KEYES, FOX & WIEDMAN LLP

April 7, 2015

VIA Electronic Filing
Hon. Kathleen H. Burgess
Secretary to the Commission
NYS Public Service Commission
Empire State Plaza
Agency Building 3
Albany, New York 12223-1350

Re: Case 15-E-0082 – Proceeding on Motion of the Commission as to the Policies, Requirements and Conditions for Implementing a Community Net Metering Program

Dear Secretary Burgess:

The Interstate Renewable Energy Council, Inc. (IREC) hereby submits for filing Comments on the Staff Straw Proposal for a Community Net Metering Program.

Thank you for your assistance in this matter. Should you have any questions, please contact me at emcconnell@kfwlaw.com or (510) 314-8206.

Sincerely,

/s/ Erica Schroeder McConnell

Erica Schroeder McConnell
KEYES, FOX & WIEDMAN LLP
436 14th Street, Suite 1305
Oakland, CA 94612
Phone: (510) 314-8206
Email: emcconnell@kfwlaw.com

Attorney for: INTERSTATE RENEWABLE ENERGY COUNCIL, INC.

cc: Active parties (via electronic mail)

STATE OF NEW YOR PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission as to the Policies, Requirements and Conditions For Implementing a Community Net Metering Program	CASE 15-E-0082

COMMENTS ON THE STAFF STRAW PROPOSAL FOR A COMMUNITY NET METERING PROGRAM OF THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC.

The Interstate Renewable Energy Council, Inc. (IREC) is pleased to submit these comments on the Straw Proposal (Proposal) for a community net metering program issued by the Department of Public Service Staff (Staff) on February 10, 2015.[1] IREC commends the Public Service Commission (Commission) and Staff for their efforts to initiate the development of a robust community net-metered solar program that will expand consumer access to renewable energy and enable more New Yorkers to benefit from these resources.

IREC is a 501(c)(3) non-profit organization, which has worked for over 30 years to enable greater use of clean energy in a sustainable way by: (1) introducing regulatory policy innovations that empower consumers and support a transition to a sustainable energy future; (2) removing technical constraints to distributed energy resource integration; and (3) developing and coordinating national strategies and policy guidance to provide consistency on these policies, centered on best practices and solid research. The scope of IREC's work includes implementing shared renewable energy (also known as community renewable energy) programs to expand options for consumers that cannot host a renewable energy system on-site.

IREC has participated in workshops, proceedings and rulemakings in over forty states

[1] Case 15-E-0082, *Notice Instituting Proceeding, Soliciting Comments, and Providing for Stakeholder Meeting* (Feb. 10, 2015); *see also* Cases 14-E-0151 & 14-E-0422, *Order Raising the Net Metering Minimum Caps, Requiring Tariff Revisions, Making Other Findings and Establishing Further Procedures* (Net Metering Order) (Dec. 15, 2014).

addressing topics that directly impact the deployment of renewable energy resources, including shared renewable energy programs. Within the past few years, IREC has provided expert guidance on the implementation of shared renewable energy programs in Minnesota, Colorado, California, Washington, DC, and Delaware. IREC has also developed *Model Rules for Shared Renewable Energy Programs* (Attachment A)[2] and assisted the National Renewable Energy Lab (NREL) in developing a guidebook on shared solar.[3] Additionally, we often collaborate with utilities, industry organizations such as the Solar Energy Industries Association (SEIA) and the Solar Electric Power Association (SEPA), nonprofit advocates such as Vote Solar, and other stakeholders to identify and refine the best practices for shared renewables programs. IREC has also created a Shared Solar Program Catalog, wherein we track the development of shared solar programs across the country.[4]

The following four key principles, as outlined and explained in our *Model Rules for Shared Renewable Energy Programs*, guide IREC's approach to shared renewable energy program development:

1. Shared renewable energy programs should expand renewable energy access to a broader group of energy consumers, including those who cannot install renewable energy on their own properties.
2. Participants in a shared renewable energy program should receive tangible economic benefits on their utility bills.

---

[2] *Model Rules for Shared Renewable Energy Programs* (2013), *available at* www.irecusa.org/wp-content/uploads/2013/06/IREC-Model-Rules-for-Shared-Renewable-Energy-Programs-2013.pdf (developed with input from Vote Solar).

[3] A Guide to Community Solar: Utility, Private and Non-Profit Project Development (2010), available at www.nrel.gov/docs/fy11osti/49930.pdf.

[4] Available at http://www.irecusa.org/2014/09/shared-solar-program-catalog-3.

3. Shared renewable energy programs should be flexible enough to account for energy consumers' preferences.
4. And finally, shared renewable energy programs should be additive to and supportive of existing renewable energy programs.

These guiding principles form the basis of IREC's *Model Rules*, and are derived from our experience in helping to develop programs at the utility and state levels across the country, as well as our monitoring of policy and market evolution over the past several years. They also correlate with our understanding of customer preferences and their motivation for subscribing to shared renewables facilities. From discussions with utilities and program managers across the country, we have found that consumers are most keenly interested in greening their energy supply through programs that result in new generation, provide them with tangible economic benefits and result in clean energy facilities located near their communities. However, it is important to note that motivations for subscribing to shared renewables facilities vary considerably, based on customer needs and expectations.[5]

Like many stakeholders in this proceeding, IREC strongly supports the development of programs that expand consumer access to renewable energy. Specifically, shared renewables programs allow customers that cannot or do not want to install renewable energy on-site to participate directly in the renewable energy market and receive the benefits via their utility bills. In addition, these programs open up a new and untapped customer base to renewable energy companies, further strengthening New York's burgeoning market.

With respect to the Proposal, we commend the Staff for outlining a strong initial Proposal

[5] *See, e.g.*, Laurel Passera (IREC), *Location, Location, Location: How Much Does It Matter for Shared Solar Participants?* (Jan. 8, 2014), www.irecusa.org/2014/01/location-location-location-how-much-does-it-matter-for-shared-solar-participants.

that reflects many of the national best practices and provisions outlined in IREC's *Model Rules*. Regarding the specific provisions in the Proposal, we have had the opportunity to review the comments issued by the New York Shared Renewables Coalition (Coalition) and IREC is supportive of the program design tenets outlined in Section II of their comments. IREC notes that the Coalition's comments also rely on and reflect our *Model Rules*.

In addition, in response to Staff's Question 2, IREC strongly supports the inclusion of a low-income component to community net metering. For a potential structure, IREC refers the Commission to our CleanCARE concept. IREC developed and introduced CleanCARE in California as a possible solution to expand access to the benefits of renewable energy to low-income consumers, who are disproportionately burdened by rising and volatile energy costs. Historically these customers have borne a larger share of the environmental and health impacts of traditional generation, as well. CleanCARE would shift the subsidy provided to low-income ratepayers that qualify for the California Alternate Rates for Energy (CARE) program from a direct rate discount to investment in shared renewable energy facilities. Participating CleanCARE customers would receive the same or better bill discounts through bill credits associated with their shares in those facilities as they would have received via the traditional CARE rate discount. In addition to providing low-income customers with bill savings, CleanCARE encourages investment in renewable energy facilities and all of the economic, environmental, public health, and other benefits associated with them.

CleanCARE would provide low-income utility customers with access to the full range of benefits of renewable energy, while also overcoming the barriers commonly encountered among low-income residential customers. In particular, the following barriers often prevent these customers from accessing renewable energy and CleanCARE offers a path to overcome each of

them.

1. Low levels of homeownership. For customers who rent their homes, the landlord who makes the decision regarding whether to purchase or lease the system does not benefit from net-metered bill reductions. Because CleanCARE relies on shared (or community) renewable energy generation, a participant need not worry about not being able to install on-site generation, but the participant would still receive the associated bill credits resulting bill reductions. At the same time, CleanCARE envisions a substantial portion of shared facilities will be located in participants' communities so participants can benefit from having facilities located nearby.
2. Low credit scores that prevent qualifying for a financed system. Because CleanCARE relies on the more effective use of existing low-income ratepayer assistance funds to support customers' participation, customers need not obtain financing independently to participate.
3. Small or nonexistent tax liability preventing full monetization of tax credits. Again, because CleanCARE relies on low-income ratepayer assistance funds to support customers' participation, customers need not leverage residential tax credits. In addition, because CleanCARE relies on third-party provider to develop projects, it would be incumbent on these providers to monetize available tax credits as needed.
4. Lower electric rates, due to state or utility subsidies, that result in lower monthly bill savings, thus removing the economic incentive to invest in energy efficiency and/or on-site renewable energy. Because CleanCARE would shift participating customers onto regular, unsubsidized rates, participants would receive the conservation and efficiency signals sent to all customers via rates, while still reducing their bills via bill

credits resulting from their share of the generation facility.

IREC introduced the CleanCARE concept over a year ago, and more recently has been working with a large number of stakeholders to refine our proposal. IREC has filed the current version of our proposal in California's "Net Metering 2.0" docket[6] and we are attaching the proposal here for the Commission's reference (Attachment B). Although the California Commission has not yet made a determination on the CleanCARE proposal, and although we recognize that the mechanisms, design, and approach will necessarily require adaption in order to be applicable in other states, including New York, we provide it as a starting point for further discussion as the Commission considers this element of the current community net metering IREC notes that the Coalition also supported the CleanCARE concept in Section III.B.5 of their comments.

IREC looks forward to working more closely with the Commission, the Coalition, and other interested stakeholders to explore the ways in which the CleanCARE concept could meet the needs of New York's low-income customers, as well as the development of alternative structures. We note that it may make sense to implement multiple or at least pilot multiple programs to reach the maximum number of low-income customers.

We look forward to providing additional comments on New York's community net metering program going forward and we appreciate the opportunity to participate in this

---

[6] The Net Metering 2.0 or Net Metering Successor Tariff or Contract docket is Rulemaking (R.) 14-07-002. The current CleanCARE proposal is available at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M148/K824/148824274.PDF. It was filed attached to a set of comments, which are available at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M148/K824/148824916.PDF. The California Commission is simultaneously considering CleanCARE in its CARE program docket, Application (A.) 14-11-007. Further detail on both dockets can be accessed here: http://delaps1.cpuc.ca.gov/CPUCProceedingLookup/f?p=401:1:1025727115859:::::.

important effort.

Respectfully submitted this 7th day of April, 2015, at Oakland, California,

/s/ Erica Schroeder McConnell

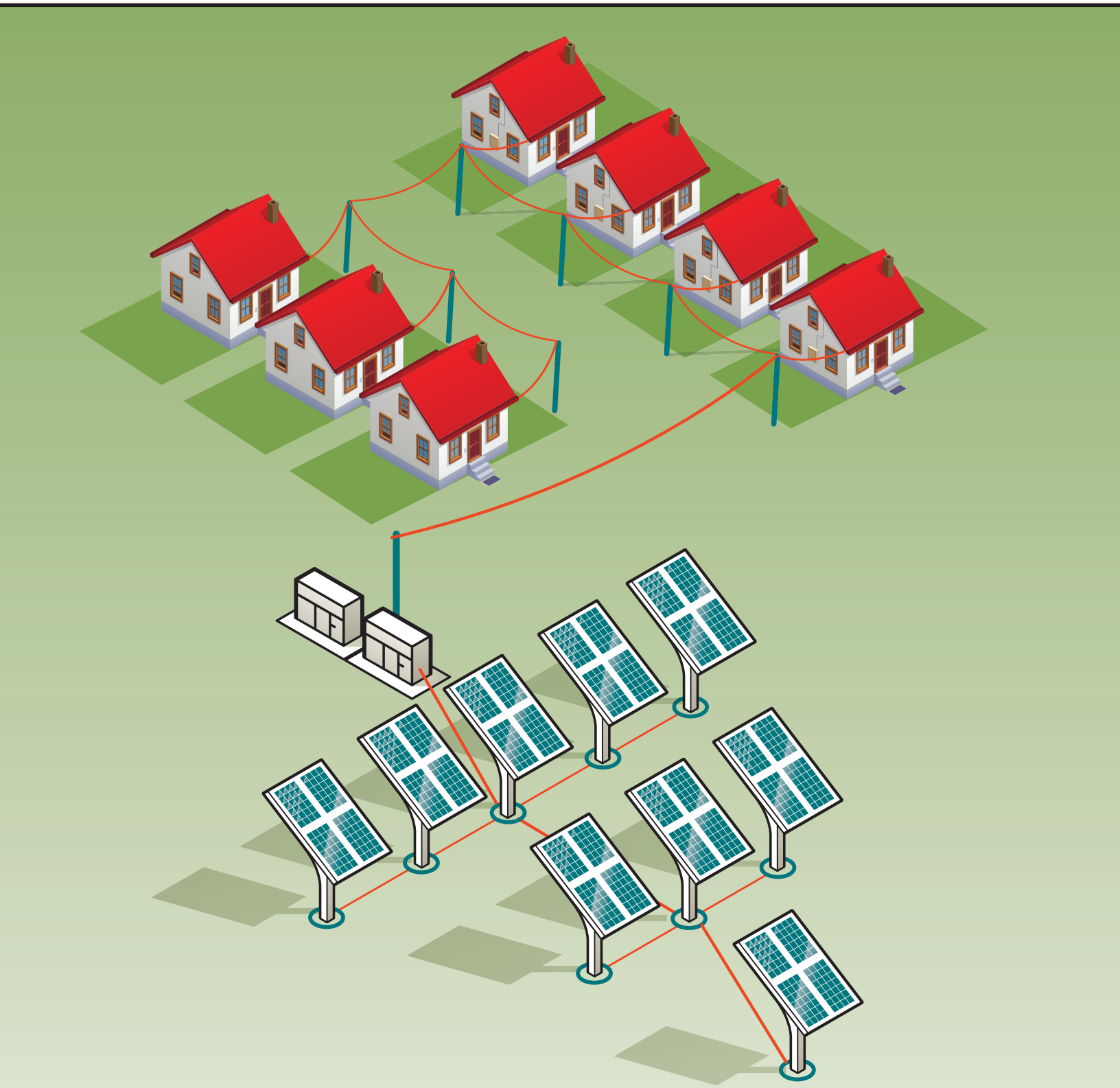
Erica Schroeder McConnell
KEYES, FOX & WIEDMAN LLP
436 14th Street, Suite 1305
Oakland, CA 94612
(510) 314-8206
emcconnell@kfwlaw.com

Attorney for: INTERSTATE RENEWABLE ENERGY COUNCIL, INC.

