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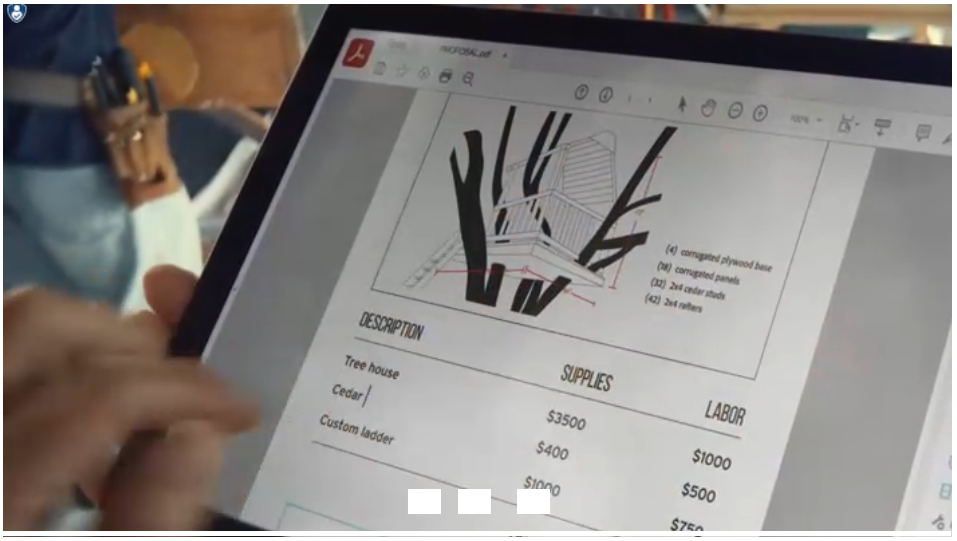
Withings Pulse O2 review: Fitness band plus heart rate monitor checks blood oxygen, too

A new wristband and blood oxygen monitoring make the newest Pulse a better band than before, but how much better?

Scott Stein

April 25, 2014 2:55 p.m. PT

6 min read



What makes a good fitness tracker on your wrist? A comfortable fit, obviously, but also the appropriate type of easy-to-use functions, no-nonsense wireless syncing with a good app, and a very readable display. The Withings Pulse , previously one of CNET's top fitness trackers, is small, can read your heart rate, and has a great Withings app and ecosystem that connects to other health gadgets. All it needed was a stylish wristband to pop into.

MASIMO 2095
Apple v. Masimo
IPR2024-00244

THE GOOD

Excellent pedometer, excellent app, affordably priced.

THE BAD

Can't read your heart rate with the band on; screen is not always on, and terrible in bright daylight; not water-resistant.

THE BOTTOM LINE

A new wristband and new firmware improve the Pulse and make it a true fitness band, but it's not a big leap forward over last year.

Now it has one, along with a new firmware update enabling blood oxygen reading and a redesigned app, and the whole package has been renamed Withings Pulse O2. So why was I less excited about it? Maybe because the landscape's changing so fast. But for its price, this Pulse still has a lot to offer. And now that the Fitbit Force is no longer on the market and the future of the Nike FuelBand is unclear, the Withings Pulse O2 is one of the best tracker-bands with a screen on the market...if you can live with some of its design flaws.

Sarah Tew/CNET

What's new: O2 reading, and a watchband

If you own one of last year's Withings Pulse pedometers, here's the great news: a simple firmware update and one of the new wristbands, which will only cost you $10 via Withings, gets you everything the Pulse O2 offers.

Withings Pulse O2: Wristband, heart rate, oxygen (pictures)

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What you get in software is a new vertical watch-face mode that works with the band, and an additional way for the heart rate monitor to also show your blood O2 levels. It's now essentially a pulse oximeter, like what you'd use in a hospital. It's a useful addition if you need to check your oxygen, but both the heart rate monitoring and O2 reading have to be done when standing still and using your finger: it's not a continuous tracker like you get on some bands like the Samsung Gear Fit .

Sarah Tew/CNET

The band: Easy fit, awkward as a watch

The new band has soft rubber straps and a black aluminum clasp that the Pulse slides into. It holds the Pulse securely and attaches cleanly, fastening like a regular watch band so it won't fall off your wrist. The band can be replaced with other regular watchbands, too: Withings offers other color options, or you can be creative. With the Pulse in the band, it looks reasonably attractive, and has a horizontal style like the Nike FuelBand and Samsung Gear Fit.

