



East Multnomah Soil and Water Conservation District

Solar Energy at Headwaters Farm: Year-One System Output

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PGE Helps Power Headwaters Farm with Solar Energy

In 2019 the East Multnomah Soil and Water Conservation District (EMSWCD) was awarded a Portland General Electric Renewable Development Fund grant (RDF) for a 70kW photovoltaic system. The solar panels were installed on two structures at EMSWCD's Headwaters Farm and began feeding electricity into the grid in April of 2020. In its first year of solar production, the renewable energy system generated 84 megawatt-hours, or enough to offset around 90% of the farm's annual electricity consumption. This equated to a savings on the farm's electricity bills of just under \$10,000 for the year.

The Headwaters solar project was made possible with support from the PGE Renewable Development Fund, which contributed \$55,566 towards the \$155,374 total project cost. The Energy Trust of Oregon also contributed \$23,715. Together over 50% of the project's cost was covered by the Energy Trust and PGE's RDF funds, with the balance coming from EMSWCD.

Since 1999, PGE customers have supported renewable energy by choosing one of several Green FutureSM options. Their contributions support the RDF, which offers competitive grants for community clean energy projects. Since its inception, the Renewable Development Fund has awarded 75 projects with more than \$16.5 million, creating over 16.6 MW of renewable generation.

Nancy Hamilton, EMSWCD's Executive Director, said of the project: "We are excited to be generating electricity at the farm and reducing our carbon footprint. And we are very grateful to PGE and their Green Future customers, as well as the Energy Trust of Oregon, for helping to make this solar project happen. The Headwaters Farm solar installation is an important demonstration opportunity for our farmers and



visitors to Headwaters Farm, and the wider community we serve. The project also made a lot of sense for us financially.”

With the generous support of PGE and the Energy Trust, the Headwaters Farm solar system is anticipated to pay for itself within eight years. The solar panels are under warranty for 30 years and could be productive well beyond that.

“EMSWCD is committed to addressing the climate crisis,” says Rowan Steele, Headwaters Farm Program Manager. “Like many other farms, the barns at Headwaters have large roof surfaces facing south with great solar exposure. Between the two roofs we were able to accommodate a solar system that off-set almost all the electricity used on site, including for the irrigation pump, walk-in coolers, and a residence. That means we could generate power without impacting our farmland, which can be used to sequester carbon through cover cropping and other conservation farming practices. The solar system has also spurred investment in an electric UTV that replaced an old gas guzzling farm truck, and we are now exploring the exciting possibility of getting an electric tractor that will reduce our use of fossil fuels even further.”

Headwaters Farm is a unique space. The publicly owned property hosts beginning farmers launching their fledgling farm businesses through the Headwaters Incubator Program (HIP). These participants use the incubator program to access critical agricultural resources like affordable farmland, irrigation water, farm equipment and tools, and basic farm infrastructure. In addition, incubator farmers receive training in sustainable production practices and business development. There are currently 17 farm businesses operating at Headwaters Farm. While they are independent businesses, they leverage their proximity to other beginning growers by collaborating on bulk purchase and market opportunities, troubleshooting issues, or commiserating or celebrating struggles and successes.

In addition to the farm incubator, Headwaters Farm also serves as a demonstration site for agricultural and riparian conservation practices. It is a real-world example of how vibrant, viable farm businesses can operate adjacent to sensitive natural resources without detrimental impacts. On-farm conservation resources and improvements include the almost 15-acre Dianna Pope Natural Area riparian buffer surrounding the North Fork of Johnson Creek, extensive stormwater management facilities, fish passage enhancements, pollinator meadows and native plant hedgerows, and numerous efforts to support healthy soils.

The Headwaters Farm solar installation is another great tool for exposing incubator farmers and the public to the opportunities of on-farm energy production and ways to help a farm’s bottom line, reduce dependence on fossil energy, and support innovation. As Rowan Steele explains, “Headwaters Farm is a space of learning. Our farmers are learning how to operate a successful farm business, but they are also learning what resources are available to growers and creative ways to align their stewardship ethic with farm viability. Exposing new growers to solar power generation and electric farm equipment helps them envision how these resources fit into their future farm. This is especially valuable given how thin agricultural margins can be and the notable maintenance and fuel savings electric equipment can



provide.” Most years Headwaters Farm sees hundreds of visitors, many of whom come to learn about farmer development and working lands natural resource management. The Headwaters Farm solar story is another way that visitors can gain an appreciation for agriculture’s prominent role in addressing the climate crisis. Steele adds, “as COVID restrictions relax and as it is safe for our farmers, we look forward to bringing visitors back to the farm to learn about on-farm solar and conservation agriculture!”

As an organization helping people care for land and water, EMSWCD offers technical assistance and educational opportunities for landowners in our service area, and so are well placed to spread the word about the environmental and economic benefits of solar energy. Solar projects like this offer huge potential for farms across the state. Especially in situations like at Headwaters Farm when solar panels are sited on existing or new farm structures, and not on vital farmland.

The East Multnomah Soil and Water Conservation District (EMSWCD) is a unit of local government whose mission is to help people care for land and water. The EMSWCD is led by an elected board of five directors and works entirely on a voluntary, non-regulatory basis with landowners, land managers, and other residents east of the Willamette River centerline in Multnomah County. All of the EMSWCD’s work is geared toward keeping water clean, conserving water and keeping soil healthy.

Contact Rowan Steele, The Headwaters Farm Program Manager, with any questions about Headwaters Farm or the new photovoltaic system (Rowan@emswcd.org or 503.935.5355). Learn more about Headwaters Farm visit <https://emswcd.org/farm-incubator/>. An overview of the solar system’s electrical output and production equivalencies can be found at <https://enlighten.enphaseenergy.com/public/systems/Tk561813320>. To learn more about the PGE Renewable Development Fund, visit portlandgeneral.com/rdf.





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The EMSWCD service area includes all Multnomah County east of the Willamette River. The location of Headwaters Farm is also shown here.



The 70.56kW photovoltaic system at Headwaters Farm is on two south-facing roofs with no seasonal shading.

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Drone image of the solar array on the equipment shed at Headwaters Farm.



Drone image of the solar array on the barn at Headwaters Farm





Reiden Gustafson of Little Sun Farm, a third-year incubator farmer, washing produce. Photo courtesy of Reiden Gustafson.



Early summer crops growing in a caterpillar tunnel with solar array visible in the background. Photo courtesy of EMSWCD.

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