Sara Baldwin Auck
Regulatory Director
Interstate Renewable Energy Council, Inc.
PO Box 1156
Latham, NY 12110
(801) 651-7177
sarab@irecusa.org

Attachment A:
IREC Model Rules for Shared Renewable Energy Programs

Model Rules for Shared Renewable Energy Programs



IREC Interstate Renewable Energy Council, Inc.

THE Vote Solar INITIATIVE

Model Rules For Shared Renewable Energy Programs

Interstate Renewable Energy Council, Inc.

Table of Contents

IREC Interstate Renewable Energy Council

THE Vote Solar INITIATIVE

Shared renewable energy programs enable multiple customers to share the economic benefits from one renewable energy system via their individual utility bills. Shared renewable energy represents a critical means of expanding access to renewable energy to more Americans.

I. Background

In November 2010, the Interstate Renewable Energy Council, Inc. (IREC) released the original version of our *Community Renewables Model Program Rules*. The intent of the *Model Program Rules* is to assist stakeholders in developing local or statewide, shared renewable energy programs that expand renewable energy access to more consumers. IREC worked closely with The Vote Solar Initiative (Vote Solar) to develop the *Model Program Rules*, taking into account the various approaches in place at that time around the United States, including efforts in Massachusetts, Colorado, California, Washington and Utah. In advance of publication, IREC and Vote Solar vetted the *Model Program Rules* with utilities, industry participants and other stakeholders, and their feedback was used to further refine the *Model Program Rules*.

Since issuing the first version of the *Model Program Rules*, IREC has participated actively in the growing shared renewable energy market, advising interested entities on program development and participating in regulatory proceedings in California, Colorado and Delaware to implement programs. In addition, IREC has continued to collaborate with Vote Solar to ensure that we are effectively advancing a common vision.

These current *Model Rules for Shared Renewable Energy Programs* represent an update to our initial model rules based on policy and market evolution over the past several years. Like the first version of the *Model Program Rules*, this updated version has been vetted with a wide range of stakeholders. As discussed in more detail below, we have moved from using the term "community renewables" to the term "shared renewable energy" or "shared renewables." We believe this new term better reflects the core innovation in these programs, which is enabling multiple consumers to share the benefits of a single renewable energy facility. Regardless of the change in nomenclature, the intent of the *Model Program Rules* remains the same: to assist stakeholders in developing shared renewable energy programs to broaden renewable energy access to more consumers. We believe the additional information and increased level of detail in this updated version of the *Model Program Rules* will help state and local stakeholders create programs that meet their particular needs and interests.

II. The Opportunity Shared Renewable Energy Programs Represent

As renewable energy becomes increasingly cost-competitive with traditional electricity sources, more and more Americans are turning to renewable sources to meet their energy needs. Hundreds of thousands of home and business owners across the United States have invested in renewable energy and are generating their own electricity. However, the majority of residential and commercial energy consumers cannot install renewable energy systems on their own property. This may be because these consumers do not have adequate or appropriate roof area, or they rent their home or business space, or due to a number of other reasons. In fact, a report from the National Renewable Energy Laboratory (NREL) estimated that only about one-quarter of U.S. residential buildings are physically suitable for installing solar on their roofs, a figure that does not even take into account the ownership status of the building.[1] In cases where homeowners and businesses do have a suitable site, they may have other reasons for not wishing to install solar on-site. For example, they may not want contractors installing and

maintaining a system on their roof, or they may be planning to move in the near future and are therefore unprepared to make such a property investment. In the end, for whatever reason, the majority of energy customers are currently unable to invest in renewable energy generation, despite their desire to green their energy supply[2].

Shared renewable energy programs address this issue by allowing a single renewable energy facility to serve multiple, dispersed energy consumers, and enabling these consumers to receive direct benefits on their utility bill from their investment in renewable energy. Shared renewables programs can allow renewable energy developers to tap a market that is currently underserved but potentially quite large. For example, if just five percent of U.S. households were to invest in a five-kilowatt (kW) interest in a shared solar system—the size of a typical residential rooftop solar installation—it would result in over 28 gigawatts (GW) of additional solar capacity,[3] equivalent to the output of over 50 coal-burning power plants[4].

While we refer to shared renewables throughout these *Model Program Rules*, which support any type of renewable energy generation, it is important to note that shared solar programs are currently the most prevalent form of shared renewables programs in the United States. Nonetheless, shared renewables programs that rely on other renewable generation, such as wind, may make sense for certain communities and some already exist today.[5]

Although typically still considered distributed generation, shared renewable energy facilities are often larger than typical customer-sited systems, which can result in lower costs due to economies of scale. The ability to site shared renewable energy facilities in optimal locations instead of being restricted to a particular customer's roof, the opportunity for new financing arrangements, and the potential simplicity of customer participation are other reasons shared renewable energy is gaining popularity.

III. Guiding Principles for Shared Renewable Energy Programs

Four key principles guide IREC's approach with respect to shared renewable energy program development. The first three principles are definitional in nature; it is these characteristics that distinguish shared renewable energy programs from other types of programs. The final principle is a best practice that IREC believes to be important when designing shared renewable energy programs.

First, shared renewable energy programs should expand renewable energy access to a broader group of energy consumers, including those who cannot install renewable energy on their own properties. As described above, most Americans are currently unable to benefit directly from renewable energy generation because they cannot install renewable energy on-site. As a matter of equity between energy consumers this barrier should be removed as it unnecessarily limits participation in generally available renewable energy programs. Moreover, shared renewables programs allow greater energy consumers to participate in renewable energy generation, unlocking a substantial new market for renewable energy developers and thereby strengthening the renewable energy industry.

Second, participants in a shared renewable energy program should receive tangible economic benefits on their utility bills. By providing credits on participating customers' utility bills, shared renewable energy programs offer a clear, intuitive way for customers to save money by choosing renewable energy. Similarly, net energy metering (NEM) has been very

successful in motivating energy consumers to invest in renewable energy because it is a straightforward and simple concept. In addition, consumers participating in NEM programs have been shown to install more energy efficiency measures than nonparticipants, again because they are highly motivated to reduce their energy bills and maximize the efficacy of their on-site renewable energy system.[6] Keeping the benefits of participation in a shared renewables program on customers' bills maintains the linkage between a customer's participation in the program, their reduced energy use, and their lower bill. Even in cases where participants may pay more initially for participation in a shared renewable energy program, programs should be designed such that participants receive a valuable hedge benefit by locking in a rate through their participation in the program, which will save them money as standard electricity rates rise over time.

Third, shared renewable energy programs should be flexible enough to account for energy consumers' preferences. Consumers are more likely to purchase a product that is specifically tailored to suit their personal values and priorities. Therefore, we recommend that shared renewable energy programs be flexible with regard to business models so that developers and utilities can innovate to meet consumer desires. This can include preferences for specific technologies, project locations, or ownership models. For example, in IREC's experience, consumers are highly motivated to participate in shared renewable energy when the generation facilities are located in or nearby their communities. Structuring a program to allow for the realization of these preferences can broaden interest and participation in the program.

Fourth, and finally, shared renewable energy programs should be additive to and supportive of existing renewable energy programs, and not undermine them. Over the previous decades, renewable energy companies have invested considerable resources in building their businesses. This private investment in time and resources has helped expand markets for renewable energy in partnership with utility-run renewable energy programs. The success of both wholesale and retail oriented distributed generation programs has resulted in dramatic reductions in the cost of renewable energy. For this reason, it makes little sense to undermine successful programs, and the businesses based upon these programs, when seeking to expand access to new customer segments. Similarly, shared renewables programs should be designed so that they result in new "steel in the ground" instead of re-purposing existing renewable energy generation. In this way, shared renewable energy programs can promote renewable energy market development as effectively as possible. Shared renewables programs represent, in some cases, another mechanism by which a utility can meet renewable energy goals, for example as dictated in state Renewables Portfolio Standards (RPS), on top of the various existing mechanisms and programs that utilities may already be pursuing. In other cases, a shared renewables program can enable a state or utility to go above and beyond current RPS requirements.

IV. Understanding Shared Renewables Terms and Nomenclature

In this section, we clarify what we mean by "shared renewable energy." In addition, we explain the relationship between shared renewables and three other renewable energy programs: NEM, group purchasing and green tariffs.

A. Shared Renewables Versus Renewable Energy Project Investments

As interest in renewable energy has grown, various approaches have emerged to allow broader groups of consumers to benefit directly from renewable energy generation. IREC divides these approaches into two categories.

Shared renewable energy programs or shared renewables programs—the focus of these *Model Program Rules*—refer to programs that enable multiple customers to share the economic benefits of one renewable energy system via their individual utility bills. Participants purchase an interest in generation from a common renewable energy system, and directly receive the benefits of their participation on their utility bills.

Renewable energy project investments, on the other hand, refer to investments made by individuals in one or more renewable energy projects, similar to any other investments that individuals might make as part of their investment portfolio. The investment could be as direct as a membership in a limited liability company (LLC) that owns and operates a renewable energy system, or it could be via a company such as Mosaic,[7] which offers interested investors an easy platform for supporting specific solar projects and earning attractive returns. The funds invested and the resulting earnings are unrelated to participants' energy bills. Other similar programs, such as RE-volv, [8] have relied on a donation model in which interested participants donate to the construction of a renewable energy system in a community, sometimes receiving a tax deduction or a gift in return.

IREC focuses on shared renewables programs because they provide participants a direct utility bill benefit similar to what they might experience through other on-site renewable energy generation programs that have been extremely popular to date. Setting up these programs can raise thorny regulatory and policy issues so policy guidance on developing shared renewables programs is particularly vital.

B. Relationship of Shared Renewables to Net Energy Metering

Shared renewable energy programs rely on utility bill credits to distribute the benefits of participation in the shared system to the participants. In this way, a shared renewables program looks similar to NEM, which also uses a bill credit mechanism to compensate consumers that have installed renewable energy generation facilities on-site.[9] NEM policies are in place in 43 states, Washington D.C., and four territories.[10] NEM has been one of the most successful policies to motivate energy consumers to invest in renewable energy, especially solar energy, because it is conceptually simple and it allows participants to directly lower their bill in a clearly intuitive way.[11] NEM credits are typically valued at the participant's retail rate, such that a participant receives essentially a one-to-one kilowatt-hour (kWh) offset on their bill for energy generated by that participant's net-metered system. In contrast, the bill credit for a shared renewable energy facility may be valued through a different process than a NEM credit, as discussed in section V.

