

June 29, 2018

Energy & Technology Committee Members
Connecticut General Assembly
210 Capitol Avenue
Hartford, CT 06106

Re: Shared Clean Energy Facilities Pilot Program Report to the Connecticut General Assembly

Dear Members of the Energy & Technology Committee:

The Department of Energy and Environmental Protection (“DEEP”) hereby submits this report to the Connecticut General Assembly pursuant to Section 16-244x(f) of the Connecticut General Statutes, which requires the following:

“On or before July 1, 2018, the department shall file a report, in accordance with the provisions of section 11-4a, with the joint standing committee of the General Assembly having cognizance of matters relating to energy, (1) analyzing the success of the shared clean energy pilot program, (2) identifying and analyzing the success of programs in other states that allow facilities similar to a shared clean energy facility, and (3) recommending whether a permanent program should be established in this state and, if so, any necessary legislation.”

On March 2, 2017, DEEP issued a Request for Proposals from private developers for shared clean energy facilities. By Final Determination dated June 28, 2017, DEEP selected three projects to participate in the Shared Clean Energy Facility Pilot Program in each electric distribution company’s service territory:

Eversource Energy:

- CHIP Fund 5 – Riverside Thompson 2.0MW, Thompson, CT
 - Expected commercial operation date: June 30, 2018
- Clean Energy Collective – Bloomfield Board of Education 1.62MW, Bloomfield, CT
 - Expected commercial operation date: July 1, 2018

The United Illuminating Company:

- US Solar Corp – USS Shelton 1.6MW, Shelton, CT
 - Expected commercial operation date: September 30, 2019

DEEP continues to monitor the progress in the development of the pilot projects while simultaneously working on the implementation of a statewide shared clean energy program as required by Public Act 18-50, An Act Concerning Connecticut's Energy Future. Public Act 18-50 was signed in to law on May 24, 2018. Section 7(c) of Public Act 18-50 directs DEEP to initiate a proceeding, on or before September 1, 2018, to develop program requirements and tariff proposals to establish a statewide shared clean energy program, and to submit, on or before July 1, 2019, any such program requirements and tariff proposals to the Public Utilities Regulatory Authority for review and approval. We look forward to providing additional updates to the Energy and Technology Committee on DEEP's progress in developing and implementing these programs.

Sincerely,

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
Bureau of Energy and Technology Policy

A handwritten signature in black ink, reading "Tracy R. Babbidge". The signature is written in a cursive, flowing style.

Tracy R. Babbidge
Bureau Chief

Enclosure

Connecticut General Statutes §16-244x: Report to the Energy and Technology Committee on the Shared Clean Energy Facilities Pilot Program

June 29, 2018



Connecticut Department of Energy and Environmental Protection

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I. INTRODUCTION

The Department of Energy and Environmental Protection (“DEEP”) issues this report in accordance with the provisions of Section 11-4a of the General Statutes of Connecticut, pursuant to Public Act 15-113, An Act Establishing a Shared Clean Energy Facility Pilot Program, as amended by Public Act 16-116, An Act Concerning the Shared Clean Energy Facility Pilot Program (“the SCEF Act”), as codified in Section 16-244x of the Connecticut General Statutes (“Conn. Gen. Stat.”). The SCEF statute directs DEEP to file a report with the Energy and Technology Committee of the General Assembly of Connecticut (“E&T Committee”) concerning the Shared Clean Energy Facilities (“SCEF”) Pilot Program. Specifically, this report endeavors to provide:

- Analysis of the SCEF Pilot Program; and
- Identification and analysis of the success of similar programs in other states.

Conn. Gen. Stat. §16-244x(f) also directs DEEP to include in this report a recommendation on whether a permanent program should be established in Connecticut and, if so, any necessary legislation. However, two recent developments refocus the discussion and recommendations for this report. First, DEEP released the 2018 Comprehensive Energy Strategy (“CES”) on February 8, 2018. Among other key strategies, the CES recommends continuing to increase Connecticut’s level of investment in renewables, while ensuring that investments optimize zero-carbon resource deployment at the lowest cost to consumers, and address siting and land-use pressures through the development of a working group. More pointedly, the CES identified SCEF program design challenges centered on the fact that contracts between projects and the electric distribution companies (“EDCs”) are paid for by all ratepayers but a credit is allocated only to participating customers. Thus, the CES recommends addressing this issue in any statewide program rollout and integrating any statewide shared clean energy program into successor programs supporting distributed generation.

Second, Public Act 18-50, An Act Concerning Connecticut’s Energy Future (“the Energy Future Act”), was signed in to law on May 24, 2018. Section 7(c) of the Energy Future Act directs DEEP to initiate a proceeding, on or before September 1, 2018, that develops program requirements and tariff proposals to establish a statewide SCEF program, and to submit, on or before July 1, 2019, any such program requirements and tariff proposals to the Public Utilities Regulatory Authority (“PURA”) for review and approval.

Therefore, this report offers insight, commentary and recommendations as informed by DEEP’s relatively brief experience with the pilot program, and spotlights certain noteworthy programs in other states that are reflective of DEEP’s stance on relevant topics as articulated in the 2018 CES.

II. BACKGROUND

The SCEF Act requires DEEP to establish, in consultation with the EDCs, namely Eversource Energy (“Eversource”) and The United Illuminating Company (“UI”), a two-year SCEF pilot program using Class I renewable energy sources. Further, the SCEF Act directs DEEP to: (1)

establish a billing credit for subscribers of a SCEF; (2) establish consumer protections for subscribers and potential subscribers of such a facility; and (3) select, pursuant to a competitive request for proposals (“RFP”) process, SCEF projects with an aggregate total nameplate capacity rating of no more than six megawatts (“MW”), but no more than two MW in the aggregate in the service territory of UI and no more than four MW in the aggregate in the service territory of Eversource. Any tariff resulting from this pilot program is subject to review and approval by PURA.

DEEP held an initial technical meeting on the pilot program on October 21, 2015. To clarify the policy objectives of the pilot program, DEEP reviewed the findings, comments and testimony submitted on SCEFs during prior legislative sessions. DEEP identified specific policy objectives for the pilot program, including:

- Expanding clean energy deployment;
- Promoting equitable participation by increasing access to clean energy for low- to moderate-income (“LMI”) customers;
- Optimizing the positive re-use of sites with limited alternative uses; and
- Supporting in-state economic development opportunities, and minimizing the cost to electric ratepayers.

