



# Creating Renewable Energy Opportunities

Summary of the October 2015  
Strategic Dialogue and Future Plans

of the

Utility - Corporate Buyer  
Collaborative Forum

June 2016

## Disclaimer

This summary reflects the discussion among participants and their views on the evolving electricity sector and is not a formal policy statement by the organizers.

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## Executive Summary

Corporate buyers are playing an increasing role in U.S. electricity markets as they set and seek to meet ambitious climate and renewable energy goals. In 2015 large corporate customers contracted for a record 3.2 GW of renewable energy (RE). Moreover, corporate buyers were responsible for over half the wind power purchase agreements contracted in 2015. The primary motivation for these buyers' investments in RE are increasingly ambitious sustainability goals, as well as the reduced fuel cost and price volatility.

Despite growing direct RE procurements, corporate buyers have found RE development complicated and time consuming. That is why 58 large US companies have signed the Corporate Renewable Energy Buyers' Principles, which articulate their needs to utilities, utility regulators and RE providers.<sup>1</sup> Given the complexity of RE deals in restructured markets, where these deals are allowed, and the need to procure large amounts of RE in regulated markets as well, corporate buyers are committed to working with regulated utilities and utility commissions to develop new RE products and streamline associated regulatory approval processes. For utilities, low carbon power is recognized as both a necessity and an opportunity, though it brings its own set of challenges. The industry is steadily reducing the carbon content of electricity in the U.S., and is committed to responding to customers' changing needs. This response, however, has to maintain grid reliability, be competitive in costs, and ensure that costs of new RE products are shared in a transparent, equitable way with other customers.

In 2015, World Wildlife Fund (WWF), World Resources Institute (WRI) and the Edison Electric Institute (EEI) initiated the Utility–Corporate Buyer Collaborative Forum to provide a platform for dialogue and cooperation between utilities and their corporate customers. The goals of the collaboration are to develop a shared understanding of participants' respective needs and constraints, and identify collaborative opportunities for improving utility-scale RE products.

The collaboration started with a task force of utility executives created by EEI and a group of corporate buyers' principles signatories. At an initial workshop in April 2015, the participants agreed to collaborate on ways to align utilities' and corporate buyers' efforts, document innovative utility offered RE products in the marketplace and develop new innovative products that could meet the needs of customers and utilities. At a second meeting in October 2015 buyers and utilities<sup>2</sup> reviewed 15 existing utility RE products to understand what features work for corporate buyers, and identified opportunities for improving the next generation of utility-offered RE products.

Buyers' most fundamental, non-negotiable need remains a reliable power supply. Beyond that, when sourcing renewable power, they are looking for utility RE products with the following key features: (1) price predictability, (2) transparent and predictable contract terms, (3) simple transactions, (4) cost-competitive energy prices, (5) the ability to retain the Renewable Energy Credits (RECs) to allow credible claims of green power use, (6) adding 'new' renewable generation above the current grid mix and state renewable portfolio standards, and (7) consumption from resources as local to their facilities as possible.

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<sup>1</sup> [www.buyersprinciples.org](http://www.buyersprinciples.org). The 58 buyers' principles signatory companies have 44 million MWh of annual demand each year until 2020 and about three times that beyond.

<sup>2</sup> Meeting participants are identified in Appendix C.



There are variations on these priorities by customer and across industry sectors, but at a high level, these needs and wants are common across many customers and sectors.

This document reports the outcomes of the October 2015 meeting and the future plans for the collaboration, and offers:

- A unique survey of state-of-the-art RE products (see Appendix E).
- RE product design features most valuable to corporate buyers. Buyer priorities are described on pages 7 and 10, and product design features that respond to these priorities are summarized in table 2, pages 11-13.
- Suggestions for improving the next generation of products (pages 14 and 15).

The meetings have helped build needed trust and identify areas of common ground between participating buyers and utilities, including:

1. A commitment to continuing to work together and exchange learning. Participants recognize that the development of grid-integrated renewable energy products is not easy, and that there is great potential benefit in working together, testing ideas and replicating successes over time. Understanding and trusting each other is key. This Utility–Buyer Collaborative Forum can continue to be an important incubator and sounding board where lessons learned about different approaches can be shared, discussed, amplified, and accelerated.
2. Utility scale renewable energy can offer significant cost advantages over smaller scales. Large customer demand can be more easily met with utility-scale renewables, can result in lower costs and can potentially be sited in ways that offer significant benefits to the grid.
3. Grid modernization is needed. Participants recognize that distribution grids need to be modernized to support renewable energy facilities. As variable renewable energy resources grow at scale, the grid needs new capabilities to integrate these new resources in ways that preserve and enhance reliability and power quality. A modernized grid is the enabler of a clean energy future.
4. Regulatory flexibility and evolution are needed. Utilities need regulatory policies and models to meet the changing needs of commercial and industrial customers. Utilities need new flexibility to offer customers specialized optional services, and to streamline the procurement and approval of such services at the scale and pricing that customers seek. A key aspect of inventing the future will be educating policy makers about new regulatory policies and frameworks needed to enable the future. Participants recognize that neither utilities nor corporate buyers can be as effective in advocating for new regulatory policies alone as they can be together.

The Utility–Corporate Buyer Collaborative Forum is continuing. Next steps include the following:

***A. Continue the collaboration to provide an internal and external communication platform***

- Hold regular internal webinars to exchange case studies, lessons-learned and best practices on current RE products; provide a forum for developing a ‘consensus statement’ for both utilities and buyers to articulate the common ground on RE products and to recommend regulatory modifications necessary to enable these products.

- Broaden external communication to regulators, policy-makers and other stakeholders by showcasing RE product ‘wins’ at ongoing utility and customer meetings; build awareness among regulators (via NARUC), customers, customer advocates, EEI members, and other industry stakeholders regarding opportunities for utility-customer collaboration and the changes needed to meet evolving customer needs.

#### *B. Advance pilots on cost-effective partnerships*

- Develop new RE products and improve existing ones: solicit interest from utilities and buyers to build integrated pilots that build and innovate on existing RE products.
- Test grid-optimized deployment: develop educational opportunities for customers, utilities, and others regarding the siting of community RE facilities. Review state-of-the-art distribution planning methodologies (e.g. CA, NY), and develop one or more demonstration projects, in which a utility and a buyer coordinate on locating RE facilities to maximize benefits to the grid.

#### *C. Explore scenarios for allocation of renewable energy attributes (RECs and others)*

- Broaden the understanding of shifting implications on RE claims from policy changes, such as mass- and rate-based Clean Power Plan compliance.
- Set up a working group with utilities and buyers to research criteria needed to satisfy allocation of RE attributes (Renewable Energy Credits RECs and other attributes) from an RE facility that serves a specific customer.

The Utility–Corporate Buyer Collaborative Forum is open to additional participants. Please contact EEI, WWF, or WRI staff to find out how you can get involved:

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## Introduction

Given the importance of climate change as a key public policy issue, nearly half of Fortune 500 and 60% of Fortune 100 companies have established aggressive climate and clean energy goals.<sup>3</sup> An increasing number are setting 100% renewable energy (RE) goals. For example, Procter and Gamble has set a goal to be powered by 30% RE by 2020 and by 100% in the longer term; Facebook aims for 50% RE by 2018; Walmart has set a goal to procure 7 billion kWh of RE by 2020 on a path to 100% RE. They are setting goals not only to reduce greenhouse gas emissions and other impacts of their operations and products, but also to improve operational efficiency and capture business value from RE through competitive fuel costs and price predictability.

As a result, corporate demand for RE is surging. In 2015 large corporate customers contracted for a record 3.2 GW of RE,<sup>4</sup> or over 21% of the 16.4 GW of RE added to the U.S. grid in 2015.<sup>5</sup> The contracts signed in 2015 tripled corporate contracts over 2014, which themselves had doubled over 2013. Of 4,000 MW of wind energy contracted through power purchase agreements (PPAs) in 2015, large corporate customers signed more than half of them (52%).<sup>6</sup>

Growing wind procurements notwithstanding, corporate buyers have found the development of RE complicated and time consuming. RE markets are still maturing: each deal has to be custom designed and negotiated, and, where utilities are involved, has to be approved by the relevant regulatory authority. Corporate energy customers are largely executing RE contracts in restructured markets, also called deregulated markets. However, these customers are also looking for RE solutions that meet their goals in regulated markets, within the same grid region or service territory as their facilities. Because of this and the size and complexity of deals, corporate buyers are increasingly committed to working with regulated utilities to develop new RE products.

For utilities, low carbon power is recognized as both a necessity and an opportunity, though it brings its own set of challenges. The industry is steadily reducing the carbon content of electricity in the U.S.<sup>7</sup> and is responsible for a large majority of installed RE capacity. Utilities also are modernizing distribution systems to provide a pathway to cleaner energy futures (i.e., by providing the functional ability to integrate growing volumes of renewable energy while maintaining the reliability and power quality customers need). Of course, bringing on new RE facilities for corporate customers must be done in a way that maintains grid reliability, and shares any incremental costs in ways that are transparent and fair to other customers. Utility rates are regulated in a cost of service framework that supports standard services, priced via cost-based tariffs. This framework does not easily accommodate the custom supply deals that large customers want. In addition, unbundling grid services, and explaining to customers which services they are using to enable RE facilities, is not easy.

Large buyers took a major step toward to address these challenges in July 2014, when a dozen companies facilitated by World Wildlife Fund (WWF) and World Resources Institute (WRI), released the Corporate Renewable Energy Buyers' Principles ([www.buyersprinciples.org](http://www.buyersprinciples.org)). The buyers developed the principles to

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<sup>3</sup> Power Forward 2.0, WWF, Ceres, Calvert Investments, 2014.

<sup>4</sup> Rocky Mountain Institute, Jan. 2016.

<sup>5</sup> Bloomberg New Energy Finance, Feb. 2016.

<sup>6</sup> Rocky Mountain Institute, March 2016.

<sup>7</sup> US EIA, Monthly Energy Review, March 2014 (~0.63 tons/MWh in 2000 to 0.52 tons/MWh in 2014).

share their challenges and needs with utilities, utility regulators and RE providers. The buyers view the principles as a foundational step toward identifying common ground and a shared vision for working together. Today, 58 corporate signatories have signed the principles, representing close to 44 million MWh of annual RE demand until 2020 and two to three times that in the longer run.

To enhance the collaboration between corporate buyers and utilities, WWF, WRI and the Edison Electric Institute (EEI) in 2015 initiated the Utility–Corporate Buyer Collaborative Forum for utilities and corporate customers to develop a shared understanding of respective needs and constraints, and identify collaborative opportunities to advance innovative utility-scale renewable energy (RE) products, particularly in regulated markets.

The collaboration began with a meeting between a task force of six utility executives created by EEI and an equal number of corporate buyers' principles signatories. At this initial workshop in April 2015,<sup>8</sup> the participants agreed to collaborate on ways to align utilities' and corporate buyers' efforts, document innovative utility offered RE products in the market place and develop new innovative products that could meet the needs of customer and utilities. At the second meeting in October 2015, buyers and utilities<sup>9</sup> convened to develop a shared understanding of the needs and constraints of buyers and utilities and identify collaborative opportunities to advance together. They reviewed 15 existing utility RE products to understand what features work for corporate buyers, and identify opportunities for improving the next generation of utility-offered RE products.