In some states, NEM has been expanded to allow for meter aggregation, or aggregate net metering (ANM), which permits a single NEM participant to offset their load from multiple meters through NEM credits generated from a single renewable energy system connected to one of the participant's meters. As with traditional NEM, ANM credits are also typically valued at or near the NEM participant's retail rate, although valuation can vary depending on how ANM rules treat

meters on different rates. In some cases, meter aggregation is allowed only for meters on the same or contiguous properties; in other cases, the meters may be further apart or there are no geographical limitations.[12]

In still other states, virtual net metering (VNM) has been implemented to extend NEM to situations where multiple participants receive bill credits from a single net-metered renewable energy facility. Although VNM and ANM are used interchangeably in some states, IREC distinguishes between ANM (one customer, multiple meters) and VNM (multiple customers, multiple meters) for the sake of clarity. Because VNM is nested within a state's NEM paradigm, VNM credits are typically valued at, or at least based off of, participants' retail rate (or rates). The bill credit mechanism in a shared renewables program closely resembles VNM except that it need not have this direct tie to the existing NEM program, including with respect to how bill credits are valued. Nonetheless, in some places, the policies are conflated. In these updated *Model Program Rules*, however, IREC intentionally separates shared renewables from the NEM framework to allow for program design flexibility while retaining intuitive appeal and other benefits of a bill credit mechanism to distribute the benefits of participation in a renewable energy system.

C. Relationship of Shared Renewables to Group Purchasing

Shared renewables programs bear some resemblance to group purchasing programs in that both types of programs allow energy consumers to leverage their combined purchasing power in order to receive a lower price for renewable energy. Group purchasing involves a group of energy consumers joining together to negotiate for better prices for the purchase of renewable energy systems for installation on their sites. For example, some communities have launched "Solarize" programs in which groups of consumers organize a bulk purchase of solar systems in order to receive a lower price.[13] Once the purchase is complete, however, each customer in the group has an individual solar system installed on their own home to serve their own load. By contrast, participants in a shared renewables program leverage their combined purchasing power to support the construction of a single renewable energy facility, whose generation they all share. Both types of programs can expand renewable energy access to more consumers, however shared renewables programs in particular allow consumers to participate even if they cannot install a renewable energy system on their properties.

D. Relationship of Shared Renewables to Green Tariffs

Finally, shared renewables programs are similar in some ways to green tariffs. Electricity suppliers, either vertically integrated utilities or competitive suppliers can offer their customers a green tariff option, also referred to as green pricing or green marketing. Under these programs, energy consumers typically pay a premium for electricity generated from clean power resources, such as solar or wind. The premium covers costs incurred by the electricity supplier from adding green power to its power generation mix.

Like shared renewable energy programs, green tariffs can offer more energy consumers the chance to "green" their energy supply. Unlike shared renewables programs, however, green tariffs may not result in the construction of new renewable energy generation, particularly if they rely on short-term contracts for renewable energy credits (RECs) to "green" the power being provided to participants in the tariff. Moreover, a green tariff may be offered as a more expensive option overlaid on the participant's underlying rate for power from the utility. Under

this arrangement, participants lose an important tangible economic benefit of renewable energy: the ability to lock in the price for electricity as a hedge against future rate increases due to fossil fuel price volatility. Finally, green tariffs have historically not provided the flexibility of most shared renewable energy programs in terms of allowing participants to choose specific project locations, technologies, or ownership models. Experience has shown that energy consumers are keenly interested in greening their energy supply through programs that result in new generation, provide them with tangible economic benefits and result in clean energy facilities located near their communities. For these reasons, as shared renewables programs continue to expand, care must be taken to ensure that green tariff programs do not inadvertently foreclose opportunities for energy consumers to participate in shared renewables programs that would meet consumer preferences for green energy with the characteristics described above. IREC supports the development of green tariff programs to expand consumer access to renewable energy, and we are optimistic that green tariff programs can be developed that meet our guiding principles for shared renewables.

V. Core Components to Consider for Shared Renewable Energy Programs

IREC believes five foundational issues require particular attention with respect to the development of shared renewable energy programs: (1) program administration; (2) the method of allocating the benefits of participation; (3) valuation of the energy produced by the system; (4) shared renewable energy facility size and location; and (5) shared renewable energy facility ownership and its implications for financing.

A. Program Administration

Shared renewable energy programs have many moving parts: program design, marketing and consumer sign-up, facility maintenance, and utility interface and participant changes, among others. All of these components necessitate a formal program structure, which could be administered by a utility, a participant or a third party.

Utility program administration is the predominant model for shared renewable energy programs across the United States. Based on IREC's review of the shared renewable energy programs we were aware of in March 2013, 79 percent, or 30 out of 38 programs, were run by utilities or a utility-sponsored third party. This framework allows an entity with significant experience in administering complex energy programs to administer the details of a shared renewables program, which may have many participants. For example, Tucson Electric Power (TEP), an investor-owned utility in Arizona, administers its shared solar program called Bright Tucson Community Solar Program. The program was launched in March 2011 with an initial goal to develop 1.6 megawatts (MW) of new TEP-owned solar generating capacity over the following three years. To date, the program has been much more successful than originally planned. As of July 2012, the TEP Bright Tucson program included 777 customers, who were subscribed to a total of 4.13 MW in TEP- or third-party-owned solar installations. Such a large program with such rapid success may have been difficult for participants to manage, whereas TEP's experience and administrative infrastructure allowed it to manage the Bright Tucson program effectively.

Even in a smaller program, administrative experience can be an important asset. For example, Colorado Springs Utilities, a municipal utility, allows its customers to lease panels from three community solar garden project developers. The total pilot program size is 2 MW and it focuses

on residential customers and educational institutions as participants. As of October 2012, Springs Utilities had over 300 residential and educational customers participating in its program. As its program matures, Springs Utilities' administrative and customer service experience will continue to be critical.

In some cases, utilities may engage a third party to help to develop and/or administer a shared renewables program. For example, the Clean Energy Collective (CEC) has partnered with numerous utilities and community groups to develop shared solar programs.[14] Typically, under the CEC model, customers own the shared facility and receive bill credits based on their interest in the facility, and CEC handles administration, on-bill crediting, facility construction, operation and maintenance.

Nonetheless, some programs have used a customer-administration model, which have been met with success. Vermont's group billing approach is a prime example. The Vermont program allows for a group of energy consumers located within the same utility service territory to choose to combine meters in order to offset that billing against a single renewable energy facility.[15] In this case, the utility bills and credits all participants in the group individually, and the group is responsible for the other aspects of program design and management. Specifically, in order to participate in group billing, the group must file the following information with the Public Service Board and other entities as required: the customers and meters that are to be included as part of the group; the method for adding and removing meters; information regarding credit allocation to each customer-meter; the contact person responsible for communications; and a dispute resolution process. According to IREC's research, Vermont has over 50 group systems across multiple utility service territories, with fewer than 10 accounts per group. In considering a group billing approach, however, it is important to remember that it may be difficult to administer on a larger scale, with more customers participating.

B. Allocating the Benefits of Participation

Allocating benefits to shared renewable energy program participants—that is, transferring value from the shared renewable energy system to participating energy consumers—is another critical element of developing a successful shared renewable energy program. As in our original *Model Program Rules*, IREC continues to recommend allocating benefits via a monetary bill credit on a participant's monthly bill.

While it may seem simpler to allocate benefits via a direct payment to participants, outside of the utility billing process, direct payments face several challenges. In particular, these payments may result in taxable income, which would reduce the benefit energy consumers receive from investing in greening their energy supply. In addition, payments could raise complicated securities issues. The U.S. Department of Energy (DOE) has a *Guide to Community Shared Solar*, which goes into additional detail about potential securities concerns, and is a good reference on this point.[16]

Because it is fundamentally a billing mechanism, allocating benefits via a bill credit may avoid many of the tax and security law implications and other challenges raised by allocating benefits via payment, which are discussed in more detail below. Moreover, many energy consumers are motivated to offset as much of their energy bill as possible, which has been a major driver behind the success of NEM programs. A shared renewables program can maintain this direct relationship between energy consumers' investments in renewable energy and a reduction in

their utility bills by relying on a bill credit mechanism to allocate the benefits of participation in a shared renewable energy facility.

Bill credits for shared renewables are typically translated into dollars to make the process easier to administer for utilities. By contrast, in most NEM programs, credits for excess generation not consumed on site are reflected as kWh credits on the bill. Under NEM, these kWh credits provide a one-to-one offset for the kWh a participant uses later in a billing period, when their system is not producing energy or when they consume more energy than the system is producing. Although this structure can work well for NEM, where most electricity produced by an on-site system is immediately used on-site, it can be more difficult to administer for a shared renewable energy system, where the generation source is separated from the participants who would like to receive electricity from that system. Providing kWh credits can be particularly difficult to track if a customer is on a time-of-use rate structure as kWh production would have to be tracked and applied to the customer's bills within the time-of-use periods contained in the customer's tariff. This can produce a major administrative burden if credits are allocated by hand. In order to simplify bill credit administration, as well as to more easily allow for appropriate bill credit valuation, IREC recommends a monetary bill credit. As with NEM, IREC recommends perpetual rollover of any excess credit to participants' next utility bill.

C. Valuation of the Energy Produced by the Shared Renewable Energy System

In addition to deciding how to *allocate* the benefits of participation in a shared renewable energy program, it is also critical to decide how to *value* those benefits. Determining the appropriate monetary value to assign to kWh credits can be a complex process. While establishing the value of the generation alone may be relatively easy, understanding the wider costs and benefits of a shared renewable energy system is more difficult. As more programs have struggled with this valuation process, two distinct categories of approaches have emerged, and still others are being proposed.

(1) Embedded cost-based approach. This approach is based on the structure of a utility's electric rate design, including the generation, transmission and possibly the distribution cost components of retail rates, similar to a traditional NEM bill credit. We refer to it as "embedded cost" because it is based on the cost structure embedded in energy consumers' current rates. Programs have typically valued the credit based on the retail rate in effect for each participant versus at the facility location, which offers at least two distinct benefits.[17] First, it maintains the ability of renewable energy to act as a price hedge against future utility rate increases for a particular participant. And second, it allows energy consumers whose retail rates contain demand charge components to realize the grid benefits stemming from their participation in a shared renewables program.

As far as the components of the credit, there appears to be general consensus that bill credits should incorporate the generation cost component of a utility's retail rate, as a shared renewable facility is supplanting utility generation for a participant. The inclusion of transmission and/or distribution cost components of rates in the bill credit has proven more contentious. On the issue of transmission credit, depending on the structure of the program, participants might not utilize the transmission system in order to deliver power from their shared renewable energy facility so stakeholders argue that they should not pay for transmission that they do not use. This argument is particularly strong in situations where a shared renewable energy facility is hosted

on a participant's site or on the same distribution feeder as a participant. In these cases program participants typically consume most or all of the energy before it even reaches the substation. Delaware's shared renewables program rules address this by allowing participants to receive a full retail rate credit if they host or are on the same feeder as the shared renewables facility, and a lower credit if they are on a different feeder.[18]

The distribution cost component is the most controversial component of embedded-cost-based credit valuation and utilities often argue that they do not receive sufficient net benefits from shared renewable energy facilities to cover distribution costs incurred from delivering energy to participants. Therefore, utilities often argue that inclusion of the full distribution cost component in bill credits results in a cost-shift to nonparticipating ratepayers; care must be taken, however, to study this assumption in order to determine if it is accurate. For example, under California's VNM program, credits created by shared renewable energy facilities are valued at a fully bundled retail rate. As a result, participants *do not* pay distribution charges.[19] California's approach appears sensible because California's virtual net-metering program is available only to occupants of multitenant buildings. Thus, California participants will be located within the same building on the same distribution circuit and, as a result, use of the distribution system will be nonexistent or minimal. In contrast, Xcel's Solar*Rewards Community program, developed under Colorado's Community Solar Gardens rules, accounts for a participant's use of the transmission and distribution systems by backing out certain related charges from a participant's "total aggregate retail rate" bill credit. In this way, a participant is primarily credited for generation-related costs collected through base rates or riders.[20] One of the justifications for taking this approach in Xcel's program was that community solar gardens could be located anywhere within Xcel's service territory, as could participants, and therefore they relied on the transmission and distribution systems.

For non-residential energy consumers, developing an embedded-cost-based credit also generally necessitates consideration of how to treat time-of-use rates and non-kWh-based charges, such as demand charges. With respect to demand charges, Colorado's Community Solar Garden rules addressed this issue by integrating such charges into a participant's "total aggregate retail rate," which is required to include "all billed components." The total aggregate retail rate is used to calculate the participant's bill credit when it is multiplied by the participant's share of the community solar garden. For participants on a demand tariff, the total aggregate retail rate is determined by "dividing the total electric charges to be paid by the customer to the investor owned [utility] for the most recent calendar year (including demand charges) by the customers' total electricity consumption for that year."[21] Other options may work as well. For example, a shared solar facility's contribution to coincident or non-coincident peak loads could be calculated and the value of these contributions could be assigned to the facility. This revenue stream could be used to facilitate financing of the project similar to how other renewable energy systems are financed.