On May 20, 2016, DEEP released a draft RFP for public comment. DEEP held a public hearing on the draft RFP on June 9, 2016, and accepted public comment on the draft RFP through June 20, 2016.

By way of a notice dated July 1, 2016, DEEP issued the Request for Proposals from Private Developers for Shared Clean Energy Facilities (“Initial SCEF RFP”) to solicit proposals for the SCEF pilot program by September 1, 2016. The Initial SCEF RFP allowed no more than three pricing bids with each proposal. The Initial SCEF RFP also integrated the specific policy objectives identified above to guide the evaluation and selection process. Further, on July 1, 2016, each EDC submitted a tariff that conforms to the requirements of the RFP to PURA for approval. PURA subsequently approved such tariffs for Eversource and UI on July 7, 2016 and August 18, 2016 respectively.

DEEP received nineteen project proposals from eight different developers in response to the Initial SCEF RFP by the September 1, 2016 deadline. Four developers offered multiple pricing options for their project proposals. Altogether, a total of twenty-nine pricing bids were submitted. On February 1, 2017, DEEP issued a Final Determination (“Initial Final Determination”) that declined to accept any bids submitted in response to the Initial SCEF RFP. The Evaluation Team assigned by DEEP identified issues with four major components of the Initial SCEF RFP that had the potential to adversely impact the pilot program’s operation and

outcome, the participating and non-participating customers, and the EDCs. Concurrently, DEEP released a revised draft RFP that addressed and modified those four components:

- Siting restrictions to protect prime farmland, historic preservation properties, core forests, and endangered, threatened and special concern species and significant natural communities;
- Limitation of commercial and industrial (“C&I”) customer subscription in the aggregate to no more than 60 percent of the total production;
- Elimination of the Subscriber Organization-managed credit and billing structure, as presented in the Initial SCEF RFP; and
- A pricing cap of \$0.17 per kilowatt-hour (“kWh”).

DEEP received written and oral comments on its Initial Final Determination and revised draft RFP. On March 2, 2017, DEEP released a final RFP (“SCEF RFP”) seeking bids through April 3, 2017, which was subsequently extended to April 10, 2017. On March 2, 2017, Eversource submitted a tariff rider (“SCEF Rider”) that includes the terms and conditions of the pilot program consistent with the SCEF RFP, which PURA approved effective April 1, 2017. On March 6, 2017, UI submitted the SCEF Rider with the same terms and conditions. DEEP held a bidders’ conference on March 16, 2017.

DEEP received nine project proposals from four developers in response to the SCEF RFP by the April 10, 2017 deadline. One developer offered multiple pricing options for its two project proposals. Altogether, a total of thirteen pricing bids were submitted. On June 28, 2017, DEEP issued a Final Determination on the SCEF RFP (“Final Determination”) that selected the following project proposals for the EDCs:

Eversource:

- CHIP Fund 5 – Riverside Thompson 2.0MW, Thompson, CT (“CHIP Fund 5 Thompson SCEF”)
- Clean Energy Collective – Bloomfield Board of Education 1.62MW, Bloomfield, CT (“CEC Bloomfield SCEF”)

UI:

- US Solar Corp – USS Shelton 1.6MW, Shelton, CT (“US Solar Shelton SCEF”)

The SCEF RFP defined “Bidder” as “an entity that submits a Proposal for a Subscriber Organization and the development and operation of the SCEF consistent with the requirements of [the] RFP”. “Subscriber organization” (“SO”) is defined by Conn. Gen. Stat. §16-244x(a)(5) as “any for-profit or not-for-profit entity permitted by Connecticut law that (A) owns or operates one or more shared clean energy facilities for the benefit of the subscribers, or (B) contracts with a third-party entity to build, own or operate one or more shared clean energy facilities.” Relative to each of the three selected project proposals, the bidder also functions as the SO.

III. ANALYSIS OF THE SCEF PILOT PROGRAM

A. Power Purchase Pricing

The SCEF RFP had set certain constraints on the purchase price to be offered by bidders for their project proposals. Each project proposal was limited to no more than three purchase price bids not exceeding the pricing cap of \$0.17/kWh for each year of the tariff term. Moreover, a purchase price could not be conditioned upon or subject to the availability of the Federal Production Tax Credit or the Federal Investment Tax Credit, or the availability or receipt or continuation for any period of any other tax treatment or government grant or subsidy.

All project proposals submitted in response to the SCEF RFP offered a flat price for the 20-year term of service under the tariff. All purchase price bids were at or below the \$0.17/kWh pricing cap. Two project proposals offered three different pricing options for the same facility that allowed for different credits to subscribers.

B. Economic Impact

DEEP performed a cost benefit analysis to compare the total expected cost of each SCEF project against its total expected benefits. The annual direct costs for each selected project for its service term were computed as the product of the total annual energy quantity and the forecast of the annual market price per renewable energy certificate (“REC”).

Total expected benefits equate to the sum of the forecasted annual costs for energy and RECs. Forecasted energy costs for each project are assumed to be the total market value of the energy generated by the selected project in each year. These energy costs were calculated as the hourly energy production (MWh) multiplied by the hourly energy price (\$/MWh), summed over the year. Forecasted REC costs are assumed to be the total market value of the RECs generated by the selected project in each year. These REC costs were calculated as the annual energy production (MWh) multiplied by the forecast of the annual market REC price (\$/REC).

Total expected project costs are then compared with the sum of the forecasted costs of energy and RECS to determine the net direct benefit and arrive at a Benefit to Direct Cost Ratio for each selected SCEF project.

