

# More Oregonians embrace all-electric homes

Upgrades that improve efficiency

By JANET EASTMAN  
The Oregonian

Brett and Lori Patten searched for two years to find their future home. To them, forward thinking meant more than a place to live for a long time. Their house and its renewable power sources needed to minimize utility costs, maintain good indoor air quality and above all, avoid fossil fuels to protect the future of the planet.

After exploring existing homes for sale, they decided to buy a solar-ready one. Their new residence, which is under construction by Ichijo USA in Hillsboro, is expected to have zero energy costs based on its energy performance score once photovoltaic panels are added to offset home electricity use.

The Pattens, who are in their 50s, envision their retirement years as being free from electric, gas and even gasoline bills. With their new home on its way and an electric vehicle as part of the plan, that future can start now.

"For my wife and me, we want to be efficient with our expenses, especially when we're living on a fixed income," said Brett Patten. "And we have a social consciousness about how we contribute to the environment."

Everyone who has endured Oregon's frosty winters, sizzling summers and wildfire smoke seems more intent on having a tightly constructed, highly insulated home, where expensively heated or cooled air stays inside while harmful particles are kept outside.

During Portland's record-breaking heat wave, which spiked to 116 degrees in June, the Pattens escaped their energy-inefficient rental home — "it was brutal," said Brett Patten, "the upstairs was 10 degrees hotter than downstairs" — and hung out in an Ichijo USA model home similar to their soon-to-be, all-electric house in Hillsboro's Reed's Crossing.

Here, there was no massive air conditioner, huffing and puffing, he said, but the temperature was a refreshing 68 degrees on all levels.

A sealed building envelope with controlled ventilation and an air filtering system not only reduces energy use and costs, but it blocks out smoke and other pollutants, and reduces moisture, which can cause allergens and mold.

Triple-glass windows and extra insulation in the attic, walls and floors can also muffle outside noise. And solar and backup battery systems keep appliances and devices running during a power outage.

Although the Pattens' plan is to generate electricity on the roof with photovoltaic panels, renters and homeowners can sign up for Community Solar to receive electricity from a locally developed solar farm at rates that can be lower than regular electricity.

There are other big and small improvements people can make that pay off during cold snaps, heat waves and most other climate conditions that may come their way. And Energy Trust of Oregon is offering cash incentives on many upgrades.

## All-electric homes

For climate, indoor air quality and cost-savings reasons, more Oregonians are modernizing their homes to all-electric or seeking out new construction with 100% electric power, either of which can now be renewably sourced.

Electric appliances and heating have long been used for smaller homes, from duplexes to accessory dwelling units, to simplify installations and avoid the cost of adding a dedicated gas line that connects to a larger gas pipeline.

According to the NW Natural gas utility, customers are paying less to power a furnace, water heater, oven, range and clothes dryer than they did 15 years ago, espe-



A solar-ready, all-electric house designed and constructed by Ichijo USA is seen in Hillsboro's Reed's Crossing.

Ichijo USA

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cially if they install a high-efficiency natural gas furnace and air conditioner.

But electricity is still needed to power the lights, electronics, air conditioner or other appliances.

Increasingly, builders and owners of larger and more expensive dwellings are joining the electric home movement.

The Home Builders Association of Metro Portland has produced the Street of Dreams luxury new home tour with its main sponsor, NW Natural, since 1975. And the association plans to continue to produce the month-long event.

In October, however, the group debuted a new event, the Homes of Tomorrow Today Tour, which allowed people to walk inside eight, all-electric homes with solar panels and car charging stations. Also on display: electric lawn mowers and leaf blowers with zero emissions that can replace gas lawn equipment.

The building and construction industry makes up about 40% of the world's carbon emissions, according to experts. Furniture, fixtures and equipment also contribute to the overall carbon footprint. Making these products durable and sustainable reduces their impact, say experts.

Designer Emily Henderson, an influencer with a million blog followers, is renovating a century-old farmhouse for her family in southwest Portland. To add to her sustainable lifestyle, she's replacing gas equipment with electric heat pumps for cooling and heating air and heating water, and adding other electric systems.

Henderson was honest in her blog about facing the learning curve of cooking and baking with an induction range. Then she posted photos of high-end electric offerings from Ilve, Bertazzoni, Fisher and Paykel, and others.

An AGA Mercury Series induction range is a real contender, Henderson wrote.

Consumer Reports researchers found that the electric smooth-top ranges they tested offered faster cooking times, better baking and broiling, and more precise temperature control than gas.

