



Oregon's Thermal Renewable Energy Credits

Policy Description

In 2016, the Oregon legislature extended the state's renewable portfolio standards (RPS) to give credit for the thermal energy generated by biomass combined heat and power (CHP) systems. While traditional renewable energy credits (RECs) have been allowed for years, this legislation added a section to Oregon Revised Statute Chapter 469A establishing thermal renewable energy credits, or "T-RECs," for facilities that generate electricity using biomass that also generate thermal energy that is used for a "secondary purpose."¹ One electricity-based REC is created with the generation of one megawatt-hour of qualifying electrical energy. One T-REC is created with the recovery of 3,412,000 British thermal units (Btu) of qualifying thermal energy and, for the purposes of complying with the Oregon RPS, is equivalent to one REC. In fact, in rulemaking, the Oregon Department of Energy (ODOE) determined that thermal RECs were simply a "type" of REC, not a separate instrument.

Quick Facts

Location: Oregon
Market Sector: Electricity
Program/Policy Type: Thermal RECs
Geography: WECC region
Program Start: 2016

To meet the requirements of Oregon's RPS, T-RECs must be generated by a facility located within the Western Electricity Coordinating Council (WECC). The WECC includes 14 western states, extending from Mexico to Canada. In this way, Oregon's T-RECs promise to encourage biomass CHP both within the state and regionally.

The legislation gives examples of RPS-eligible biomass feedstocks (for example, organic wastes, landfill, agricultural residues, spent pulping liquor, energy crops, and forest debris). Thermal energy that bypasses the electricity production device or thermal energy that is generated while electricity production equipment is out of service is not eligible. Thus, direct biomass heating is excluded from T-RECs, even in facilities that also generate electricity with the biomass.

Similar to RECs associated with renewable electricity generation, any end uses of thermal energy that are in support of the generation of electricity ("station service") are not within the definition of "secondary purposes." In the same way that the electrical parasitic loads of the generation facility, including lighting for the generation plant building, cannot be counted for RECs, the thermal end uses of the generation plant are not eligible as secondary purposes. Thus, space heating for the generation plant's building and equipment is not eligible, but space heating for associated offices is. Notably, boiler feedwater heating and steam deaerator heating uses are not eligible. Energy use for on-site fuel processing, such as biomass drying, is also not eligible, although biomass drying of fuels that are sold and not used as on-site fuel is eligible. The energy used for digester heating in an anaerobic digester CHP system is eligible for T-RECs because this use directly supports the function of a facility such as a wastewater treatment plant (WWTP) and is not directly associated with station service.²

Policy Development

Oregon has joined 12 other states and the District of Columbia in adding renewable thermal RECs to the RPS.³ Oregon's T-REC is one of the most narrowly defined. Most other states include solar thermal sources, and many include geothermal and biomass fuels. Several include T-RECs for residential, commercial, and industrial uses. Of the nine states that include

¹ https://www.oregonlegislature.gov/bills_laws/ors/ors469A.html

² For more information on rules for RECs in Oregon: <https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=1116>; <https://www.oregon.gov/energy/Get-Involved/rulemakingdocs/ODOE%20TRECS%20Draft%20Rules%20Companion%20Document%20Oct%202016.pdf>

³ For more information on renewable thermal in state portfolio standards: <https://www.cesa.org/wp-content/uploads/Renewable-Thermal-RPS.pdf>

biomass as an eligible resource, only North Carolina and Oregon restrict it to thermal energy as a byproduct of electricity generation. Most of these states quantify one T-REC as equivalent to 3.412 million Btu/h, as Oregon does. States also differ in their metering and monitoring requirements and how T-RECs are classified and applied to the RPS requirements. Oregon is one of only a few states that treat a T-REC as equivalent to an REC for the purposes of meeting RPS obligations.

Policy Outcomes



Gresham Wastewater Treatment Plant

SOURCE: Oregon Department of Energy

In 2018, the Gresham Wastewater Treatment Plant became the first Oregon facility to be certified for thermal RECs and is one of only a handful of U.S. WWTPs that are net-zero energy.⁴ The City's treatment plant serves 114,000 customers in the cities of Gresham, Fairview, and Wood Village and treats 13 million gallons of water daily in an anaerobic digester installed in 1990. Biogas is burned in two 400 kW Caterpillar G3508 engines to produce electricity and heat. In 2015, the plant began receiving fats, oil, and grease (FOG) from area restaurants. The addition of 30,000 gallons of FOG per year nearly doubled the plant's biogas production and allowed adding the second gen-set. **The site generates about 10% more electricity than it uses on site, which is sent back to the grid and donated to Portland**

General Electric's low-income utility assistance program. Heat from the engines' jacket water is used to heat the digester and the facility's buildings. The facility currently uses only about 40% of the heat recovered from the engines. The plant is investigating other uses for the remaining 60%, including using it to dry digester solids.⁵ As of August 2018, ODOE had four applications for thermal REC projects, including a pulp and paper plant and wood products plant.

Lessons to Share

- Certifying T-RECs is a very different process from certifying RECs from electricity generation. Traditional RECs require minimal paperwork, and electricity generation is very easy to verify. The ODOE and the Gresham WWTP worked in an iterative process to lay out what is required in a plan and work out "kinks" in the process. ODOE expects future projects to go much quicker with the experience gained at the Gresham plant. However, every facility is different and complex, and ODOE continues to work with T-REC applicant personnel through the process toward certification.
- For the Gresham WWTP, incentives and technical assistance were crucial in helping the project pencil out. In addition to receiving T-RECs, the project received Oregon's Business Energy Tax Credits and biomass incentive funds from the State of Oregon. The Energy Trust of Oregon supported the City of Gresham with technical assistance, project development support, and cash incentives for energy efficiency measures and for the two CHP generator sets.

Example system REC payment:

Reciprocating engine operating at 400 kW average net capacity with thermal output of 1.94 MMBtu/h. If this engine operates year-round with availability of 95%, this project could potentially earn about 3,300 RECs for its electricity generation and 4,700 T-RECs for its thermal generation.

For More Information

U.S. DOE NORTHWEST CHP TECHNICAL ASSISTANCE PARTNERSHIP (CHP TAP)
www.nwchptap.org

OREGON DEPARTMENT OF ENERGY
<https://www.oregon.gov/energy>

Date produced: 2019

⁴ "Achieving energy net zero at the Gresham Wastewater Treatment Plant", Modern Power Systems, June 12, 2019
<https://www.modernpowersystems.com/analysis/achieving-energy-net-zero-at-the-gresham-wastewater-treatment-plant-7254009/>

⁵ To learn more about the City of Gresham's wastewater treatment plant, listen to the ODOE's podcast with the plant's senior engineer, Alan Johnston: <https://energyinfo.oregon.gov/blog/2018/8/23/grounded-podcast-gresham-powers-through-the-fog>