Selected SCEF Project	Nominal Value of Direct Cost	Nominal Value of Direct Benefit	Net Direct Benefit	Benefit to Direct Cost Ratio
Shelton	\$8,806,818	\$6,665,821	(\$2,140,997)	0.757
Bloomfield	\$8,519,730	\$6,403,444	(\$2,116,286)	0.752
Riverside	\$11,297,477	\$8,700,217	(\$2,597,259)	0.770
All 3 Projects	\$28,624,024	\$21,769,482	(\$6,854,542)	0.760

The Benefit to Direct Cost Ratios for the selected SCEF projects are less favorable than in-state solar projects recently selected in the Small-Scale Clean Energy RFP issued pursuant to Public Act 15-107, An Act Concerning Affordable and Reliable Energy. Together, the three selected SCEF projects’ average cost is \$0.165/kWh over the 20-year term of the contract in nominal dollars. This is higher

than small grid scale projects selected in DEEP's most recent procurement of Class I renewable generation, which have an average cost of less than \$0.10/kWh. The cost of the SCEF projects, however, are less expensive than residential and commercial behind the meter roof top solar, which DEEP estimates to cost over \$0.20/kWh when the full cost of net metering and ratepayer incentives are considered.

The higher costs under the SCEF pilot program may be attributable to higher acquisition costs and greater financial risk. Under the pilot program, Subscriber Organizations need to attract prospective customers and maintain a subscriber base that meets certain program provisions (i.e., minimum 20 percent subscription of SCEF output by LMI customers; commercial and industrial subscription cannot exceed 60 percent of SCEF output). Moreover, developers must operate their SCEFs in accordance with the EDCs' tariffs. Payments or credits for energy and RECs produced by the SCEF are sent from the EDC to the subscribing customer. That customer then sends payments to the developer. This compares to grid-side projects that receive payments directly from the EDCs under the terms and conditions of a purchase power agreement.

The SCEF projects have additional benefits that are not quantified in DEEP's analysis of the direct costs and benefits. Most importantly, these projects will provide access to solar for customers that currently do not own a home or are otherwise not suited for rooftop solar. These renewable energy projects will provide some economic development in local communities during their development and may alleviate the need for some transmission and distribution investment by supplying power in Connecticut. They also aid in suppressing wholesale energy and capacity prices, especially at times of high electricity demand in the summer when renewable resources displace energy resources with substantially higher operating costs.

C. Pilot Program Subscribership and LMI Minimum Subscription Requirement

Participation in the SCEF pilot program is open to residential, commercial, and industrial customers of the EDCs. Each SCEF is required to have at least ten subscribers located within the same EDC territory. Additionally, the Initial SCEF RFP imposed a subscription cap whereby a given customer cannot have a subscription exceeding 40 percent of the SCEF's estimated annual output.

To promote the policy objective of equitable participation, DEEP designed the pilot program to specifically target residential LMI households. In both iterations of the RFP, bidders were required to include a detailed method to obtain, and maintain for the life of its term, a subscriber base wherein a minimum of 20 percent of the SCEF's estimated annual output is utilized by subscribers that qualify as LMI.

All project proposals submitted in response to the Initial SCEF RFP adequately met the minimum LMI threshold requirement. However, DEEP observed that several proposals appeared to indicate a preference by the bidders to subscribe SCEF output, beyond the 20 percent LMI requirement, to C&I customers.

Offering subscriptions largely to C&I customers is not detrimental to the SCEF pilot program. A single C&I customer could more easily take on 40 percent of a SCEF's output, as compared to hundreds of residential customers. Nonetheless, an intent of the SCEF pilot program is to examine, on a smaller scale, how a program that enables shared access to renewable energy to a broader range of Connecticut's residents – specifically renters and other residents whose homes are not appropriate sites – would operate in the state. In its February 1, 2017 Final Determination, DEEP concluded that such emphasis on C&I subscription would not align with the intent of broadening residential access to renewable energy. Therefore, in the subsequent SCEF RFP, DEEP incorporated a modification whereby no more than 60 percent of the estimated annual output of the SCEF is utilized by C&I customers in the aggregate. For a fully subscribed SCEF, a minimum of 40 percent of its estimated annual output must be subscribed to residential customers, of which 20 percent must specifically be subscribed to residential customers or master-metered multi-unit building account holders who qualify as LMI.

DEEP's review of the nine program proposals submitted in response to the SCEF RFP concluded that all proposals sufficiently met the program provisions for subscribership (i.e., minimum 20 percent subscription of SCEF output by LMI customers; C&I subscription cannot exceed 60 percent of SCEF output).

Under the pilot program, a residential customer would qualify as LMI if the gross annual income of the customer's household is eligible for any federal, state, or local assistance program that limits participation to households whose income is at or below 175 percent of the federal poverty limit, or is at or below 80 percent of the greater of (a) area median income, and (b) state median income, in either case at the time of subscription. Moreover, in broadening access to clean energy to households residing in master-metered multi-unit buildings, DEEP expanded LMI eligibility (for the purpose of meeting the 20 percent LMI minimum subscription requirement) to include any capacity that is subscribed to by the EDC account holder of a master-metered multi-unit building, wherein a tenant would qualify under the above income guidelines.

Ideally, this extension encourages subscription by housing authorities and rental agencies that provide housing to households meeting the LMI criteria but are not directly billed by an EDC. The downside is that any direct financial benefit of a SCEF subscription involving a master-metered multi-unit building would go to the landlord or owner of that building. Any financial benefit would not necessarily extend to the tenants of that building, LMI or not, since the tenants are not the electricity account holders, but pay for their electricity use as part of their rent payments or other payment arrangement. Lastly, such a building is able to qualify toward the 20 percent LMI minimum subscription requirement as long the SO obtains proof that at least one tenant meets the LMI criteria. DEEP is interested in learning in the future to what extent master-metered multi-unit buildings contribute to meeting the 20 percent LMI minimum subscription requirement, and how the SOs qualify such buildings as LMI. As Connecticut moves toward implementing a statewide SCEF program, DEEP recommends further contemplation of whether to continue to include, in some

manner, participation by households that are not EDC account holders, and, if so, how to integrate their participation more meaningfully.

DEEP reflected on the methods presented by the bidders for determining whether an EDC customer or a master-metered multi-unit building meets the LMI criteria. Most of the bidders who responded to either the Initial SCEF RFP or the SCEF RFP expressed plans to collaborate, partner, or consult with one or more municipal groups (such as housing authorities, economic improvement boards, or clean energy committees) and/or entities known to interact with LMI communities (such as Operation Fuel, community service organizations, or other local causes), in order to develop outreach efforts to identify potential subscribers that may meet LMI criteria. Another bidder indicated its intent to target EDC households in nearby census tracts designated as low income using the most recent Housing and Urban Development (“HUD”) data available. Yet another bidder planned to directly collaborate with master-metered multi-unit building owners or agencies that provide housing to households meeting the LMI criteria. DEEP is interested in learning about each SOs’ actual experience in administrating their methods for LMI outreach and qualification. Such information, if timely received, might provide some context and insight for consideration by DEEP to create incentives or other financing mechanisms to encourage participation by low-income customers for the statewide SCEF program.