A new vertical watch face lets you easily check time with a press of a button, but pedometer readings are ridiculously small at the bottom, impossible to glance at without a magnifying glass. But, the previous Pulse didn't have pedometer readings in its clock display at all. The design of the Pulse's display is odd, too: a soft matte surface has a glowing blue LED screen beneath it, like the FuelBand. But the FuelBand writes its numbers in huge dots: this display has smaller fonts, and text looks fuzzy through the matte surface. In bright daylight, it's basically unreadable. And you need to press that side button to light the display.

Horizontal view. The LED display flicker effect doesn't appear except in photographs.
Sarah Tew/CNET

The rest of the Pulse's display modes are all still horizontal, though, which means you have to twist your wrist to use it properly. And flipping the main clock to horizontal isn't possible on the Pulse itself; you have to change the setting on the Withings app and re-sync.

Sliding the Pulse in and out gets tricky, and feels like it'll scrape the Pulse's soft finish. And you'll need to take it out to read your heart rate: it requires your finger to use, and there's no hole in the back of the band to take readings, which gets seriously annoying.

But, if you just consider the new Pulse band as an added convenience, it's better than anything the little fitness tracker had before.

The Pulse as fitness tracker

The Withings Pulse is still one of the best pure pedometers out there, if you care about accurate readings, easy syncing, and a detailed, data-rich app. The Pulse has its own LED display that shows steps taken, distance traveled, elevation climbed, estimated calories burned. It also tells the time, and can track sleep and read heart rate.

Each function pops up with a click of the top button. The display is also touch-sensitive, and with a finger-swipe you can dig back to previous days' readings. The Pulse stores the last 10 days of data.

Syncing with Android or iOS is as simple as pressing and holding the top button for three seconds, or waiting for the Pulse to sync automatically via the Withings Health Mate app. The Pulse O2 also works with a wide variety of phones: iOS 5 on an iPhone, iPad, or third-gen iPod Touch or later; or Android

2.3.3 on a phone or tablet, is all you need -- which includes some iPhones and Android phones that don't always work with other recent Bluetooth fitness trackers.

Sarah Tew/CNET

The Pulse can also be worn as a simple clip-on device: for $119, you get the Pulse plus a wristband and a rubber clip accessory. In clip mode, it's actually easier to use.

Heart rate readings seemed accurate compared to gym equipment I tested against. The data is collected and graphed in the Withings app, but no extra coaching is offered on the device itself. There is, however, in-app coaching, similar to what Jawbone offers, but more along the lines of health suggestions based on your data.

Sleep tracking needs to be started before going to sleep, but turns off automatically: waking up and taking ten steps will shut it off. I like checking how much I'm sleeping, but the Pulse makes you click through three menus and then touch a display to either a heart or moon-shaped icon to start heart rate measurement or sleep tracking. It's too many clicks and swipes and touches, and isn't intuitive.

One more important note: the Pulse isn't water-resistant. A Micro-USB charge port pops out the side, which at least avoids the need for a dongle, but also means you can't get the tracker wet. Other bands can be worn in heavy rain or in a shower.

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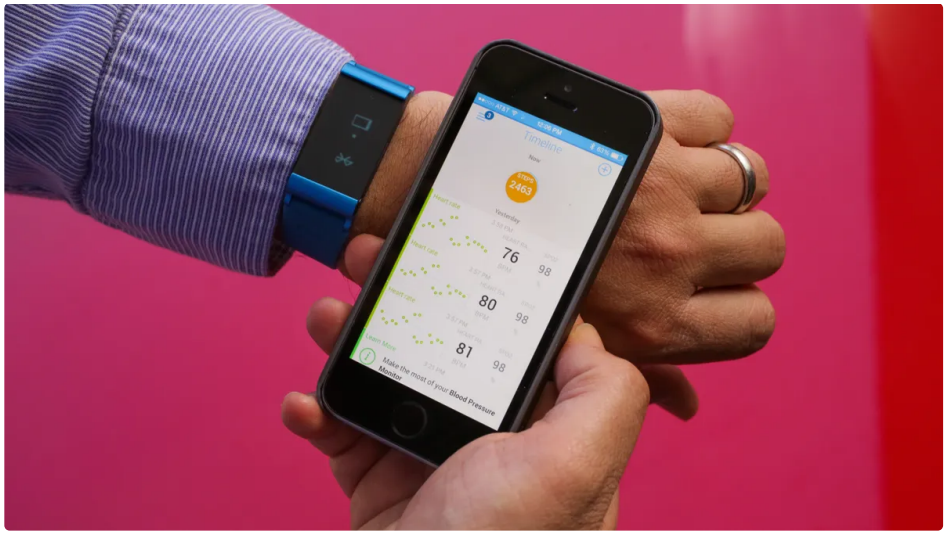
Withings claims two weeks of Pulse use on a single charge. A full charge of the Pulse got me about 10 days of use with the older model. I've only been using the current one for a few days so far.