We learned that the buyers want to work with utilities to develop new incremental RE supplies (i.e., over and above RE that utilities may have developed already); buyers want to be able to tap into the fixed-price benefits that renewable power can offer over the long-term; and importantly, they do not want to have to spend endless hours negotiating unique transactions with energy suppliers. In essence, corporate America wants to streamline the procurement process for RE, especially in regulated markets where each unique transaction has to be approved by regulatory authorities. They want to move toward more uniform products and transactions, and simpler regulatory approval processes.

Utilities, for their part, want to accommodate these customers while ensuring that the costs of new RE products be shared in ways that are transparent, equitable, and fair. Utilities understand the need to evolve, and they see the Utility–Corporate Buyer Collaborative Forum as helping to drive adaptive change in both their business and regulatory models. They want to work with customers to develop new products which are mutually beneficial – the proverbial 'win/win.' In the end, utilities and corporate buyers will need to work together to advocate for new regulatory policies that will make it easier for utilities to provide custom products and services.

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<sup>8</sup> Meeting results of the 1<sup>st</sup> workshop in April 2015 can be found at [www.buyersprinciples.org](http://www.buyersprinciples.org).

<sup>9</sup> Buyers included Cisco Systems, Facebook, General Motors, IBM, Procter and Gamble, and Walmart; utilities included American Electric Power, Duke Energy, Tucson Electric Power, Xcel Colorado, and Xcel Minnesota. Madison Gas & Electric Company and Southern California Edison Company are members of the EEI Task Force and attended the initial April 2015 workshop, but were unable to attend the October 2015 meeting due to scheduling conflicts. Meeting participants are identified in Appendix C.



Participants of the Utility–Corporate Buyer Collaborative Forum convened for an initial workshop in April 2015, where they voted to move forward four collaboration priorities:

1. Generate deeper understanding of existing electricity products/transaction structures.
2. Develop new, buyer-utility driven generic models that build and innovate on existing models that could be more flexible and replicable across regulated markets.
3. Define common principles and vision to align buyer and utility efforts over the mid- and long-term.
4. Develop collaborative statements and awareness campaigns to build trust, demonstrate commitment among all stakeholders, and gain political support.<sup>10</sup>

Consequently, the focus for the October 2015 meeting was on understanding and evaluating existing RE products and using lessons-learned to inform the next generation of RE products. EEI, WWF, and WRI contracted ICF International to review current and pending utility green power products that are broadly representative of varying types of innovative RE products being offered by investor-owned electric utilities in the U.S. today. Nine products were reviewed in depth and an additional five products were reviewed for specific design innovations.<sup>11</sup>

The goals of the October meeting were to:

1. Discuss products in sufficient detail to understand specific design features which are most attractive (and least attractive) to customers, and;
2. Use these insights to guide the development of improved RE products.

## Learning from Existing Renewable Energy Products

The 15 original products reviewed are identified in table 1. They are organized into 3 categories<sup>12</sup>, as follows:

1. Shared Solar products, which are designed to supply RE to multi-user communities of customers,
2. Green Tariff products, which are riders or tariffs that are offered to give customers more control and choice by purchasing bundled RE and Renewable Energy Certificates (RECs) from either a 3<sup>rd</sup> party or a utility-owned project or portfolio of projects,<sup>13</sup> and;
3. Utility Services & Procurement products in which the utility is directly procuring RE for use within its service territory and the energy is not re-contracted to an individual customer directly. This can be done either by building and owning RE facilities itself (including customer-hosted projects) or by helping the customer finance the installation of RE facilities (typically photovoltaic – PV), but the customer does not retain the energy and/or the RECs.

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<sup>10</sup> More background on the 1<sup>st</sup> workshop in April 2015 can be found at [www.buyersprinciples.org](http://www.buyersprinciples.org).

<sup>11</sup> Since the meeting, Xcel MN announced a unique next generation product Renewable\*Connect that was added to tables 1 and 2. Appendix E provides further detail on 14 of the reviewed utility products.

<sup>12</sup> These definitions are revised from the initial definitions applied to the 3 categories as presented at the October meeting to more accurately reflect current practices in electricity markets.

<sup>13</sup> Utility RE products are not limited to solar PV, but include all kinds of renewable resources (e.g., wind, biomass).

TABLE 1: Review of Select Utility-Offered Renewable Energy Products

<b>"Shared Solar" products</b>
Tucson Electric Power (AZ) – <a href="#">Bright Tucson Community Solar</a>
Southern California Edison (CA) – <a href="#">Community Renewables</a>
*Xcel Energy (MN) – <a href="#">Solar Rewards Community Program</a>
<b>"Green Tariff" products</b>
Rocky Mountain Power (UT) – <a href="#">Schedule 32 Service for Renewable Facilities</a>
Duke Energy (NC) – <a href="#">Green Source Rider</a>
*Dominion (VA) – <a href="#">Renewable Energy Supply Service</a>
*NV Energy (NV) – <a href="#">Green Energy Rider</a>
*Xcel Energy (MN) – <a href="#">Renewable*Connect Program</a>
*Arizona Public Service (AZ) – <a href="#">Service Agreements with Renewable Power Options for Large Customers</a>
<b>"Utility Services &amp; Procurement" products</b>
PSE&G (NJ) – <a href="#">Solar Loan Program</a>
National Grid (RI) – <a href="#">Renewable Energy Growth Program</a>
Dominion (VA) – <a href="#">Solar Partnership Project</a>
Arizona Public Service (AZ) – <a href="#">Solar Partner Program</a>
Georgia Power (GA) – <a href="#">Utility-Scale and Medium-Scale Distributed Generation Procurements</a>
*Georgia Power (GA) – <a href="#">US Military Transactions</a>
<small>*Indicates utility products that were included but reviewed in less depth. Additionally, Xcel MN's Renewable*Connect was announced in November 2015 after the October meeting but it is included here because it was developed with input from the Utility–Corporate Buyer Collaborative Forum. Summaries of these products are in Annex E.</small>

In preparation for the meeting, these products were researched and summarized with input from utilities and buyers. The first step was to interview corporate buyers to understand their specific needs and concerns. What emerged was a hierarchy of needs, from 'needs' to 'strong wants' to 'wants'.

Buyers most fundamental, non-negotiable need is reliable power supply. They must have uninterrupted power to operate their businesses. Beyond reliability, customers identified a number of strong wants including the following:

- Price predictability – In order to manage operating budgets, corporate customers want to avoid fuel price volatility. Many buyers see RE as an effective way to hedge fuel price risk.

- Transparent and predictable contract terms – Customers want to understand what they are paying for and they want their total cost to be stable and predictable.
- Simple transactions – Simpler transactions allow corporate buyers to save on the human capital and other resources needed to understand and navigate RE purchases.
- Competitive energy prices – Corporate customers operate in their own competitive markets in which energy spend can impact profit margins. The larger energy is as a cost of business, the harder it is for customers to pay a premium for RE. Many buyers prefer long-term contracts that enable new generation in lieu of paying an eventual upfront premium.
- Ability to claim green power credibly – In order to be credible with the public and with emissions reporting systems, corporate customers are required to hold the RECs in order to demonstrate that they are purchasing low-carbon or emissions-free renewable power. U.S. market rules require whichever party (utility or customer) is claiming the RE to own or have the RECs retired on their behalf. Therefore, customers see REC ownership as essential to be able claim the RE they are purchasing from the utility.
- ‘New’ generation and/or additionality above state renewable portfolio standards (or current grid mix) – Consistent with the desire to retain the RECs from any RE purchases, buyers specifically want to induce *new* supplies of low-carbon power, supplies which would not be there without their purchases.
- Local energy source system – Many, but not all, customers want to be supplied by green power from a low-carbon generating facility within reasonable proximity to the buyer’s facility (e.g. within the same balancing or grid region).

Other wants include the following:

- Capital preservation – In order to manage their capital efficiently, corporate buyers prefer to allocate capital to projects in the buyers’ core businesses. The vast majority of customers prefer to rely on energy suppliers to develop and supply projects, who they perceive to have lower hurdle rates (minimum acceptable rates of return), and not directly enter the energy business.
- Access to RE for investment and expansion plans – Buyers are factoring the availability of green power into their decisions about where to locate new facilities and/or expand existing facilities.
- Standardized offering – Consistent with the desire for simpler transactions, buyers want to move toward more standardized products and deals. Like simplicity, standardization reduces transaction costs for all parties.
- Choice in RE provider – In order to ensure the best products and the best prices, buyers want competitive options (e.g. 3<sup>rd</sup> party providers can supply utility-offered products).
- Publicity for “doing the right thing” – In the interest of building businesses which will be successful over the long-term, buyers want to be recognized by the public – and most importantly, by their customers – for being environmentally responsible.
- Meeting 100% of facility electricity demand – As more companies set 100% RE goals, buyers want to induce the development of new green power supply sources large enough to supply all of their demand, net over a period time (by default on an annual basis), regardless of whether the source is supplying 100% of their instantaneous demand at a particular moment in time.

There are variations on these priorities by customer and across industry sectors, but at a high level, the above needs and wants are common across many customers and sectors.

Given these customer needs and priorities, the second step was to characterize the 15 utility RE products, focusing on design features most relevant to customer needs. How these products meet key customer needs was done in an extensive slide deck used to support discussions during the meeting (Appendix E).

## Design Features to Meet Customer Needs and Wants

The foremost priority for customers is reliability and every one of the reviewed products includes balancing of sources across the grid. This means that customers are assured of reliable power supply, regardless of the performance of their RE sources. It also means that the grid is providing new services (e.g., the kind of ramping of backup generation that keeps frequency and voltage within acceptable limits as renewable generation waxes and wanes). In this sense the grid is the ultimate enabler of “100% clean energy.”

In addition to grid-based reliability, the 15 products reflect a range of features which meet, or begin to meet, customers’ strong needs, as described above. The categories of these features, summarized in table 2, can be thought of as design features.

Price Predictability (column 2, table 2) – There are a number of products that contribute to price stability and predictability by offering a fixed price over a longer term contract: Xcel Minnesota’s proposed Renewable\*Connect program would replace the fuel clause charge with a fixed kWh charge for 5 or 10 years; Tucson Electric Power (TEP) offers a fixed price component over 20 years in their Bright Tucson Community Solar program; Public Service Electric and Gas guarantees a price floor for solar renewable energy credits (SREC), which are used to offset customer costs; National Grid offers a 20-year purchase commitment to qualified customers; Arizona Public Service (APS) offers a 20-year contract for hosting APS-owned PV installations; Georgia Power will enter into 20-year purchase commitments for green energy resources whose cost is at or below the Company’s long-run avoided cost.

Transparent terms (column 3, table 2) – RE products can be made easier for customers to evaluate if the customer’s bill is a function of fewer, more basic terms (e.g., a simple energy credit, a basic delivery charge, and a charge for standby generation that is an understandable product of unit generation, capacity cost and some probability of outage/non-availability). For example, TEP’s Bright Tucson program replaces multiple energy cost terms with a single incremental charge.

Simplicity (column 4, table 2) – RE products and programs should lower the transaction costs for customers to participate through such features as the use of an on-line registration process, integrated into existing business processes and systems (e.g., billing), the use of standard contracts and agreements, and existing rate mechanisms (e.g., fuel clauses). For example, TEP’s Bright Tucson program fully integrates with the existing billing system, and Georgia Power has standardized their offtake contracts and the interconnection process for the Advanced Solar Initiative.