D. Meaningful Commitment on the Part of Participating Subscribers

DEEP’s evaluation of the project proposals received in response to the Initial SCEF RFP revealed that none of the proposals required a financial investment from subscribers. Rather, each proposal included a minimal one-time subscriber fee which ranged from \$1 or less. Subscriber savings ranged from 1.5 cents/kWh to 3.75 cents/kWh. DEEP concluded that the proposals generally did not require the subscribers to have a meaningful interest or stake in the SCEF, either through upfront costs or monthly subscription fees on participating customers that are not tied to the actual output of the system. DEEP was concerned that none of the submitted project proposals required a significant commitment or contribution by the subscribers for the billing credits they will receive. Shared clean energy customers should be expected to have an interest in the clean energy system, either by purchasing a portion of the clean energy facility through an upfront payment or leasing arrangement tied to a portion of the facility, or making a commitment to purchase the output from the facility over a period of time.

As a result, DEEP eliminated the SO-managed credit and payment structure entirely that was offered in the Initial SCEF RFP. For the subsequent SCEF RFP, DEEP required bidders to adopt the EDC-managed credit and payment structure, which was amended at that time to remove any payment from the EDC to the SO except for the unsubscribed portion of generation, to more closely mirror the residential rooftop solar programs.

A fundamental program design challenge remains, centering on the fact that contracts between projects and the EDCs are paid for by all ratepayers but a credit is allocated only to participating customers. To date, all contracts or tariffs with renewable generation, both grid-connected and behind the meter, have been paid for by all ratepayers. For grid-connected projects, the financial

benefits from those long-term contracts go to all ratepayers. For behind the meter projects, some financial benefits go to all ratepayers, but many of the financial benefits accrue only to participating ratepayers who own or lease rooftop solar systems. In the case of behind the meter generation, host customers receive bill credits for their net generation, but put “skin in the game” either by purchasing the solar system or by leasing through fixed monthly payments. In other words, revenue from the sale of energy to the utility (as well as avoiding the need to purchase grid-delivered energy) provides a return on their investment in solar panels. In addition to this financial commitment, the project is sited on the customer’s home or property. Similarly, with virtual net metering, the host has a financial interest through a purchase or lease, and the project is sited on their property or a property in which they have an interest.

In contrast, proposals under the SCEF pilot program required no meaningful commitment on the part of participating subscribers. None of the proposals received required the purchase or lease of a portion of the system; rather, participating customers simply receive a credit from the EDC that is paid for by all ratepayers and pass a portion of that along to the solar developer.

Allowing SCEF subscribers to receive a bill credit without putting “skin in the game” means that credit is simply added to the price bid by the project proponent, locking all ratepayers into a higher-priced contract than the market otherwise would accommodate. In the absence of meaningful subscriber participation, DEEP could procure a unit of the same size through its grid scale procurements at a lower price for all ratepayers. When community solar is offered to subscribers without requiring any meaningful commitment or lease agreement from the subscriber, the system is functioning the same as a grid scale installation but with an added cost to non-participant ratepayers to pay for administering and delivering credits to subscribers who have not provided any material support to the system. Credits to participating customers raise the cost of the project, and this cost ultimately is borne by other ratepayers. Based on DEEP’s experience with competitive solicitations, small grid-scale projects, similar in size to community solar projects, can be developed in Connecticut more cost-effectively than through the shared solar pilot structure and, in the process, provide the same benefits for all ratepayers, not just subscribers.

E. Commercial Operation and Marketing Materials

To ensure the likelihood that each project proposal will become fully operational, DEEP evaluated the extent of relevant experience a bidder has to successfully develop, finance, construct, operate, and maintain a SCEF and successfully fulfill its responsibilities. To that end, the SCEF RFP required bidders to detail the operational parameters of the energy resource plan, and the operation and maintenance plans of their respective SCEF. Bidders needed to demonstrate that the technology it proposes to use is technically viable. Moreover, bidders had to demonstrate the financial viability of the proposed project, including the ability to fund development costs, the ability to post the required development period security and operating period security, and the ability to acquire the required equipment in the proposed time frame. All of the project proposals submitted in response to the SCEF RFP adequately met these requirements.

The SCEF RFP required bidders to be able to commit to a guaranteed in-service date for their respective project proposals, whereby the SCEF must begin service: (1) after the date of PURA’s final approval of the purchase price approved by DEEP through the RFP process; and (2) no later than July 1, 2020. Moreover, the timing of commercial operation was among the factors DEEP evaluated qualitatively, in order to more quickly implement and learn from the pilot program.

The developers of the selected projects committed to the following commercial operation dates:

- CHIP Fund 5 Thompson SCEF – June 30, 2018;
- CEC Bloomfield SCEF – July 1, 2018; and
- US Solar Shelton SCEF – September 30, 2019.

DEEP notes that the above in-service dates for the CHIP Fund 5 Thompson SCEF and the CEC Bloomfield SCEF fairly coincide with July 1, 2018 filing date of the instant report to the E&T Committee. Pursuant to Conn. Gen. Stat. §16-244x(e), the bidders for the three selected projects are required to submit a status report on their respective SCEFs to the E&T Committee and DEEP no later than one year after selection (which is June 28, 2018), and annually for two years thereafter. Via email dated June 21, 2018, DEEP issued a reminder to each bidder about the required status report submission. The RFP also provides for DEEP to obtain detailed reports from the selected bidders on certain information (e.g., relevant subscriber information, LMI qualifications and subscribership, implementation of terminations fees, etc.). However, the annual filing requirement for such reports do not start for each SCEF until after commercial operation commences.

As of June 29, 2018, DEEP received status reports from CEC and US Solar, but not from CHIP Fund 5. CEC stated that its SCEF project will not be interconnected by July 1, 2018, but expressed confidence that the project will be in-service within 12 months of that date. US Solar reported that it is on track for its initial fall 2019 commercial operating date target. US Solar noted that it expects to begin project engineering and permitting in the third quarter of 2018, and commence site work and subscriber outreach in early 2019.