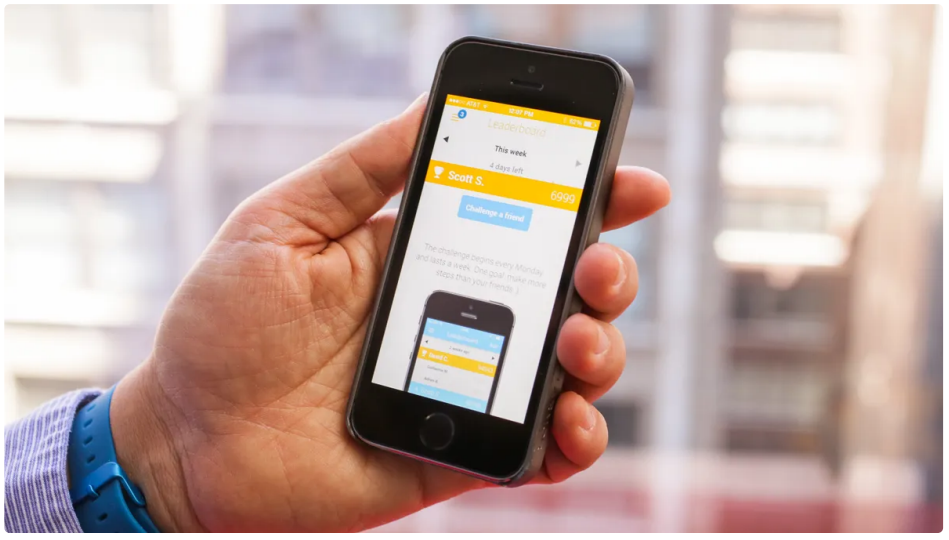


Sarah Tew/CNET

Health Mate app: Lots of health options

Withings has a nice ecosystem in its Health Mate app, and a new redesign offers a cleaner timeline for collected data, more like what the Jawbone Up offers. There's an attempt at social competition, too, with new fitness goal challenges, but the app doesn't connect to Facebook and makes you email an invitation or scan for local devices via Bluetooth. The newest version of Health Mate also allows iPhone 5s users to tap into the M7 chip and use their phone as a pedometer if they don't have their Pulse (or, if you don't own a Pulse at all and want to use the Withings app). I tested the Pulse O2 on an iPhone 5s.

The Health Mate app also has new reminders for various health-encouraging habits: sleep more, or drink more water, or take your blood pressure. The app can ping you with these reminders, and they're generated based on what the data you're sending to the app. In the few days I used the Pulse O2, I couldn't get a strong sense of the coaching, but I'll update this in a week or so.



Sarah Tew/CNET

Withings has a wireless scale and blood pressure monitor that sync with the app, and combine to form a more detailed health-profiling ecosystem. You can also link a BodyMedia armband, if you have one. The app links with RunKeeper,

Runtastic and MyFitnessPal, too.

Conclusion: A new band on an old tracker

Credit goes to Withings for allowing current Pulse owners to get some new ways to use their tracker, but the Pulse O2 as a wearable fitness band lacks the type of display I'd like to make this easy to use when working out.

Still, the added features and the affordability of the whole package make the Pulse one of the more attractive fitness bands-as-watches out there, especially now that the Fitbit Force isn't on the market and the FuelBand's future is in question. It works in tandem with a variety of useful Withings health hardware accessories, too. The Pulse O2 isn't a fitness band of the future. It is, however, a very welcome upgrade for the present.

