A Proposal To Expand Net Metering To Enable Community Renewable Energy Projects In NJ

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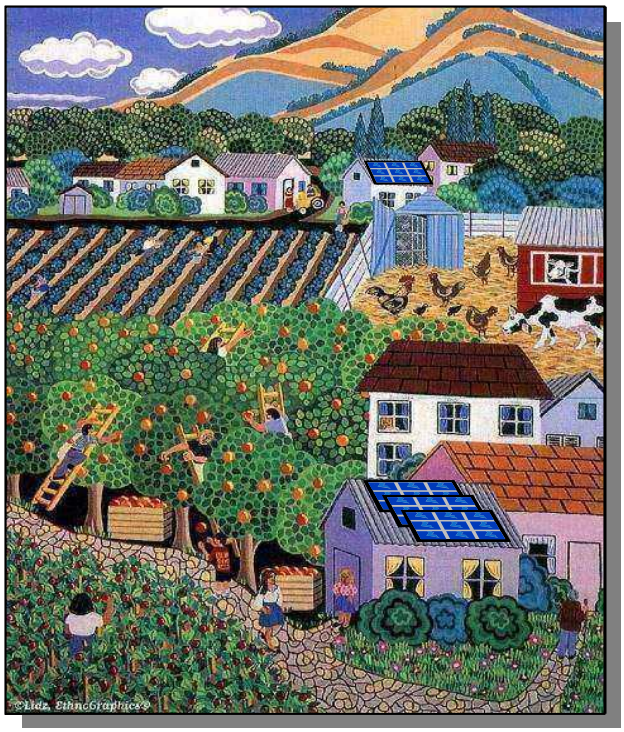


Sun Farm™ NETWORK

New Jersey's Solar Power Company[sm]

Executive Summary

The distributed renewable energy market in NJ is focused almost exclusively on relatively small net metered applications in which the renewable energy system is dedicated to offsetting the usage of a single meter for a single customer at a single site. While there are many customer scenarios where this is beneficial, it is inherently inefficient, and forces the market to pursue commercial structures that are economically suboptimal and which leave many viable applications stranded. For solar in particular, the existing net metering structure prevents potentially large generators from contributing to the state's aggressive renewable energy goals to the extent they could, and a large number of motivated customers are prevented from participating directly with a solar energy installation due to numerous factors such as shade, orientation, or other site restrictions. The existing net metering construct is therefore overly constrained, and with slight modification, could be expanded to remove current inequities in the market and super-charge deployment of renewable energy systems on a much more cost effective basis.

Community Net Metering expands the existing net metering system slightly, and allows renewable energy systems to be installed under the net metering paradigm for whole communities at a time, rather than just a single site. The Community framework is Net Metering on steroids, and functionally, is very similar to "micro-grid" concepts being discussed elsewhere. The Community Net Metering concept has been acknowledged by the NJ BPU in its recent Solar Transition board order, and a working group to explore the concept further has been launched from the Interconnection and Net Metering group. This proposal is a response to the solicitation for input by BPU staff from that working group.

What Is Community Net Metering? Community Net Metering is based on the application of the existing net metering rules and billing arrangement to an aggregated customer, potentially including multiple account holders at multiple dis-contiguous sites, each with a separate meter and potentially on different tariffs, such that the NET of consumption and generation by the group members are computed in aggregate. The Community entity becomes the "customer" for purposes of billing and determination of net metering requirements. Some members within the Community group serve as net generators of renewable energy, the excess of which is used to offset net consumption by other members within the same community group. Community Net Metering is essentially a "virtualized" and "multi-site" version of net metering, whereby multiple meters are treated as if they were one aggregated meter, and the normal net metering rules are applied accordingly. To be consistent with existing net metering capacity limits, the amount of renewable energy generated on a net annual basis cannot exceed the net consumption by the renewable community as a whole. In this way, this "aggregated customer" is generating power only for its own consumption.

Why Do We Need Community Net Metering? Community Net Metering will have a profound impact on the commercial development of distributed renewable energy markets (especially solar) in NJ, and represents a dramatic step forward in NJ's

pioneering leadership of sustainable energy. The Community Net Metering construct accomplishes several key strategic goals for the program: it removes market barriers and expands the addressable market, enables more optimized economics that allows smaller customers to be served more cost effectively, removes profound inequities in the market (i.e., citizens that pay into the program but can't benefit directly today), and attracts key market development resources (like capital) that eventually reduce the need for state incentives. And it realizes these benefits by making a small, but profound, change to the existing net metering rules. No fundamentally new policies or programs are needed, and much of the existing market infrastructure and institutional knowledge can be leveraged to advantage. Community Net Metering directly serves the state's goals of bringing the most renewable energy, to the most people, at the lowest possible cost.

How Does Community Net Metering Work: A Local Renewable Energy Cooperative (LREC) is formed by any group of participants that want to build a renewable energy generation system and share in its output. The LREC itself becomes the customer under the Net Metering rules, and represents the members of the Community group in aggregate. Hosting members of the group install a renewable energy system that provides a net excess of electricity, and receive a credit from the EDC each month based on that excess rated at the standard residential tariff. Consuming members of the LREC do not have a physical generation system on their site, and have their utility meter read (and rated as per existing tariff) each month as usual. The credits from the generation customer, and the charges normally assessed to the consuming customers, are aggregated together into a net bill presented to the LREC as per the usual Net Metering methodology. The members make payments to the LREC and the LREC (acting as a collective customer) pays the aggregated bill to the utility. In this way, the output from a renewable energy generation system is shared "virtually" by all the members in the group, and the LREC acts as an aggregated customer that applies to the EDC for Community Net Metering treatment.