(2) Value-based approach. The value-based approach to bill credits is based on the value of shared renewable energy generation, usually to the participants' utility and its ratepayers. This value includes the value of the new generation source to the utility, and also the value of avoided transmission and distribution costs, such as system infrastructure costs and avoided line losses. Although sometimes more difficult to calculate, some states are considering including other components in renewable energy valuation, such as avoided carbon dioxide emissions and associated costs, and improved security and resiliency in the face of natural disasters or acts of terrorism. As with the embedded-cost-based approach, which components

to include and how to value them can be the subject of debate. In the end, the key difference between an embedded-cost approach and a value-based approach is that, under a value-based approach, the bill credit is generally the same for all participants as the credit is no longer based on an individual participant's retail rate which is often based on their customer class or other considerations. For this reason, a value-based bill credit approach can be easier to administer, especially if different customer classes are allowed to participate in a single shared renewable energy facility.

Until recently, Holy Cross Energy (HCE), headquartered in Glenwood Springs, Colorado, was the only utility that had implemented a value-based approach to bill credits for its shared solar program.[22] The CEC partnered with HCE to create this program in 2009. Under this program, participants purchase specific panels in solar arrays being installed within HCE's service territory. In return, the participant receives a bill-credit of $0.11 per kWh for each kWh generated by the panels purchased by the participant. This rate is approximately 30 percent higher than HCE's current retail rates and represents the value HCE believed the arrays bring to HCE's generation portfolio, including the purchase of Renewable Energy Credits (RECs). Automated on-bill credits are achieved through CEC's proprietary RemoteMeter technology. Colorado Springs Utilities recently joined HCE in offering a value-based credit of $0.09 per kWh along with an upfront REC payment per kW of capacity for the value of RECs received over the life of the solar array. Springs Utilities uses the RECs to meet its renewable energy standard. On-bill credits are provided through proprietary metering technologies that integrate with the utility's billing software that were developed separately by developers participating in the program such as SunShare[23] and CEC.

While still relatively rare, value-based approaches to determining bill credits represent an intriguing means of arriving at a bill credit pricing mechanism that moves away from utility embedded costs drawn from retail rates and towards approaches that rely more on the value of the facilities to the utility and its ratepayers. Since HCE's pioneering in this area, CEC has implemented a similar model with San Miguel Power Association[24] and Poudre Valley Rural Electric Association.[25] In addition, the concept of value-based rates for renewable energy is being considered outside of shared renewable energy programs and may have implications for how NEM programs are developed as well. For example, Austin Energy, in partnership with Clean Power Research, has developed a new Value of Solar Tariff (VOST) tariff to replace its NEM tariff, which is based on a value-of-solar rate instead of traditional retail-rate-based NEM.[26] The development of value of solar tariffs needs to be handled carefully to ensure that projects supported by the tariff continue to be able to clearly communicate the investment case to participants and financial institutions involved in financing the project.

(3) Other Valuation Approaches. As the number of shared renewable energy programs grows, utilities and other stakeholders have begun to develop new ways to provide tangible economic benefits to participants on their electricity bills. For example, stakeholders in California are developing a shared renewables offering that is based off of a green tariff framework, but permits participants to lock in a specific rate for renewable energy from shared facilities that meets up to 100 percent of their electricity needs.[27] Accordingly, although the customer may end up paying a modest premium for renewable energy today, locking in the energy rate provides a hedge benefit to a participant over time. In addition under the valuation methodologies being explored, the utility may also levy other program costs on the participant's bill, such as the costs of integration or delivery. The utility may also provide credit for any benefits the new renewable generation may provide, for example by exempting the participant from a renewable energy

standard compliance charge, or through a "value of solar credit" or a credit reflecting a particular facility's locational benefits. IREC continues to participate in efforts to address the issue of valuation.

In our original *Model Program Rules*, IREC recommended an embedded cost-based approach, and specifically one rooted in the retail rate in effect for each participant. We stated that valuing the kWh credit at the retail rate in effect for the participant maintains the ability of the project to act as a price hedge against future utility rate increases. In addition, our original *Model Program Rules* took a nuanced approach to compensating utilities for a project's impact on the distribution system by specifying that participants on the same distribution circuit as the shared renewable energy facility would have their kWh credits valued at their full retail rate. Finally, the original *Model Program Rules* also allowed for a stakeholder process to determine an appropriate level of compensation to the utility for delivery of the electricity to participants not on the same feeder as the facility—via a "reasonable charge"—once a number of factors have been taken into account. Colorado's community solar gardens program incorporates a similar "reasonable charge, as determined by the Commission" to cover the utility's costs of delivering electricity to participants' premises, integrating the solar generation with the utility's system, and administering the program.[28]

IREC continues to believe that the embedded-cost based approach may work for some programs. However, we also believe that a value-based approach or other emerging approaches may be solid options for other programs. In this updated *Model Program Rules*, IREC does not recommend one approach over another. Instead, we provide model language for the embedded-cost based and value-based types of bill credit approaches, which are the two most evolved approaches to date, and leave it to individual programs to evaluate their particular situation and to select the approach that works best for them. For the value-based approach, IREC recommends a process by which the appropriate regulatory authority determines the appropriate bill credit value by considering the costs as well as the benefits of shared renewable energy, including but not limited to avoided fuel expenses, avoid line losses, and capacity benefits.[29]

We encourage those designing a shared renewables program to keep in mind the trade-off between in-depth analysis and getting a program off the ground. It may make sense to identify a proxy value for the shared renewable energy generation that can be applied while a longer-term cost-benefit study is undertaken.

For any valuation approach, it is also important to consider who owns and receives the value for any RECs generated. RECs represent the renewable or "green" attributes of one megawatt-hour (MWh) generated from an eligible renewable energy resource, and are typically used by utilities in order to comply with RPS requirements. Some states also have Solar RECs or SRECs, which are specific to energy generated from eligible solar facilities. It is important to specify who owns the RECs from a shared renewable energy facility, in particular because RECs may carry a dollar value that, in some states, could significantly improve a project's bottom line for participants. In IREC's *Model Program Rules*, ownership of the RECs stays with the participants unless otherwise accounted for under separate contracts.

A final consideration related to valuation of shared renewable energy is how to treat net excess generation, in other words, a scenario in which a participant's bill credit from a shared renewable facility exceeds the charges on their electric bill in a given billing period. IREC recommends that credits for net excess generation be rolled over to the participant's next bill.

This is the simplest approach and helps address possible issues concerning jurisdiction of the Federal Energy Regulatory Commission over wholesale power sales.

D. Shared Renewable Energy Facility Size and Location

In our original *Model Program Rules*, IREC specified a renewable system size cap of two MW. This size cap was chosen because a two-MW system maintains economies of scale both in the installed cost of the system and in the participation/marketing costs for a business engaged in developing shared renewable energy systems, and still allows for relatively low-cost interconnection on most utility distribution systems.[30] In addition, smaller facilities are more likely to be able to take advantage of locations closer to load, such as rooftops or brownfields, which can result in both grid and environmental benefits.[31] IREC continues to believe that a two-MW cap can make sense for some programs. In these revised *Model Program Rules*, however, we omit a facility size recommendation because we have observed that in some cases local stakeholders wish to enable larger installations. Larger installations may be subject to greater review under existing state interconnection standards and, depending on their location, may result in fewer grid and environmental benefits than smaller systems located closer to load. Nonetheless, they may be desirable to a particular community for other reasons, for example because participants wish to offset a combined load of larger than two MW, or because a community has a large plot of land that can host a larger system, or because participants are seeking to achieve the lowest cost possible. At this point, IREC believes it is best for stakeholders to have flexibility in developing shared renewable energy programs, with systems sized to meet their particular needs or preferences

Another important consideration with respect to system size is whether to require that a shared renewable energy facility be hosted at a site with on-site load, beyond just parasitic load, or whether these facilities can be stand-alone facilities. In order to allow for maximum flexibility, IREC specifically allows for both circumstances in our *Model Program Rules*.

E. Shared Renewable Energy Facility Ownership and Financing Implications

Shared renewable energy facilities can be owned by participants directly, by the utility or by a third party, such as a renewable energy developer. The type of ownership structure affects what types of local, state and federal funding and incentives are available based on factors such the owner's credit rating and tax appetite. In order to maximize the availability of funding and to ensure available incentives are used as efficiently as possible, IREC's *Model Program Rules* support flexibility in facility ownership to allow for direct ownership, third-party ownership, and utility ownership of shared renewable energy systems.

An important aspect of allowing utility ownership is a requirement that all system purchase costs, operation and maintenance costs, necessary investment returns, and other costs related to a utility-owned system must be recovered from participants enrolled in a utility program. This requirement is important to maintaining a level playing field between utility offerings and offerings of other parties by ensuring that all costs incurred by a utility to operate a shared renewable energy system are recovered from program participants the same as occurs with other competitive providers, and not from non-participating ratepayers.

In addition, it is important to recognize that third-party ownership of a renewable energy system can be critical to tapping into funders who are able to fully utilize available federal tax credits.

The efficient utilization of federal tax credits can result in a reduction in the cost of renewable energy by almost 50 percent.[32] Recognizing the important role third-party ownership can play in increasing access to renewable energy, at least 22 states, Washington, D.C. and Puerto Rico explicitly authorize or at least allow for third-party ownership of renewable energy generation facilities.[33] In addition, legislation enacting VNM or shared renewable energy programs in Colorado, Massachusetts and Delaware has similarly explicitly enabled third-party ownership of shared renewable energy systems.[34]

F. Additional Program Considerations

Beyond the five core components discussed above, there are several additional program considerations that inform provisions in our *Model Program Rules*, including the number of program participants, the portability and transferability of a subscription, and participation of low-income energy consumers.

1. Number of Program Participants

Regarding the minimum number of participants, IREC considered conflicting program impacts raised by stakeholders. On one hand, if a program requires too many participants, gathering up the minimum number of participants can make participation by smaller systems difficult. On the other hand, if a program requires just one participant, then the "shared" aspect of a shared renewables program is taken out of the picture, which is a key motivator for some stakeholders. After considering these two concerns, IREC recommends a minimum of two participants in a shared renewable energy system. This requirement will allow duplex owners, small apartment buildings, and small commercial establishments to participate. According to IREC's research, existing programs have taken varying approaches to this issue. Colorado's Solar Gardens Act rules stipulate that a shared system must have a minimum of 10 participants. Vermont and California, on the other hand, require a minimum of two participants.

2. Portability and Transferability of Participation

Inevitably participants may need to modify or discontinue their participation in a shared renewable energy facility, for example because their energy consumption has changed or they have moved. It is important for shared renewables programs to consider how to treat such changes. In particular, it is critical to determine whether or not to allow participants to bring their subscriptions in a shared renewable energy facility with them if they move within a program's territory ("portability"), and whether or not to allow participants to transfer their subscriptions to another energy consumer if they move outside of a program's territory ("transferability"). In our *Model Program Rules*, IREC recommends as much flexibility as possible in this regard, allowing for both portability and transferability of subscriptions. At the same time, we recognize that portability and transferability pose some level of administrative burden. For example, in some instances it may be administratively much easier to require a participant in a program to relinquish their interest in a shared renewables facility rather than allow them to directly transfer that interest to another qualified customer if they move outside of the utility service territory where the facility is located. Given that only half of Americans stay in a residence for longer than 10 years,[35] and that renters, younger and more urban households are likely to move even more frequently, it is essential to consider and specify how these situations will be treated with respect to program participation, regardless of the ultimate approach taken.

3. Low-Income Energy Consumer Participation

There has been increasing attention paid to including low-income households in shared renewable energy programs, and in renewable energy initiatives in general. For example, Colorado included low-income participation as a priority in their Solar Gardens program.[36] The Colorado Utilities Commission's rules for the program require utilities to reserve at least five percent of their renewable energy purchases from new community solar gardens for eligible low-income participants either through dedicated low-income solar gardens or as low-income set asides within other solar gardens, to the extent there is demand.[37] In implementing the program, the Public Service Company of Colorado (PSCo) requires solar gardens to provide an explicit plan for achieving this five-percent target.[38] It is not clear yet how successful this method of promoting low-income participation in shared renewable energy will be. Renewable energy and low-income advocates are continuing to brainstorm ways to make renewable energy available to low-income communities, which have traditionally been difficult to reach with existing programs. Delta-Montrose Electric Association in Colorado has sought to increase participation among low-income coop members by allowing for a solar lease with as little as $10 upfront. At this price point, the customer is able to lease 2.67 watts of capacity in the DMEA community solar array. While such a framework may raise administrative costs, it represents an innovative way to encourage participation among low-income households in shared solar by lowering the barrier upfront costs can present.