8.0

Withings Pulse O2

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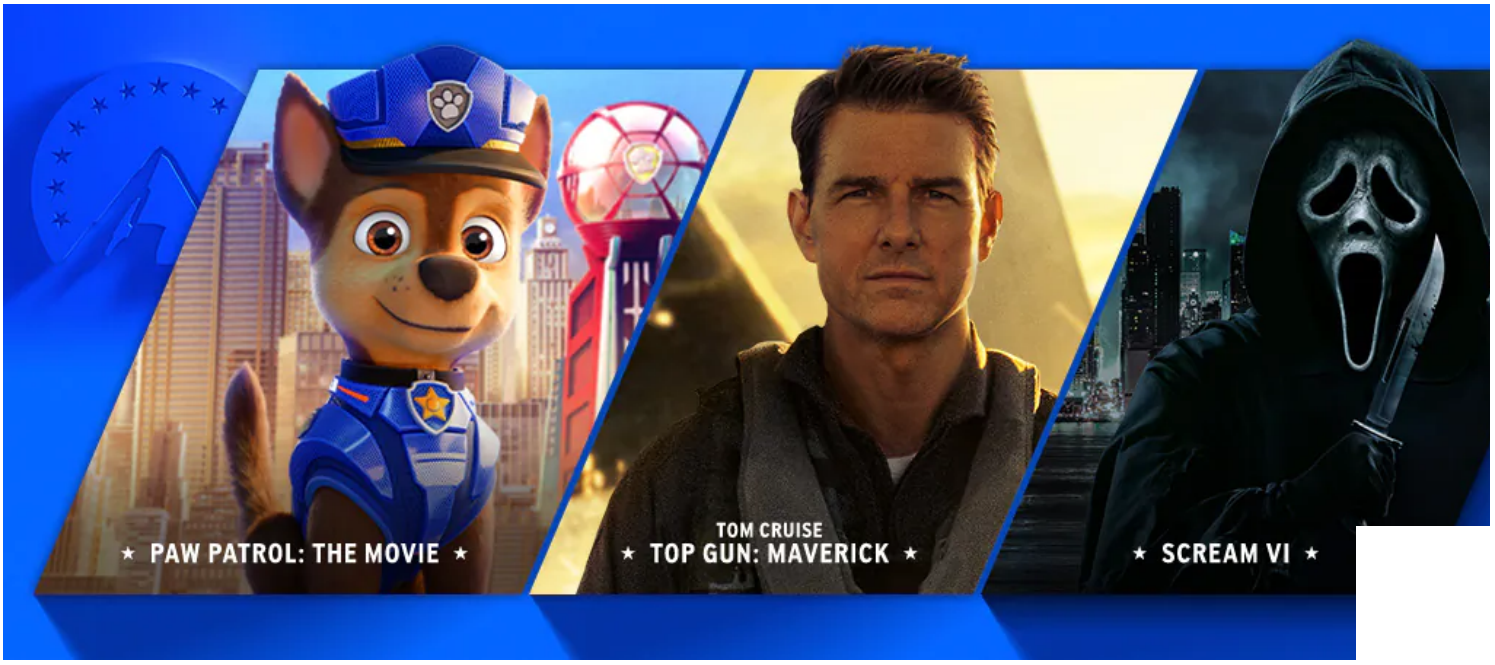


Could This Be the Final Frontier for Renewable Energy?

Marine energy is getting a boost in the fight against climate change.