Cost competitiveness (column 5, table 2) – RE products can be made more cost competitive through designs that offer potential long-term savings in exchange for a low incremental fixed cost commitment by the customer; allow the customer to contract directly with 3<sup>rd</sup> party providers, so the customer can get the best price the market has to offer; the customer can buy RE at prices that are equal to or less than the utility’s long-term avoided cost, which guarantees that RE will not cost customers more than standard grid

supply, and could cost them less; or offer high load factor customers a tariff under which they can save enough to offset the premium needed for RE. For example, Xcel MN's Renewable\*Connect program would allow customers to save money over the term of the contract if the fuel clause increases over the contract term.

REC ownership and additionality (column 6, 7, table 2) – Design features that enable customers to own RECs include: a) utility delivery services intended to “wrap around” facilities developed for customers by 3<sup>rd</sup> party suppliers (i.e., where the customer has negotiated an offtake price for the energy and/or RECs; for example Rocky Mountain Power's Schedule 32), b) green products offered by utilities in jurisdictions that don't have RPS requirements (i.e., so RECs or equivalent certificates are not needed by the utility; e.g. Georgia Power's Advanced Solar Initiative), and c) the utility develops RE facilities for a specific program, separate from RPS compliance, where the customer keeps the RECs (e.g., Xcel MN's Renewable\*Connect program). A fourth design feature may be an incentive green power tariff which allows the customer to realize savings relative to the otherwise applicable grid supply tariff, with such savings used to buy RECs for the customer (e.g. Arizona Public Services' RE Service Agreements for high load factor customers).

Large customers also express a strong preference for utility products that develop new RE projects on their behalf. Virtually all the reviewed products allow for or are specifically designed to facilitate new projects, or will have the option for new projects in the future.

Local projects (column 8, table 2) – Products that aggregate customers for the purpose of underwriting multi-user community facilities show great promise. It's also worth developing policies and procedures by which the utility can provide strategic direction for the optimal siting of local facilities, to optimize project benefits to the grid. Product features intended to ‘wrap around’ facilities developed for customers by 3<sup>rd</sup> party suppliers also are worth pursuing (i.e., where the customer is procuring a local facility).



Table 2: Summary of Key Design Features of the 15 Reviewed Utility Green Power Products

Design Elements							
Utility Renewable Energy (RE) Product	Price predictability	Transparent terms	Simple deals	Cost-competitive	REC Ownership	New build possible	Local projects
<b>Community/Shared Solar</b>							
Tucson Electric Power - Bright Tucson Community Solar	Replacement of base energy charges & Renewable Energy Standard Tariff with an incremental charge for power from community solar arrays that is fixed over a 20-yr term	Single incremental charge replaces multiple energy cost terms needed for standard service	Easy sign-up: admin fully integrated into routine processes and billing system	Low incremental fixed cost, potential savings over 20 yrs	Utility	Yes	Intent to develop local community arrays. Siting determined by aggregated demand
Southern California Edison - Community Renewables					Customer	Yes	Intent to develop local community arrays owned and managed by 3rd party. Siting determined by aggregated demand
Xcel Energy (MN) - Solar Rewards Community Program			Bill credits paid through fuel clause	Potential for savings through bill credits for production at retail rate + REC incentive	Utility	Yes	Will develop local community projects for subscribers in same or adjacent county

Design Elements							
Utility Renewable Energy RE Product	Price predictability	Transparent terms	Simple deals	Cost-competitive	REC Ownership	New build possible	Local projects
<b>Green Tariffs</b>							
Rocky Mountain Power (UT) - Schedule 32 for RE Facilities	Customers can enter into fixed price offtake agreement with 3rd party but additional peak demand charges are variable	Postage stamp T&D rates, transparent tariff components ( PPA/ energy, standby, admin)			Customer: per 3rd party PPA, customer has full flexibility on how RECs are priced and managed	Yes	Will support local facilities anywhere in service territory. Must be 3rd party supplier
Duke Energy (NC) - Green Source Rider	Supply contracts to customers from 3 to 15 yrs	Energy from PPA, REC recovery fee, admin fee; emphasis on transparent energy credit calculations for customer planning		Customer can contract with 3rd party PPA and potentially pay equal to original rate but net savings not possible	Customer: Duke retires RECs on behalf of customer, not counted toward RPS compliance	Yes	Will support local facilities anywhere in service territory
NV Energy – Green Energy Rider	Fixed renewable resource rate that would apply over base retail rate over contract term.			Customer RE rate can potentially equal original rate but net savings not possible	Customer (though example where utility and customer split RECs)	Yes	Will support local facilities dedicated to a specific customer
Dominion - Renewable Energy Supply Service	Customer can enter into fixed price contract with 3rd party anywhere in PJM plus admin and program costs				Customer	Yes	Will support facilities anywhere in service territory. Must be 3rd party
Arizona Public Service - Agreements with RE Options				High load factor tariff offers savings to offset small RE premium	Customer: Portion of tariff savings can be used to purchase RECs, which are not counted toward utility RPS	Future option	Utility will co-develop local facilities anywhere in service territory with physical delivery
Xcel Energy (MN) – Renewable* Connect - <i>proposed</i>	Fuel clause charge replaced with fixed kWh price month-to-month or over 5 or 10 year contracts	Fixed kWh price for customers based on 1) resource cost, 2) capacity credit, 3) 'neutrality adjustment', and 4) admin costs	Simple sign-up and billing	As proposed would allow customers to save money over the term of the contract if fuel costs increase above the cost of participation	Customer receives the RECs and the Company retires RECs on customer's behalf	Possible in future tranches	Current sources for tariff are in MN but customers cannot choose a specific project

	Design Elements						
Utility Renewable Energy (RE) Product	Price predictability	Transparent terms	Simple deals	Cost-competitive	REC Ownership	New build possible	Local projects
<b>Utility Services and Procurement</b>							
PSE&G - Solar Loan Program	Utility guarantees a price floor for SRECs		Admin fully integrated into routine processes and billing system	Customer costs offset by SRECs	Utility: RECs monetized to pay back customer's loan; customer has SREC upside in yrs 11-15 after loan paid off	Yes	Provides loans for RE facilities installed by commercial & residential customers
National Grid (RI) - RE Growth Program	20 yr purchase commitment by utility	Transparent standard tariff-based revenue calculations			Utility	Yes	Purchase offer for eligible local RE facilities
Arizona Public Service - Solar Partner Program ( <i>residential only</i> )	20 yr contract for hosting	Reliable production modelling for estimating lease payments	Standardized agreement for payments to hosts; admin integrated with billing system, including customer pre-screening for eligibility		Utility	Yes	Yes (grid-optimized siting within service territory)
Georgia Power - Advanced Solar Initiative (Utility and Medium-Scale DG Procurements)	20 yr PPA purchase commitments		On-line application, standardized contracts/ interconnection process, admin fully integrated into routine processes and billing system	Utility purchases energy at or below long term avoided cost; if 3 <sup>rd</sup> party developer, customer can receive lease payment	Customer: GA Power retires RECs on behalf of all customers; no RPS in GA; energy sold to Georgia Power	Yes	Will buy from local facilities whose cost is at or below long-run avoided cost
Dominion - Solar Partnership Project	Lease rates paid at agreed amounts based on system size over 20-year period	Fixed payments for hosting, not kWh dependent	Easy-on ramp for site hosts but need standard admin processes		Utility	Yes	Yes (grid-optimized siting within service territory)
Georgia Power - US Military Transactions	Military base hosts utility owned and developed project and receives RECs + output in outage event			Large scale economies made projects at or below avoided cost	Customer	Yes	RE facilities developed onsite at military bases

## Improving on Current Renewable Energy Products

Meeting discussions confirmed that product design features summarized in table 2 remain an appropriate starting point for efforts to improve green products. While none of the products are able to achieve all of the buyers needs yet, these products represent a great step forward and many are very close to meeting the needs.

In addition, participants brainstormed and prioritized specific issues/design features for further development, possibly via demonstrations coordinated through the Utility–Corporate Buyer Collaborative (brainstormed ideas and priority results are described more fully in Appendix A).

The priorities are as follows:<sup>14</sup>

1. Developing pilots of cost-effective partnerships. Participants recognized that the key to successful and cost-competitive green power products will be effective partnerships between utilities and customers. Utilities and corporate buyers need to establish relationships based on trust, then work together to develop solutions that provide value to both parties without shifting costs inappropriately to other customers. Participants suggested finding creative models to trade and share value, such as sharing the allocation of RECs costs; customers providing sites to host projects, e.g. where a lease payment can provide a revenue stream; or customers providing wider system benefits whose value is exchanged for the RECs and RE. For utilities, this could also involve customer help in advocating for the regulatory approval of new products and/or rate treatments.
  - o Leverage Utility Strengths Toward Large Scale Deployment. Participants specifically voted to support the idea of customers and utilities partnering to leverage infrastructure, utility knowledge and capital to decrease costs and increase reliability, for both onsite and large offsite projects. Buyers emphasized the need for large-scale projects to meet the size of their demand but some customer types will still be interested in project partnership ideas onsite.
2. Increasing price predictability. Participants reinforced the importance of price certainty for customers and predictable cost recovery for utilities. Table 2 suggests multiple approaches, depending on whether the utility buys or builds green power. Buyers encouraged fixed price commitments based on long-run avoided cost projections. Notwithstanding industry experience with the impossibility of projecting long-term avoided cost accurately, RE technologies typically eliminate fuel price risk, which has been a major source of avoided cost variation (forecast versus actual).
3. Supporting customer claims of additionality. Customers prioritized the need to claim they made a new project happen; however, the allocation of renewable energy credits (RECs) surfaced as a core, unresolved issue during the discussions. Participants agreed that it would be extremely helpful if utilities and buyers could find a resolution to this issue (e.g., by agreeing how to share RECs; or devising a new approach that avoids double-counting but lets both utility and buyer take credit for new green power capacity).

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<sup>14</sup> This list condenses, reorganizes and summarizes the ideas and design elements identified in Appendix A.

4. Coordinating grid-optimized deployment. Buyers recognized that the value of distributed energy resources to the grid depends on location, so there is an inherent tradeoff between flexibility to site new facilities and cost to the buyer, net of any grid benefits provided by a new facility. The optimal siting of new green power facilities could be a prime topic for utility/buyer coordination.
5. Developing and testing new green products. During the meeting one specific product innovation was proposed for a beta test (e.g., a utility provides an incentive rate for a high load factor customer and the savings can be applied to purchasing the RECs from an RE project to cover the customer's load). Participants agreed with the concept of coordinating one or more pilot tests of green product innovations.
6. Transparency of costs (charges) & saving (credits). Given that buyers have a 'strong want' for transparency and simplicity, utility participants saw this as a priority for further development. Project participants might wish to explore the feasibility of a uniform green power supply contract.