How Do We Enable Community Solar? Implementing the Community Net Metering framework requires changes in the existing Net Metering rules (14:8-4). Fortunately, relatively few changes are required, since all the Net Metering provisions are built on the concept of a "Customer Generator" and an "Applicant". By clarifying these two concepts to include a Community that aggregates multiple participants acting as a single legal entity, all the provisions that refer to that abstracted definition of customer are thereby extended. In summary, the required changes a) allow a legal entity representing an aggregated group of members to apply for community net metering, b) allow a generation site to produce more energy than the local site consumes, as long as it doesn't exceed the usage of all community members combined, and c) introduce a modified billing scenario in which consuming members receive a notice of charges from the utility, hosting customers also receive a notice of charges showing the net excess rated in dollars using the residential tariff, and an aggregated bill reflecting the net charges for all members of the community together is rendered to and settled by the aggregated Community Customer entity. Specific language changes to the existing Net Metering rules are included in this proposal.

Background

When originally introduced, New Jersey had one of the most progressive Net Metering frameworks in the nation. It remains a strong foundation for commercialization of distributed renewable energy systems (especially solar), but other states have recently established more advanced constructs that NJ should consider. More importantly, the last five years of experience with NJ's current Net Metering framework have exposed numerous unintended constraints and restrictions that hamper development of the expanded market required by NJ's aggressive sustainable energy goals.

In particular, the existing Net Metering framework focuses almost exclusively on relatively small applications in which the renewable energy system is dedicated to offsetting the usage of a single meter for a single customer at a single site. While there are many customer scenarios where this is beneficial, it is inherently inefficient, and forces the market to pursue commercial structures that are economically suboptimal and which leave many viable applications stranded. Potentially large hosting sites are prevented from contributing to the state's aggressive renewable energy goals to the extent they could, and a large number of motivated consumers are prevented from participating directly with a renewable energy installation due to a wide variety of site restrictions. The existing net metering construct is therefore overly constrained, based on a deeply entrenched concept in which "customer" is equated with "meter". By expanding the concept of "customer" to include groups of individuals (and organizations) acting collectively, Net Metering can be greatly enhanced to remove current inequities in the market and super-charge deployment of renewable energy systems on a much more cost effective basis.

The Sun Farm Network identified these structural issues with the Net Metering framework several years ago, and presented the idea of "Community Solar" during its RPS-expansion comments in mid-2004. As defined at that time, "Community Solar" would allow solar systems to be installed under the net metering paradigm for whole communities at a time, rather than just a single building. This approach introduces significant economic efficiencies, and for the first time allows all NJ citizens to participate directly in a solar installation regardless of their individual site conditions. Community Solar is Net Metering on steroids, and functionally, is very similar to "micro-grid" concepts being discussed elsewhere. The Sun Farm Network published the first white paper on Community Solar in the Spring of 2006, and has since been advocating for adoption of the required net metering extensions by the NJ BPU.

The Community Solar concept was debated as part of the Solar Transition proceeding throughout 2007, and a commitment to further explore the concept was included in the December 6, 2007 board order on the overall Solar Market Transition. Numerous stakeholders have expressed support for the Community Solar concept, and there has been near unanimous agreement to more formally define the construct and prepare a recommendation for board consideration. Also, over the last year several states have implemented new programs that contain limited components of a larger Community

Renewable Energy paradigm. Building on the consensus that has emerged for the concept over the last two years, and leveraging the "proof of concept" scattered in the limited implementations of other states, New Jersey has an opportunity to establish striking national leadership in a powerful new commercialization mechanism for distributed renewable energy systems.

The original "Community Solar" concept has been appropriately expanded to more generally cover "Community Renewable Energy" (not just solar), since the same issues apply to all highly distributed renewable energy sources. A proceeding to formally assess and (if appropriate) prepare a Community Renewable Energy proposal for the board was spawned out of the Net Metering and Interconnection Working Group in July of 2007, including a call for comments on "Community Renewable Energy" issued on August 25, 2008. This document is our response to that call for comments, and represents a detailed proposal on what Community Renewable Energy (or Community Net Metering) could be, and how it could be implemented.

Defining Community Net Metering

On the surface, the Community Net Metering concept is easy to define: the application of the existing net metering rules and billing arrangement to an aggregated customer, potentially including multiple account holders at multiple dis-contiguous sites, each with a separate meter and potentially on different tariffs, such that the NET of consumption and generation by the group members are computed in aggregate. The aggregated entity becomes the "customer" for purposes of billing and determination of net metering requirements. Some members within the community group install renewable generation systems that provide a net excess of electricity that is used to offset the consumption by other members within the same group. A single utility bill is rendered to the community group entity, based on the net consumption of the group in aggregate.

Community Net Metering is therefore based on an expanded concept of net metering that abstracts the definition of "customer" to include multiple parties acting collectively. This is a simple but high impact change in the implementation of Net Metering, and enables a wide array of applications that are not possible today. These new application scenarios are highly diverse, and result from permutations of several key defining attributes. For purposes of clarifying these distinctions, our definition of Community Net Metering will build upon the following concepts:

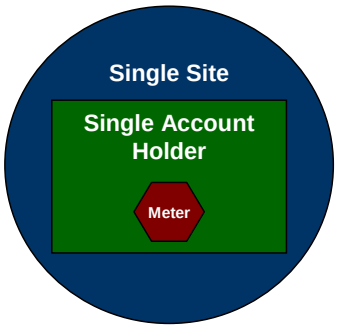
- **Site**: A physical property with legally defined boundaries and a unique property tax identifier, where electricity is either consumed or produced. "Site" could potentially include multiple contiguous properties that have the same owner and which effectively function as a single site.

- **Account Holder**: An entity, usually a person, company, or organization, that bears fiduciary responsibility for an account with the Electric Distribution Company (EDC), and who is legally authorized to manage the consumption and

generation of electricity at a given site. Note that the actual *consumer* of electricity may be different than the account holder, under a wide variety of tenant arrangements.

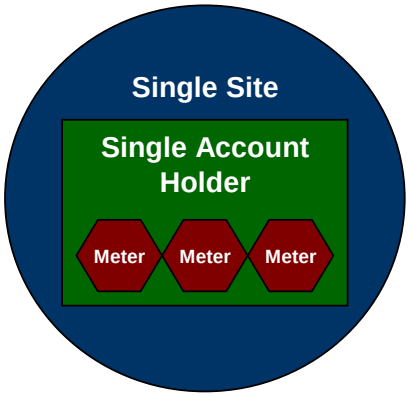
- **Meter**: The physical point of interconnection between a Site and the grid, including a revenue grade meter owned and operated by the EDC to measure power and energy flow between the Site and the grid.

