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ResearchReport

Residential Solar Incentive Program

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Issue

Describe the Connecticut Green Bank's Residential Solar Incentive Program and its legislative history.

Summary

The Connecticut Green Bank's Residential Solar Incentive Program (RSIP) provides financial incentives for residential homeowners to install solar photovoltaic (PV) systems on their property (CGS §§ 16-244ff & 16-244gg). These incentives can help reduce the upfront cost of owning and installing a system or the monthly costs of leasing one from a third party. The program is funded through sales of solar home renewable energy credits (SHRECs) generated by its PV systems. It may also be funded by available federal funds and up to one-third of the annual revenue from the renewable energy charge on electric bills.

The legislature created the program in 2011 and substantively updated it in 2015, 2016, and 2019. Among other things, the updates (1) expanded the program's scope and funding sources; (2) limited the program's operation by sunsetting it on December 31, 2022, or once it installs 300 Megawatts (MW) of PV systems, whichever occurs first; and (3) increased the installation threshold that would trigger the program's end from 300 MW to 350 MW. (Information about the current level of deployed MWs is available here.)

RSIP Program

Incentives

RSIP offers two types of financial incentives for eligible homeowners to install solar panels on their property: the expected performance-based buydown (EPBB) and the performance-based incentive (PBI). Eligibility is generally limited to 1-4 family owner-occupied residential properties that offer a good location for a solar system.

The EPBB provides an upfront incentive to reduce purchasing costs that is based on the PV system's size and efficiency rating (i.e., major design characteristics, such as panel type, tilt, shading, and orientation). Once the system is installed, the incentive is paid directly to the installing contractor, on the homeowner's behalf.

The PBI is for homeowners who lease a PV system. Under this method, a homeowner contracts with a third party who installs a system on the homeowner's roof but maintains ownership of the system. The homeowner then pays the third party either a monthly fee for using the system or enters into a power purchase agreement to purchase the power produced by it. Under the PBI, a certain price per kilowatt-hour (kWh) produced by the system over a six-year period is paid to the third-party owner and used to reduce the homeowner's leasing costs.

Additional information about RSIP is available here.

Funding

SHRECs. By law, RSIP incentives are funded by the Green Bank's sale of SHRECs. A SHREC is a Class I renewable energy credit created for each MW hour of electricity produced by a qualifying residential solar PV system that receives approved incentives from the Green Bank on or after January 1, 2015. It is owned by the Green Bank until it is transferred to an electric distribution company (EDC, i.e., Eversource or United Illuminating), under master purchase agreements reached between the bank and the EDCs.

By law, the master purchase agreements must require the EDCs to annually purchase 15-year tranches of SHRECs until the program's end, which by law must be at the end of 2022 or when the program deploys 350 MWs of residential solar PV installations, whichever occurs first. The law allows the Green Bank to set the purchase price for SHRECs, subject to certain limits, but requires the price to decline over time.

The EDCs may either retire the SHRECs to satisfy their Renewable Portfolio Standard requirements or resell them with the proceeds from the resale netted against their costs. The law requires that the EDCs recover their associated costs through a fully reconciling, non-bypassable component of their rates (CGS § 16-245gg).

Other Funding Sources. The program may also be funded by available federal funds and up to one-third of the annual revenue from the renewable energy charge on electric bills.

RSIP Legislative History

PA 11-80 (§ 106)

The legislature created the Clean Energy Finance and Investment Authority (now known as the Connecticut Green Bank) in 2011 and, among other things, required it to implement a residential solar PV energy program that would lead to installing at least 30 MW of new PV generating capacity in the state by December 31, 2022 (PA 11-80, § 106). It required the authority to fund the program by using up to one-third of the annual revenue from the renewable energy charge on electric bills.

Under the act, the authority had to offer direct financial incentives for purchasing or leasing qualifying residential PV systems. The incentive could be paid out on either a per kWh basis or as a one-time upfront incentive based on expected system performance. The act required the authority, when determining the type and amount of incentive to provide, to consider (1) verified PV system characteristics, such as operational efficiency, size, location, shading, and orientation and (2) willingness-to-pay studies.

PA 15-194

While PA 11-80 required the program to install at least 30 MW of capacity by December 31, 2022, PA 15-194 instead required the program to end on either that date or once it deployed 300 MW of solar PV installations, whichever occurred first.

In addition, the act expanded the program's funding by creating SHRECs and establishing the process through which the EDCs must purchase SHRECs from the Green Bank under a master purchase agreement. It also set certain criteria for determining whether a residential PV system qualifies for the program.

PA 16-212 (§§ 5 & 6)

PA 16-212 made several adjustments to RSIP to broaden its scope. Among other things, these:

1. eliminated a 20-kW size restriction for eligible PV systems and instead limited the program's financial incentives to a system's first 20 kW of direct current;

2. expanded the types of incentives provided by the program to include power purchase agreements; and

3. extended the deadline for the Green Bank and EDCs to negotiate and develop the master purchase agreements for SHRECs.

PA 19-35 (§§ 4 & 5)

PA 19-35, among other things, increased the MW threshold that triggers the program's end from 300 MW to 350 MW, while maintaining the December 31, 2022, deadline. It also correspondingly extended the requirement for the EDCs to annually contract to purchase 15-year tranches of SHRECs until the program finishes.

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