## Big-Picture Points of Consensus Among Participants

Buyers and utilities recognize the development of new, utility-offered RE products is critical for creating utility and regulatory models of the future. In addition to identifying key design elements for successful RE products, participants in the Utility–Corporate Buyer Collaborative Forum concluded the October 2015 meeting with the following emerging points of agreement:

1. Working together and exchanging lessons learned is required for developing and scaling new approaches. Participants recognize the difficulty of developing grid-integrated green power products and the potential benefits of working together, testing ideas and replicating successes over time. Participants agree success will require understanding and trust. This Utility–Buyer Collaborative Forum can continue to be an important incubator and sounding board where lessons learned about different approaches can be shared, discussed, amplified and accelerated.
2. Utility scale renewable energy can offer significant cost advantages over smaller scales. Large customer demand can be more easily met with utility-scale renewables, can result in lower costs and can potentially be sited in ways that offer significant benefits to the grid.
3. Grid modernization is needed. Participants recognize that distribution grids need to be modernized to support renewable energy facilities. As variable renewable energy resources grow at scale, the grid needs new capabilities to integrate these new resources in ways that preserve and enhance reliability and power quality. A modernized grid is the enabler of a clean energy future.
4. Regulatory flexibility and evolution are needed. Utilities need new regulatory policies and models to meet the changing needs of commercial and industrial customers. Utilities need new flexibility to offer customers specialized, optional services, and to streamline the procurement and approval of such services at the scale and pricing that customers seek. A key aspect of inventing the future will be educating policy makers about new regulatory policies and frameworks needed to enable the future. Participants recognize that neither utilities nor corporate buyers can be as effective in advocating for new regulatory policies alone as they can be together. Participants identified some of the common messages that could resonate with regulators:
  - o Utilities and buyers are leading the way toward the grid of the future – a modern grid will be flexible, clean, reliable, and affordable;



- Utilities value all of their customers and want to help them to meet their needs;
- New regulatory constructs are needed to meet the changing needs of customers and enable a dynamic, responsive future grid;
- Buyers prefer large scale, off-site renewables, tied to the grid, and optimized for shared benefit;
- Buyers care about modernizing the grid to maximize deployment of clean energy.

## Meeting Outcomes

Given the participants' priorities and outcomes from the October meeting, an extensive list of options for next steps have been identified to shape the future work of the Collaborative Forum in its objective to further advance the development and replication of successful utility-offered RE products.

A. Develop and demonstrate new products – activities to build, demonstrate and further RE product innovation, focusing on priorities defined by participants. Options for next steps based on themes discussed at the meeting:

1. Regularly exchange case studies, lessons-learned and best practices on current RE products: institute quarterly webinars to provide opportunities for participants to review and showcase progress, for example presenting and discussing successful deals or utility programs and sharing lessons learned and results from existing pilots and case studies. In addition to sharing and analyzing existing examples, customers and utilities should have opportunities for blue sky discussions about innovating on existing examples and developing new ideas on ways to exchange value in utility programs and products that can make them win-win.
2. Outline overall RE product design features: organize a team to review the meeting results and assemble a draft guidance document to outline key design options and features for utilities when designing the next generation of utility RE products. Develop a process to get input and agreement with the rest of the Utility–Corporate Buyer Collaborative participants. Guidance will be based on what has worked in other regulatory proceedings, lessons for replicability and best practices.
3. Advance pilot on cost-effective partnership for new RE products: solicit interest from a utility and buyers to build an integrated pilot that uses customer savings produced under a commercial rate classification to pay for new renewables that cover a customer's energy usage and attempt to break-even on cost.
4. Explore how to address price transparency and predictability: hold a kick-off webinar that reviews relevant design features related to price transparency and predictability and discuss possible additional approaches and enhancements. Solicit utilities willing to test new product designs.
5. Test grid-optimized deployment: hold an initial webinar to review state-of-the-art distribution planning methodologies (e.g., CA, NY) and discuss the feasibility of a demonstration project in which a utility and a buyer coordinate the siting of a dedicated RE facility. Once a demonstration has been implemented, develop a case study that documents how the facility was compensated for support to the grid (this assumes facility valuation will make use of new planning methods).
6. Explore scenarios for allocating RECs: solicit interested utilities and buyers for a working group that researches criteria needed to satisfy the requirement for an RE facility that serves a specific

customer and develop a white paper as a vehicle for discussion and consensus building. The paper should describe different options for allocating RECs, including examining how certain scenarios interact with mass and rated-based Clean Power Plan (CPP) compliance. The working group should recommend best practices for REC allocation under different scenarios.

B. Facilitating regulatory outreach to enable new models – activities to develop a basis for outreach to regulators and other important industry stakeholders on new regulatory policies needed to facilitate utility-scale RE product innovation. Options for next steps based on themes discussed at the meeting:

1. Develop consensus statement on RE product needs: put together a working group of utilities and buyers to discuss and draft a statement articulating the common ground that both buyers and utilities share that can paint a path toward the regulatory modifications that will be needed for utilities to meet evolving customer needs.
2. Showcase RE product ‘wins’ (i.e., RE supply deals successfully negotiated between utilities and corporate buyers): present these wins, case studies, and lessons for replicability to other utilities, regulators and stakeholders at ongoing utility and customer meetings, such as the National Association of Regulated Commissioners (NARUC), EEI Key Accounts Conferences, Critical Consumer Issues Forum (CCIF) and other major industry events.
3. Outreach to regulators: drawing on the above results, build awareness with regulators as well as other utilities and stakeholders on the opportunities for utility-customer collaboration and what is needed to meet changing customer needs. EEI, WWF and WRI will continue to build engagement with regulators via NARUC and with customer advocates and other important industry stakeholders via the Critical Consumer Issues Forum (CCIF) and other major industry events. They will also explore opportunities for utilities and customers to jointly present case studies and key needs to these audiences.

This extensive list of options for next steps of the Collaborative Forum was condensed and prioritized in further stakeholder discussions following the October meeting to recommend a workable action plan for the upcoming months.

## Goals and Action Plan of the Utility–Corporate Buyer Collaborative Forum

Two key goals will guide the ongoing focus of the Utility–Corporate Buyer Collaborative Forum:

1. Share lessons from existing models and collaboratively develop and demonstrate new products that drive value for both utilities and customers, and;
2. Facilitate education and outreach to regulators and other stakeholders to create the enabling conditions for new solutions and models to succeed.

The following key action items<sup>15</sup> will guide the ongoing work of the Utility–Corporate Buyer Collaborative Forum to pursue these goals:

***A. Continue the collaboration to provide an internal and external communication platform***

- Hold regular internal webinars to exchange case studies, lessons-learned and best practices on current RE products; provide a forum for developing a ‘consensus statement’ for both utilities and buyers to articulate the common ground on RE products and to recommend regulatory modifications necessary to enable these products.
- Broaden external communication to regulators, policy-makers and other stakeholders by showcasing RE product ‘wins’ at ongoing utility and customer meetings; build awareness among regulators (via NARUC), customers, customer advocates, EEI members, and other industry stakeholders regarding opportunities for utility-customer collaboration and the changes needed to meet evolving customer needs.

***B. Advance pilots on cost-effective partnerships***

- To develop new RE products and improve existing ones: solicit interest from utilities and buyers to build integrated pilots that build and innovate on existing RE products.
- Test grid-optimized deployment: develop educational opportunities for customers, utilities, and others regarding the siting of community RE facilities. Review state-of-the-art distribution planning methodologies (e.g. CA, NY)), and develop one or more demonstration projects, in which a utility and a buyer coordinate on locating RE facilities to maximize benefits to the grid.

***C. Explore scenarios for allocation of renewable energy attributes (RECs and others)***

- Broaden the understanding of shifting implications on RE claims from policy changes, such as mass- and rate-based Clean Power Plan compliance.
- Set up a working group with utilities and buyers to research criteria needed to satisfy allocation of RE attributes (Renewable Energy Credits RECs and other attributes) from an RE facility that serves a specific customer.

The Utility–Corporate Buyer Collaborative Forum presents a unique opportunity for ongoing collaboration between utilities and corporate buyers to share lessons-learned and best practices from pilots and demonstrations of successful utility-offered RE products, with the objective to further amplifying and accelerating successful RE product solutions. Facilitated by WWF, WRI and EEI, the Collaborative Forum plans to jointly tackle ambitious action items in its ongoing work. Your active engagement is highly appreciated.

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<sup>15</sup> Other items, discussed at the October meeting, had to be postponed as consideration for future work and as framing to analyze upcoming pilots, such as deeper work on RE product design features and on how to address price transparency and predictability.

# Appendix A. Opportunities for Improved Utility Renewable Energy Products

Focus Question: What are the key features/design elements that enable mutually beneficial renewable energy products?

Key: Red = Top Six Highest Votes; Green = Buyer Votes; Blue = Utility Votes

Location	Risk Mitigation	Large Scale	Cost Competitive	Low Transaction Costs	Enabling Credible Claims	Additionality	Flexibility	Transparency
<ul style="list-style-type: none"> <li>• Grid optimized deployment Buyer (1), Utility (2)</li> <li>• Project located within the "grid" and in close proximity to facility                             <ul style="list-style-type: none"> <li>– Changes risk profile, enables credible claims and is more competitive</li> </ul> </li> <li>• Options available for local vs. non-local green power</li> </ul>	<ul style="list-style-type: none"> <li>• Price predictability e.g. fixed price using avoided cost projection Buyer(2) Utility (3)</li> <li>• Ability to recover costs of any unsubscribed energy from customer base Utility (1)</li> <li>• Return in early years; Shows cost performance out front, as time goes on, can build a business case</li> <li>• Ability to direct RECs from unsubscribed energy to RPS compliance or green pricing program</li> <li>• Credible offtake:                             <ul style="list-style-type: none"> <li>– Developer</li> <li>– Bank</li> <li>– Project</li> </ul> </li> <li>• Risk sharing with customer with upside and downside                             <ul style="list-style-type: none"> <li>– Anyone can participate</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Onsite co-developed projects that leverage infrastructure and utility knowledge &amp; capital to decrease costs and increase reliability; one buyer has vacant real estate that could house RE Buyer (1) Utility (1)</li> <li>• Large load size from stand alone or aggregated generation or by moving loads to an area or site to increase scale – it is easier to claim 100% credit at a large scale</li> </ul>	<ul style="list-style-type: none"> <li>• Cost-effective partnership that provides value to both parties without impacting rate payers/cost shift e.g. Shared allocation of cost for RECs; land use in exchange for RECs; or customer provided system benefits in exchange for RECs Buyer (2) Utility (5)</li> <li>• Enables transactions that are outside territory to achieve lowest cost (lowest hanging fruit)</li> <li>• Monetizes new value streams (SRECs, emission credits, capacity, value, etc.)</li> <li>• Uses utility capital where economic</li> <li>• Ability to source RE projects from within wider ISO (e.g. Dominion)</li> <li>• Mechanisms to take in RE from utility</li> <li>• Monetizes new value streams (SRECS, emission credits, capacity value, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial rate classification with a renewable component such as APS example (chart 19), goal is to break even on cost Buyer (2) Utility (1)</li> <li>– APS - exchange cost-of-service tariff (with savings) for a new build product tied to customer facility</li> <li>– Savings from High Load Factor tariff funneled to new project development</li> <li>– Offering must be "easy sign-up"</li> </ul>	<ul style="list-style-type: none"> <li>• Provides for common interest                             <ul style="list-style-type: none"> <li>– Grid</li> <li>– Better than grid</li> </ul> </li> <li>• Utilizes and credits emissions savings from revised brown dispatch order</li> <li>• Accounts for emission reduction as opposed to "REC ownership"</li> </ul>	<ul style="list-style-type: none"> <li>• Customer able to claim they made something happen (additive)                             <ul style="list-style-type: none"> <li>– Additionality is inclusive of all DER products (e.g. solar) Buyer (2) Utility (1)</li> </ul> </li> <li>• High level additionality                             <ul style="list-style-type: none"> <li>– New projects Buyer (2)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Flexible contract terms and contract options                             <ul style="list-style-type: none"> <li>– 5-10 or 10-15 years</li> <li>– Range of contract terms for given capacity</li> <li>– Our business model as a customer is limited to a 5-10 year term therefore, we expect to have to buy from existing assets</li> <li>– Flexible purchase quantities</li> <li>– REC-sharing, potentially time-bound (e.g. customer gets RECs after 3 years) Buyer (2)</li> </ul> </li> <li>• Flexible on asset ownership</li> <li>• Flexible on program side of meters served                             <ul style="list-style-type: none"> <li>– Number/aggregation</li> <li>– Transferring location</li> </ul> </li> <li>• Flexible on asset location</li> <li>• Different emission factor products (e.g. standard grid, 50% of grid emissions factor)</li> <li>• Aggregates small demand sites (&lt;2MW) with other interested parties in the same boat, within or across utilities and PUC jurisdictions                             <ul style="list-style-type: none"> <li>– e.g. would enable a 100 MW wind farm in Indiana allocated to customers and utilities over PJM</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Transparency of costs (charges) and savings (credits) on the bill Utility (3)</li> <li>• Risk tolerance (transparency) for both sides</li> <li>• Pricing risk (transparency)</li> <li>• Identifies product/transaction controls that could be impactful                             <ul style="list-style-type: none"> <li>– Where controls are</li> <li>– How controls work</li> <li>– Who makes the rules</li> <li>– Who enforces the rules</li> </ul> </li> </ul>