In the simplest case, there is a single account holder with a single meter at a single site. There are numerous other real-world cases, however, in which a given account holder may own multiple sites or have multiple meters on a given site, or multiple account holders associated with a given site. In particular, there are many cases where the account holder/site that can best generate the renewable energy is physically separate from where that energy is best consumed. Based on these permutations distinct application scenarios are possible, each of which could be considered a specific sub-set of the more general Community Net Metering concept:



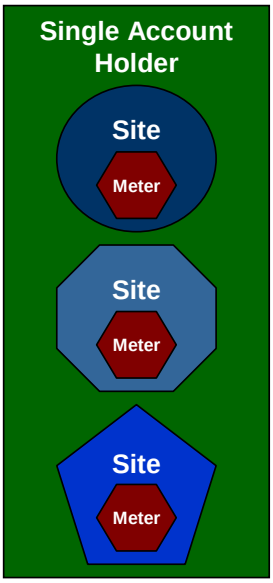
- **Simple Scenario**: The common use of net metering today, in which a single account holder integrates their generation system into a single meter at a single site. The generation asset is co-resident with the point of consumption, and the generation system is constrained to be no larger than the total annual consumption of the single customer at that single site.

- **Campus Scenario**: A single account holder residing at a single site, but with multiple meters. Typical examples include farms with large properties and multiple buildings, a school or military base where multiple buildings are involved, a large multi-facility industrial site, or a corporate headquarters campus. In all cases, there is a single account holder with multiple points of generation and consumption on a single property (or contiguous group of parcels). In all these cases, the customers want to build a renewable energy asset that integrates with a given meter that produces a net excess of electricity (at that meter) which can be applied against the usage of their other buildings (and meters) on the site. Imagine a large storage barn or warehouse (big roof, but no electricity consumption at that building) hosting a solar array to serve the heavy load site (like a milking shed) at the other end of the property, each building of which has its own meter. This is a very common scenario, and one that is completely disallowed by net metering today. The current RedSkye pilot proposal is an example of the Campus Scenario. A cumbersome work around is sometimes

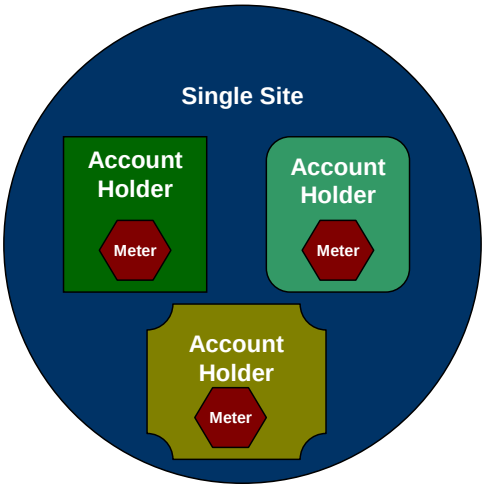


implemented, in which a single physical system (like a solar field) is broken into several sections so it can be interconnected into multiple meters owned by the same account holder at the same site. This approach is extremely cumbersome and expensive, and results in what looks like multiple projects for what is really a single application.

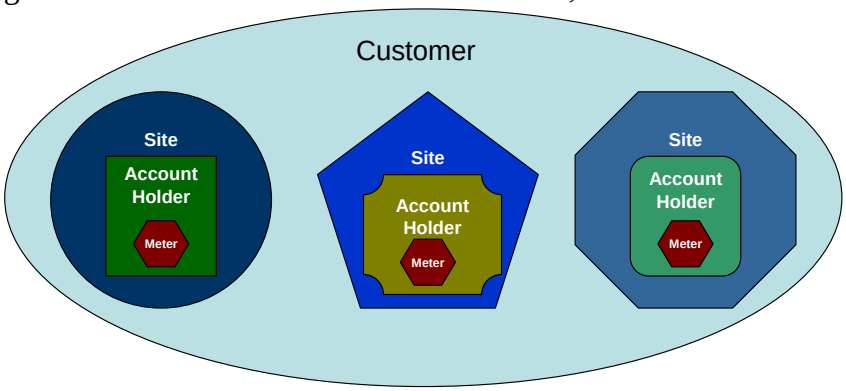
- **Multi-Site Scenario**: A single account holder that has buildings (i.e points of both renewable generation and consumption) at multiple sites, each with their own meter (or meters). Typical examples include a corporate entity with multiple office buildings, or a municipality that has multiple buildings and properties around the town. In this very common scenario, the customer wants to install a large renewable generation system at one site, sized in excess of the electricity needs at that site, which can be used to offset consumption at the other sites. This is a simplified case of "community energy" since a single customer (account holder) is involved (i.e., a "community of one"). It represents the most obvious case of "multi-site net metering" since the single customer would be billed for the NET of consumption after applying the net metering billing arrangement across the COLLECTION of meters owned by the customer – some of which are net producers, some of which are net consumers - but the aggregate of which determine the customer's financial obligation to the utility. This scenario is not supported in any form by net metering today.



- **Tenant Scenario**: A single physical site, but with multiple buildings (and meters) associated with separate account holders. A common example is an industrial park where a group of separate companies have facilities at a single property. In this case, the group of customers would like to build a single renewable energy system and have the full retail benefit of that generation shared in some agreed upon way between the participating members of the group. This scenario is simplified since it is on a single site, but introduces the significant abstraction that "customer" may mean a group of account holders acting collectively. This scenario is not supported in any form by net metering today.



- **Community Scenario**: The fully abstracted case where multiple account holders, across multiple sites, function collectively to act as a single "aggregated customer" under the net metering billing arrangement. These customers would like the net excess generated at one or more of their member sites (where a renewable generation system is installed) to be used to offset the load of the other (net consuming) account holder/sites within the group. It is still net metering since all the same rules of net metering are used (as applied to the collective customer), the excess generation is rated at the full retail rate, and all the electricity generated by the group is fully consumed by the same group (i.e. not a retail offer to members outside the group). This scenario is not supported in any form by net metering today.



