

Electric: ‘It’s a lot easier to charge these than even what we originally thought’

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systems by installing more efficient pumps and sprinklers.

The electric tractor project came to Wallace from two other Oregon nonprofits — Sustainable Northwest, a renewable energy and natural resources conservation group, and Forth Mobility, which aims to expand access to electric vehicles and transportation.

Discussions started pre-pandemic, with the nonprofits interested in accelerating the adoption of electric farm machinery.

Bridget Callahan, senior energy program manager for Sustainable Northwest, said the transition to electrification is “inevitable” as more states adopt policies to curb fossil fuels.

Oregon legislators passed a law known as the Climate Protection Program late last year. It requires fuel suppliers in Oregon to reduce greenhouse gas emissions from the products they sell 50% by 2035 and 90% by 2050.

“Our idea is, we’re seeing this rapid transformation. ... We know it’s not going to look the same in rural parts of the state and Northwest,” Callahan said. “How do we ensure major investments in electrification, and what does that look like in a rural context?”

Whitaker Jamieson, program manager at Forth Mobility, said they wanted to show the potential for electric tractors on farms.

“I think that’s the key to the demonstration,” Jamieson said. “You start to see heads turning, and people saying ‘I need to start thinking about this for my farm.’”

Boots on the ground

A fourth project partner, the Bonneville Environmental Foundation, came aboard and provided funding to purchase one of the first two demonstration tractors.

The foundation works primarily with consumer-owned utilities in the Northwest that purchase hydroelectricity from the Bonneville Power Administration. It includes a renewable energy program that supports community solar projects, as well as electric vehicles.

Evan Ramsey, senior director of renewables for the foundation, said the project was a good fit.

“This was one way to get some of this clean technology into those communities,” Ramsey said. “Certainly the prospects for electric tractors — reducing operating expenses, reducing health impacts for farmers and reducing emissions — those are all great outcomes, if we can realize them.”

The project has also received backing from the USDA, Alumbra Innovations Foundation, Pacific Power and Portland General Electric’s Drive Change Fund.

Wallace, with the Wy’East RC&D, said he was brought on to be the boots on the ground, running the tractors and building interest among farmers.

The first two tractors were shipped to his home in 2021. Both came from the California manufacturer Solectrac — the 40-horsepower eUtility Electric Tractor and 30-horsepower Compact Electric Tractor.



George Plaven/Capital Press

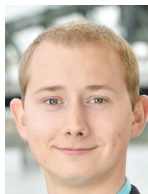
Robert Wallace, executive director of the Wy’East Resource Conservation and Development Area Council, demonstrates one of two new Solectrac compact electric tractors.



Evan Ramsey



Bridget Callahan



Whitaker Jamieson

Wallace fitted both models with data collection systems that use cellular and satellite connections to show where the tractors have been, what they were doing, how long they were able to do specific tasks and how much energy they used.

One of the challenges, Wallace said, is limitations with the battery packs. To make a battery large enough to power a 500-horsepower combine, like those seen in his neighbors’ wheat fields, would not be cost-effective.

But for smaller farms, vineyards and orchards, Wallace said the electric tractors can do a lot.

“Overall, they can perform any job that an equivalent diesel tractor can perform,” he said.

Field testing, charging

Dave Picanso, farm manager at Rusted Gate Farm in Central Point, Ore., said they hosted the electric tractors last spring to test drive in their apple and truffle orchards.

“When we first started using them, the first thing everybody noticed is how quick they are,” Picanso said. “You can take off basically in any gear.”

Rusted Gate Farm is a working farm and nonprofit organization in the Rogue Valley of Southern Ore-

gon. Part of the mission, Picanso said, is to support other small farms through demonstrations, trials and educational outreach.

Picanso said there was “definitely” a learning curve getting used to the electric tractors and how they handle. The tractors were too small to use working hay, he said. They were better suited for the orchards — mowing brush, moving mulch and running a rotary tiller between rows of trees.

The tractors charged overnight, and Picanso said they never had an issue running out of battery while out on a job.

“We ran it for three and a half to four hours pretty hard, and we would still have 30% (battery),” he said.