# Appendix B. Moving Forward: Developing Opportunities for Improved Utility Renewable Energy Products

*Focus Question: What do buyers and utilities need to do to develop the key features/design elements?*

Proposed actions:

- Develop a model and conduct a beta project on commercial rate classification with a renewable component such as *Arizona Public Service – Service Agreements with Renewable Power Options for Large Customers* product;
- Educate stakeholders by developing a tutorial on how renewables really work, including intermittency and non-storage issues and describing the need to have traditional resources online;
- Engage in discussion on what a credible claim is. There is room for movement either from regulatory or corporate goal/vision to account for emission reduction as opposed to “REC ownership”;
- Propose an alternate REC accounting process to find an alternative to using RECs to make claims. The current struggle is with additional/non-additional; RPS vs. non-RPS; generation emission vs. consumed emission; “old” vs. “new” generation; couple or de-couple RE from C&I; and identifying the best goal measures. More time is spent worrying about accounting than increasing capacity;
- Identify areas of common interest in terms of the grid and better than grid;
- Explore alternatives to how additionality is defined. Does it have to be renewable? Does it have to be conveyed via a REC?
- Develop a collaborative statement to regulators that includes the following key messages:
  - Utilities value their customers and want to help them to meet their needs; this is not about how large the customers are, which raises questions on fairness among regulators
  - Utilities and buyers are leading toward the utility of the future with new regulatory constructs and flexibility and we need regulator support
  - Buyers care about large scale, off-site renewables, tied to the grid
  - Buyers care about modernizing the grid
  - Buyers are not interested in being in the utility business.



## Appendix C. Participant List

### Corporate Customers:

- Jay Dietrich, Program Manager: Climate Stewardship and Energy, IBM
- David Ozment, Senior Director, Energy, Walmart
- Mark Ragase, North American Energy Buyer, Procter and Gamble
- Steve Skarda, Global Energy/CO2 Leader, Procter and Gamble
- Andy Smith, Global Sustainability Manager, Cisco Systems
- Jim Stanway, Energy Buyer, Facebook
- Rob Threlkeld, Global Manager - Renewable Energy, General Motors

### EI Task Force Utility Members:

- Carolyn Brouillard, Manager, Regulatory Policy & Strategy, Xcel Minnesota
- Priya Burkett, Director, C&I Markets, Xcel Energy
- Barbara Coppola, Director DER Product Development and Program Management, Duke Energy
- Jerome Davis, Regional Vice President, Xcel Colorado
- Ray Kackley, Manager, National Account and Business Development Services, AEP
- Carmine Tilghman, Senior Director, Wholesale, Fuels, & Renewable Resources, Tucson Electric

### Edison Electric Institute, World Wildlife Fund, World Resources Institute, and ICF

#### International Participants:

- Eric Ackerman, Director, Alternative Regulation, EEI
- Bryn Baker, Manager, Renewable Energy, WWF
- Priya Barua, Associate, Charge Initiative, WRI
- Casimir Bielski, Manager, Rate and Regulatory Business, EEI
- Ben Foster, Consultant, ICF International
- Katie Jereza, Facilitator, EEI
- Anna Kiefer, Intern, Climate & Renewable Energy, WWF
- Steve Kiesner, Director, National Customer Markets, EEI
- Craig Schultz, Principal – Renewable Energy, ICF International
- Marty Spitzer, Director of Climate Change and Renewable Energy, WWF
- Letha Tawney, Director, Utility Innovation, WRI

## Appendix D. Meeting Agenda

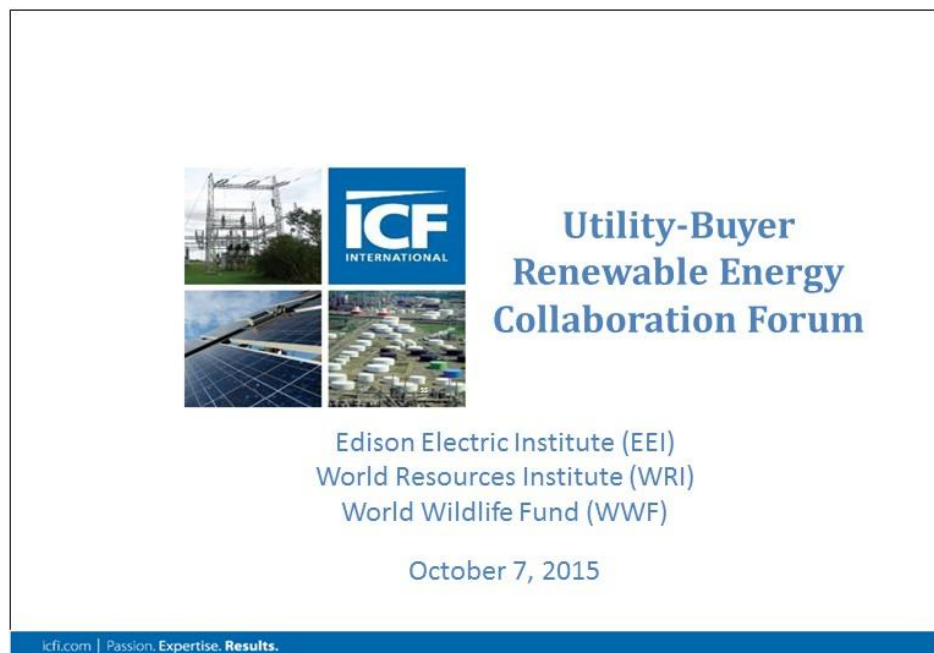
Wednesday, October 7		
Time	Activity	Session
8:00 - 8:30 am	Coffee and Breakfast	
8:30 - 9:00 am	1. Welcome and Opening Remarks <ul style="list-style-type: none"> <li>• Welcome &amp; Introductions</li> <li>• Meeting Purpose – Where are we in our work stream? What do we want to accomplish today? EEI, WWF, WRI</li> <li>• Meeting Agenda - Process, Roles, and Guidelines; Frameworks for Assessment Katie Jereza, Facilitator, EEI</li> </ul>	Round Robin Presentation
9:00 – 9:45 am	2. Overview of Utility Renewable Energy Products <ul style="list-style-type: none"> <li>• Research goals &amp; approach, including product selection and characterization and utility and customer feedback</li> <li>• High-level profiles of 9 innovative utility products – What is the product? What are its innovative features? What are the barriers that have (and have not) been overcome to develop this product? Craig Schultz and Ben Foster, ICF</li> </ul>	Presentation with Q&A for clarification and understanding
9:45 - 10:00 am	Break	
10:00 – 11:30 am	3. Overview of Renewable Energy Products (continued) <ul style="list-style-type: none"> <li>• Discussion and feedback based on presented products and identify key lessons and take-aways</li> <li>• Includes clarifying Q&amp;A about presented products</li> </ul>	Facilitated Discussion
11:30 – 12:15 pm	Lunch	
12:15 – 1:45 pm	4. Opportunities for Improved Renewable Energy Products <ul style="list-style-type: none"> <li>• From previous session, facilitator will:               <ul style="list-style-type: none"> <li>– Summarize significant features and barriers (design elements)</li> <li>– Identify potential opportunities and implications (areas of common ground)</li> </ul> </li> <li>• Focus questions:               <ul style="list-style-type: none"> <li>– What design elements enable mutually beneficial renewable energy products?</li> <li>– What are the costs and benefits for all stakeholders to enable replication across multiple states/regions?</li> </ul> </li> </ul>	Facilitated Discussion
1:45 – 2:00 pm	Break	

2:00 – 3:00 pm	<p>5. Opportunities for Improved Renewable Energy Products (continued)</p> <ul style="list-style-type: none"> <li>• Focus questions: <ul style="list-style-type: none"> <li>– What are the key design elements that enable mutually beneficial renewable energy products?</li> <li>– What are the costs and benefits for all stakeholders to enable replication across multiple states/regions?</li> <li>– What three design elements offer the greatest impact on creating shared value?</li> </ul> </li> </ul>	Facilitated Discussion
3:00 – 4:05 pm	<p>6. Moving Forward: Leveraging the Opportunities (Common Ground) for Improved Renewable Energy Products</p> <ul style="list-style-type: none"> <li>• From previous session, facilitator will summarize key design elements (areas of common ground) to gain agreement on key takeaways from the discussion</li> <li>• Focus questions: <ul style="list-style-type: none"> <li>– What do we need to do to promote the key design elements?</li> <li>– Who needs to be engaged or communicated to?</li> <li>– What are our immediate next steps?</li> </ul> </li> </ul>	Facilitated Discussion
4:05 – 4:25pm	7. Closing Thoughts	Round Robin
4:25 – 4:30 pm	8. Next Steps in the Collaborative Process	
4:30 pm	Adjourn	

## Appendix E. High-Level Profiles of Utility Products

The focus for the October 2015 meeting was on understanding and evaluating existing RE products and using lessons-learned to inform the next generation of RE products. EEI, WWF, and WRI contracted ICF International to review current and pending utility green power products that are broadly representative of varying types of innovative RE products being offered by investor-owned electric utilities in the U.S. today.

Nine products were reviewed in depth and an additional five products were reviewed for specific design innovations.<sup>16</sup> The RE products were researched and summarized, with input from utilities and buyers.



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<sup>16</sup> Since the meeting, Xcel MN announced a unique next generation product, Renewable\*Connect, that has been added to tables 1 and 2 of this document. This product, however, is not covered in the following pages.

## Contents

- Research Goals and Approach
- High-Level Profiles of 9 Innovative Utility Products
  - Win-Win Takeaways
  - Key Barriers and Requirements
- Innovative Features from 5 Additional Utility Products
- Product Synthesis
  - Motivations for Buyers
  
  - Range of Product Attributes: A Backdrop for Discussion on Value Creation

## Research Goals

- Present cross-section of win-win utility-buyer renewable energy products.
  - Buyer achieves benefits (e.g., financial savings, price competitiveness, contract speed and transparency, access to local renewables) it could not achieve without utility engagement.
  - Utility achieves benefits (e.g., customer load and relationship, distribution system planning, sustainability) without negatively affecting non-participants.
- Highlight innovative product features and their unique value-add in the market.
  - Flag replication potential of products into new utility markets.
- Clarify barriers that have (and have not) been overcome to develop products.
- Research is intended to inform discussion => how utility renewable energy

## Research Approach

1. Identified renewable energy products and transactions at investor-owned utilities with innovative benefits for buyers and utilities. 24 innovative products were initially screened nationwide across 17 utilities.

2. Based on discussions among EEI, WRI, and WWF, representative products at 9 utilities were selected for interview research.