There is a single concept which unites all these diverse scenarios: the application of the existing net metering rules and billing arrangement to an **aggregated customer**, potentially including multiple account holders at multiple dis-contiguous sites, each with a separate meter and potentially on different tariffs. The NET of consumption and generation by the group members are computed in aggregate, and the collective entity becomes the "customer" for purposes of billing and determination of net metering requirements. This abstraction of "customer" allows almost all of the existing net metering structure to be applied similar to the way it is today, but across a "virtual customer" that includes multiple entities at multiple sites with multiple meters. As such, Community Net Metering represents a **billing arrangement** that conceptually combines the existing Net Metering tariff with the aggregated multi-site billing feature already provided by some EDCs today.

This change immediately enables easy solutions to common constraints seen in the industry today – many of which arise artificially from overly-strict interpretation of "customer = meter". Examples include:

- A renewable energy installation on a large warehouse to serve the energy intensive needs of another building owned by the same customer on the same site served by a separate meter (campus scenario),

- A municipality installs a wind system at the township garage (where space is plentiful) to support the electrical load of the main township offices downtown (multi-site scenario), and

- a group of customers in an industrial park install a solar field on a common area, the electricity from which is shared by all the group members at their individual buildings, each with their own utility meter (tenant scenario).

The real payoff comes from the fully abstracted case, where multiple account holders join together as a collective customer to realize virtual net metering across multiple sites. In this case, some members of the aggregated entity are net producers of renewable energy, which is applied to offset the energy use of the other members within the group. The aggregated entity itself gets a single net metering bill from the utility, reflecting the NET consumption of the aggregated group. This scenario represents the highly innovative potential for this conceptual expansion of Net Metering, and allows a highly diverse range of new applications that expand the market. One of the strongest policy motivations for the Community Net Metering framework is that it creates an ability to serve the vital small-site (residential, light commercial, etc) segment in a more cost effective way, but that benefit is only realized in the full Community scenario. Other examples of this scenario include:

- A Church decides to promote its own Community Renewable Energy project, putting an unused 5-acre parcel of church-owned land to work as the hosting site for a large solar array. The project becomes a church-wide "environmental stewardship" effort, and members of the Church subscribe to use the output from the Church's solar installation.

- A customer with a large electrical load has no option for installing solar herself, due to restrictions on her property. But there is a large warehouse across the street that could host a solar system large enough to fully meet her needs. The hosting warehouse and the consuming customer form a 2-party Community Net Metering partnership, resulting in the warehouse getting paid for hosting, and the consuming customer benefiting directly from solar power despite the limitations of her site.

- A large retailer wants to offset its electricity usage across multiple New Jersey sites with locally generated renewable energy. It forms a Community Renewable Energy project with three farmers that host the wind turbines on otherwise un-useable land. These generators create enough wind energy to fully supply all the retailer's sites, thereby realizing its strategic corporate goal of becoming "carbon neutral" in its energy usage.

- A large citizen action group uses its membership and monthly newsletter to promote its own branded Community Renewable Energy project. Several hundred customers sign up to share in the harvest provided by seven large solar sites hosted on ex-brownfields.

- A small organic farm adds "solar electricity" to its repertoire of locally grown products. The farm hosts a 3-acre solar field alongside its other crops, and by promoting to its existing customer base, signs up 25 customers that want "locally

harvested solar electricity" to be part of their monthly "NJ Fresh" shopping basket.

- A large warehouse hosts a solar system on its huge and previously un-used sunny roof. They form a Community Renewable Energy project and offer discounted solar electricity to their employees. The employer makes money by putting their roof to work, and the employees see the solar offer as a company perk.

The following chart summarizes the various Community Net Metering Scenarios, all united by the single concept of a "customer" being based on a virtual aggregation of multiple parties at multiple sites but acting collectively as a single legal entity:

Scenario	**Simple**	**Campus**	**Multi-Site**	**Tenant**	**Community**
Account Holder	Single	Single	Single	Multiple	Multiple
Site	Single	Single	Multiple	Single	Multiple
Meter	Single	Multiple	Multiple	Multiple	Multiple
Example	Single family residence	A single site with multiple buildings and meters (eg: farm, schools, military base, corporate, etc). Customers would like excess generation from a system connected at one meter to offset load of their other onsite meters.	A single business (EIN), farm or municipal entity with mulitple locations, each with its own meter. Customer would like excess generation from one site to offset load at another site.	Multiple businesses, each with a separate meter, but all at an office park within a single physical site. Customers would like to share the output from a single energy generation installation.	Multiple account holders, across separate sites, each with their own meter, act as an aggregated customer in which excess generation by some members is used to offset usage by other members in the group.
How Handled By Net Metering Today	The only case allowed today	**Not Allowed**; extremely cumbersome work-around possible.	**Not allowed**, no work-around	**Not allowed**, no practical work-around	**Not allowed**, no work-around

In all these cases, the renewable energy system is still bound to the constraints of a Net Metering application – connected at the distribution level (not transmission), and limited in size (currently 2MW per generation site). It therefore remains a highly distributed approach to generation, and delivers the full benefits of distributed generation. A 500KW Community Renewable Energy site is physically identical to a 500KW customer sited net metering project that might be done today. To retain this distributed generation value, we expect that most Community Renewable Energy projects will be in the 500-2000KW range, perhaps slightly larger if the net metering cap is raised.

In considering the Community Net Metering concept, we focus on the most general Community scenario. Enabling that most abstracted configuration automatically enables

all the other valuable scenarios as well. The remainder of our comments will therefore focus on the full Community Renewable Energy construct, with the implied recognition that the other sub-set scenarios are automatically covered at the same time.