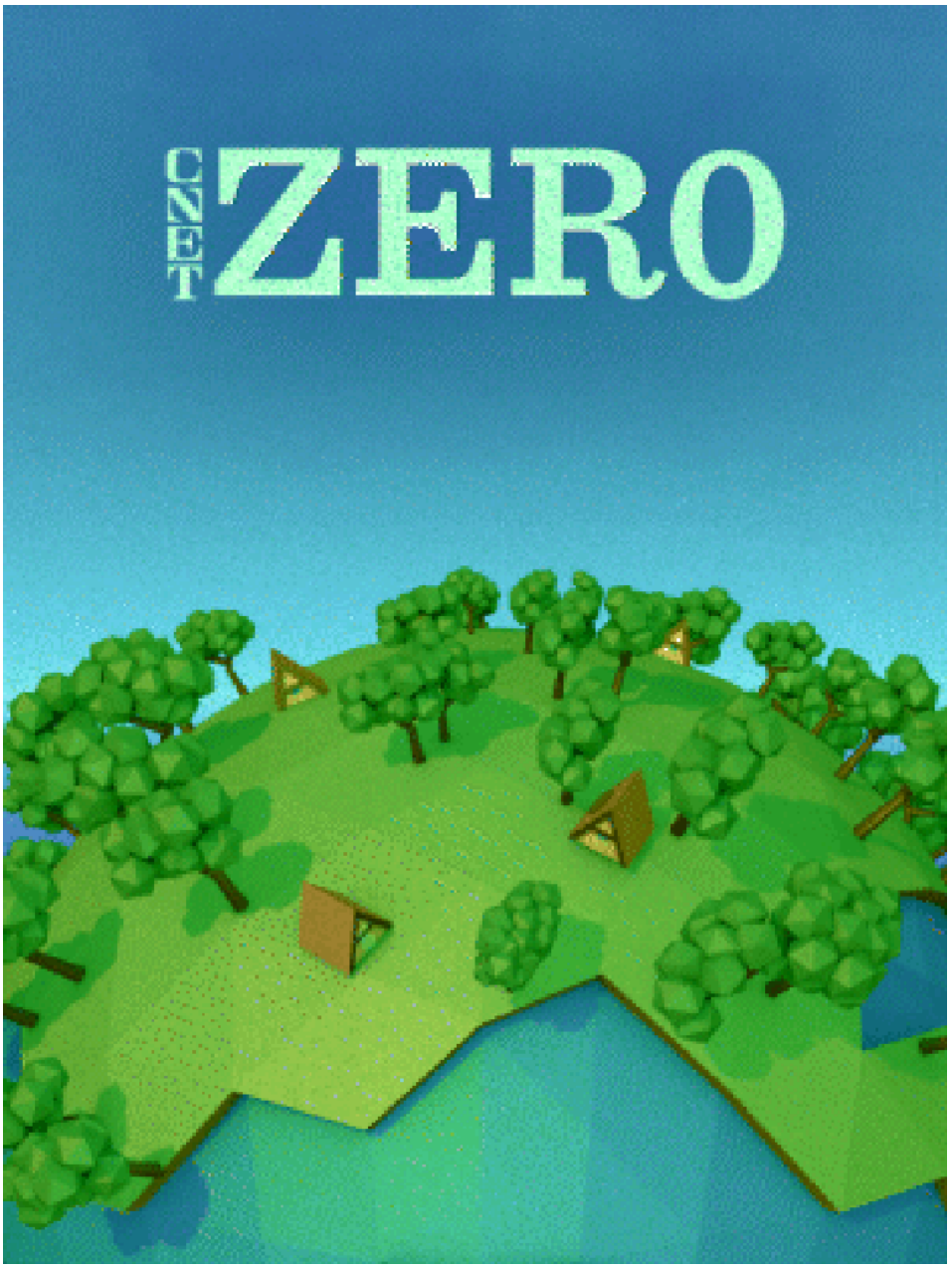
Eric Mack
May 14, 2023 4:44 p.m. PT

6 min read

A buoy-based wave energy converter from wave energy technology company OceanEnergy.
OceanEnergy/PNNL

This story is part of **CNET Zero**, a series that chronicles the impact of climate change and explores what's being done about the problem.

With 70% of the Earth's surface covered by oceans, wave power could be one of our largest energy resources. If you've ever been knocked off your feet by a big wave, you've felt a smidgeon of that power.



For decades, scientists and engineers have looked to our vast oceans and dreamed of ways to extract a tiny fraction of that energy. In an era of climate awareness and anxiety, finding ways to do that is finally getting more attention.

The Biden administration's Ocean Climate Action Plan reveals how the ocean holds important potential for renewable energy, both from offshore wind power and less-explored sources such as waves, tides and currents. Even the chillier waters that lie deep below tropical seas could provide clean marine energy.

The plan acknowledges an ambitious endeavor nearing completion off the coast of Oregon, where 7 miles of conduit were laid under the floor of the Pacific Ocean using pioneering horizontal drilling techniques. Soon, thick

cables will be run through that conduit to connect the mainland to PacWave, an offshore experimental testbed built to develop and demonstrate new technology that converts the power of waves into onshore electricity.