3. Conducted senior-level interviews with 9 utilities to understand drivers, experience, lessons learned, and outlook for products. Then, confirmed product descriptions with utilities before producing this slide deck.

4. Obtained input on overall buyer motivations as well as buyer perspectives on certain individual utility products from WRI and WWF.

5. Summarized findings from utility and buyer perspectives as backdrop for today's discussion. Profiled 9 representative, innovative products. Included descriptions of innovative features from 5 additional products.

## Map of Representative Innovative Utility Products Profiled





## Representative Innovative Utility Products Profiled in Depth

“Shared Solar” type products

1. Tucson Electric Power (AZ) – [Bright Tucson Community Solar](#)
2. Southern California Edison (CA) – [Community Renewables](#)

“Green Tariff” type products

3. Rocky Mountain Power (UT) – [Schedule 32 Service for Renewable Facilities](#)
4. Duke Energy (NC) – [Green Source Rider](#)

“Utility Services & Procurement” type products

5. PSE&G (NJ) – [Solar Loan Program](#)
6. National Grid (RI) – [Renewable Energy Growth Program](#)
7. Dominion (VA) – [Solar Partnership Project](#)
8. Arizona Public Service (AZ) – [Solar Partner Program](#)

TEMPLATE

### A. Program/Project/Tariff Name

*High-level description of renewable energy product with basic attributes to establish a common understanding of this product.*

*The following descriptions of utility products were based upon secondary-source research and interviews with the 9 utilities listed on the prior slide, and the slide content has been reviewed and approved by the utilities for this purpose.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Selected features within the product that demonstrate the potential individual wins for either the utility, the customer, or both.
  - Sub-features and attributes that elaborate briefly on the major feature(s) and benefits.
  - Will not cover ALL elements or product details.

KEY BARRIERS AND REQUIREMENTS

- Describes barriers that were identified by the utility to implement this product.
- Describes characteristics or requirements that would be needed for replication and/or expansion either within the market itself or at another utility.
- Not all barriers and requirements are listed.

MAJOR TAKEAWAYS

## 1. Bright Tucson Community Solar

*In addition to meeting a portion of its state Renewable Energy Standard goal, Tucson Electric Power is offering community solar from large, local solar arrays in blocks of 150 kWh to residential and commercial customers at a modest incremental price that is fixed over a 20-year period that can yield potential savings for customers.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Very well designed and executed utility-led community/shared solar program.
  - Easy sign-up process and administration with trusted utility provider.
  - Low incremental costs for participation with upside savings potential for customers over 20 years.
    - » Price adder is locked in over contract term versus utility supply costs expected to increase.
  - Flexible purchase quantities to meet individual needs.
  - High visibility into local solar projects that are being built under this program.

KEY BARRIERS AND REQUIREMENTS

- Need to be able to develop large-scale, cost-effective solar plants locally.
- First of its kind program required significant ground work to get approval.
- Needed to set up internal billing systems to handle transactions.



MAJOR TAKEAWAYS

## 2. Community Renewables Program

*Southern California Edison (SCE) is establishing a "community renewables program" that provides customer subscription access to locally produced power, owned and managed by a third party and administered/billed by SCE.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Competitive third party-driven community renewables program to provide customer choice within the relationship and administration of existing utility provider.
  - Customers can select from any qualified provider's offer.
  - Customer and program protections in place to reduce individual project failure risks.
  - Customers receive benefits from their project subscriptions based on average retail rates.
  - Creates local renewables and economic impact.

KEY BARRIERS AND REQUIREMENTS

- Multiple contracting layers creates program administration issues and increases costs.

### 3. Schedule 32 Service for Renewable Facilities

*Rocky Mountain Power (RMP) provides customers the opportunity for utility-enabled renewable power (2 MW+) with choice of renewable energy project and developer covering multiple projects and/or multiple customer accounts.*

#### INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Aggregated renewable energy procurement from third party PPA providers.
  - Customers can contract directly with third party PPA providers anywhere in RMP (Utah) territory for on-site or off-site projects. Siting and size flexibility exceeds even many virtual net metering programs elsewhere in the US.
  - Renewable power has physical deliverability to customer through “postage-stamp” transmission and distribution charges. Product also brings price certainty (hedge) benefit to customers and transparency in tariff components.
  - Customer has full flexibility on how RECs and other environmental attributes are priced and managed.
  - Purchases can come from multiple systems and/or be allocated to multiple meters for flexibility in project development.

#### KEY BARRIERS AND REQUIREMENTS

- Cost-effectiveness challenge: Need to have highly cost competitive large-scale renewable PPAs for customers to realize savings versus utility power.
- Treatment of peak demand charge in utility Schedule 32 tariff means that variable renewable resource projects (e.g., solar and wind) will have little to none of their peak demand charge offset under program.



### 4. Green Source Rider

*Duke Energy (Carolinas) provides a rate tariff for customers to contract for renewable power plus RECs up to a 15-year term to offset a portion of the customers' load in addition to existing utility energy supply.*

#### INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Enables renewable energy supply competition from third party PPA developers.
  - Customers can contract for renewable projects anywhere in Duke (Carolinas) territory.
  - Duke retires RECs on behalf of customer under tariff.
  - Customer can potentially purchase new renewables at no incremental energy cost versus utility supply.

#### KEY BARRIERS AND REQUIREMENTS

- Need to have cost-competitive renewable energy supply available.
- Energy credit calculations need to be transparent and fixed over contract period for customer and renewable project owner planning.
- Customer cannot achieve net savings from renewables under this tariff.
- Administrative processes need to be streamlined for customer and utility benefit.



MAJOR TAKEAWAYS

## 5. Solar Loan Program

*PSE&G provides project loans of 10 years to commercial and residential customers for on-site solar projects, with repayment of the loans from solar renewable energy credits (SRECs) generated by the project. Customer also has net metering benefits and SREC upside for sales in years 11-15 after loan is paid off.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Utility manages alternative revenue stream (SRECs) to overcome first cost (capital cost) barrier to customers, while still allowing customers to own their systems and select their solar installers.
  - Utility reduces buyer risk and complexity: removes SREC price uncertainty by guaranteeing a floor value and is trusted loan provider.
  - Depending on SREC production, product can be low to no cost for customer avoiding all loan payments while realizing energy offset savings.

KEY BARRIERS AND REQUIREMENTS

- High SREC values and high conventional power costs are significant enablers.
- Utility must have available/authorized capital to invest in loan pool.
- Utility has downside protection from regulatory construct that allows potential SREC price loss and default loss to be shared among electricity customers.
- Program might be successful in markets with lower SREC values if structured differently (repayment from physical energy or capacity value as well as SRECs).
- Need robust internal billing systems to handle transactions.



MAJOR TAKEAWAYS

## 6. Rhode Island Renewable Energy Growth Program

*National Grid provides easy access to performance based incentive (PBI) tariffs for renewable energy systems up to 5 MW directly with the utility for 15 or 20-year periods, eliminating uncertainty and providing long-term economic impact in Rhode Island.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Renewable project feed-in-tariff for small scale system, and competitive bid set PBIs for large scale distributed generation (greater than 250 kW) offsetting customer bills with excess earnings potential.
  - Includes solar, wind, hydro, and biomass projects with choice of renewables from 1 kW to 5 MW.
  - Transparent, standard tariff-based revenue calculations, subject to ceiling prices.
  - Locks in benefits over 20 years, making financing and development very low risk for buyer.
  - Nature of annual ceiling price calculations maximizes use of federal incentives and also removes potential for state over-subsidization of renewable development.



MAJOR TAKEAWAYS

## 7. Solar Partnership Project

*Dominion is implementing a project to install and operate solar at host sites on targeted high and low volume circuits to evaluate the potential impact from deployment while offering lease payments to hosts.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR HOST AND UTILITY

- Utility-developed solar projects on customer sites with lease payments for hosting systems and no investment or risk for customers.
  - Easy on-ramp for site hosts with known payments - not kWh dependent.
  - Host customer can participate in visible leadership role for new solar projects.
  - Additional research for utility grid and distributed energy resource (DER) planning.
    - » Connected to the emerging interest of utilities in determining the locational value of DER.
  - Projects go into overall energy procurement mix with capital costs part of rate base.

KEY BARRIERS AND REQUIREMENTS

- Need to be able to identify and develop solar projects on targeted circuits/feeders.
- Establish template lease agreement and understand risks.
- Create or tap into solar project development experience in emerging market.



MAJOR TAKEAWAYS

## 8. Solar Partner Program

*Arizona Public Service is conducting a 10-megawatt research and development program on feeder impacts from distributed solar by strategically deploying utility-owned and operated systems with no cost or risk for customers, and providing annual payments for customer hosts.*

INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Template, simple system designs for easy installation with known costs and reliable production modeling, all monitored as part of a utility distributed generation impact study.
  - Targeted feeders to evaluate impact and deployment of emerging inverter technology and distributed generation resource management software to create maximum system benefits.
    - » Connected to the emerging interest of utilities in the locational value of distributed resources.
- Easy, customer-driven sign-up process that includes pre-screening and has known cost savings (earnings) for customers over 20-year contract term.
- Utility-installed systems with no performance risks borne by customers.
  - Qualified third-party contractors deployed by APS and all system output serves APS power needs via a separate meter (not net metered).



## 9. Utility-Scale and Medium-Scale Distributed Generation Procurements

*Georgia Power is procuring competitively-priced solar power from projects of multiple sizes across the state under standard PPA terms at or below long-term avoided costs.*

### INNOVATIVE FEATURES OFFERING WIN-WIN OPTIONS FOR BUYER AND UTILITY

- Customers of many sizes can develop projects for sale to rock-solid off-taker (Georgia Power), reducing risk and cost in project financing and enabling faster installation.
  - Online application process with transparent procurement goals, progress, and price ceilings.
  - Standard contracts and process for interconnection.
  - Utilized long-term average avoided costs (20-30 years) to enable effective cost/price comparisons for PPAs.

### KEY BARRIERS AND REQUIREMENTS

- Need to be able to efficiently manage major solar procurement effort with administrative systems in place.
- Cost barriers have been broken due to the speed and scale of this program.



## Innovations from Additional Utility Products - I

- **NV Energy – Green Energy Rider**
  - Key takeaways: Customized agreements within the constructs of a tariff framework ensure that the utility can earn a rate of return while customers can access renewable energy at a cost-competitive rate.
  - Can purchase renewable energy generated in Nevada either blended within the NV Energy portfolio or as part of dedicated assets for the use of a specific customer.
  - Customer can choose all or part of a specific renewable energy facility/project.
  - At large scale, tariff arrangement could be equal to current tariff rate, but not lower.
  - Have already implemented 20 MW solar project for Apple and awaiting Public Utilities Commission approval of 100 MW solar project for Switch.
  - Renewable project attributes/benefits bring value to both the customers and the grid.



## Innovations from Additional Utility Products - II

### ■ Dominion – Renewable Energy Supply Service

- Key takeaways: Customers can contract via utility for third-party provided renewable energy projects anywhere in PJM territory at negotiated rates plus administrative and program costs.
  - Contract structure is aligned to minimize risks for utility and its overall customer base, but may not yet appeal to large customers for long-term transactions.
- Targeted specifically to large C&I customers (> 500 kW demand).
- Due to low utility power costs and some transaction complexity, customers have not yet contracted for any renewable energy projects, but interest is relatively high and potential exists for deployment.

