Metropolitan Washington Council of Governments

BUILT ENVIRONMENT AND ENERGY ADVISORY COMMITTEE (BEEAC)

Meeting Conference Call Summary: October 19, 2017

BEEAC Members IN Attendance:
Gina Mathias, Takoma Park (Chair)
Emil King, District of Columbia (Vice Chair)
Bill Eger, City of Alexandria (Vice Chair)
Ellen Eggerton, City of Alexandria (*)
Tim Stevens, City of Falls Church, Sierra Club
Stefanie Kupka, City of Fairfax (*)
Kevin Milsted, Prince William County
Daniel Lee, WMATA (Metro)
Dale Madearis, NVRC
Joan Kelsch, Arlington County
Dyan Backe, City of Gaithersburg
Lindsey Shaw, Montgomery County
Lisa Orr, Frederick County
Jessica Lavender (*)

Additional Attendees:
Tanuj Deora, Smart Electric Power Alliance
Nick Kasza, National League of Cities
Corey Ramsden, Solar United Neighbors
Quentin Anderson, Groundswell
Julia Philpott, SolSmart
Daniel White, DOEE
Kate Staples, Dominion Energy (*)
Helen Reinecke-Wilt, Arlington County
Julika Weiss, Institute for Ecological Economy Research
Larissa Johnson, Montgomery County
Mary Lynn Wilhere, DOEE
Stella Tarnay, Biophillic DC
Lobna El Gammal, Carnegie Mellon University

COG Staff:
Leah Boggs, COG DEP
Jeff King, COG DEP
Maia Davis, COG DEP
Alex Bonelli, COG DEP
Tim Masters, COG DEP

(*) Indicates participation by phone

1. Call to Order and Introductions

Gina Mathias, City of Takoma Park, BEEAC Chair

Chair Gina Mathias called the meeting to order and attendees introduced themselves in person and by phone.

2. Approval of September 14, 2017 Meeting Summary

Gina Mathias, City of Takoma Park, BEEAC Chair

The meeting summary was approved by committee members.

3. Jurisdiction Roundtable

BEEAC Committee Members

Jurisdictional updates included:

Gina Mathias, City of Takoma Park –

- City of Takoma Park was named the 2017 "Sustainability Champion" by Sustainable Maryland. The city achieved 650 points (500 above the minimum required for certification).

Helen Reinecke-Wilt, Arlington County –

- Arlington County's Green Home Choice certification program launched a free kitchen and bath pilot certification program. This program provides free consultations for making homeowners' kitchens and bathroom more energy and water efficient.

Lisa Orr, Frederick County –

- Frederick County launched commercial PACE program to encourage businesses to invest in renewable energy. A result of this program is that a large solar array will be installed at Bar-T Mountainside Summer Camp near Urbana.

Tim Stevens, Sierra Club –

- An update to the Virginia building code regarding energy efficiency has not been adopted yet, but it is close to being accepted. Energy ratings standard. Adopted features include the Duck Plaster Test (only applies where an air vent is outside of the building envelope) and the Home Energy Rating System (voluntary standard known as HERS).

Lindsey Shaw, Montgomery County –

- Montgomery County's PACE program currently has 11 projects that are under construction (totaling about $5M). Their most recent project is a site in Rockville with solar, the first project that will include solar in Montgomery County.
- On the residential side, Montgomery County's council proclaimed October as Energy Action Month. It is the second year of energy exploration events in partnership with libraries where people can sign up for home energy checkups as part of the Empower Program. Also launched Energy Bingo at senior centers, which has had high participation. The County also received 500 lightbulbs from Pepco to do the Let There Be Lightbulb Exchange events again with congregations with Fall.
- Montgomery County passed the International Green Construction Code of 2012. They do have an alternative compliance path – a LEED Silver requirement with certain points that are

required in the energy section to achieve compliance.

Dyan Backe, City of Gaithersburg –

- City of Gaithersburg will consider opting into the county's benchmarking ordinance – will be introduced in December.
- A food composting pilot project has been established in the city.
- Together with Solar United Neighbors, the city will be participating in the Montgomery County solar cooperative. Also hoping to potentially have the city participate as a coop member.

4. Biophilic DC

Stella Tarnay, DC's Biophilic Cities Initiative

This item was moved to next BEEAC meeting agenda due to time constraints.

4. Community-Scale Solar: Solarizing one Community at a Time in the Metropolitan Washington Region

Segment 1 – Community Solar: What is Community Solar and Overview of Project Model Types

Tanuj Deora, SEPA
The Smart Electric Power Alliance (SEPA) is a not for profit, 501(c)(3) research education organization. They have around 1,100 member organizations and about 50% of them are utilities. The goal of the organization is to bring together various stakeholders and figure out how to accelerate the transition to a clean energy future.

The organization started 25 years ago with a focus on helping utilities deploy the first grid-connected solar projects in the country. Now SEPA's activities encompass several other renewable energy sources, as well as utility-scale storage. One of the reasons for the expansion from being purely solar-focused was the realization in the utility sector that solar is not a threat, but an asset for the power system. For the past five years, SEPA has had a focus on community-scale solar. Community solar has emerged as an opportunity for utilities to participate in a proactive way with consumers, while addressing some of their concerns.