In Dufur, Wallace showed how the tractors can plug into any standard 220-volt outlet. It takes roughly three to four hours for the tractors to fully charge, while the battery life ranges from several hours to all day, depending on how hard they’re working.

“It’s a lot easier to charge these than even what we originally thought,” Wallace said. “We don’t need on-farm charging stations.”

Wallace acknowledges there are limitations with the tractors’ size and batteries. They can’t do everything that commercial agriculture demands, he said, but trials like those at Rusted Gate prove they can be effective in certain operations.

“Now we’ve got things we can use, things we can see on the landscape,” he said. “It’s not going to fit every solution, and that’s not what we’re trying to do.”

Cost of ownership

On May 12, Oregon State University published a study analyzing



George Plaven/Capital Press

Wallace demonstrates how to charge a Solectrac compact electric tractor at his home in Dufur, Ore.

the cost of ownership for the Solectrac Compact Electric Tractor and 32-horsepower John Deere 2032R.

The study, conducted by OSU’s Nexus of Energy, Water and Agriculture Lab, assumes both tractors operate 250 hours a year for seven years. The cost of ownership is divided into four segments: purchase price, financing costs, energy costs and maintenance and repair.

According to the study, the electric tractor produced substantially less greenhouse gas emissions — 1.56 metric tons versus 4.84 metric tons generated by the diesel tractor. The electric tractor’s emissions were calculated based on the estimated emissions of generating the electricity it used.

Meanwhile, the cost of ownership was roughly equivalent, ranging from \$39,853 to \$40,738 for the electric tractor compared to \$37,553 to \$43,072 for the diesel tractor. The findings were based on data collected by Wallace.

Kyle Proctor, the study’s author, wrote that eTractors “offer a great value proposition for farmers in the Pacific Northwest.”

“The transition toward eTractors would support the country’s goals of combating climate change, and because agriculture is one of the industries most vulnerable to climate change impacts, the transition to eTractors can serve as an act of self-preservation for agriculture,” Proctor wrote.

More than 80% of the cost of ownership for the Solectrac Compact Electric Tractor is associated with the initial purchase price. The base price is listed at \$27,999, or \$33,797 if you add the front loader and industrial tires.

The base price for the diesel John Deere 2032R is \$25,345, which includes industrial tires.

Deere and other manufacturers are also developing electric tractors and sprayers.

Callahan, with Sustainable Northwest, said the study is further underscored by the rising cost of diesel. The American Automobile Association reports the average price of diesel is currently \$4.99 per gallon in Oregon, and \$4.48 per gallon nationwide.

Average electricity prices in Oregon are lower than the national average, according to the U.S.

Energy Information Administration, with about half all all generation hydro power.

Rates are 10.86 cents per kilowatt-hour for residential customers; 9.27 cents per kilowatt-hour for commercial customers; and 5.89 cents per kilowatt-hour for industrial customers.

“Energy is one of the few things (farmers) can control,” Callahan said. “Electrifying their farm, being able to plug their tractor in at home and being able to completely remove all these other market forces provides a lot more stability, and really adds another layer of resilience to our farming community.”

Growing interest

A separate report released simultaneously by the Cadeo Group in Portland examined the electric tractor market in the Pacific Northwest and barriers to adoption.

Electric tractors are still nascent in the U.S., according to the report, making up less than 1% of the total market share. Buyers now tend to be hobby farmers willing to assume greater risk to try less established technologies.

“The farm is not their primary source of income,” the report states, “and therefore they are more willing to try a new technology based on other motivations such as carbon emission reduction without risking their long-term economic capability.”

However, the report states that adoption of electric tractors could quickly increase due to recent technological improvements, cost reductions in development and manufacturers increasing production.

Based on their demonstrations and cost of ownership findings, Callahan said the project is growing in both scale and interest. Another two Solectrac Compact Electric Tractors were delivered earlier this month, which will be made available to farms for testing.

In March, Oregon Sens. Ron Wyden and Jeff Merkley announced a \$1.5 million allocation to the project, which will be used to add 12 new electric vehicles to the fleet.