Motivations and Benefits

The Community Net Metering framework will have a profound impact on the development of the distributed renewable energy markets in NJ, and represents a dramatic step forward in NJ's pioneering leadership in sustainable energy. In essence, Community Net Metering allows generation systems to be built for whole communities at a time, rather than focusing exclusively on less efficient individual facilities. There are numerous technical, operational, finance, and marketing advantages to this approach, the merits of which justify creation of this new market model. But Community Net Metering also directly supports the state's aggressive renewable energy goals, and its primary objective of bringing the most renewable energy, to the most people, at the lowest possible cost. There are therefore strong *public policy* motivators for making this small but profound change to the existing net metering structure:

- **Expands the market:** many customers cannot participate in renewable energy generation (especially solar and wind) due to site restrictions – as much as 70-80% of interested parties are currently barred from participation for these reasons. Meanwhile, there are many "resource rich" sites that are restricted to building systems no bigger than their local load will allow. Imagine a very large warehouse that could support acres of rooftop solar, but which has only a small onsite use for electricity. These two factors leave a large fraction of the potential market unable to contribute to the state's renewable energy goals. The Community Net Metering paradigm connects these "resource rich" customers with the "renewable disenfranchised", dramatically expanding the amount of renewable energy (especially solar) that can be developed within the state. Our analysis indicates that in the case of solar, the Community Renewable Energy paradigm expands the developable solar potential in the state by a factor of three to four. The Community Net Metering innovation is therefore crucial to realizing the state's expanded sustainable energy goals.

- **Introduces economic efficiency**: The Community Net Metering framework creates an efficient economic model, especially for bringing renewable energy to smaller facilities. The Community-based paradigm allows relatively large scale (and cost effective) systems to be built to directly serve smaller consumers (residential, light commercial, not-for-profits, municipal, etc) – which if they were equipped with their own small-scale systems – would cost more and hence be a greater burden on the rate payer. This model also attracts large and efficient financing support, and can maximize leverage of tax incentives for all customers. Most importantly, it allows the system cost to be amortized over a longer term than would be typical in a retail application, which can cut the perceived cost of renewable power in half. The Community construct is unique in that it promotes

lower cost larger scale systems, but in a highly distributed form appropriate for capturing full retail electron value.

- **Removes inequities**: All renewable energy incentives are funded by all consumers, especially through the RPS mechanism. But as noted above, the vast majority of those customers are unable to benefit directly for a wide variety of mostly site related reasons. The Community Net Metering concept removes this inequity, and allows ALL NJ citizens, companies, and organizations to participate in the adoption of renewable energy, regardless of their local site or socioeconomic conditions. This dis-enfranchisement is particularly severe in urban areas, where the electrical demand is frequently the highest. We believe this factor alone is a profound motivator for the adoption of the Community Net Metering construct.

- **Attracts market development resources**: Community Net Metering creates the kind of large scale market that attracts significant development resources, especially financing capital. By attracting financing support, "pay as go" programs can be offered that make renewable energy highly affordable to all socioeconomic classes. Financiers have demonstrated a strong interest in investing in larger systems that serve aggregated customer bases (where credit risks can be minimized), compared with individual site installations. As the market matures, especially with the help of a more efficient economic model that can attract large scale private capital, the industry's need for separate incentives will continue to decline.

- **Diversity and Innovation**: The Community Net Metering concept is very rich, and opens up new opportunities for a wide variety of new and existing market participates to innovate. The renewable energy industry is still quite young, and the Community framework creates an extraordinary pathway for unleashing the creativity, enthusiasm, and pioneering drive that helps new markets evolve and mature.

- **Introduces scale and professional management**: unlike many customer-sited applications, Community Net Metering projects will be managed professionally to ensure maximum production. This maximizes the return from every invested dollar – including those from the rate payer - and helps these new distributed assets integrate effectively with the emerging "smart grid". Community Net Metering generation sites also become ideal distributed locations for other energy delivery services, such as storage and regulation. If fully developed, Community Net Metering generation sites can become the anchors for "islands of sustainability" that support multiple goals within the Energy Master Plan.

The Community Net Metering construct therefore accomplishes several key strategic goals for the program: it removes market barriers and expands the addressable market, enables more optimized economics and allows smaller customers to be served more cost effectively, removes profound inequities in the market (i.e., engages citizens that pay into

the program but can't benefit today), and attracts key market development resources (like capital) that eventually reduce the need for state incentives. And it realizes these benefits by making a small, but profound, change to the existing net metering paradigm. No fundamentally new policies or programs are needed, and much of the existing market infrastructure and institutional knowledge can be leveraged to advantage.

The Community framework allows resource-rich hosts to join with motivated renewable energy consumers in a way that is locally visible, economically efficient, and directly satisfying – regardless of a customer's local site constraints. And since Community Renewable Energy sites are still highly distributed (i.e., not centralized large scale wholesale plants), they deliver the same benefits that accrue from any distributed generation paradigm – especially the "local presence" that motivates participation by many customers.

A Proposal For Implementation

As defined above, Community Net Metering is based on abstracting the concept of "Customer Generator" to include a group of participants acting in aggregate. Implementing Community Net Metering depends upon applying the existing Net Metering provisions to this collective case, while recognizing that the net excess generation of some group members may be used to offset the usage of other members within the same group. The following proposal recommends an approach to implementing this abstraction, with the goal of minimizing complexity, retaining and leveraging existing systems and procedures to the greatest extent possible, and minimizing deviation from the existing Net Metering rules. As a solar developer, this is not necessarily the version of Community Net Metering we would prefer, but it represents a balanced approach that we hope reflects the needs of all shareholders.

- A Community Net Metering project starts with the creation of a **Local Renewable Energy Collaborative** (LREC). A LREC (typically a LLC) is formed by any group of interested parties for the purpose of building a renewable energy system and sharing its output using the Community form of Net Metering. A LREC is its own distinct legal entity, will typically have its own unique name, and can be of almost any size (up to the generation size limits) as along as all the members are within the same utility (EDC) territory. The LREC itself is the "customer" for the purposes of applying the Net Metering requirements and billing arrangement. It is expected that companies will emerge to provide the services necessary to form and operate LRECs.