Each selected SCEF is required to post a development period security, equal to \$20 per kW (AC) of its proposed nameplate capacity, with the associated EDC. If a SCEF is not in-service within twelve months after its guaranteed in-service date, and fails to meet certain additional requirements before the end of that twelve-month period, the SCEF would be in default. A SCEF in default would no longer be eligible for the tariff under the pilot program, and would forfeit the development period security.

F. Generation Technology and Distribution System Impact

Although the SCEF pilot program was open to all Class I renewable energy sources, project proposals submitted in response to the Initial SCEF RFP were limited to two types of generating technology: fuel cell (two project proposals) and solar photovoltaic (“PV”) (seventeen project proposals). With the subsequent SCEF RFP, all nine projects proposals utilized solar PV technology.

Of the nineteen project proposals generated by the Initial SCEF RFP, one fuel cell project and fifteen solar PV projects were sited in Eversource territory, and one fuel cell project and two solar PV projects in UI territory. Of the nine solar PV project proposals received in response to the SCEF RFP, seven were located in Eversource territory and two were located in UI territory.

DEEP's qualitative evaluation of the project proposals included consideration of the positive and negative impacts that a proposed SCEF may have on the distribution system based on the location of the facility. While not a requirement for program participation, inclusion of this factor encourages mindful selection of sites more conducive to enhancing system integrity. To this end, both iterations of the RFP provided prospective bidders access to maps previously developed, at the request of DEEP, by the EDCs for informational purposes. In pertinent part, these maps emphasized locational desirability for substations based on whether the substation was nearing its maximum capacity in each EDC's service territory, with the red substations as the "most desirable", the yellow substations as "desirable", and the green or blue substations as the "least desirable". The RFP cautioned that these indicators do not necessarily mean that the cost or complexity of interconnections, or market pricing will be less costly or complex than other locations.

As noted in the June 28, 2017 Final Determination, DEEP's selection of the CHIP Fund 5 Riverside Thompson project was, to some degree, because of the project's close proximity to a substation deemed "most desirable."

G. Environmental and Land Use Impacts from Siting

A number of DEEP's other recent RFPs, specifically RFPs issued pursuant to Public Act 15-107, have elicited a growing discourse over environmental concerns regarding site optimization for state-procured renewable projects. This led to several RFPs incorporating additional criteria to limit potential impacts to environmental resources, including endangered species and wildlife habitat protection, core forests, water quality and other considerations such as the protection of prime and important farmland.

DEEP's evaluation of project proposals submitted in response to the Initial SCEF RFP indicated that many of those proposals called for clearing wooded land or locating the facility on prime farmland. Therefore, in the subsequent SCEF RFP, DEEP provided new standards for environmental considerations as a threshold requirement and as part of the qualitative evaluation, rather than solely encouraging environmentally-based site optimization as a qualitative factor to be evaluated. Specifically, as a threshold requirement, developers had to attest that the generation site of the SCEF does not impact, in whole or in part, prime farmland, historic preservation property, or core forest. Developers also needed to demonstrate that locating the SCEF at the generation site will not significantly affect any endangered, threatened and special concern species and significant natural communities based on the Natural Diversity Data Base. Qualitatively, the project proposals were ranked more favorably for the positive re-use of sites with limited development opportunities, such as brownfields and landfills.

The nine project proposals submitted in response to the SCEF RFP demonstrated that much more effort was taken by developers to site their proposals in appropriate locations that limited land use impacts. Three projects were located on landfills, one on a vacant municipal property that does not require tree clearing, one on a brownfield and another on a former industrial site. The locations for the remaining three projects were identified as edge forest requiring some clearing, but none are on core forests or farmland. The locations of the three selected projects are as follows:

- CHIP Fund 5 Thompson SCEF – an industrial site that housed a former mill;
- CEC Bloomfield SCEF – vacant municipal property, no tree clearing; and
- US Solar Shelton SCEF – former landfill site.

H. Consumer Protections, Subscription Documents, and Billing Terminology

Pursuant to the SCEF Act, DEEP established Consumer Protection Rules for subscribers and potential subscribers under the SCEF pilot program. The Consumer Protection Rules provide certain terms, disclosures, and other consumer protection provisions applicable to the interactions and transactions by and between an SO or its agent, an EDC customer, and/or a subscriber or prospective subscriber of a SCEF selected to participate in the pilot program. The Consumer Protection Rules, which were appended to the SCEF RFP as Appendix C, may be accessed via DEEP's dedicated webpage for the SCEF pilot program, www.ct.gov/deep/SCEF.

DEEP's qualitative evaluation of the project proposals allowed for consideration of the extent to which a project proposal includes consumer protections beyond those mandated by the Consumer Protection Rules. Of the project proposals submitted in response to the SCEF RFP, DEEP did not identify any bidders that appreciably extended beyond what the Consumer Protection Rules already stipulate. One bidder stated its commitment to adhering to best practice standards to protect consumer privacy and data; however, Section 5 of the Consumer Protection Rules already outlines the restrictions and the limited disclosures regarding a subscriber's or prospective subscriber's energy usage or personally identifiable information. Moreover, each SO is already required to provide its subscriber information privacy policy to its subscribers and prospective subscribers. Another bidder indicated that it would make participation as effortless and streamlined as possible, which relates more to quality of service. Yet another bidder pointed out that its SCEF program will not require credit reports or security deposits, and will limit subscriber participation on a 60-day to 60-basis. However, DEEP views this more as a novel program model approach worthy of implementation under the pilot program for feasibility and potential future applicability, rather than as an enhancement to consumer protections.

The SCEF RFP required each selected bidder to submit its subscriber agreement, subscriber agreement summary form, any marketing materials, and its webpage content for approval by DEEP prior to using such documents with prospective subscribers, for compliance with the Consumer Protection Rules and the SCEP RFP. Since the June 28, 2017 Final Determination, DEEP's primary activity with the pilot program has centered on ensuring that such documents are in compliance with the RFP and the Consumer Protection Rules (Appendix C of the SCEF RFP).