There are a number of challenges to facilitating low-income participation in renewable energy, including both on-site and shared renewables programs. To begin with, the long-term return on investment, which can be the selling point for these programs for higher-income energy consumers, is not a motivator for low-income individuals and families, who typically need a positive cash flow on day one. In other words, these opportunities present poor front-end economics that make them unappealing to low-income energy consumers. In addition, the current economic recession and the constrained lending environment makes loans even more difficult to obtain for low-income energy consumers, who may already be struggling with lack of capital and low credit ratings. Beyond the economics, renewable energy programs have not historically been marketed well to low-income individuals and families, who may benefit from multilingual and multicultural marketing to explain the value of such programs to them.

At the same time, there are a number of factors specific to low-income energy consumers that may motivate them to participate in renewable energy programs, including in particular shared renewables programs. For example, low-income individuals and families that have high energy costs will see a proportionately greater economic benefit to reducing those costs with renewable energy generation. There are also strong fairness and justice reasons for encouraging low-income participation in renewable energy: it should not just be a resource for middle- and high-income communities.

Likewise, from an environmental justice perspective, low-income communities are often the sites for polluting traditional power plants and as a result they face disproportionate health impacts from pollution generated by these facilities. Shared renewable energy offers one potential way to turn this trend into a positive development opportunity for low-income communities, by siting shared renewable energy projects in these communities. These projects can create high quality jobs for low-income families in the rapidly growing clean energy sector. For example, the California Environmental Justice Alliance has called for shared renewable energy programs to

include a requirement to site a percentage of shared renewable generation in "disadvantaged communities."

Ultimately, encouraging participation by low-income energy consumers or siting guidelines requires creative thinking about program design. However we are actively considering how to encourage participation in shared solar by low-income energy consumers and we hope to be able to offer more information on this front going forward. To lower the barrier to entry to shared solar programs, we have lowered the minimum subscription size from one kW to one panel in order to lower the initial cost of participation in a shared solar program.

VI. Shared Renewables in States with Restructured Energy Markets

Shared renewable energy may face unique conditions in restructured states, where competitive supply of electricity has been introduced.[39] While retail suppliers in these states are largely unregulated, the design of retail choice markets and the interaction among the relevant players inherently presents certain opportunities and challenges that do not exist in vertically integrated states. Ultimately, retail choice itself opens up possibilities for shared renewable facilities without necessarily requiring additional policy changes, though certain policy changes can help facilitate greater consumer adoption.

Offering energy consumers renewable energy options, including shared renewables, may give some suppliers a marketing advantage in attracting customers. Indeed, some suppliers already offer shared renewables in restructured states. For example, in Massachusetts, retail suppliers that also operate as solar developers are able to facilitate participation among their customers in shared renewable energy facilities and then allocate the resulting bill credits under Massachusetts' VNM rules. The participants pay the retail supplier as they would under their regular tariff.

One challenge to implementing shared renewable energy in restructured states is that it may complicate the billing process. In retail choice states, billing requires an exchange of data between the supplier and the utility and accurate billing requires that both parties have a common understanding of what each piece of customer usage data represents. The potential for miscommunication exists for traditional customer-sited facilities, but is likely be magnified in a more complicated shared renewables arrangement. While the general parameters of the billing process are determined by state law, the responsibility for accomplishing reconciliation rests with utilities and suppliers, and in some states, the reconciliation process may differ among utilities. The provision of bill credits to retail supply customers, including to participants in a shared renewable energy facility, must be harmonized with the billing protocols in a particular state. If the utility handles this crediting and reconciliation, and bears the associated administrative burden, it is more likely that a retail supplier can bear the other costs of administering a shared renewable energy facility. Shared renewable energy becomes much more difficult, if not impossible, if retail suppliers are required to manage bill credit reconciliation because the administrative burden could be substantial, especially if participants include customers of more than one utility. On the other hand, the utility has the advantage of having a sophisticated billing system that is typically already calibrated to deal with the necessary state-mandated reconciliation and crediting processes. Moreover, the utility will likely recover any costs associated with revising or updating its billing system across a much broader base than a retail supplier.

A further complication arises when customers that participate, or wish to participate, in a shared renewables facility are served by different retail suppliers. In these circumstances, utility responsibility for the reconciliation process becomes even more critical, in order to relieve retail suppliers of the administrative burden as well as to alleviate the difficulty of a retail supplier coordinating in this way with a direct competitor. This complication is likely to be an issue only where a shared renewables facility is not being sponsored by a retail supplier, for example, where state law allows some other type of intermediary to offer shared subscriptions to a facility. Presumably, any programs offered by retail suppliers would avoid this possibility by requiring participants to be, or become, full customers of the supplier. Perhaps due to this competitive issue, IREC is not aware of such a structure being used to date.

Another important consideration is that retail suppliers are typically not required by law to offer any particular programs.[40] Therefore, if a retail choice customer wanted to participate in a shared renewable energy facility, but that customer's supplier does not provide such an option, the customer would need to break its contract to find a supplier that would offer it. Because of the time involved in setting up a retail choice contract, and penalties that the customer would incur in breaking it, there is little incentive to switch suppliers for this reason alone. It is possible that a consumer could elect to wait until an existing supply contract expires to pursue participation in a shared renewables program; however, availability could be limited and time sensitive so there is no guarantee that an attractive offer would exist when the customer's existing contract expired. The negative implications of switching could be mitigated in various ways by suppliers (e.g., offering to pay customer contract penalties as a customer recruitment tool) or through a regulatory regime that promotes flexible enrollment procedures.

Finally, it is important to note that the implications of restructured markets for the development of shared renewables programs are likely to be limited because the majority of retail choice load belongs to larger commercial and industrial customers. By contrast, many shared renewable energy programs target smaller commercial and residential customers, who, in many states, usually opt to stay with their utility service rather than rely on competitive suppliers. Moreover, in the wholesale market, these smaller customers' loads are aggregated based on the customer groups' load profiles and auctioned off through MW blocks. Therefore, retail suppliers typically serve and bill these customers under large portfolios and not individually. As a result, these small customers would need to be extracted from the portfolio and managed manually in order to participate in a shared renewable energy program. Such individual management poses a significant burden on retail suppliers and a thus represents a barrier to smaller customers' participation in shared renewables.

As comfort with the concept of shared solar continues to increase, we may see more interest in developing such programs in states with restructured energy markets. Likewise, as consumers become more aware of their energy options, we may see them leverage their market power and drive retail suppliers to offer more renewable energy options, including shared renewables. At this time, we have not modified our model rules to explicitly address shared renewables programs in restructured states, but we believe that the model still may serve as a useful starting point for such programs, as the same considerations are relevant. IREC believes there is substantial potential for shared renewable energy programs in restructured states, and we plan to continue to monitor interest in and development of programs, and to analyze opportunities and barriers particular to these markets.

Model Rules For Shared Renewable Energy Programs

This section contains model rules for shared renewables programs, which are based on IREC's experience monitoring and assisting in the development of shared renewables programs around the United States. They are intended to serve as a guide for renewable energy stakeholders to consider along with their community's particular interests, constraints and priorities.

In addition to a few minor linguistic and stylistic changes, they are updated as follows:

- The term "Shared Renewable Energy Facility" replaces the term "Community Energy Generating Facility."
- The term "Participant" replaces "Subscriber."
- The term "Bill Credit" is defined and replaces the term "Net Metering Credits."
- The two-MW size limit on Shared Renewable Energy Facilities is removed.
- A Subscription minimum of one panel replaces a minimum of one kilowatt.
- In addition to the embedded cost-based valuation approach to bill credit valuation in our original model rules, a value-based approach is also included as a second option. Program developers can choose between the two options depending on their particular circumstances.

I. Definitions

As used within these rules, unless the context otherwise requires:

a. "**Bill Credit**" means the monetary value of the kilowatt-hours (kWh) generated by the Shared Renewable Energy Facility allocated to a Participant to offset that Participant's electricity bill.

b. "**Biomass**" means a power source that is comprised of, but not limited to, combustible residues or gases from forest products manufacturing; waste, byproducts, or products from agricultural and orchard crops; waste or co products from livestock and poultry operations; waste or byproducts from food processing, urban wood waste, municipal liquid waste treatment operations, and landfill gas.[41]

c. **"Shared Renewable Energy Facility"** means Renewable Energy Generation that is located in or near the service territory of an Electricity Provider where the electricity generated by the facility is credited to the Participants to the facility. A Shared Renewable Energy Facility may be located either as a stand-alone facility, called herein a stand-alone Shared Renewable Energy Facility, or behind the meter of a participating Participant, called herein a hosted Shared Renewable Energy Facility. A Shared Renewable Energy Facility must have at least two Participants.

d. **"Electricity Provider"** means the entity providing electricity service to Participants.

e. **"Locational Benefits"** mean the benefits accruing to the Electricity Provider due to the location of the Shared Renewable Energy Facility on the distribution grid. Locational Benefits include such benefits as avoided transmission and

distribution system upgrades, reduced transmission and distribution level line losses, and ancillary services.

f. **"Renewable Energy Credit"** means a tradable instrument that includes all renewable and environmental attributes associated with the production of electricity from a Shared Renewable Energy Facility.

g. **"Renewable Energy Generation"** means an electrical energy generation system that uses one or more of the following fuels or energy sources: Biomass, solar energy, geothermal energy, wind energy, ocean energy, hydroelectric power, or hydrogen produced from any of these resources.

h. **"Participant"** means a retail customer of a utility who owns a Subscription and who has identified one or more individual meters or accounts to which the Subscription shall be attributed. Such individual meters or accounts shall be within the same Electricity Provider's distribution service territory as the Shared Renewable Energy Facility.

i. **"Participant Organization"** means an organization whose purpose is to beneficially own and operate a Shared Renewable Energy Facility for the Participants of the Shared Renewable Energy Facility. A Participant Organization may be any for-profit or non-profit entity permitted by [state] law. The Shared Renewable Energy Facility may also be built, owned, and operated by a third party under contract with the Participant Organization.

j. **"Subscription"** means an interest in a Shared Renewable Energy Facility. Each Subscription shall be sized to represent at least one panel in the Shared Renewable Energy Facility's generating capacity; provided, however, that the Subscription is sized to produce no more than 120% of the Participant's average annual electrical consumption. For Participants participating in meter aggregation, 120% of the Participant's aggregate electrical consumption may be based on the individual meters or accounts that the Participant wishes to aggregate pursuant to these rules. In sizing the Subscription, a deduction shall be made for the amount of any existing renewable energy generation at the Participant's premises or any Subscriptions owned by the Participant in other Shared Renewable Energy Facilities.

k. **"Total Aggregate Retail Rate"** means the total retail rate that would be charged to a Participant if all electric rate components of the Participant's electric bill, including any riders or other additional tariffs, except for minimum monthly charges, such as meter reading fees or customer charges, were expressed as per kWh charges.