- There are two types of customers within an LREC: *Hosting* customers that provide the site for the shared renewable energy system, and *Consumer* customers that are net consumers sharing the electricity generated by the hosting sites. Conceptually, the LREC will hold a master account with the local utility, and upon joining the LREC, each member's utility meter is aggregated (assigned to) the LRECs master account. Consuming members of an LREC retain their

original utility meter, which is read monthly by the utility as usual. Hosting customers may have their meter changed to be a bi-directional meter capable of measuring net energy flow as with typical net metering installations today. It should be allowed to establish a new service, with a new net metering meter, at a Community hosting member's site, if a suitable service and meter are not already present.

- Any type of customer can join a LREC and participate in a Community Net Metering project: residential, commercial, not-for-profit, municipal, etc. Customers on different tariffs can join the same LREC. Each member must sign a contract with the LREC to join, the terms of which must be clearly stated, particularly regarding how generation sharing and billing within the LREC is to be provided. Hosting customers are expected to make a long term commitment to the LREC through a separate hosting agreement, but consumer customers should be allowed to exit the LREC under agreed upon conditions. It is expected that the LREC will solicit new members as needed to maintain balance between the renewable generation and total electricity consumption by the LREC members. There are no geographic constraints on LREC membership, other than the constraint that all members must be within the same utility territory.

- An LREC must include at least one Renewable Energy generation system, capable of producing a net excess of electricity relative to the hosting site, as defined by the NJ Clean Energy Program. An LREC may include more than one hosting site, and may include different types of generation (mixing solar and wind, for example). An individual system (on a given interconnect) is limited in size by the net metering cap (currently 2MW), but obviously individual system size will exceed the historical load of the hosting customer. Total estimated production by all generation systems within the LREC may not exceed the total consumption projected by the initial LREC members, and total rated AC capacity of all generation system within the Community group may not exceed the Net Metering cap (currently 2MW) in order to retain the distributed value of the Community Net Metering solution. There is no requirement that an LREC provide ALL of the energy needed by its members, and in fact it is likely that it will typically only provide a fraction of the total needed since predicting both consumption and generation in advance is impossible. All LREC systems must be connected at the distribution level, and are eligible to generate RECS or SRECs (if solar). LRECs with solar generation systems can apply to the SREC pilot program to earn their SRECs, and may participate in any BPU-sponsored SREC-contracting programs (such as the EDC-securitization program recently approved), consistent with the rules of those programs. LREC generation systems are not eligible for rebates regardless of size.

- Renewable generation systems within a Community Net Metering project must still apply for an interconnection with the EDC as per existing Net Metering practice. The only change from existing customer sited installations is the elimination of the constraint that system size cannot exceed historical load. Based

on the assessment done through interconnection application and review, Community Net Metering solutions will retain the same safety and reliability profile present with the current Net Metering program. Physically, a 500KW community installation is identical to a 500KW customer sited installation already allowed today. It is expected that all Community installations will require Level 2 Interconnection review.

- The rating and billing of net metering for a LREC could conceivably become quite complex, since the members could be on different tariffs, and as a result of inherent complexity in tariff structure (demand charges for some but not others, multi-tiered pricing, time of day options, etc). There are two simplifying concepts that can make Community Net Metering fairly simple: a) all settlement is done in dollars (not kws or kwhrs), and b) all hosting sites are on a basic residential net metering tariff, rated simply on kwhrs generated. These two program design parameters are essential to making the billing aspects of the Community Net Metering program both fair and manageable.

- Billing for an LREC would be managed as follows:

  - All members of the LREC continue to get a monthly "bill" from the utility, based on the utility reading their meter as they do today. This bill rates the customer's consumption as per their normal tariff. Since they are part of the LREC, this monthly communication is marked "notification of charges" (or something similar), and there is no balance due from the customer to the utility.

  - In the case of consuming customers, this looks just like a regular bill with a net dollar-amount incurred, and would be identical to their regular utility bill (if they weren't part of the LREC) except for the fact that that it is a "notice of charges" with no balance due. For hosting customers, the net excess generation is rated at the residential retail rate and shows a "credit" in dollars[1]. As with the consuming members of the LREC, the hosting customer's "bill" is marked "notice of charges", and there is no monetary transaction required directly between the customer and the EDC.

  - The EDC sends copies of all the "notice of charges" for members of the LREC to the LREC itself, and separately renders a BILL to the LREC based on the total of the consuming customer charges, minus the credits from the hosting customer – <u>all done in dollars</u>. Differences in tariffs, and complexities resulting from demand vs energy charges, are therefore not

[1] This is a slight change from the way net metering calculations are done today, whereby (conceptually) kwhrs output to the grid are subtracted from kwhrs taken in from the grid, the net of which is used to rate the customer's bill. Any credits are carried over as kwhrs, not dollars. In the Community Net Metering case, a hosting customer's net generation (output minus consumption) is rated at the full retail rate to compute a credit in dollars. It is this dollar amount that is used to offset consumption (via dollars) by other members of the LREC. Credit carry over, if any, is handled in dollars at the LREC level, not the hosting account.

relevant in the computation of the aggregated LREC net metering bill. The LREC pays that bill to the utility, acting as the "collective customer" on behalf of its members. If generation exceeds consumption within a given month, that net credit (in $) is carried over on the LREC's bill), but is not directly visible to the individual members through their utility billing. If LREC generation is not sufficient to cover the needs of the consuming members, the difference is "bought" from the EDC, just as with net metering today. All collection issues, if any, are settled between the LREC and the EDC. In extreme cases of non-payment, the Community LREC account is terminated, and all member customers revert back to being individual customers of the utility as before.

- The LREC pays the monthly bill to the EDC, and then based on the "notice of charges" inventory provided by the EDC, renders bills as appropriate to members of the LREC. Host customers would typically be paid for the amount of electricity they helped generate, while consumers are billed for the amount of electricity they used. The exact mechanics and rating for sharing of the monthly generation is up to the LREC itself, as spelled out in the contract it holds with its members. These billing arrangements will typically vary from LREC to LREC. Each month, LREC members see a) a notice of charges from the EDC based on a read of their utility meter as usual, and b) a bill from the LREC for their consumption, as offset by renewable energy generation within the group.