During the course of reviewing the SOs' documents, DEEP viewed some variance in how the three selected bidders separately framed their billing and credit structure under the pilot program. In particular, the Consumer Protection Rules require the subscriber agreement to provide a plain language disclosure of the subscription fee and the credit to be delivered to the subscriber. While the SCEF RFP (and the Consumer Protection Rules, by extension) endeavored to include defined terminology for the transaction components of the billing and credit structure, inconsistent use of certain terms within the three subscriber agreements provided opportunity for further misinterpretation, which may negatively affect the success of the pilot program. After some discussion with the three bidders, DEEP recommended that the SOs use of the following terms and definitions for the SCEF pilot program going forward to the extent these items are referenced in the subscriber agreement, subscriber agreement summary form, marketing materials, and website content:

- *On-bill credit* – the value of the subscribed energy allotment that is credited on the subscriber's EDC bill;
- *On-bill credit rate* – the rate at which the on-bill credit is calculated (e.g., 17¢/kWh);
- *Subscription payment* – the portion of the on-bill credit that the subscriber must pass through to the subscriber organization;
- *Subscription payment rate* – the rate at which the subscription payment is calculated (e.g., 15¢/kWh);
- *Subscriber savings* – the difference between the on-bill credit and the subscription payment; and
- *Subscriber savings rate* – the rate at which the subscriber savings are calculated (e.g., 2¢/kWh).

The use of the standard terms and definitions by all three SOs should improve the subscribers and potential subscribers' understanding of how the pilot program operates, and what their responsibilities are in order to receive subscriber savings. Moreover, consistent use on a program-wide basis eliminates SO-specific terminology, and ensures similar understanding by the personnel of other entities that might be involved at some point (e.g., representatives of the EDCs when discussing electricity bill payments, representatives of the PURA's Consumer Affairs Unit when responding to an inquiry, complaint or dispute about an SO). Accordingly, DEEP recommends continued use of these terms for the forthcoming statewide SCEF program.

DEEP notes that Section 4.b of the Consumer Protection Rules requires the SOs to include an approval designation given by DEEP in any information they use toward marketing or sales activities. However, concurrent with its review of the SOs' documents, DEEP was in the process of developing a specific webpage for the SCEF pilot program. In addition to providing key details about the pilot program, this webpage identifies and gives information about the three projects selected to participate in the program. It also provides hyperlinks to the program-specific webpages created by the SOs and approved by DEEP. Accordingly, in lieu of the approval designation, DEEP has required the SOs to

include the hyperlink to the SCEF pilot program webpage on their respective marketing materials and web content.

To date, DEEP’s review of each SO’s set of documents has not fully concluded due to remaining compliance issues that must be satisfied before active program use. The following table provides the status of each SO’s subscriber-facing documents and web content, as of June 28, 2018:

Items	CHIP Fund 5 Thompson SCEF	Clean Energy Collective Bloomfield SCEF	US Solar Shelton SCEF
Advertising/marketing materials	An introductory marketing letter (for prospective tenants who may be LMI) was submitted; DEEP provided feedback seeking adjustments to meet RFP compliance; DEEP awaits CHIP Fund 5’s response and re-submission	Sales rep badge template, and CEC sales tool (PPT presentation) are compliant as of 6/19/2018; “leave behind” data sheets (residential and commercial versions) are deemed compliant as of 6/19/2018, on the condition that they are amended to incorporate the required non-affiliation statement	US Solar has re-submitted its “CT SCEF Marketing” flyer/handout in response to initial DEEP feedback; DEEP is currently reviewing re-submission for compliance
Website content	A mock-up of a website marketing page was submitted; DEEP provided feedback seeking adjustments to meet RFP compliance; DEEP awaits CHIP Fund 5’s response and re-submission	DEEP awaits CEC’s submission of screenshots of CT-specific webpages	US Solar has re-submitted its website content in response to initial DEEP feedback; DEEP is currently reviewing re-submission for compliance
Subscriber agreement(s)	A draft subscriber agreement was submitted; DEEP provided feedback seeking adjustments to meet RFP compliance; DEEP awaits CHIP Fund 5’s response and re-submission	Subscriber agreements (residential, commercial, and governmental versions) are deemed compliant as of 6/19/2018	US Solar has re-submitted its subscriber agreements in response to initial DEEP feedback; DEEP is currently reviewing re-submission for compliance
Subscriber agreement summary form	A draft summary form was submitted; DEEP provided feedback seeking adjustments to meet RFP compliance; DEEP awaits CHIP Fund 5’s response and re-submission	Summary form is deemed compliant as of 6/19/2018	US Solar has re-submitted its summary form in response to initial DEEP feedback; DEEP is currently reviewing re-submission for compliance

Going forward in the statewide implementation of the SCEF program, DEEP will explore using standardized documents that also provide sufficient flexibility to allow for constructive differences in the SOs’ approaches, subject to approval by DEEP and PURA.

I. Reporting Requirements to DEEP after Commercial Operation Commences

After commercial operation of a selected SCEF commences, each bidder is required to report certain information to DEEP, initially within three months of that date and then annually thereafter:

- Detailed information on all subscribers upon entering a subscriber agreement in the preceding year, including each subscriber’s meter address, customer class, and historic average annual electric use upon entering in the subscriber agreement; date of entry and exit from the subscriber organization (if applicable); subscriber savings¹ received; and subscription method, including but not limited to the payments made for a subscription;
- Household income information upon entering the subscriber agreement, or other form of proof thereof, on all subscribers or a tenant of a master-metered multi-unit building identified as LMI by the SO and how such subscribers were qualified as LMI in the preceding year;
- Detailed information on the termination fees charged or other damages collected from subscribers for terminating the subscriber agreement in the preceding year, including but not limited to the amount charged, the number of subscribers charged, how the fee was collected, whether such subscribers were identified as LMI, the reason for termination of the subscriber agreement, and the rate class of such subscribers;
- All marketing materials used to solicit prospective subscribers in the preceding year, including but not limited to the website used by the SO;
- The number of subscriptions, and kWhs associated with any such subscriptions, that were: (1) transferred to another subscriber, or to another location with the same subscriber; (2) terminated; or (3) downsized in the preceding year; and
- A sworn affidavit that the SO has complied with the LMI subscriber requirements detailed in Section 3.8 of the SCEF RFP for each month in the preceding year.