II. General Provisions

a. Subscriptions in a Shared Renewable Energy Facility may be transferred or assigned to a Participant Organization or to any person or entity that qualifies to be a Participant under these rules.

b. New Participants may be added at the beginning of each billing cycle. The owner of a Shared Renewable Energy Facility or its designated agent shall inform the Electricity Provider of the following information concerning the Participants in the Shared Renewable Energy Facility on no more than a monthly basis: (1) a list of

individual Participants by name, address, account number or meter number; (2) the proportional interest of each Participant in the Shared Renewable Energy Facility; and (3) for Participants who participate in meter aggregation, the rank order for the additional meters or accounts to which Bill Credits are to be applied.

c. A Participant may change the individual meters or accounts to which the Shared Renewable Energy Facility's electricity generation shall be attributed for that Participant no more than once quarterly, so long as the individual meters or accounts are eligible to participate.

d. An Electricity Provider may require that Participants participating in a Shared Renewable Energy Facility have their meters read on the same billing cycle.

e. If the full electrical output of a stand-alone Shared Renewable Energy Facility or the excess generation from a hosted Shared Renewable Energy Facility is not fully allocated to Participants, the Electricity Provider shall purchase the unsubscribed energy at a kWh rate that reflects the full value of the generation. Such rate shall include the avoided cost of the energy, including any Locational Benefits of the Shared Renewable Energy Facility.

f. If a Participant ceases to be a customer within the distribution service territory within which the Shared Renewable Energy Facility is located, the Participant must transfer or assign their Subscription back to their Participant Organization or to any person or entity that qualifies to be a Participant under these rules.

g. If the Participant ceases to be a customer of the Electricity Provider or switches Electricity Providers, the Electricity Provider is not required to provide compensation to the Participant for any unused Bill Credits.

h. A Shared Renewable Energy Facility shall be deemed to be located on the premises of each Participant for the purpose of determining eligibility for state and local incentives.

i. Neither the owners of, nor the Participants to, a Shared Renewable Energy Facility shall be considered public utilities subject to regulation by the [responsible agency having regulatory oversight] solely as a result of their interest in the Shared Renewable Energy Facility.

j. Prices paid for Subscriptions in a Shared Renewable Energy Facility shall not be subject to regulation by the [responsible agency having regulatory oversight].

k. A Participant owns the Renewable Energy Credits (RECs) associated with the electricity allocated to the Participant's Subscription, unless such RECs were explicitly contracted for through a transaction independent of any interconnection tariff or program contract. For a Shared Renewable Energy Facility located behind the meter of a participating Participant, the host Participant owns the RECs associated with the electricity consumed on-site, unless the RECs were explicitly contracted for through a separate transaction independent of any Shared Renewable Energy or interconnection tariff or contract.

l. The dispute resolution procedures available to parties in the Electricity Provider's interconnection tariff shall be available for the purposes of resolving disputes between an Electricity Provider and Participants or their designated representative for disputes involving the Electricity Provider's allocation of Bill

Credits to the Participant's electricity bill consistent with the allocations provided pursuant to Rule II.b. The Electricity Provider shall not be responsible for resolving disputes related to the agreements between a Participant, the owner of a Shared Renewable Energy Facility, and/or a Participant Organization or any other party. This provision shall in no way limit any other rights the Participant may have related to an Electricity Provider's provision of electric service or other matters as provided by, but not limited to, tariff, decision of [responsible regulatory body or agency], or statute.

III. Bill Credit Provisions

a. An Electricity Provider shall not limit the cumulative, aggregate generating capacity of Shared Renewable Energy Facilities.

b. For a Shared Renewable Energy Facility, the total amount of electricity expressed in kWh available for allocation to Participants, and the total amount of RECs generated by the Shared Renewable Energy Facility and allocated to Participants, shall be determined by a production meter paid for by the owner(s) of the Shared Renewable Energy Facility. It shall be the Electricity Provider's responsibility to read the production meter.

c. For a hosted Shared Renewable Energy Facility, the determination of the quantity of Bill Credits available to Participants of that facility, including the host Participant, shall be based on any energy production of the Shared Renewable Energy Facility that exceeds the host Participant's instantaneous on-site consumption during the applicable billing period and the Participants' Subscriptions in that Shared Renewable Energy Facility.

d. For a stand-alone Shared Renewable Energy Facility, the determination of the quantity of Bill Credits available to each Participant of that Shared Renewable Energy Facility shall be based on the total exported generation of the Shared Renewable Energy Facility and each Participant's Subscription in that Shared Renewable Energy Facility.

e. The Electricity Provider shall carry over any excess Bill Credits earned by a Participant and not used in the current billing period to offset the Participant's consumption in subsequent billing periods until all credits are used or electric service is terminated. Any excess Bill Credits shall not reduce any fixed monthly customer charges imposed by the Electricity Provider.

IV. Embedded Cost-Based Approach to Bill Credit Valuation

a. For Participants that host a Shared Renewable Energy Facility or where participating Participants are located on the same distribution feeder as the Shared Renewable Energy Facility, the value of the Bill Credits for the host Participant and those Participants on the same distribution feeder shall be calculated by multiplying the Participant's share of the kWh electricity production from the Shared Renewable Energy Facility by the retail rate for the Participant. For Participants on tariffs that contain demand charges, the retail rate for the Participant shall be calculated as the Total Aggregate Retail Rate for the Participant.

b. For all other Participants in a Shared Renewable Energy Facility, value of the Bill Credits allocated to each Participant shall be calculated by multiplying the Participant's share of the electricity production from the Shared Renewable Energy Facility by the retail rate as charged to the Participant, adjusted for cost and benefits, including locational benefits, [42] provided by the Shared Renewable Energy Facility. The [responsible agency having regulatory oversight] shall ensure that any costs included in this cost-benefit analysis are not already recovered by the Electricity Provider from the Participant through other charges.

V. Value-Based Approach to Bill Credit Valuation

a. For all Shared Renewable Energy Facilities, the value of Bill Credits allocated to each Participant shall be calculated by multiplying the Participant's share of the kWh electricity production from the Shared Renewable Energy Facility by the value of the electricity produced as determined by the [responsible regulatory body or agency], taking into account both the costs and benefits of the Shared Renewable Energy Facility. The benefits of the Shared Renewable Energy Facility shall include but not be limited to the avoided cost of generation, capacity benefits, avoided line losses, avoided transmission and distribution investments, environmental benefits or avoided environmental compliance costs, and any other Locational Benefits.[43]

Endnotes

[1] Paul Denholm & Robert Margolis, Nat'l Renewable Energy Lab., *Supply Curves for Rooftop Solar PV-Generated Electricity for the United States* 4 (Nov. 2008), *available at* http://www.nrel.gov/docs/fy09osti/44073.pdf.

[2] SEIA Solar Survey 2012 (http://www.seia.org/research-resources/america-votes-solar-national-solar-survey-2012), Gallup poll March 2013 (http://www.usnews.com/news/articles/2013/04/01/poll-americans-overwhelmingly-support-alternative-energy).

[3] *See* http://quickfacts.census.gov/qfd/states/00000.html (114,761,359 U.S. households in 2011).

[4] Union of Concerned Scientists, http://www.ucsusa.org/clean_energy/coalvswind/c01.html.

[5] For more detail on U.S. community wind efforts, see http://www.windustry.org.

[6] *See CPUC California Solar Initiative 2009 Impact Evaluation, Final Report* § 10, (June 2010), *available at* http://www.cpuc.ca.gov/PUC/energy/Solar/eval09.htm.

[7] Mosaic, https://joinmosaic.com.

[8] RE-volv, http://re-volv.org.

[9] For a more in depth explanation of NEM, see DSIRE, Solar Policy Guide: Net Metering, www.dsireusa.org/solar/solarpolicyguide/?id=17, and IREC, *Net Metering Model Rules* (2009), *available at* http://irecusa.org/wp-content/uploads/2010/08/IREC_NM_Model_October_2009-1-22.pdf.

[10] DSIRE, NEM Summary Map (Feb. 2013), http://www.dsireusa.org/documents/summarymaps/net_metering_map.pdf.

[11] Larry Sherwood, IREC, *U.S. Solar Market Trends 2011*, at 7, *available at* http://www.irecusa.org/wp-content/uploads/IRECSolarMarketTrends-2012-Web-8-28-12.pdf (showing that 93 percent of systems were net-metered as of 2011).

[12] Keyes & Fox LLP, on behalf of NAURC, *Exploring Aggregated Net Metering in Arizona*, Summary of Policies in Other States (Part 3) (Jan. 2011), *available at* http://www.naruc.org/grants/Documents/SERCAT_Arizona_2010.pdf.

[13] *See* NREL, *The Solarize Guidebook: A Community Guide to Collective Purchasing of Residential PV Systems* (May 2012), *available at* http://www.nrel.gov/docs/fy12osti/54738.pdf.

[14] For more information on the CEC, see www.easycleanenergy.com.

[15] Vermont's group billing rules also apply to a single consumer with multiple electric meters. For more detail on the Vermont program, see the Vermont Net Metering web site at http://psb.vermont.gov/utilityindustries/electric/backgroundinfo/netmetering and the DSIRE Vermont Net Metering web site at www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=VT02R.

[16] U.S. Dept. of Energy, *A Guide to Community Shared Solar: Utility, Private, and Non-Profit Project Development* (Nov. 2010), *available at* www.nrel.gov/docs/fy12osti/54570.pdf.

[17] *See e.g.,* CPUC, D.11-07-031, *California Solar Initiative Phase One Modifications* 5-22 (July 20, 2011), *available at*

http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/139683.PDF (California); CPUC, D.08-10-036, *Decision Establishing Multifamily Affordable Solar Housing Program within the California Solar Initiative* 31-40 (Oct. 20, 2008), *available at* http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/92455.PDF (California); C.R.S. § 40-2-127(5)(b)(II) (Colorado); 26 Del. Code § 1014(e) (Delaware).

In a few cases, like Massachusetts "neighborhood net metering" program, the credit is valued based on the retail rate in effect *where the project is located*. This may be easier to administer in some ways because the program administrator needs to only consider one retail rate rather than (potentially) several different rates of many participants, which could include customers in the residential, commercial and industrial sectors. *See* 220 CMR § 18.04(3); *see also* DSIRE, Mass. Net Metering, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MA01R&re=0&ee=0.

[18] *See* 26 Del. Code § 1014(e)(2); 26 Del. Admin. Code § 3001-8.4.

[19] *See* CPUC, D.11-07-031 & D.08-10-036, *supra* note 17.

[20] *See* CO PUC, Docket 11A-418E, Recommended Decision of Administrative Law Judge Paul C. Gomez Approving Application with Modifications, at 46-54 (March 8, 2012); Xcel Energy, *2012 Renewable Energy Standard Compliance Plan*, Vol. 1, § 9 (May 13, 2011); CO PUC, Docket 11A-418E, Direct Testimony and Exhibits of Scott B. Brockett, at 4-13 (May 13, 2011).

[21] 4 C.C.R. 723-3 § 3665(c)(1)(A)-(B) (referring to C.R.S. § 40-2-127(5)(b)(II)).

[22] *See* CEC HCE FAQ, http://www.easycleanenergy.com/faq.aspx.

[23] *See* http://mysunshare.com for more information on SunShare LLC.

[24] *See* San Miguel Power Association Community Solar, http://www.smpasolar.com/learn.aspx.

[25] *See* Poudre Valley Community Solar, http://www.pvreasolar.com/learn.aspx.

[26] *See* Austin Energy, Residential Solar Rate, http://www.austinenergy.com/energy%20efficiency/Programs/Rebates/Solar%20Rebates/proposedValueSolarRate.pdf; Karl Rábago, Leslie Libby & Tim Harvey, Austin Energy, and Benjamin Norris & Thomas E. Hoff, Clean Power Research, *Designing Austin Energy's Solar Tariff Using a Distributed Value PV Calculator*, World Renewable Energy Forum 2012, *available at* http://www.cleanpower.com/wp-content/uploads/090_DesigningAustinEnergysSolarTariff.pdf.

[27] *See* PG&E A.12-04-020 In the Matter of the Application of Pacific Gas and Electric Company to Establish a Green Option Tariff (U39E), and SDG&E A.12-01-008 Application of San Diego Gas & Electric Company (U902E) For Authority To Implement Optional Pilot Program To Increase Customer Access To Solar Generated Electricity. Dockets are available at http://delaps1.cpuc.ca.gov/CPUCProceedingLookup/f?p=401:1:596995556267001:::::

[28] *See* C.R.S. § 40-2-127(5)(b)(II). While IREC supported the incorporation of such a "reasonable charge," we participated in the Colorado rulemaking to calculate the charge and we ultimately did not support the outcome. IREC submitted an alternative proposal in the docket, 11A-418E,

https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=11A-418E.

[29] Additional discussion of design of bill credits can be found in R. Thomas Beach & Patrick G. McGuire, Community Solar California, *The Design of Bill Credits for Community Solar Facilities in* California (January 2012); *see also* Joseph Wiedman & Jason Keyes, IREC, SolarABCs, *A Generalized Approach to Assessing the Rate Impacts of Net Energy Metering* (Jan. 2012), *available at* http://www.solarabcs.org/about/publications/reports/rateimpact/pdfs/rateimpact_full.pdf.

[30] Most state interconnection procedures specify 2 MW as the cutoff for Level 2 "Fast Track" interconnection procedures. Systems interconnecting at the distribution level that are able to take advantage of Level 2 interconnection procedures will generally proceed in a relatively quick and inexpensive fashion through the utility interconnection process.

[31] *See* Joseph F. Wiedman & Erica M. Schroeder, Keyes, Fox & Wiedman, Tom Beach, Crossborder Energy, IREC, *12,000 MW of Distributed Generation by 2020: Benefits, Costs and Policy Implications* (July 2012), *available at* http://www.irecusa.org/wp-content/uploads/Final-12-GW-report-7.31.12.pdf.