“We’re certainly eager to watch this program scale,” Callahan said. “We just want to make sure this technology is accessible, and we think there are a lot of ways to do it.”

Traci Brock, member services manager for the Wasco Electric Cooperative in The Dalles, said they will bring an electric tractor to demonstrate at their annual member appreciation picnic in June. The co-op serves roughly 5,000 square miles and 3,000 customers in rural Oregon.

“Farmers, as much as they want to say they don’t want it, I think it intrigues them a little bit,” Brock said. “It’s one thing reading an article about it. It’s another thing actually getting your hands on it.”

Jamieson, the project manager at Forth Mobility, said electric tractors are only going to get better as the project moves forward.

“Once the market really starts to pick up over the next 2-3 years, I think we’ll start to see pretty significant changes in this sphere,” he said.

Taylor: Before joining USDA, Taylor worked for several members of Congress

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“passion for seeking market opportunities for American farmers, ranchers and food producers of all types.”

Since 2016, Taylor has been the director of Oregon Department of Agriculture, in a state whose economy is heavily dependent on foreign trade, exporting about \$2.85 billion in agricultural goods annually.

Before coming to ODA, Taylor spent 12 years working on agricultural trade policy and related issues in Washington D.C., where she oversaw USDA’s Farm and Foreign Agricultural Services branch. She spent years traveling the world in that role, looking for ways to open new markets and improve the competitive position of U.S. farm goods in the global marketplace.

Before joining USDA, Taylor worked for several members of Congress.

Taylor is a graduate of Iowa State University. She grew up on her family farm in Iowa, a property that has been in her family for more than 100 years.

During high school, Taylor enlisted in the U.S. Army Reserve. In college, her unit was deployed to Iraq, where she served one tour with the 389th Combat Engineer Battalion.

A replacement for her at ODA has not yet been announced.

Labor: ‘Tardiness is not acceptable. All agriculture is perishable’

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Ocean carriers are rushing to get empty containers across the Pacific Ocean, where they can be loaded with Asian consumer products headed for U.S. shores, he said. “This is at a time exporters are screaming for empty containers.”

Carriers don’t want to wait for containers to travel inland in the U.S. before returning with farm exports, which are typically lower in value and less profitable for them, Friedmann said.

Meanwhile, ports are clogged with so many containers that ships must wait to get unloaded, severely slowing the delivery of products, he said.

“There is no room for further disruption,” Friedmann said. “Even without further disruption, we’re in crisis.”

Delayed deliveries are especially hazardous for farm products, which can spoil or fail to arrive in time to meet seasonal demand, he said. “For food and agriculture, tardiness is not acceptable. All agriculture is perishable.”

These problems are putting pressure on both the ILWU and the PMA to avoid further turbulence in port operations as they try to reach an agreement, said Michael LeRoy, a law professor at the University of Illinois who studies labor and employment relations.

The ILWU’s recent contract deal



Getty Images

The Port of Seattle.

with the United Grain terminal in Vancouver, Wash., suggests that labor-management relations are more conciliatory than in the past, LeRoy said.

Contracts for grain handling operations are negotiated separately from container terminals but likewise devolved into acrimony and a worker lockout in 2013. A new contract was signed the next year but broader labor strife at container terminals soon followed.

The United Grain agreement does “bode well” for smoothen contract negotiations between ILWU and PMA, LeRoy said. “Usually, those things set a pattern for the next contract.”

Even so, the combative bargaining history between the two organizations cannot be ignored, he said. “Past is prologue in these things, so I expect some level of contention.”

The longshoremen effectively control port operations and thus have an inherent negotiating advantage, which is only stronger during the current worker shortage, LeRoy said. “Labor has not been this strong for 40 years and that includes the longshore union.”

Given the fragile state of the economy and the “terrible situation” at the ports, the ILWU would be wise not to overplay its hand, though, he said.

For example, a coal miners’ strike in 1946 led to a public backlash against the union and a “massive defeat” for Democrats in the next election, he said.

“The longshore union has to be careful not the repeat that history,” LeRoy said. “If you lose public support, you lose some bargaining power. I expect that to be a moderating influence.”