DEEP looks to perform further evaluation of pilot program subscribership and administration, after one or more of the three selected bidders have commenced operation of their SCEFs and begin to submit reports on their actual pilot program experience. DEEP intends to review these compliance reports to assess the performance of the pilot program to ensure that the SOs appropriately administer their respective SCEF pilot programs and LMI qualification methods in conformance to the RFP and the Consumer Protection Rules, and to gauge achievability of program objectives (i.e., expanding clean energy deployment, increasing LMI access to clean energy, optimizing site selection, supporting economic development, and minimizing electric ratepayers’ costs).

J. Identification and Analysis of the Success of Similar Programs in Other States

States across the nation offer variations of SCEF, or community solar, programs. Every program is labeled something different and has different definitions, but the central objective is to offer a group of customers a value on their electric bill for the generation of an offsite facility for which they subscribe.

¹ The SCEF RFP, at page 33, originally used the term “Credit.” Refer to the above section, *Consumer Protections*, for the current use of the term “Subscriber savings” in place of “Credit.”

Included in Appendix A is a more detailed overview of community solar programs in other states. The majority of the programs are exclusively solar with only a few states that allow other renewable technology. Of the 10 states discussed (see Appendix A), 8 of them offer programs through either net metering or virtual net metering. Maine enacted legislation in 2017 to transition community solar into a program that is separate from net metering. Currently, only Connecticut and North Carolina offer a program that stands alone without net metering. The majority of states offer grants and incentives to subscribing organizations to cover the costs of the facilities and can be in the form of direct payments to the generator or long-term power purchase agreements.

In assessing programs across multiple states, DEEP identified the following key common factors:

- Program size
- Facility size
- LMI requirements
- Number of Participants
- Subscription requirements
- Treatment of excess generation
- Valuation of benefits

Three states base the entire shared solar program size on a percentage of load for the utility. Massachusetts allows up to six percent of the utility's peak load for all net metering, with shared solar authorized under this cap. Similarly, Delaware's program is subject to a net metering cap of five percent of electrical suppliers aggregated customer monthly peak demand. Other states are similar to Connecticut and offer a MW limitation: Maine is authorized for 50 MW, Maryland at 300 MW, North Carolina at 20 MW, New Hampshire at 100MW for all net metering, and Rhode Island at 30 MW. Maryland's program is also a three-year pilot with a 25-year term for the projects.

A shared solar facility can range from 100 kW up to 10 MW in size. Connecticut, New Hampshire Massachusetts, Maryland and North Carolina allow facility between 1 MW and 5 MW. Rhode Island allows up to 10 MW. Vermont allows much smaller facilities sized from 500 kW. Maine also requires 2 MW of the entire program capacity to be reserved for facilities with a net generating capacity less than 100kW. Delaware breaks it down by residential, non-residential and farm customers with limits on each from 25 kW to 2 MW.

LMI subscribers have set asides in Connecticut, Rhode Island and Maryland. Connecticut's pilot requires 20 percent to LMI. Maryland requires 60 MW be set aside for LMI. Rhode Island encourages facilities to include LMI subscribers, but there are no set requirements. State programs that focus on LMI subscribers often allow shorter subscription terms, little or no upfront costs for subscribers, and verify LMI subscribers based on income compared to the area median income for the state or HUD. The Maryland Strategic Energy Investment Fund has set \$3.5 million for shared solar grant incentive program in 2018 to absorb the risk associated with LMI subscriptions. The funding will be allocated

through a competitive process. Maryland offers a grant to developers if they can address two specific issues within the LMI community, namely significant energy savings and shorter contract periods.

Each state permits a different number of subscribers, all requiring a minimum number of subscribers typically with no maximum. Maine has a limit of ten customer metered accounts per generating facility and requires that there be a legally enforceable shared ownership interest in the facility. Some states allow a subscriber to sign up with more than one facility but limits the total subscription value to a percentage of the annual usage, which ranges from 100 to 120 percent of the customer load. All states allow for estimated annual usage for accounts with no history.

In general, all states allow the subscriber to receive a credit for a specific portion of the facility generation. Some states, especially those states that tie the shared solar program into net metering, provide for the subscriber credit at the full retail rate. Other states require the subscriber credit to be a specific \$/kWh and some allow the credit to vary but have set limits if the credit reaches a specific value.

Most states offer direction for excess generation the subscriber receives from the facility. All states require the excess credit to appear on the subscriber's electric bill, but states vary in how that credit is calculated. Vermont is clear that excess generation can be credited to the subscriber for up to 12 months then any unused credits revert to the utility. Maine has a similar policy stating that after 12 months the credits expire and there is no compensation for excess. Some states allow the credit to net out kWh charges, while others require a dollar value or facility cents/kWh value like Connecticut.

IV. CONCLUSION

Designing a successful and cost-effective statewide shared solar program requires a clear means to keep project costs down, minimize impacts on non-participants, and ensure the program meets other policy goals. Therefore, DEEP recommends the following policy components be incorporated into any statewide program, many of which have been incorporated into the Energy Future Act:

- *Competition.* Similar to the pilot program and other clean energy programs in Connecticut, SCEFs should be required to participate in a competitive auction to drive down the price of these resources, which may be tied to the Low and Zero Emissions Renewable Energy Tariff auctions. This will allow these projects to compete alongside similarly sized projects that serve commercial and industrial customers, municipalities, state agencies, and agricultural customers.
- *Eligibility.* To ensure meaningful customer participation, the statewide SCEF program should require that all participating customers (with possible exemptions for LMI customers and small businesses) purchase solar panels or a percentage of the facility output and pay the full cost upfront, or enter into a long-term lease arrangement that requires a fixed payment each month not tied to the actual monthly output of the facility. This fixed payment would contribute to development of the clean energy system and

limit the rate impact on non-participant ratepayers. A lease arrangement could be structured to provide a flat rate over the lease term. This would enable participants to receive the value of owning a PV system (obtaining electric bill credits in return for their support of the grid) without the burden of installation and maintenance. The EDC would pay credits to the customer on a fixed cents/kWh basis for energy the facility produces. These improvements would limit the rate impact on non-participating ratepayers for the credits obtained by subscribers.

