

Water in Oregon pipeline is tapped for electricity

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Lucid Energy has developed a renewable energy system that makes use of water moving through pipelines. The company's LucidPipe Power System converts pressure in water pipelines into electricity. They have a patented, lift-based turbine technology and last month they made news in a project involving Lucid Energy, the Portland Water Bureau and Portland General Electric. A 200kW LucidPipe Power System installed

in a Portland Water Bureau water pipeline in Portland, Oregon, came online and began generating renewable energy for Portland General Electric. In short, one of the city of Portland's major water pipelines has started producing renewable energy.

The Portland Water Bureau (PWB) and Lucid Energy "flipped the [switch](#)," reported *PennEnergy*. The LucidPipe Power System uses the flow of water inside a PWB pipeline to spin four 42" turbines to produce electricity for Portland General Electric. The company said the system is expected to begin full [capacity](#) power generation by March. (LucidPipe can operate across a range of flow conditions, volumes and velocities. The lift-based vertical axis spherical turbine design generates electricity by extracting excess head pressure from large diameter [24"-96"], gravity-fed water pipelines and effluent streams. Several LucidPipe systems can be installed into a single pipeline; LucidPipe systems can be deployed three to four turbine diameters apart, so up to four LucidPipe units can be installed in a standard 40-foot section of pipe. The company said on their website that one mile of 42" diameter pipeline could produce as much as 3 [megawatts](#) or more of electricity.)

Fast Company called it an "ingenious new system" that "captures energy as water flows through the city's pipes, creating hydropower without the negative environmental effects of something like a dam." Or, simply put, "[Turn](#) on the tap and you're getting water and energy for the price of one."

Discussing the process, Ben Coxworth in *Gizmag* said, "As the water flows through, it spins four 42-inch (107-cm) turbines, each one of which is hooked up to a generator on the outside of the pipe. The presence of the turbines reportedly doesn't slow the water's [flow](#) rate significantly, so there's virtually no impact on pipeline efficiency."

The company said this was the first project in the U.S. to secure a

20-year Power Purchase Agreement (PPA) for renewable energy produced by in-pipe hydropower in a municipal water [pipeline](#).

The project will generate approximately \$2 million worth of renewable energy capacity over the PPA period that is used to pay for the development, installation and ongoing operational costs. After 20 years, the PWB will have the right to own the system and all the energy it produces, said the company.

"It's pretty rare to find a new source of energy where there's no environmental impact," said Gregg Semler, CEO of Lucid Energy, in *Fast Company*. "But this is inside a pipe, so no fish or endangered species are impacted."

What effect will the installation have on drinking water? The company said the system generates electricity from fast-moving water in pipelines without disrupting pipeline operations and with no environmental impact. It was tested and Certified by NSF International to NSF/ANSI Standard 61 for use in potable water systems and is suitable for agricultural, industrial and wastewater pipelines. Semler spoke in a video in 2013 about renewable energy and what his company is able to contribute. "We replace an existing pipe with our own pipe. Inside the system is a turbine that then connects to a generator sitting on top of the pipe. All we're doing is recapturing energy that exists inside these pipelines." He said that managers of water pipelines can reduce the major cost of delivering safe clean drinking [water](#) by deploying their pipeline technology. Unlike other [renewable energy](#) systems, it does not depend on the weather. "It is not dependent on the sun shining or the wind blowing," he said. As the [company](#) website also put it, the advantage is "clean, baseload energy without the [intermittency](#) of wind and solar."

More information: www.lucidenergy.com/

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