OFFICE OF LEGISLATIVE RESEARCH
Objective Research for Connecticut's Legislature

ResearchReport

Residential Solar Programs

By: Mary Fitzpatrick, Principal Analyst

July 1, 2022 | 2022-R-0144

Issue

This report discusses the recent history of state programs to encourage residential solar installations, particularly, the transition from net metering and the Residential Solar Investment Program to the Residential Renewable Energy Solutions program.

Summary

In recent years, the legislature has made changes to how residential customers with solar generating facilities are compensated for the power and related attributes that they generate. Until recently, these customers could enter into "net metering" arrangements, in which the utility compensates the customer at the retail rate for electricity. They could also participate in the Green Bank's Residential Solar Investment Program (RSIP), which offered direct financial incentives funded by selling the renewable energy credits (RECS) that their facilities generated.

In 2018, the legislature directed the Public Utilities Regulatory Authority (PURA) to open a proceeding to establish tariffs for a new residential clean energy program to replace net metering and RSIP. Legislation passed the following year delayed this transition and revisited certain aspects of it by, among other things, requiring PURA and the Department of Energy and Environmental Protection (DEEP) to study the value of distributed energy resources and consider the study's findings when determining the tariffs.

PURA responded to these requirements by establishing the residential tariff, now called the Residential Renewable Energy Solutions (RRES) program, in 2021. Under RRES, residential customers may enter into contracts to sell their energy and RECs to Eversource and UI at a fixed

20-year price under either a (1) buy-all incentive rate structure where the utility buys all the energy and RECs the project generates or (2) a netting rate structure where the utility buys all the project's RECs and then provides credits on the customer's electric bill for any energy exported to the electric grid and not consumed on site.

As of January 1, 2022, new residential solar customers are eligible for RRES rates. Once Eversource or United Illuminating (UI) approves the project, the customer will receive the rate for a 20-year term. But customers already net metering before January 1, 2022, may continue doing so (at the full retail rate) until December 31, 2041, and customers already participating in RSIP may continue doing so under the program's terms.

The law requires Eversource and UI to offer RRES tariffs for new customers for six years and establishes a similar six-year time frame for related programs for other customers (e.g., commercial and industrial). At the end of that time, DEEP must assess the tariff offerings, determine if they are competitive compared to the cost of technologies, and report their findings to the legislature.

Compensating Residential Solar Customers

Net Metering

A central consideration for residential customers when purchasing or leasing solar panels is the extent to which their utility company will purchase power generated by the panels and compensate the customer for that power, typically through a credit on the customer's electric bill. Until recently, these customers in Connecticut could enter into "net metering" arrangements in which the utility compensates the customer at the retail rate for electricity (including supply and delivery charges), in effect "running the meter backwards" (CGS § 16-243h). In practice, net metering customers' generation and usage is netted on a monthly basis (e.g., a customer who uses 200 kilowatt hours (kWh) and generates 100 kWh is charged for 100 kWh). If they generate more than they used they receive credits for their excess generation on their next month's bill (e.g., if the same customer generated 220 kWh, then he or she would have the next month's usage reduced by 20 kWh).

Residential Solar Investment Program

Until recently, new residential net metering customers could also participate in the Green Bank's Residential Solar Investment Program to benefit from the RECs generated by their systems. The law requires the Green Bank to offer direct financial incentives for residential solar projects under RSIP until the earlier of (1) December 31, 2022, or (2) the program achieving 350 megawatts of residential solar projects in the aggregate (CGS § 16-245ff). In practice, the program met its megawatt target and has not been accepting applications since January 1, 2022.

Customers participating in RSIP could receive either upfront cost reductions for purchasing their system or monthly performance-based cost reductions for leasing their system from a third-party. These financial incentives were funded, in part, by the Solar Home Renewable Energy Credit (SHREC) program. Under this program, RECs created by residential solar projects that receive Green Bank funding are owned by the Green Bank and must be purchased by Eversource and UI under a master purchase agreement that they negotiate (CGS § 16-245gg). By law, RSIP must be funded with SHREC revenue and may also be funded by available federal funding and up to one-third of the funds the Green Bank collects through the clean energy charge on ratepayer bills (CGS §§ 16-245ff(g) & -245n). Eversource and UI recover their costs for purchasing the RECs through their electric rates (CGS § 16-245gg).