## Innovations from Additional Utility Products - III

### ■ Arizona Public Service – Service Agreements with Renewable Power Options for Large Customers

- Key takeaway: Data center customers move to experimental high load factor tariff for savings.
  - Reflects benefits to grid from customer energy load profile.
- Key takeaway: Portion of tariff savings can be dedicated to high-quality REC purchase program with:
  - Customer selection of renewable energy projects, the projects are located within the utility territory or with physical deliverability to the utility, and RECs are not counted towards utility Renewable Energy Standard compliance.
  - APS continues to earn a regulated rate of return on renewable energy assets.
- Future ability to co-develop and “billboard” new renewable energy projects with utility.

## Innovations from Additional Utility Products - IV

- Xcel Energy (MN) – Solar\* Rewards Community Program
  - Key takeaway: Subscribers (off-takers) can pay **third party garden owners** up-front for their share of the system or pay-as-they-go for output.
  - Individual projects (“solar gardens”) can be developed up to 1 MWac. **The PUC allowed the first group of gardens to be co-located up to 5 MW.**
    - Project development interest is very high (over 1,000 MW in applications received).
    - Subscribers credited for production at applicable retail rate plus REC incentive.
      - Bill credits paid by all customers through the fuel clause.
      - REC incentive transfers environmental attributes to the utility.
    - Individual subscriptions limited to 40% of a solar garden’s capacity.
    - Proximity requirement: subscribers must be in same or adjacent county to solar garden.

## Innovations from Additional Utility Products - V

- Georgia Power – US Military Transactions
  - Military bases hosted large-scale solar while staying on existing rate schedule.
  - Utility-owned and developed projects were cost competitive due to large scale.
  - Key takeaway: Solar system output (owned by utility) can be made available directly to military bases in the event of a grid outage, creating an energy security benefit.
  - Large-scale deployment to meet US military targets for renewable energy.
    - 30 MW each at Fort Benning, Fort Gordon, Fort Stewart, and Naval Submarine Base Kings Bay (total 120 MW).

## Buyer Motivations for Renewable Energy Products

### BUYER "NEEDS"

- Power system reliability.

### BUYER "STRONG WANTS"

- **Price predictability** (preferably certainty) – typically provided by shielding the customer from fuel price volatility.
- **Transparent and predictable contract terms** – to minimize perceived customer risk and increase understanding of benefits and utility cost recovery.
- **Simple transactions** – time and human capacity are at a premium, particularly for companies with facilities in many service territories and/or with a small team.
- **Low energy prices** – especially important if buyer is operating on small margins and/or energy is a relatively large operating expenditure.
- **Ability to claim green power credibly** – REC retirement or other ways to credibly show lower greenhouse gas emissions (for public disclosure).
- **Local energy source or system.**

### BUYER "WANTS"

- **Capital preservation** – prefer to spend capital on their core business.
- **Clear investment signals** – choosing where to locate and invest, especially as these are long-term decisions and large investments in facilities.
- **"New" generation and/or additionality above state renewable portfolio standards** (or current grid mix).
- **Standardized offering** – limitations to one-off deals include: commercial sector's inability to leave locations quickly, multiple service locations, etc.
- **Choice in renewable energy provider** – introduce some element of competitive pricing.
- **Publicity for 'doing the right thing.'**
- **Offering can meet 100% of facility electricity demand** (regardless of offsetting 100% of load).

Content provided by World Resources Institute based on buyer working group input

## Sector-Specific Buyer Motivations

### "WANTS" SPECIFIC TO RETAIL SECTOR

- **Affordability** (beyond low energy prices) – running retail business on very small margins. Commodity manufacturing and other types of businesses also have this margin challenge.
- Retailers typically have small, dispersed load at multiple facilities so they value more highly:
  - *Simple transactions.*
  - *Flexibility to change meters served, as the facility footprint changes.*
  - *Shorter contract times – facilities often leased, smaller loads, etc.*

### "WANTS" SPECIFIC TO MANUFACTURING /

#### HEAVY INDUSTRIALS

- **Both price predictability and low cost are important** - energy is a large operating cost.
- **Long-term contracts** – particularly when choosing where to locate and invest, as these are long-term decisions and investments in facilities.

### "WANTS" SPECIFIC TO THE IT SECTOR / DATACENTERS

- **Both price predictability and low cost are important** - energy is a large operating cost.
- If facilities are leased, represent small load, or there is future uncertainty:
  - *Shorter contract times are preferred – if facilities leased, smaller loads, etc.*
  - *Flexibility to change meters served is valued, as the facility footprint changes.*
- For long-term decisions and investments:

Content provided by World Resources Institute based on buyer working group input

## What Product Attributes Lead to Greater Value Creation?

Attribute	Value Range		
Product Origin	LEGISLATIVE	RPS COMPLIANCE	UTILITY
Scale	<10 MW	10 MW-30 MW	>30 MW
Initiative Approach/Staffing	PROJECT	PROGRAM	PROCUREMENT
Electricity Costs	LOW	MEDIUM	HIGH
Utility Role	ADMIN ONLY	BLENDED ROLE	PROJECT DEVELOPER
Market Conditions	IMMATURE	GROWING	ADVANCED
System Ownership	THIRD PARTIES	CUSTOMER	UTILITY
Transaction Complexity	HIGH	MEDIUM	LOW
Transaction Risk	HIGH	MEDIUM	LOW
Price Hedge	FLOATING	HYBRID	FIXED
REC Value	LOW	MEDIUM	HIGH
REC Owner	CUSTOMER	OPEN	UTILITY

## Scratch Sheet to Track Attributes by Utility Product

Utility Renewable Energy (RE) Product	Attribute											
	Product Origin	Scale	Approach	Electric Costs	Utility Role	Market Conditions	System Owner	Complexity	Risk	Hedge	REC Value	REC Owner
Tucson Electric Power - Bright Tucson Community Solar												
Southern California Edison - Community Renewables												
Rocky Mountain Power (UT) - Schedule 32 for RE Facilities												
Duke Energy (NC) - Green Source Rider												
PSE&G - Solar Loan Program												
National Grid (RI) - RE Growth Program												
Dominion - Solar Partnership Project												
Arizona Public Service - Solar Partner Program												
Georgia Power - Utility and Medium-Scale DG Procurements												
NV Energy - Green Energy Rider												
Dominion - Renewable Energy Supply Service												
Arizona Public Service - Agreements with RE Options												
Xcel Energy (MN) - Solar Rewards Community Program												
Georgia Power - US Military Transactions												

# Appendices:

## More Details on 9 Innovative Products



## Bright Tucson Community Solar [Tucson Electric Power]

### Design & Key Features I

- **Pricing/Rates**
  - Replacement of base energy charges, Fuel Adjustment Charge (PPFAC), and Renewable Energy Standard Tariff (REST) with an \$0.02/kWh incremental charge for power from community solar arrays that is fixed over a 20-year term.
  - Over time, as base energy charges increase (as expected), customers will have fixed energy price components, creating savings versus conventional utility rates.
- **Contract Structure**
  - Customers agree to be part of the program and can change purchase levels (or terminate) annually.
- **Program Size: No cap, program expands as subscribers sign-up**
  - Currently 23 MW deployed – 18 MW commercial & 5 MW residential.

## Bright Tucson Community Solar [Tucson Electric Power]

### Design & Key Features II

- **Administrative Processes**
  - Fully integrated into routine operational processes and billing systems.
- **Relationship, if any, to Net Metering**
  - Program acts primarily as a fuel-replacement option with green benefits; however, unused capacity on a monthly basis can be carried forward until the end of the year.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - Utility makes regulated returns on its project development (utility-owned), PPA's recovered through REST surcharge, and achieves Renewable Energy Standard goals.
  - Non-participating ratepayers do not bear any incremental costs.
- **Other Key Features**
  - New residential program proposed to fix total electric bill at current rates for 10 years by subscribing to utility community solar.



## Bright Tucson Community Solar [*Tucson Electric Power*]

### Drivers & Market Conditions

- **Overall Product/Transaction Impetus**
  - With the Renewable Energy Standard in place, the utility proposed this program to the Arizona Corporation Commission to meet customer interest and required renewable deployment targets.
  
- **Scalability within Utility Territory**
  - Highly scalable and currently being expanded.
  
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - High potential where the utility can cost-effectively develop large-scale projects.
  - Utility uses existing authority to sell power to customers to enable this program.

# Southern California Edison

## *Community Renewables Program*

### *[Southern California Edison]: Design & Key Features I*

- **Pricing/Rates**
  - Pricing is expected to be above existing customer utility rates, based on project sizes (small) and expected program implementation costs for both developers and utility.
- **Contract Structure**
  - Developers enter into agreements with subscribers (i.e., customers).
  - Developers enter into agreement with utility for power to be delivered.
  - Subscribers enter into rate tariff agreement with utility.
- **Program Size: Allocated capacity 50MW**
  - Program launch expected February 2016.
- **Target Market(s) & Customer Eligibility**
  - Residential and small commercial customers.

## *Community Renewables Program*

### *[Southern California Edison]: Design & Key Features II*

- **Administrative Processes**
  - Complex program requirements create an administrative burden.
- **Relationship, if any, to Net Metering**
  - Not directly related. In this program, time-of-use system production is credited to the subscriber at “class average retail rates.”
- **Utility Cost Recovery and Treatment of Non-Participants**
  - Subscribers bear all program and administrative costs.
- **Other Key Features**
  - Enables buyers to shop around to different developers for best offers, but this process can lengthen the development cycle for third parties and customers.
  - Backstop of Renewables Portfolio Standard: utility bundled customers are the off-takers of unsubscribed energy deliveries.

## *Community Renewables Program*

### *[Southern California Edison]: Drivers & Market Conditions*

- **Overall Product/Transaction Impetus**
  - Legislation created goals for community/shared renewables which are being implemented by utility via this program design, subject to close California Public Utility Commission oversight.
  
- **Scalability within Utility Territory**
  - Limited scalability due to complex administrative processes and relatively high pricing.
  
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - Class average retail rate calculation and credits could potentially be replicated in other shared renewable programs.



## *Schedule 32 Service for Renewable Facilities* *[Rocky Mountain Power]: Design & Key Features I*

- **Pricing/Rates**
  - Customer pays privately-negotiated PPA rate for physical energy and RECs, plus utility tariff charges for transmission and distribution, standby utility power during peak periods, and administrative charges. Currently, renewable energy transactions' combined costs are significantly higher than RMP conventional power.
- **Contract Structure**
  - Contract negotiated between PPA provider and customer, then brought to Rocky Mountain Power (RMP) for integration into Schedule 32. RMP can terminate either contract if a party defaults.
- **Program Size: 300 MW (per Utah Senate Bill 12)**
  - Launched Spring 2015; currently no customers on program.
- **Target Market(s) & Customer Eligibility**
  - Commercial customers over 2 MW in demand, but can aggregate across meters to reach minimum. Individual renewable energy projects must be at least 2 MW in capacity.

## *Schedule 32 Service for Renewable Facilities* *[Rocky Mountain Power]: Design & Key Features II*

- **Administrative Processes**
  - Custom/manual administration of contracts and payment flows.
- **Relationship, if any, to Net Metering**
  - Effectively a direct energy procurement program, not net metering.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - RMP administration costs are included in rate tariff.
  - No impact to rate base - all costs borne by participating customers.
- **Other Key Features**
  - None found.

## *Schedule 32 Service for Renewable Facilities*

### *[Rocky Mountain Power]: Drivers & Market Conditions*

- **Overall Product/Transaction Impetus**
  - Legislatively driven by large customers who want to purchase bundled energy plus RECs for their operations resulting in Schedule 32 tariff implementation by RMP.
  
- **Scalability within Utility Territory**
  - Not easily scalable due to administrative processes and incremental costs to customers.
  