- With net metering today, the EDC gets no compensation for the kwhrs generated by a net metering site. In the case of a Community Net Metering solution, the EDC is clearly providing a service in the form of the copper (and management thereof) that connects the LREC members. We therefore believe that it would be appropriate for the EDC to earn compensation for these services, structured as a "right to use" (RTU) fee that is paid by the LREC in proportion to the net generation of the hosting sites. The RTU fee should be subject to stakeholder input and will of course be determined by the board in its overall approval of the Community Net Metering program. To maintain the economic balance of net metering, however, and in recognition of the significant distributed generation value provided by Community Net Metering systems, we believe this RTU fee should be no more than $0.01/kwhr. This structure is better for the EDC than allowed by net metering today, but if held within appropriate limits, maintains relatively full retail capture of net metering generation so that the community system economics are viable. If it is higher than this amount, the economics degrade significantly. The monthly RTU fee would be paid to the EDC by the LREC on their monthly bill.

- An Example: Three parties form a simple LREC: a customer with a large solar field, a residential consuming customer, and another commercial consuming customer. The total consumption from the three customers is 35,000 kwhrs/yr, and the solar system is sized to generate approximately 30,000 kwhrs/yr. In a

given month, the residential consumer consumes 1,000 kwhrs and is sent a "notice of charges" rated at $155. The commercial customer consumes 2,000 kwhrs and is sent a "notice of charges" rated at $257 (reflecting both kw and kwhr charges). The hosting customer consumed 500 kwhrs, and the solar field itself generated 2,700 kwhr. That customer therefore receives a "notice of charges" showing a net generation of 2,200 kwhrs, rated at the retail rate of $341 AS A DOLLAR CREDIT. The EDC sends all three summary of charges to the LREC at the end of the month, and a separate bill for $71 ($155 + $257 – $341), plus an RTU fee of $22 (2,200 X $0.01/kwhr), for a total bill of $93. The LREC pays the $93 bill to the EDC, and then (based on the notice of charges detail provided for each member by the EDC) renders bills (and payments as needed) to the members of the LREC according to its contract terms. The members make payments to the LREC and the LREC (acting as a collective customer) pays the aggregated bill to the utility. Had there been excess generation in this month, that credit (in dollars) would have been carried over to the following month. If at the end of the true-up period any credit remains, it is paid to the LREC adjusted to wholesale rates.

Required Net Metering Changes

Implementing the Community Net Metering framework for renewable energy systems will require changes in the existing Net Metering rules (14:8-4). Fortunately, relatively few changes are required, since all the Net Metering provisions are built on the concept of a "Customer Generator" and an "Applicant". By clarifying these two concepts to include a Community that aggregates multiple participants acting as a single legal entity, all the provisions that refer to that abstracted definition of customer are thereby extended.

In short, the required changes a) allow a legal entity representing an aggregated group of members to apply for community net metering, b) allow a generation site to produce more energy than the local site consumes, as long as it doesn't exceed the usage of all community members combined, and c) introduce a modified billing scenario in which consuming members receive a notice of charges, hosting customers also receive a notice of charges showing the net excess rated in dollars using the residential tariff, and an aggregated bill reflecting the net charges for all members of the community together is rendered to and settled by the aggregated Community Customer entity.

The following recommended changes are relative to the title 14 revision as published in the NJ Register on April 16, 2007, starting on page 139. Existing Net Metering rules are in normal blue text, proposed additions are in *green italic text,* and ~~red strike-out text~~ reflects existing text that should be removed. Unaffected sections of the existing rules are not shown. Not all of the proposed changes are NECESSARY, since in several cases we provided additional clarity on details that could be inferred from the abstraction of "customer", but which we believe benefited from explicit treatment in the rule.

In section **14:8-4.2 Definitions,** three changes are needed: the addition of a new "community customer" concept, and amendment of two existing definitions to include that "aggregated customer" case:

1. *"Community Customer" means a single legal entity that represents a group of customers acting collectively in the production of distributed renewable energy for their own use. A Community Customer may include multiple residential, small commercial, and other customers, each with one or more separate utility meters, who are at separate physical sites and are on separate tariffs, but who function together as a single aggregated entity in their development of a net metered system. In this case, excess generation by some members of the group is used to offset consumption by other members within the same group. Any number of participants may join to become a Community Customer, as long as all the members are within the same electric distribution company (utility) territory. The electric distribution company (utility) treats the aggregated Community Customer entity as the customer for purposes of billing and the application of all net metering provisions.*

2. "Applicant" means a person who has filed an application to interconnect a customer-generator facility to an electric distribution system, *and may include individuals (people, businesses, or organizations) or a Community Customer representing a group of individuals in aggregate.*

3. "Customer-generator" means a residential or small commercial customer that generates electricity, on the customer's side of the meter, *and may include a Community Customer representing a group of individuals acting in aggregate.*

14:8-4.3 Net Metering General Provisions

4. (a) All Electric Distribution Companies (EDC) and supplier/providers, as defined at N.J.A.C. 14:4-1.2 and 14:8-1.2 respectively, shall offer net metering to their residential and small commercial customers, as defined at N.J.A.C. 14:8-4.2, that generate electricity, on the customer's side of the meter, using class I renewable energy sources. *For individual customers* ~~[, provided that]~~ the generating capacity of the customer-generator's facility ~~[does]~~ *will* not exceed two megawatts, and ~~[does]~~ *will* not exceed the amount of electricity supplied by the electric power supplier or basic generation service provider to the customer over an annualized period. *For a Community Customer, the generating capacity of a given customer-generator's facility will not exceed two megawatts at a single site, but MAY exceed the amount of electricity provided by the electric power supplier or basic generation service provided over an annualized period at that particular site hosting the generation facility. There may be more than one site hosting a generation facility within a Community Customer group, so long as the total estimated annual generation of all sites together (in kwhr) does not exceed the total estimated consumption of the Community Customer members (in kwhrs) over*

an annualized period, and the total rated capacity of all generation sites within a Community group does not exceed two MW.