RECS

Renewable energy facilities produce one REC when they generate one megawatt-hour of electricity. Utilities and electric suppliers purchase RECs to demonstrate compliance with renewable energy requirements, creating a market for RECs and a secondary source of value for renewable energy projects.

Transition to Tariffs

In 2018, the legislature directed PURA to begin a proceeding to establish tariffs (detailed rate schedules and rules) for a new residential clean energy program to replace net metering and RSIP. PA 18-50 required PURA to establish a rate for residential tariffs guided by the state's Comprehensive Energy Strategy. It allowed PURA to base the rate on (1) the results of competitive solicitations conducted under the act for other commercial and industrial clean energy programs or (2) the average cost of installing and maintaining the project and a rate of return that is just, reasonable, and adequate. The act also directed PURA to establish the period of time, up to a day, used to calculate the net amount of energy produced by the project and not consumed. Under this act, new customers signing up with solar would be subject to the new tariff, rather than net metering, when RSIP expired. Customers who were already net metering or begin doing so before the tariffs went into effect could continue to do so for a 20-year period (PA 18-50, § 7).

The following year, the legislature delayed this transition and revisited certain aspects of it. A 2019 law delayed the transition to tariffs by (1) extending RSIP, (2) extending PURA's deadline to open its proceeding and (3) sunsetting new net metering on December 31, 2021, rather than when RSIP expired. The act required PURA and DEEP to study the value of distributed energy resources (a term generally referring to on-site generation that, by law, includes Class I resources like solar panels) and consider the study's findings when determining the tariffs. It also allowed PURA to establish a longer netting period, up to a month (PA 19-35).

Residential Renewable Energy Solutions

In 2021, PURA established the residential tariff, now called the Residential Renewable Energy Solutions Program (RRES), to replace both net metering and RSIP (Docket 20-07-01). Under this program, administered by Eversource and UI, residential customers may enter into contracts to sell their energy and RECs to Eversource and UI at a fixed 20-year price under either a (1) buy-all incentive rate structure where the utility buys all the energy and RECs the project generates or (2) a netting rate structure where the utility buys all the project's RECs and then provides credits on the customer's electric bill for any energy exported to the electric grid and not consumed on site.

In an interim decision, PURA determined rates in effect for applications received beginning January 1, 2022 (Docket 21-08-02). Table 1 shows the rates, along with "adders" (amounts added to the rates for customers in certain circumstances). PURA also established an annual rate setting review process to determine adjustments to the rates in subsequent years depending on program performance.

Table 1: Residential Renewable Energy Solutions Rates Beginning January 1, 2022 ($/kilowatt-hour)

	Buy-All Rate	Netting Rate	
		Excess Energy	RECs
Eversource	$0.2943	Customer's Retail Rate	$0.0318
UI	$0.2943	Customer's Retail Rate	$0.00
Low-Income Adder	+$0.025		
Distressed Municipality Adder	+$0.0125		

Once a residential customer enters into an arrangement under which their utility purchases power generated by their solar panels, the terms of that arrangement generally do not change for at least a 20-year period, but the date the customer began the arrangement determines the terms. Specifically, customers with approved projects before January 1, 2022, may net meter (at the full retail rate) until December 31, 2041. They may also participate in RSIP if they were approved for that program before it ended. By law, after December 31, 2041, utilities will compensate these customers at a cents-per-kilowatt hour rate that PURA determines (CGS § 16-243h).

Customers with projects approved on and after January 1, 2022, will receive the RRES rates shown in Table 1 for a 20-year term and may not participate in RSIP because compensation for their RECs is already included in the rates. If, after an annual rate review for the program, PURA adjusts the rates, customers signing up on and after the date the adjustments become effective will receive those adjusted rates for a 20-year term. By law, PURA must establish tariffs for utilities to purchase energy on a cents-per-kilowatt-hour basis when an RRES customer's term expires (CGS § 16-244z(c)(1)(B)).

The law requires Eversource and UI to offer RRES tariffs for new customers for six years and establishes a similar six-year time frame for related programs for other customers (e.g., commercial and industrial). At the end of that time, DEEP must assess the tariff offerings, determine if they are competitive compared to the cost of technologies, and report their findings to the legislature (CGS § 16-244z(c)(1)(B) & -244z(c)(2)).

MF:kl