[32] This estimate is based on the federal 30-percent investment tax credit (ITC), which is scheduled to decline to 10 percent in 2016 if no action is taken before that. For more detail on the ITC, see http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F.

[33] *See* DSIRE Third-Party Ownership Map, http://www.dsireusa.org/documents/summarymaps/3rd_Party_PPA_map.pdf

[34] *See* C.R.S. § 40-2-127(2)(b)(I)(A) (Colorado); 26 Del. Code § 1014(d)-(e) (Delaware); Mass.Gen.Laws, ch. 164, § 1G et seq. (Massachusetts).

[35] See Paul Emrath, Ph.D., National Association of Home Builders, *How Long Buyers Remain In Their Homes,* (Feb. 2009), available at http://www.nahb.org/generic.aspx?sectionID=734&genericContentID=110770&channelID=311

[36] C.R.S. § 40-2-127(1)(b)(II), (5)(a)(IV)(B), (5)(e).

[37] 4 C.C.R. 723-3 § 3665(d)(V).

[38] 2012 PSCo RES Plan, Vol. 1 at § 5, 25.

[39] Fully restructured states include Connecticut, Delaware, Illinois, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Texas and Washington D.C

[40] *See* Justin Barnes & Laurel Varnado, N.C. Solar Center, IREC, *The Intersection of Retail Choice and Net Metering: An Overview of Policy Practice and Issues* (Dec. 2010), *available at* http://irecusa.org/wp-content/uploads/2010/12/FINAL-Intersection-of-Retail-Choice-and-Net-Metering-Report.docx.pdf (includes a table of state net metering policies, as they apply to retail choice states).

[41] The definition of Biomass may need to be adjusted to reflect state renewable portfolio standard definitions.

[42] Additional discussion of design of bill credits can be found in R. Thomas Beach & Patrick G. McGuire, Community Solar California, *The Design of Bill Credits for Community Solar Facilities in* California (January 2012); *see also* Joseph Wiedman & Jason Keyes, IREC, SolarABCs, *A Generalized Approach to Assessing the Rate Impacts of Net Energy Metering* (Jan. 2012), *available at* http://www.solarabcs.org/about/publications/reports/rateimpact/pdfs/rateimpact_full.pdf.

[43] For a more thorough discussion of the benefits of distributed generation to consider for the purposes of valuation, see Keyes, Fox & Wiedman, LLP, *Unlocking Distributed Generation Value: A PURPA-Based Approach to State Policy Design*, available at http://www.irecusa.org/wp-content/uploads/2013/05/Unlocking-DG-Value.pdf.

Attachment B:
IREC Proposal in California Net Metering 2.0
Docket R. 14-07-002

Interstate Renewable Energy Council, Inc. (IREC)
Proposal March 16, 2015

CleanCARE—Investing in Communities

In developing the successor standard contract or tariff to the current net energy metering (NEM) tariff, Assembly Bill (AB) 327 requires the Commission to "[e]nsure that the standard contract or tariff made available to eligible customer-generators ensures that customer-sited renewable distributed generation continues to grow sustainable and include specific alternatives designed for growth among residential customers in disadvantaged communities." Pub. Util. Code § 2827.1(b) (emphasis added). IREC proposes a new California Alternate Rates for Energy (CARE) rate option—CleanCARE—as one of those specific alternatives. Under CleanCARE, low-income and medical baseline customers would receive access to affordable renewable energy. The CleanCARE framework would also provide these customers with a clearer connection between cost-causation and energy usage. CleanCARE could complement other alternatives proposed by other parties.

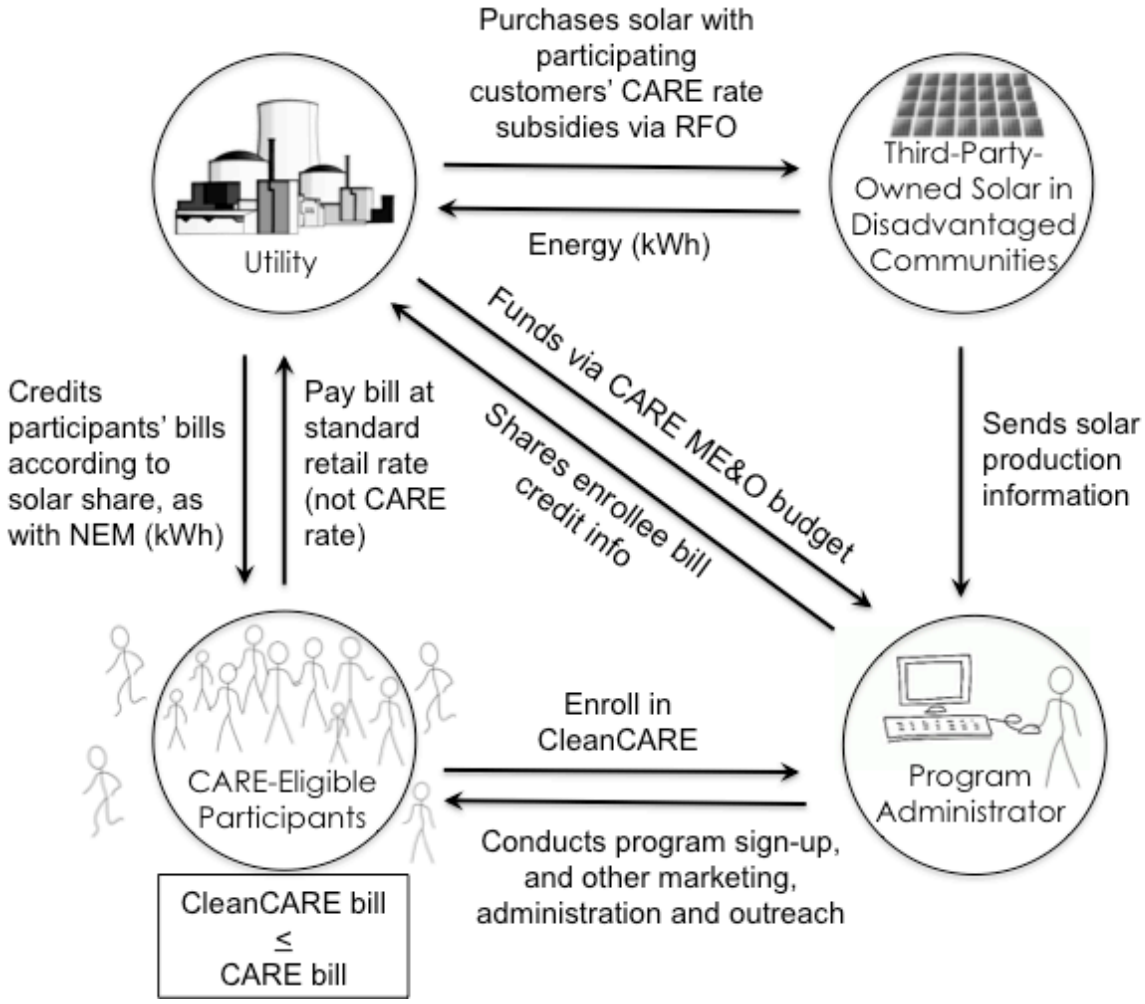
CleanCARE would allow a portion of the funds allocated toward CARE rate reductions to be invested in the development of shared distributed renewable generation by a third-party entity. CARE customers electing the CleanCARE option would move to the standard rate for the rate class and through participation in the CleanCARE program would offset a portion of their monthly bills through kilowatt-hour (kWh) bill credits. As a result, a CleanCARE customer would receive the equivalent or a lower bill than the customer would have seen under the standard CARE program rates. In this way, the CleanCARE option would increase opportunities for low-income households to participate in renewable energy programs while guaranteeing at least the average rate levels and benefits of the current CARE program and being revenue-neutral for ratepayers. IREC proposes a third-party-administered program, initially relying on five MW of pilot project capacity and, if successful, expanding to serve more customers with more renewable energy. CleanCARE could also be expanded to incorporate energy efficiency, energy storage and demand response to decrease participants' bills via usage reductions as well as NEM bill credits.

The CleanCARE program can effectively serve to increase access to renewable energy for customers in "disadvantaged communities" and result in new renewable energy facilities sited in those communities. IREC intends this proposal to be a starting point for discussion on the manner in which a CleanCARE program option could meet these goals. IREC has already solicited and incorporated feedback from a variety of stakeholders and organizations, and looks forward to continuing to discuss this program concept.

How would CleanCARE work?

Currently, the CARE program provides discounted electricity and gas rates for over 3 million low-income enrollees. Because the CARE program is structured as a direct rate discount, however, it provides very limited opportunities for enrollees to participate in California's renewable energy programs. CleanCARE would provide an option to redirect a portion of the current CARE program funds associated with this rate discount toward purchasing renewable generation from a third-party developer for the benefit of CARE-eligible customers.

Overview of CleanCARE Concept



Relationship to existing CARE program: Fundamentally, CleanCARE relies on the funding associated with the CARE rate discount to support investment in renewable energy generation for the benefit of participants via kilowatt-hour (kWh) bill credits. Participants in CleanCARE would have to meet the eligibility requirements for CARE but would choose CleanCARE's alternative bill reduction option instead of receiving the CARE rate discount, which would guarantee them the same or better bill reductions as they would receive under CARE rates. Thus participants in CleanCARE could still be considered part of the CARE program, and CleanCARE would support rather than undermine efforts to reach eligible CARE customers and achieve CARE penetration goals. In addition, CleanCARE would rely on the CARE administrative budget, in particular with respect to marketing, education and outreach, and leverage existing efforts to minimize costs.

Disadvantaged communities: AB 327 does not define the term "disadvantaged communities." In this instance, IREC believes that it would be appropriate to use the most recent version of the California Communities Environmental Health Screening Tool (CalEnviroScreen) to identify the 25 percent of census tracts that represent the most disadvantaged communities, and that there

may be other areas or groups of customers that should qualify as "disadvantaged communities" under AB 327 as well. The census tracts identified by CalEnviroScreen should represent a significant percentage of the State geographically and include many potential sites for solar development. Based on an initial exploration of census data, IREC expects that there is significant overlap between CARE enrollment and customers living in "disadvantaged communities," but recognizes that (1) some CARE customers do not live in these communities and (2) some customers in these communities are not eligible for the CARE program. Nonetheless, IREC believes that CleanCARE would reach a significant customer segment in "disadvantaged communities." In addition, CleanCARE would incorporate a requirement that all of the renewable energy facilities associated with the program be located within "disadvantaged communities," as discussed below.

IREC further notes that, based on the data we have gathered to date, many CARE-eligible customers are renters who cannot install on-site renewable generation. CleanCARE would provide an option for these customers to participate in renewable energy. CleanCARE would be offered to both CARE-eligible renters and homeowners, and some homeowners may find it to be a more attractive option. CleanCARE would complement California's successful Single-family Affordable Solar Housing (SASH) and Multi-family Affordable Solar Housing (MASH) programs by increasing program options for low-income customers. CARE-eligible customers living in single-family homes may be able to choose between the SASH program and CleanCARE, for example. In some regions, up to 40 percent of eligible SASH clients have properties that are not suitable for solar, for example due to shading issues or roofs in need of replacement. Likewise, CARE enrollees in multifamily housing may be able to choose between MASH and CleanCARE. Together with SASH and MASH, CleanCARE would expand the options for low-income customers to benefit from renewable energy generation. A customer's choice would depend on program eligibility requirements, and the customer's particular situation, needs and preferences, including whether the customer is more interested in on-site or shared renewable generation.

Optional program, starting on a pilot basis: IREC proposes that CleanCARE be introduced on a pilot basis, with voluntary, limited enrollment in particular regions of the state, for example those with high levels of participation in the current CARE program or large numbers of enrollees who have higher energy usage. As discussed below, CleanCARE is likely to be most attractive to Tier 3 CARE customers and potentially Tier 2 CARE customers, as well, especially in future years. Alternatively, CleanCARE could begin with enrollment in a region with the highest proportion of CARE customers in "disadvantaged communities," as the Commission defines them under AB 327. This framework would allow for identification of sites for the "in-community" renewables and focus outreach efforts on a particular region. Other means of creating a sample customer base for a pilot program could also be developed with input from interested parties. Marketing and outreach for the program would be closely coordinated with entities with experience in this area, including Grid Alternatives, state weatherization program experts, and other community-based organizations to identify the most effective strategies and ensure positive uptake.