Once fully operational (as soon as 2025), PacWave could generate up to 20 megawatts, enough to power a few thousand homes. "I get really excited about wave energy because the resource is so large," Levi Kilcher, a senior scientist with the National Renewable Energy Laboratory, told me.

An illustration of PacWave's planned infrastructure.
Oregon State University

Kilcher was a lead author on the 2021 NREL report that compiled available data on marine energy sources in the US, including waves, tides and ocean currents. The team found that the total energy potential is equal to more than half (57%) of the electricity generated in the US in a single year.

> "I get really excited about wave energy because the resource is so large."
> Levi Kilcher, senior scientist, National Renewable Energy Laboratory

Though experimental sites like PacWave point to an efficient way to harvest wave power and could facilitate breakthroughs, wave energy still has a way to go before becoming a significant source of electricity. Though waves are steady, they aren't identical, posing a key challenge in designing a machine to capture their energy.

"You're trying to tune [the technological approach] so you can take advantage of these shifting kinds of waves," said Andrea Copping, a senior researcher at the Pacific Northwest National Laboratory.

Differing approaches to capturing wave energy include devices that ride the top of waves or ones that translate the pressure waves put on the seafloor into power. Another approach involves devices called oscillating water columns, which compress air as waves rush through them. That compressed air spins a turbine and generates energy.

Power from the depths

Waves are just one potential source of marine energy that scientists and officials are investigating.

Copping says there's renewed interest in another form of marine energy: ocean thermal energy conversion, or OTEC, which involves bringing up colder water from deeper parts of the ocean. This chilly flow then goes through a heat exchange process with warmer surface water, similar to the way home heat pumps exchange hot and cold air. That process drives a turbine to generate electricity.

OTEC technology was pioneered in the 1970s when energy prices soared, but it never really caught on. According to Copping, climate change has led to more attention on OTEC, which could be a fit for islands like Puerto Rico, Guam and small nations in the South Pacific.

"There's a real interest, and we really think it's going to go this time," Copping said.

A small OTEC plant has been functioning in Hawaii for years. Copping believes new commitments from the US government hold promise for the future of the technology, which has also seen significant interest in Japan and other surrounding nations.

It's possible that concern over climate change could unlock new sources of funding for OTEC. In the meantime, building smaller facilities (10 megawatts or less) and putting them on land instead of floating on the ocean is making the tech more affordable, Copping said.

There's also the added bonus that the cold water pipes can double as a form of air conditioning in the tropical locales where OTEC works best.

Going with the flow

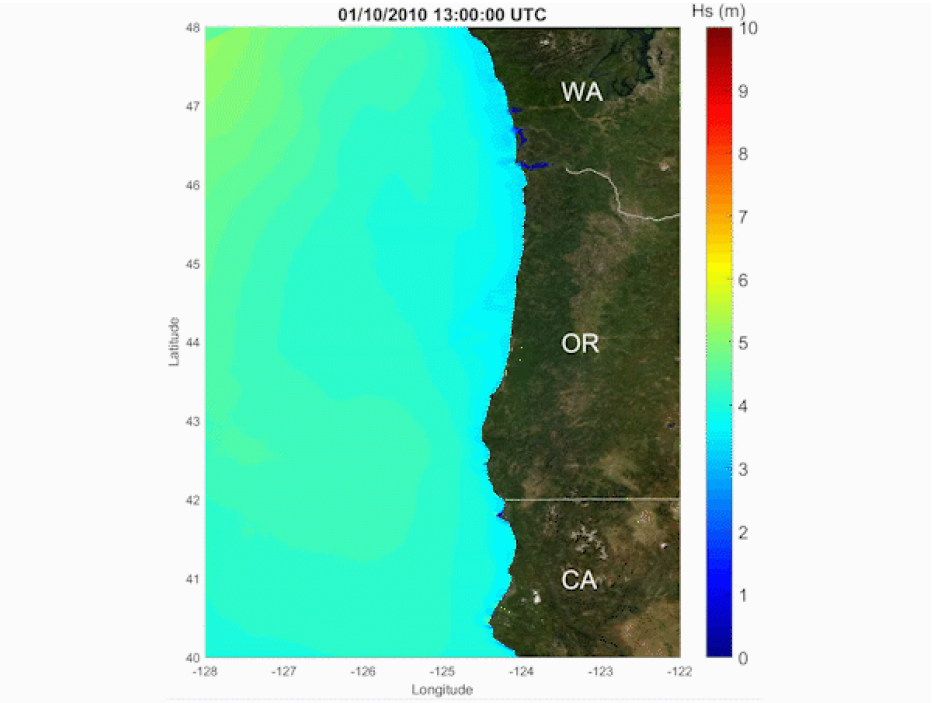
Much of the US coastline, like Alaska, the Pacific Northwest and the rocky shores of Maine, has climates where there's little chance of finding surface water warm enough for OTEC. Fortunately, some of these spots are optimal for generating power from a source that relies on shallower water: tides.