- *Exemptions for LMI customers and small businesses.* DEEP recognizes that leasing/ownership requirements would likely result in higher costs and other burdens for participants. Many states intend their shared solar programs to specifically benefit LMI customers who do not have rooftop solar access and cannot take advantage of conventional net metering. Imposing high program participation requirements may work against this accessibility goal. Ensuring high participation rates by LMI customers can be a worthwhile goal in the context of reducing energy burden and meeting other policy objectives. A program or projects specifically targeting LMI customers and/or small business customers could be exempted from the leasing/ownership requirements through the tariff structure.

DEEP looks forward to implementing the statewide program required by the Energy Future Act. DEEP intends to use information, feedback, and lessons learned from its experience with the SCEF pilot program in preparation for the opening of that proceeding by September 1, 2018.

APPENDIX A

State	Program Size	Facility Size	Subscription Requirements / Size	Number of Participants	LMI
Connecticut	6MW	Up to 2MW		≥10 per facility	20% of estimated annual output
Delaware	Subject to statewide net metering cap of 5% of Electric Supplier's aggregated customer monthly peak demand (utilities may increase limit)	Non-residential customers 2 MW - 500kW; municipal and residential customers to not exceed 25kW; farm customers not to exceed 100kW			
Maine	60MW		>25MW	Up to 10 meters can be net metered against a single eligible facility.	
Maryland	193MW statewide	2MW	Not to exceed 200% of subscriber's baseline usage	>1	60MW set aside for LMI grant program http://energy.maryland.gov/residential/Pages/CommunitySolarLMI-PPA.aspx
Massachusetts	All net metering capped at 6% of utility's peak load (3% allocated to government-owned systems, 3% to non-government systems)	<1MW private facility; <10MW public facility		>2	
New Hampshire	All net metering capped at 100 MW	1MW	Subscriber can sign with more than one facility but cannot exceed subscriber's total load	>1	30 MW for LMI; Restricts occupancy of the housing to households with a gross annual income not exceeding 80% of the area median income as defined annually by US HUD; Restricts the monthly rent, including a utility allowance, that may be charged to residents, to an amount that does not exceed 30% of the gross monthly income of a household earning 80% of the area median income as defined annually by HUD. The value of the credits shall be used to provide a direct benefit to tenants of LMI housing.

State	Program Size	Facility Size	Subscription Requirements / Size	Number of Participants	LMI
<i>North Carolina</i>	20MW	5MW	Minimum subscription size of 200 W. Subscription size cap is 100% of the maximum annual peak demand of electricity of each subscriber at the subscriber's premises.	>5	
<i>Rhode Island</i>	30MW	10MW		>3	
<i>Vermont</i>	The cumulative output capacity of net metering systems equals 4% to 15% of the distribution company's peak demand during 1996; or the peak demand during the most recent full calendar year, whichever is greater.	500kW; 2.2MW military			

State	Treatment of Excess Generation	Net Metering	Valuation of Benefits	Link
Connecticut	Subscriber carries dollar value credit on bill for up to one year, EDC pays out any credit after 12 months		Each subscriber's monthly electric bill from the EDC will include an on-bill credit representing the value of the subscribed energy allotment	http://www.ct.gov/deep/cwp/view.asp?a=4405&Q=600224&deepNav_GID=2121
Delaware	Annually subscriber can request payment from Electric Supplier, if less than \$25 can be carried over on bill as credit	Yes	For participants on the same distribution feeder as the Community Energy Facility, full retail rate. For customers not on the same distribution feeder, Standard offer service rate.	https://legis.delaware.gov/ison/BillDetail/GetHtmlDocument?fileAttachmentId=38650
Maine	Carried over as a kWh credit for 12 months expires after 1 year with no compensation		1:1 kWh credit	http://legislature.maine.gov/legis/bills/getPDF.asp?paper=HP1120&item=1&snum=127
Maryland	Electric bill credit only as either kWh or dollar value credit	Yes	An electric company that does not provide Standard Offer Service shall pay a subscriber for kWh of excess generation at the electric company's avoided cost of generation.	http://www.psc.state.md.us/electricity/community-solar-pilot-program/
Massachusetts	Credits appear as a dollar value on bill and never expire	Yes	Credit equal to the excess kilowatt-hours by time of use billing period, if applicable, multiplied by the sum of the distribution company's: (i) default service kilowatt-hour charge in the ISO-NE load zone where the customer is located; (ii) transmission kilowatt-hour charge; and (iii) transition kilowatt-hour charge; provided, however, that this shall not include the demand side management and renewable energy kilowatt-hour charges set forth in sections 19 and 20 of chapter 25.	https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter169
New Hampshire	Payment equal to utilities default service rate on an annual basis	Yes	The customer-generator may elect to be paid or credited by the electric distribution utility for its excess generation at rates that are equal to the utility's avoided costs for energy and capacity to provide default service as determined by the commission consistent with the requirements of the Public Utilities Regulatory Policy Act of 1978.	http://www.gencourt.state.nh.us/rsa/html/XXXIV/362-A/362-A-9.htm
North Carolina	Avoided cost		The offering utility shall credit the subscribers to its community solar energy facility for all subscribed shares of energy generated by the facility at the avoided cost rate.	https://www.ncleg.net/Sessions/2017/Bills/House/PDF/H589v6.pdf
Rhode Island		Yes	Standard offer service kilowatt hour charge for the rate class applicable to the net metering customer, except that for remote public entity and multi-municipality collaborative net-metering systems that submit an application for an interconnection study on or after July 1, 2019 and community remote net-metering systems, the standard offer service kilowatt hour charge shall be net of the renewable energy standard charge or credit.	http://www.ripuc.org/eventsactions/docket/4631-NGrid-CNN-Presentation(1-11-17).pdf

State	Treatment of Excess Generation	Net Metering	Valuation of Benefits	Link
<i>Vermont</i>	Excess credits rolled over to next month; after 1 year, any remaining credit reverts to the utility.	Yes	The adder sum minus the residential rate per kWh charged by the company as of the date it files with the Board a proposed modification to its rate schedules to effect this subdivision (K) or to revise a credit previously instituted under this subdivision (K). The adder sum shall be \$0.20 if the solar net metering system is of 15 kW capacity or less and otherwise shall be \$0.19. The customer receives the credit for 10 years.	http://publicservice.vermont.gov/renewable_energy/net_metering