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - High potential if large-scale renewable projects' energy costs are below current or expected conventional utility power costs.
  - Alternative or complement to off-site, scale, and flexibility benefits of virtual net metering (VNM), but not at all a VNM program.



## *Green Source Rider [Duke Energy]*

### Design & Key Features I

- **Pricing/Rates**
  - Customer adds Rider to its existing tariff to cover cost of energy (from PPA) plus \$0.0002/kWh REC recovery fee plus \$500/month administrative fee, less time differentiated avoided energy and capacity costs.
- **Contract Structure**
  - Customer enters into 3- to 15-year contract with Duke for Rider.
  - Duke enters into PPA with renewable project owner or develops project internally.
- **Program Size: Cap of 1 million MWh/year**
  - Initiated at the beginning of 2014; interest, but currently no customers have executed agreements.
- **Target Market(s) & Customer Eligibility**
  - Large commercial & industrial customers.

## *Green Source Rider [Duke Energy]*

### Design & Key Features II

- **Administrative Processes**
  - New manual administrative processes created for this program.
- **Relationship, if any, to Net Metering**
  - Effectively a direct energy (plus REC) procurement program, not net metering.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - All program administrative costs are paid by participants.
- **Other Key Features**
  - Customer can never receive a credit more than the bundled clean energy plus REC price (it can effectively never experience a net savings from participation).



## *Green Source Rider [Duke Energy]*

### Drivers & Market Conditions

- **Overall Product/Transaction Impetus**
  - With the Renewable Energy Portfolio Standard (REPS) in place, Duke worked with the Utilities Commission to offer the Green Source Rider as experimental program for customers.
  
- **Scalability within Utility Territory**
  - Not easily scalable in current form due to cost calculations and manual management processes.
  - Green Source Rider participant RECs do not count toward REPS goals, creating some competitive pressures on pricing.
  
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - Sharing some portion of net avoided cost savings with customer would make this more replicable.



## *Solar Loan Program [PSE&G]*

### Design & Key Features I

- **Pricing/Rates**
  - Loan at 11.179% for 10 years. Loan sized so that expected future SRECs cover monthly
- **Contract Structure**
  - Contract between PSE&G and customer for loan and for SREC guarantee. Paid for separately from utility bill (like a standard equipment loan).
- **Program Size: 80 MW initially, adding 97.5 MW to current loan program**
  - Completed 80 MW of loans, equal to ~15% of all distributed solar capacity in PSE&G.
- **Target Market(s) & Customer Eligibility**
  - Program has goals and offerings for residential and commercial customer segments.

## *Solar Loan Program [PSE&G]*

### Design & Key Features II

- **Administrative Processes**
  - Fully integrated into routine operational processes and billing systems.
  - Straightforward application and administrative processes.
- **Relationship, if any, to Net Metering**
  - Customers receive full net metering according to their rate schedule rules.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - PSE&G makes regulated returns on interest for its loans.
  - Non-participating ratepayers do not bear any incremental costs.
  - Utility gets downside protection for recovery of potential SREC price loss and default.
- **Other Key Features**
  - None found.

## *Solar Loan Program [PSE&G]*

### Drivers & Market Conditions

- **Overall Product/Transaction Impetus**
  - Regional Greenhouse Gas Initiative (RGGI) regulations from 2007 were source of funding authorization for loans from PSE&G to customers.
  
- **Scalability within Utility Territory**
  - Highly scalable and currently being more than doubled in size.
  
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - Where the utility can allocate loan funds and the market for SRECs or other alternative revenue sources is healthy.

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## Renewable Energy Growth Program [National Grid RI]

### Design & Key Features I

- **Pricing/Rates**
  - Price ceilings have been established based on renewable resource, project size, and financing cost drivers (investment tax credit, etc.). Current market prices for solar are generally under ceilings.
  - Mechanism for updating ceiling prices based on numerous market factors annually to avoid over- or under-support for renewables.
- **Contract Structure**
  - Renewable Energy Growth tariff provides 20-year purchase at a fixed price for power & RECs.
    - Fixed incentives for solar projects under 250 kW, and competitive pricing for solar and non-solar systems 250 kW to 5 MW via auctions/RFPs with established ceiling prices.
- **Program Size: 160 MW cumulatively over 5 years (2015-2019)**
  - On target for 25 MW by end of 2015.
- **Target Market(s) & Customer Eligibility**

## Renewable Energy Growth Program [National Grid RI]

### Design & Key Features II

- **Administrative Processes**
  - New administrative processes have been established to manage this program.
- **Relationship, if any, to Net Metering**
  - Not net metering, but customer earnings from energy sales can be first applied to utility bills before any excess is paid.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - All net program costs are fully recoverable from a separate tracker/factor and charged to all customers, outside of both commodity costs and core distribution charges, and are not avoided by customers that receive bill credits, net metering, or other kWh charge reduction methods.
  - Program costs are subject to ceiling rates so there is no negative rate base impact.
  - Administrative costs can be relatively high due to the new program process requirements.
- **Other Key Features**
  - Utility has access to forward capacity benefits in ISO-New England market, although mechanisms for capturing this benefit are not yet implemented.

## *Renewable Energy Growth Program [National Grid RI]*

### Drivers & Market Conditions

- **Overall Product/Transaction Impetus**
  - Legislation created the Clean Energy Jobs Program Act, establishing this feed-in-tariff to enable small, medium, and large distributed generation to be developed and delivered to National Grid over a 5-year period.
  
- **Scalability within Utility Territory**
  - Highly scalable when administrative processes are fully automated.
  
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - This model can be replicated in other markets where the developed costs are competitive with existing power sources.
  - No adaptations required for non-solar renewable project development.
    - Already explicitly has pricing and other requirements for multiple renewable technologies.



## *Solar Partnership Project [Dominion]*

### Design & Key Features I

- **Pricing/Rates**
  - Lease rates paid at agreed amounts based on system size over 20-year period (specific numbers not public).
- **Contract Structure**
  - Host customers sign lease agreement and receive payments.
- **Program Size: 30 MW<sub>DC</sub> target**
  - 7 MW online by end of 2015.
- **Target Market(s) & Customer Eligibility**
  - Primarily municipal, higher education, and commercial customers. Individual system size targets of 500 kW to 2,000kW.

## *Solar Partnership Project [Dominion]*

### Design & Key Features II

- **Administrative Processes**
  - Primarily manual process for managing installations, lease agreements, and payments.
- **Relationship, if any, to Net Metering**
  - N/A; customer is host for utility asset only.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - Net project costs are recovered through Dominion base rates, after selling renewable energy credits (RECs) in PJM territory.
- **Other Key Features**
  - Streamlines solar deployment with trusted utility partner.

## *Solar Partnership Project [Dominion]*

### Drivers & Market Conditions

- **Overall Product/Transaction Impetus**
  - Environmental community and solar industry pushing for increased solar deployment.
  - Dominion wants to determine impacts and possible benefits of targeted installations.
  
- **Scalability within Utility Territory**
  - Definitely scalable, but administrative processes would need to be standardized.



## Solar Partner Program [Arizona Public Service]

### Design & Key Features I

- **Pricing/Rates**
  - Customers earn \$30/month (\$360/year) with no cost to participate (if eligible).
- **Contract Structure**
  - 20-year contract for customers using standardized forms for program payments (earnings) and as solar system host site.
- **Program Size: 1,500 customers**
  - Currently 900 active applications in the pipeline for 2015.
- **Target Market(s) & Customer Eligibility**
  - Residential only at this time connected to specific feeders, with system sizes of 4 kW, 6 kW, and 8 kW in standard configurations only.

## Solar Partner Program [Arizona Public Service]

### Design & Key Features II

- **Administrative Processes**
  - Streamlined and integrated with existing billing systems, including customer pre-screening for eligibility.
- **Relationship, if any, to Net Metering**
  - No net metering – systems produce power for utility.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - All program costs included in approved project budget.
  - Program costs offset by power generation and RECs.
  - Non-participants will not experience any material impact.
- **Other Key Features**
  - Utility builds strong relationships with customers and maintains load while creating valuable capacity asset.
  - Utility enables local installer market adaptation as Arizona-based contractors learn how to operate and evolve with new technology.



## Solar Partner Program *[Arizona Public Service]*

### Drivers & Market Conditions

- **Overall Product/Transaction Impetus**
  - Utility looking to increase utility-owned generation and meet Renewable Energy Standard goals while definitively testing the feeder impact from distributed solar. Also developing secure communication infrastructure to monitor and control advanced inverters in real-time, keeping new protocols inline with existing and planned distribution system automation projects. This program was created to rapidly recruit residential customer hosts while enabling the utility to test various system and portfolio attributes, technologies, and software.
- **Scalability within Utility Territory**
  - Highly scalable due to streamlined process and cost-effective development options.
- **Replicability Potential of Value-Add Features to Other Utility Markets**
  - Replicable where system sizes and design options can be standardized.
  - Could be scaled up to commercial rooftops in specific segments where costs and development options are known and/or easily manageable.
  - Needs high levels of utility involvement in project development and program management to capture maximum benefits.



## *Utility-Scale and Medium-Scale Distributed Generation Procurements [Georgia Power]: Design & Key Features I*

- **Pricing/Rates**
  - Based on competitive solicitations for power from medium- and large-scale projects (subject to rate ceilings). Solar prices are currently at or below long-term avoided costs.
- **Contract Structure**
  - Transparent PPA contracting according to program rules between provider and Georgia Power over 20-year term.
- **Program Size: 800 MW target; 200 MW distributed (medium-scale and customer sited) & 600 MW utility-scale**
  - Currently on target to meet goals.
- **Target Market(s) & Customer Eligibility**
  - Medium-scale projects and large utility-scale projects from any qualified provider.

## *Utility-Scale and Medium-Scale Distributed Generation Procurements [Georgia Power]: Design & Key Features II*

- **Administrative Processes**
  - Fully integrated into routine procurement processes and payment systems.
- **Relationship, if any, to Net Metering**
  - N/A; buy all/sell all for customer-sited projects.
- **Utility Cost Recovery and Treatment of Non-Participants**
  - Rate base impact is neutral; costs recovered through fuel clause.
- **Other Key Features**
  - Georgia Power retires RECs on behalf of all customers.

## *Utility-Scale and Medium-Scale Distributed Generation*

### *Procurements [Georgia Power]: Drivers & Market Conditions*

- **Overall Product/Transaction Impetus**
  - Georgia Power and Public Service Commission worked together to establish solar programs as part of the utility integrated resource plan (IRP) that must be at or below average, long-term avoided costs.
  
- **Scalability within Utility Territory**
  - Highly scalable and on target to reach 800 MW installed capacity; additional procurement must be per approved IRP.



## About the Organizations

Edison Electric Institute (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia, and directly and indirectly support more than 1 million jobs. EEI has more than 70 international electric companies as International Members, and 270 industry suppliers and related organizations as Associate Members. For more information, visit [www.eei.org](http://www.eei.org).

World Resources Institute (WRI) is an environmental think tank that goes beyond research to find practical ways to protect the earth and improve people's lives. Our mission is to move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations. For more information, visit [www.wri.org](http://www.wri.org).

World Wildlife Fund (WWF) is one of the world's leading conservation organizations, working in 100 countries for over half a century. With the support of almost 5 million members worldwide, WWF is dedicated to delivering science-based solutions to preserve the diversity and abundance of life on Earth, halt the degradation of the environment and combat climate change. For more information, visit [www.worldwildlife.org](http://www.worldwildlife.org).