Growing up in Alaska, Kilcher was always fascinated by the power of tides. But he had no idea that nearby Cook Inlet is considered one of the world's ideal spots for harnessing their energy. When Kilcher first started work at the National Renewable Energy Laboratory, he was surprised when his colleagues informed him that this hometown of Homer, Alaska, was among the best tidal energy spots in the world.

When it comes to converting the ocean's movements into electricity, tidal energy technology is the most developed -- it's about as simple as putting the right turbine in the right place in the water. A number of tidal-power projects have already been deployed in Europe and elsewhere, as well as in niche applications around the world.

Tidal energy is the yin to the yang of wave energy. Waves can be anywhere and everywhere, but they're hard to predict. Tides are a mostly known quantity and are global, but their power potential is restricted to a few very specific places. The fast flows required to generate power are typically only found in narrow channels or between islands and the mainland. Still, where tidal energy works, it's a very reliable form of renewable energy.

"One thing that makes tidal energy especially attractive is it's 100% predictable," Kilcher said.



Waves (the tallest in red and shortest in blue) arrive along the west coast of the United States in this accelerated animation.

Zhaoqing Yang/Pacific Northwest National Laboratory

Some smaller experiments are being run with other consistent characteristics of oceans besides tides, like their major, slow-moving currents. Kilcher noted that research is underway off the coast of the southeastern US to examine how much power can be pulled out of currents before impacting heat circulation patterns in the North Atlantic.

"You don't want to be extracting so much energy that the Gulf Stream starts to shut down," he said. "These are the kind of scientific research questions that we look at."

Thar she blows

So far, effectively pulling power from the ocean has less to do with water than with the air above it. Offshore wind energy is by far the most productive source of power that we transfer from ocean to land.

"Offshore wind is the most mature technology without a doubt," Bryson Robertson, director of the Pacific Marine Energy Center at Oregon State University, told me. "We've been working on wind energy systems really since the birth of civilization. We were running sails [on boats], and we were using windmills to grind wheat."

"We've been working on wind energy systems really since the birth of civilization. We were running sails [on boats], and we were using windmills to grind wheat."

Bryson Robertson, director, Pacific Marine Energy Center at Oregon State University

Large, power-generating wind turbines anchored to the seafloor have become a familiar sight off the coast of the northeastern states and other locales. Robertson says that floating offshore wind turbines are a newer, promising technology that could help scale up the amount of electricity we literally pull out of thin air.

Wind is more consistent offshore, and floating infrastructure can be deployed in more parts of the world and on deeper seas. And taller turbines could access high-altitude winds in locations that are out of the view of the public.

Robertson believes the opportunities to generate more wind power from floating infrastructure are significant enough to make a real dent in carbon emissions.

A tough environment

Unlike developing a new mobile app or even a mobile phone, building the infrastructure to pull power from one of the most inhospitable and untamed environments on Earth can be a slow, difficult process.

"We know less about these tidal raises, these big wave areas because we stay out of them," Copping said. "That's one of the reasons this is taking time. But just look at the ocean -- it's hard not to see the energy potential."

There are also a number of other considerations, including the impacts marine energy infrastructure could have on wildlife, the broader environment, local populations, fishing and other industries.

A research diver inspects a hydrophone lander deployed on the seafloor as part of ongoing research to improve the environmental monitoring of marine energy devices.
Richard Walsh/Scripps Institution of Oceanography

"I think the biggest issue is uncertainty," Robertson added. "We haven't done this at scale before, so what are the environmental impacts going to be?"

He says the policy process may be slow for good reasons, but the need for marine energy is still urgent.

"We need to find a way to deploy technology faster while being cognizant of the environment," he said. "We just need to find a way to accelerate this process if we're going to have a measurable impact on climate change."

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