds few fish to be disturbed by the turbines. When in operation the turbines will be 180 feet down, too deep to interfere with surface traffic.
- Jay Inslee: "I'm chomping at the bit, I want to get these things in the water and see what they can do."
- Narrator: Congressman Jay Inslee, after a briefing by APL's Jim Thomson and others, is enthusiastic about the potential of tidal power.
- Jay I.: "There is huge energy available to us in both wave and tide power, and here at the UW we're looking at a proposal to have a more standardized testing facility in Puget Sound to help move the commercialization of this industry."
- Narrator: So a Puget Sound try-out for tidal power appears to be on track thanks to Snohomish County, the UW, and APL.