After consulting with Portland-based green experts Josh Salinger of Birdsmouth design-build firm and Brian Stewart of Electrify Now, Henderson joined a commu-

*'WE DID NOT ELECTRIFY OUR HOME WITH THE PURPOSE TO SAVE MONEY NOW OR EVEN OVER A LONG PERIOD OF TIME. WE DID IT TO DEMONSTRATE PASSIVE HOUSE DESIGN AND TECHNOLOGIES TO HELP SAVE OUR PLANET AND ALL CHILDREN.'*

**Tad Everhart** | remodeled his two-story house in southeast Portland's Mount Tabor neighborhood to use a third of the power it once needed

nity solar project to access 100% clean energy and PGE's Green Future Choice Renewable Power, which does not come from natural gas-powered plants.

"As we say in our house every night, 'We love you, Mother Earth,'" wrote Henderson.

Portland developer Eli Spevak, the owner of Orange Spot, designs and builds all-electric homes in small communities, most recently Cully Green in northeast Portland's Cully neighborhood.

Here, townhomes are clustered around a courtyard shaded by fir trees. Sound-dampening walls with cellulose insulation, coated double-pane windows and other green features lower the homes' operating expenses and help regulate air temperature.

Spevak said that a decade ago environmentally conscious buyers were asking him for tankless gas water heaters, in-floor radiant heat and gas ranges.

"Maybe there was a time when it made sense to burn methane in our homes," he said.

But times have changed. "Today, electric systems are healthier, safer and much more efficient," he said.

Oregon's recently updated building code requirements are among the most demanding in the nation, according to Rachel Trice of the Home Builders Association of Metro Portland. Still, developers and builders specializing in high-performance homes surpass these requirements.

In addition to Passive House and Net Zero Energy homes, other green building certification programs include Earth Advantage, a Portland-based nonprofit facilitating sustainable, quality construction.

Another option is Energy Star-certified homes, which generate fewer greenhouse gas emissions than typical buildings and meet strict energy performance standards set by the U.S. Environmental Protection Agency.

Over the past 10 to 15 years, buyers have become increasingly more aware of environmental issues, said Douglas Macleod of Blue Sky Property Northwest, who sells efficient homes.

His clients, who are

mostly first-time home buyers and people who are downsizing, also appreciate stricter building codes and voluntary upgrades by builders.

Macleod recently sold a new, 1,276-square-foot, all-electric home in northeast Portland's Roseway neighborhood for its asking price of \$412,000. He also found a buyer for the 815-square-foot home next door, which sold for \$342,500.

Governments are making progress, too.

"California is going all electric for new construction in 2023," Macleod said. "Washington state's governor wants to introduce legislation similar to California's and they're talking about adopting codes mandating or encouraging all-electric new building construction in Oregon."

"It's coming," he added.

## Retrofitting

Nicholas Kinzie, of Ashland, tested out the benefits of solar in the smallest of ways — with a solar cellphone charger. Over time, he has converted his house to be net zero. It's powered by solar panels that produce enough renewable energy to meet annual consumption, with Tesla Powerwalls for back-up power.

A zero-energy home also reduces pollution and makes a home healthier, quieter, more comfortable and more affordable, according to Energy Trust of Oregon.

Kinzie, who was featured as a success story in Portland's Sustainable Building Week 2021 in October, also upgraded to an EcoSmart tankless water heater and solar-powered attic fans.

In a video produced for October's virtual event, he explained that exterior window shades and a retractable awning help retain the heat or cold he wants inside.

Retrofitting, or future-fitting, a property also often includes water-saving features and sustainable building materials and finishes that create less waste.

Tad and Maria Everhart remodeled their two-story house in southeast Portland's Mount Tabor neighborhood to use a third of the power it once needed.

Guided by exacting Passive House building standards, they modernized their 24-year-old home to be super insulated and all-electric.

Passive House adherents prefer lower-emission insulation like cellulose or wood fiber instead of foam. Windows have an additional layer between the inner glass and

outer glass. And windows are placed to maximize light, ventilation and views.

Although no window is as energy efficient as a highly insulated wall, triple-glazed windows resist heat flow twice as well as legally required double-pane windows, Everhart found.

The total energy to mine window materials, refine them, produce then assemble, ship and install windows — called embodied energy and emissions — is only about 5% or 10% more than a standard window.

"The good news is we can produce high-performance building products using slightly more energy than for conventional building products," said Everhart.

The size of the foundation is also considered in Passive Houses since cement for concrete requires a huge amount of energy, usually from burning coal. Everhart said building materials and equipment are still mostly produced by fossil fuels.

The home's orientation on the site and its shape are also considered to reduce energy needs.

The Everharts pay about \$6 more a month for PGE's 100% renewable power program, instead of pulling energy from natural gas-powered plants. They said the premium lets them support the future without having to install a wind turbine in their yard or solar panels on their roof.

"We did not electrify our home with the purpose to save money now or even over a long period of time," said Tad Everhart. "We did it to demonstrate Passive House design and technologies to help save our planet and all children."



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