IREC proposes that the pilot program capacity be limited to 5 MW total—2 MW of smaller-sized projects (20-40 projects) and 3 1-MW projects. If the first year pilot (e.g., 2016) is

successful, then the program would be expanded to incorporate more renewable energy to serve more customers, for example an additional 20 MW in 2017 and 25 MW in 2018. In addition, energy efficiency, energy storage and demand response could also be incorporated, as discussed below.

Program administration: IREC suggests that a third party administer the CleanCARE program to help to ensure that the program is as nimble and cost-effective as possible. A third party with experience working with "disadvantaged communities," such as Grid Alternatives, would be especially appropriate in this case. The utilities would necessarily play an important role in CleanCARE implementation and administration, as well. A framework for appropriate information-sharing between the third party and the utility would need to be put in place since the utilities have information on CARE enrollees' locations and energy usage, and so that the utilities' could apply appropriate bill credits to enrollees' bills. In addition, IREC expects that CleanCARE marketing, outreach and education would be coordinated with current outreach efforts around CARE and the Energy Savings Assistance Program (ESAP), as well as the SASH and MASH programs, and that these existing efforts would be leveraged to keep costs low. Marketing, outreach and education efforts should also be coordinated with community-based organizations. Such marketing, education and outreach efforts should include education for participants in reading and understanding their electricity bills. In addition, a workforce development component could be incorporated into the program to maximize the benefit to disadvantaged communities.

Standard retail rates: In contrast to CARE participants, CleanCARE enrollees would remain on or be transferred to their utility's standard residential rate structure instead of receiving discounted rates. Access to affordable electricity would be achieved by reduced overall energy *bills* through kWh bill credits, rather than reduction in energy *rates*. This shift would be an important improvement over the current CARE program because it would provide CleanCARE participants with greater information concerning the cost of their energy consumption, thereby increasing their ability to manage their energy costs directly based on consistent pricing signals over the longer term—both during enrollment in the CleanCARE program and after they have exited the program. In particular, the CleanCARE program would encourage participating customers to conserve energy, for example through energy efficiency implementation, since their remaining consumption not offset by bill credits would be at the higher standard rate than the reduced CARE rate. This is particularly important because many current CARE enrollees are only temporarily within the program but energy cost management decisions can continue to provide benefits after departing the program.

Shared distributed generation: The renewable distributed generation provided under CleanCARE would be from eligible renewable energy resources procured by the utilities and take the form of shared renewable generation of at least two types:

- Some percentage of facilities (e.g., 30 percent) would be smaller-scale generation (e.g., 1 – 100 kW) located within "disadvantaged communities," and would include rooftop or small ground-mounted solar and potentially small-scale wind.

- The remaining capacity would be larger-scale renewable distributed generation (e.g., 100 kW – 5 MW) located in optimal locations on the electricity grid, as determined by the local distribution utility. These larger facilities, like the smaller facilities, would be located within disadvantaged communities.

Residents and other stakeholders from within the "disadvantaged communities" should be able to provide input regarding any facilities located in those communities. This would involve outreach to citizen activists, groups, and/or local governments, and would occur through various forums, including local meetings, Commission-sponsored forums, and/or through solar developer-led outreach, potentially in response to particular requirements in the procurement process as discussed below.

Utilizing shared renewable generation would allow for economies of scale on a programmatic basis by facilitating the installation of systems larger than those seen in on-site programs. At the same time, the "shared" aspect of these facilities can accommodate the participation of customers in the CARE program for a relatively short period of time, very likely shorter than a typical 20- or 25-year renewable energy contract. When a customer is no longer CARE-eligible and leaves the program, a new customer could participate drawn from a wait list maintained by the program administrator. Although not anticipated, if there is insufficient interest in the program, the utility could purchase excess energy and associated Renewable Energy Credits (RECs) at a substantially lower price, such as the Default Load Aggregation Point (DLAP) price plus a REC price, specified as part of the procurement process. Beginning with a small program and phasing in capacity would limit any negative effects in such a scenario. If a project were to fail for any reason, and therefore not generate energy and associated kWh bill credits, CleanCARE participants could be immediately transferred back to traditional CARE rates such that they would not experience any adverse bill impacts.

Moreover, to further address cost concerns, CleanCARE could be designed to unlock broader grid benefits by targeting areas of the grid identified by the local distribution utility as benefiting from renewable distributed generation and possibly energy storage. These benefits would flow to the local utilities' ratepayers as a whole. In addition, relying on a fleet of CleanCARE facilities to serve all CleanCARE enrollees should help minimize risk as compared to a customer or group of customers relying on a single facility.

Bill credit mechanism: To realize the necessary bill reductions, CleanCARE enrollees would receive kWh bill credits associated with the shared renewable generation developed under the program. The program would ensure that their electricity bills would be offset via these kWh credits at the same level or more than they currently experience under the broader CARE program. The renewable energy would be procured by the utility using participating customers' CARE subsidies, as discussed below; the customer would be allocated a set quantity of energy from the CleanCARE facility based on how much the CARE subsidy associated with customer's full bill will purchase.

As shown below, with the assistance of the California Solar Energy Industries Association (CalSEIA) and other stakeholders, we have calculated the bill impacts of the CleanCARE programs in 2014 for a Tier 3 CARE-eligible customer (800 kWh per month), based on current

average CARE and non-CARE rates, and an estimated all-in cost of solar of $0.23 per kWh. This projected cost-of-solar comprises an assumed $0.15 for the energy, $0.05 for transmission and distribution costs associated with the energy, and $0.03 for administrative costs associated with the program. We also assumed a full retail rate credit (i.e., one-to-one kWh offset), as under the current NEM program. Under CleanCARE, a Tier 3 customer would see additional bill savings of $16.84 per month, above and beyond what that customer's bill would have been under the standard CARE program.

Customer Bill Savings Under CleanCARE (2014)

	2014 CARE				**2014 CleanCARE**				
	Usage (kWh)	CARE Rate ($/kWh)	Bill ($)	CARE Subsidy ($)	Ren. Energy (kWh)	Net Usage (kWh)	Res. Rate ($/kWh)	Total Bill ($)	**Add'l Bill Savings**
Tier 1	330	0.111	36.55	14.70		330	0.155	51.25	
Tier 2	100	0.132	13.25	5.34		100	0.186	18.58	
Tier 3	370	0.200	73.91	36.52		124	0.298	37.04	
TOTAL	800		**123.71**	56.56	246	554		**106.87**	**16.84**

Relying on a similar analysis, we estimate a bill savings of $13.51 per month in 2018 under CleanCARE, based on anticipated average rates in 2018. For these anticipated rates, we relied on the utilities' proposals in docket R.12-06-013 (RROIR), which result in relatively conservative estimates regarding the beneficial bill impacts of CleanCARE; we expect in reality the additional bill savings would be greater. For the 2018 cost of solar, we estimated $0.20 per kWh, given the reductions in soft costs expected but taking into account the expiration of the investment tax credit (ITC), as well. Similar to the 2014 cost of solar, the projected 2018 cost of solar comprises an assumed $0.12 for the energy, $0.05 for transmission and distribution costs associated with the energy, and $0.03 for administrative costs associated with the program.

In addition, we conducted a similar analysis for a Tier 2 customer (400 kWh per month). Such a customer would see additional bill savings of $1.90 per month in 2018 under CleanCARE. In 2014, a Tier 2 customer would have to pay an additional $3.85 per month, which indicates that the CleanCARE pilot should be targeted to Tier 3 CARE customers, at least in the near term.

IREC emphasizes that the bill savings associated with CleanCARE are just a piece of the benefits associated with the proposed program, which also include the benefits associated with increased renewable energy generation generally and benefits of siting those facilities in "disadvantaged communities." In addition, the bill savings could be improved by incorporating energy efficiency improvements into the program to further lower a customer's bill. As discussed below, this may be more feasible as solar costs drop and a portion of the CARE funding could be transferred to energy efficiency and other demand-side management. Finally, a workforce development component to the CleanCARE program could further enhance job-related and other economic benefits to disadvantaged communities.

Procurement: The utilities would use a request for offer (RFO) process would be used to procure renewable generation facilities for the CleanCARE program, beginning with the initial pilot phase of 5 MW. The RFO would require that facilities be located within "disadvantaged

communities." Similarly bidders could be required to conduct some form of outreach with those disadvantaged communities prior to submitting a bid. The Renewable Energy Credits (RECs) associated with these facilities could be sold to the utility for Renewables Portfolio Standard (RPS) compliance purposes.

It will be critical to ensure long-term funding for the CleanCARE renewable energy facilities such that the income stream derived from shifting the CARE rate subsidy would be locked in for a significant number of years (e.g., 10-20 years). Long-term funding of the CleanCARE program is essential because CleanCARE enrollees would not be "buying down" the upfront cost of their participation, as participants might in other renewable energy programs. Financiers will need to have the assurance of a long-term income stream.

Future "clean energy package"—energy storage, energy efficiency, demand-side management: After the initial pilot phase of the program, IREC proposes that CleanCARE would incorporate investment in a broader "clean energy package," which would likewise be designed to achieve an equivalent or better monthly bill for CleanCARE enrollees as compared to bills they would have received under the current CARE program. In order to achieve such bill savings for CleanCARE enrollees, the "clean energy package" would incorporate energy efficiency upgrades to lower the enrollee's overall energy consumption, in addition to the bill credits associated with participation in shared renewable energy generation.

The concept of the "clean energy package" is intentionally left flexible enough to allow for development and offering of diverse packages of targeted measures that meet the needs of CleanCARE enrollees. This flexibility should allow for packages to include an appropriate mix of energy efficiency and renewable distributed generation to achieve cost-effective bill savings for enrollees while also using energy storage and demand response to drive grid benefits. The program administrator and/or "clean energy package" offerors would be required to identify target communities, assess their energy needs, and develop a plan to meet those needs within the program parameters. Our discussions with organizations working in low-income communities on energy issues show broad support for this idea of a stable, long-term funding mechanism designed to support investment in a holistic package of services for enrollees to meet their energy needs.

The ESAP could fund energy efficiency offerings and participation in ESAP could be coordinated with the CleanCARE program enrollment process to ensure CleanCARE enrollees receive energy efficiency upgrades to reduce their consumption prior to enrollment in CleanCARE. Similarly, coordination between CleanCARE and demand response programs targeted at residential customers, such as San Diego Gas & Electric Company's Summer Saver program, could be increased to drive overall program savings and grid benefits.

Because a "clean energy package" would introduce additional complexity into the program, IREC proposes introducing it in a later phase of the program.

Benefits of CleanCARE

The cornerstone of the CleanCARE program is that it would achieve at least the same beneficial bill impacts for enrollees as the current CARE program, and could empower program participants to achieve even better results. In addition, low-income customers enrolled in CleanCARE would be able to enjoy the benefits of renewable energy generation. On-site renewable generation programs to date have typically had high cost barriers to participation and have been largely unavailable to renters. Because enrollees would be served under their utility's standard retail rates, CleanCARE would also more directly and continuously provide the same price signals as other customers, instead of masking those signals with below-cost rates. In the longer term, this should provide these customers the information about rates that they need to continue to make long-term decisions about energy conservation and efficiency.

In addition, CleanCARE would benefit "disadvantaged communities" in at least two ways. First, it would provide for direct participation by CARE-eligible customers in "disadvantaged communities. These customers, as well as other participating CARE-eligible customers located in other communities, would see the bill savings from participation in the CleanCARE program on their electricity bills. Second, CleanCARE would result in renewable energy development within "disadvantaged communities," which could include both urban and rural locations. Thus although there is not complete overlap between CARE-eligible customers and customers within "disadvantaged communities," all customers within disadvantaged communities can benefit from increased renewable generation in their communities. These include the environmental benefits of these facilities, as well as job creation and other workforce-related benefits, in particular if a job training component is incorporated into the program.

CleanCARE should also drive down rates for all California energy consumers as it represents a more efficient use of ratepayer funds for low-income assistance. Importantly, if implemented quickly, development of CleanCARE resources would allow California to leverage the full 30% federal Investment Tax Credit, set to decrease to 10% on Jan 1, 2017. This would result in a 30% reduction in the price of the renewable distributed generation used to serve the program along with an additional 20% reduction in cost via accelerated depreciation. Additionally, by installing renewable distributed generation at locations on the grid identified by utilities as benefiting from DG, CleanCARE would maximize grid benefits from the program, which in turn should help to drive down all energy customers' rates over time.

Beyond these benefits, the modifications to the CARE program embodied in CleanCARE are aligned with California's overall renewable energy goals. These include the Commission's loading order, the 33% Renewable Portfolio Standard and the Governor's 50% renewable energy and 12,000-MW distributed generation goals.