5. (b) The EDC shall develop a tariff providing for net metering. Each supplier/provider and EDC shall make net metering available to eligible customer-generators, *including community customer-generators,* on a first come, first-served basis.

6. (c) If, in a given monthly billing period, a customer-generator supplies more electricity to the electric distribution system than the EDC or supplier/provider delivers to the customer-generator, the EDC and supplier/provider shall credit the customer-generator for the excess. To do this *for an individual customer*, the EDC or supplier/provider shall reduce the customer generator's bill for the next monthly billing period to compensate for the excess electricity from the customer-generator in the previous billing period. *To do this for a Community customer, the computation of excess will be done at the aggregate level based on the sum of net excess generation for each generation facility within the community customer group minus the sum of net consumption within the community customer group, In this case the EDC or supplier/provider shall reduce the community customer generator's bill for the next monthly billing period by the dollar amount value assessed to the excess electricity (at the full residential retail rate) from the community customer-generator in the previous billing period, as applied to the bill rendered to the Community Customer entity (not the individual members).*

7. (e) At the end of each annualized period, the supplier/provider shall compensate ~~[the]~~ *any individual* customer-generator for any excess kilowatt hours generated, at the electric power supplier's or basic generation service provider's avoided cost of wholesale power, as defined at N.J.A.C. 14:8-4.2. *For a community customer-generator, the supplier/provider shall pay the accumulated credit in dollars, adjusted to reflect the service providers avoided cost of wholesale power, as defined at N.J.A.C. 14:8-4.2.*

8. (g) Each supplier/provider or EDC shall submit an annual net metering report to the Board. The report shall be submitted by June 30th of each year, and shall include the following information for the one-year period ending May 31st of that year:
    1. The total number of customer-generator facilities, *with a breakout identifying individual and community net metering customers*;

9. (j) A supplier/provider or EDC shall provide net metering at non-discriminatory rates. *For an individual customer-generator, net metering rates will be* ~~[that are]~~ identical, with respect to rate structure, retail rate components, and any monthly charges, to the rates that a customer-generator would be charged if not a customer generator, except that a supplier/provider or EDC may use a special load profile for the customer-generator, which incorporates the customer-generator's real time generation, provided the special load profile is approved by the Board. *In the*

case of a community net metering customer, the aggregated community applicant will be assessed charges in dollars, reflecting the net difference in dollars between all consuming customers within the group (rated at their usual tariff rate, with identical rate structure, retail rate components, and any monthly charges), and net energy producers within the group (at the standard residential tariff rate with identical rate structure, retail rate component, and any monthly charges). Individual members of the community group will receive a "notice of charges" monthly from the EDC although not requiring payment directly from that community member to the EDC, and the community customer entity will receive an aggregated bill showing charges assessed to individual members, and the net balance due (or credit) from the community customer acting on its members behalf. All fiduciary transactions for community customer-generators are settled between the community customer entity and the EDC.

14:8-4.4 Meters and Metering

10. (a) A customer-generator facility used for net metering shall be equipped with metering equipment that can measure the flow of electricity in both directions at the same rate. This is typically accomplished through use of a single bi-directional meter. *In the case of a community customer-generator, only the sites equipped with a renewable generation facility will need a bi-directional meter, and other customers (without a generation facility) within the community group will retain the existing utility meter without change.*

11. (b) A customer-generator facility, *either for an individual customer-generator or for the generating sites of a community group,* may choose to use an existing electric revenue meter if the following criteria are met:

    1. The meter is capable of measuring the flow of electricity both into and out of the customer-generator's facility at the same rate; and
    2. The meter is accurate to within plus or minus five percent when measuring electricity flowing from the customer-generator facility to the electric distribution system.

12. (c) If the customer-generator's existing electric revenue meter, *either for an individual customer-generator or for the generating sites of a community group,* does not meet the requirements at (b) above, the EDC shall install a new revenue meter for the customer generator, at the company's expense. Any subsequent revenue meter change necessitated by the customer-generator, whether because of a decision to stop net metering or for any other reason, shall be paid for by the customer-generator.

13. (d) The electric distribution company shall not require more than one meter per customer-generator, *either for an individual customer-generator or for the generating sites of a community group*. However, an additional meter may be installed under either of the following circumstances:

1. The electric distribution company may install an additional meter at its own expense if the customer-generator consents; or
2. The customer-generator may request that the EDC install a meter, in addition to the revenue meter addressed in (c) above, at the customer-generator's expense. In such a case, the EDC shall charge the customer-generator no more than the actual cost of the meter and its installation.

14:8-4.5 General Interconnection Provisions

14. (d) An application for interconnection review shall be submitted on a standard form, available from the EDC and posted on the Board's website at www.bpu.state.nj.us. *In the case of a Community Applicant, one interconnection application is required for each generating installation, but the Community entity may submit the applications and act as the customer regarding all aspects of the interconnection approval.* The application form will require the following types of information:

Conclusion

Community Net Metering creates a vehicle for neighbors to band together and collaborate in the generation and use of locally provided renewable electricity. Individual customer sited solutions will continue to be supported and are both optimal and desired in many cases. But the proposed expansion of the current Net Metering rules allows the construction of renewable energy systems for an entire community at a time, which can be much more effective than building for each customer (especially smaller customers) individually. This approach brings the most renewable energy, to the most people, at the lowest possible cost. In the case of solar, "sharing a larger solar installation" is highly beneficial, since it allows "solar rich" sites to be fully utilized contributing solar electricity to the larger community, and gives "solar handicapped" customers access to locally generated solar electricity despite the limitations of their individual site. This solution is highly scalable, easily financed, and makes solar more equitably available to all citizens in the Garden State – yet continues to encourage highly distributed installations with all the benefits that implies. The proposed implementation approach builds heavily on the existing Net Metering program, and requires relatively few, but profound, changes that enable the concept of an "aggregated customer". The Community form of Net Metering would be a pioneering enhancement to NJ's already strong program, and would set the gold standard for optimizing the use of Net Metering to realize the widespread adoption of sustainable energy solutions.