In the past, solar has been driven primarily by policy action and environmental concerns, until recently with the improvement of the economics of renewables. The economic decisions surrounding solar are now drivers. Major federal subsidies are ramping down, states are less aggressive about increasing their solar mandates; the economic driver is creating the momentum in solar now. In many areas, solar is the least cost resource for utilities, and that may be happening in the metropolitan Washington region soon.

SEPA has put out a *Solar Market Snapshot* report, an *Energy Storage Market Snapshot* report, and a *Demand-Response Market Snapshot* report. The solar market has shown healthy growth with the compound annual growth rate around 40% in the last seven years. The policy environment is beginning to present challenges to the market. The Federal Investment Tax Credit has ramped down, but the solar market was prepared for that. Currently, a recent *trade case* may also present challenges to solar market growth.

The municipal utility of the City of Ellensburg, Washington launched the first community solar program in the country over 10 years ago. About 3-4 years ago, community solar became more prominent with the need of utilities to become more proactive in the space. The involvement of third-party developers who developed more effective business models through things like virtual net metering and community solar programs was also influential.

There are two drivers of community solar: 1) third party-driven programs, many are policy-driven, and 2) utility-driven programs in response to customer interest. They each have unique challenges. In areas where there are legislative mandates encouraging community solar there are typically compelling customer value propositions, but there are also questions of the long-term sustainability of those programs. The long-term sustainability of programs that are utility-driven are well-managed, but the consumer value proposition is not always compelling.

Last year, there was about 10GW of solar installed in the US. Community solar is a very small portion of this, but once the models are further refined it may become a major method of solar deployment. Most of the work done at SEPA focuses on helping utilities design their programs. Utility interest is rapidly increasing. There is about a gigawatt of community solar projects in the pipeline. There are about 380MW of online capacity today. This trend is expected to grow.

At SEPA, community solar is defined as solar projects that are developed off-site, at scale, preferably somewhere that the electric power system will benefit from the deployment of the asset. Behind-the-meter projects (i.e. communities putting solar on their rooftops or multi-family housing) are not included in SEPA's definition. The idea is that after a project is built, it provides power, the utility gives a bill credit to the customers, and the customer pays for that power through a variety of methods. There are two ways for customers to pay for the community solar power; 1) through an upfront payment, paying for a share of the project, or 2) through a subscription, paying per kWh. Market research shows that subscription community solar projects are more attractive to customers.

Community solar presents a few benefits for customers. It is portable and more accessible for many customers. There is the opportunity to expand access of solar energy to a broader set of the community; including low- and moderate-income (LMI) segments of the community. SEPA has researched some of the mechanisms for accessing solar projects available to LMI groups (research available behind paywall – contact *Tanuj* for further information).

Design can be a barrier to project development, specifically regarding billing. These projects require programming solutions, which are often expensive, and the costs need to be recovered when billing customers. How to do this can be a challenge for many project developers. SEPA spends a lot of time helping utilities with these problems.

There is a fair amount of complexity associated with community solar including issues related to physical development tasks, the recruitment of customers, financing and legal issues, and the billing itself. However, there is an emerging set of companies that are helping utilities deal with these issues. (Case studies can be found in the appendix of Tanuj's slide deck). SEPA has done some DOE-funded work to find out what is most compelling in marketing and product design for consumers; an area utilities have struggled with. SEPA has published several reports regarding this (some are behind SEPA's paywall, but Tanuj can provide a discount code – there are also a few community solar experts on their team that Tanuj can put you in contact with).

Nicholas Kasza, National League of Cities

Nicholas is working with a SolSmart advisor, COG, and NVRC. They have a technical team that provides assistance with administrative work associated with solar project deployment. Currently, they are working in the City of Alexandria, the City of Fairfax, and Arlington County in Virginia. They are hoping to expand and recruit within the region – there is no one designated in Maryland, however this may change soon. A lot of the designations are clustered across the country, a notable example being Denver, Colorado. This is something that the metropolitan Washington region could achieve.

The first thing to consider with community solar is the primary actors; this can include an individual owner, a project developer, the electric utility, a financier, and the participants. These actors can play more roles depending on the business model in place. There are three general types of business model; utility-sponsored/led/driven, solar developer or third party-sponsored, and nonprofit or other community-based entities.

Regarding ownership of a project, this could be an individual community member or participant (often they own some panels or a share of the panels). In this model, the owner generally pays upfront and has direct ownership of panel(s). This can be challenging as it can limit participation based on the high upfront cost and if there are any credit rating requirements. There can also be challenges with the Investment Tax Credit (ITC) depending on its structure.

The third-party model of ownership generally means that the developer retains ownership of the project, or there could be a third-party financier (e.g. an investment fund, big banks, local banks) who owns the project. These models, as well as utility-driven models, are usually subscription-based models. A third-party developer, a nonprofit, a community organization, or a utility can administer the program. A utility as administrator has benefits including the fact that they are a known entity in the community, and ideally, they understand the billing process.

In the ownership model, rather than an individual spending $15,000 to pay for an array on their rooftop, they make an upfront payment that goes toward a portion of the community solar project. This can also potentially be structured over a set timeframe. For the subscription structure, there can be a one time or multiple upfront payments, and a monthly pay-as-you-go structure, allowing for flexibility to the consumer. There are typically four actors in these models; a third-party developer, a financier (behind the developer), a utility and the subscribers. The utility is getting the electricity and they are still delivering it to the subscribers, however, the subscriber makes payments to the developer.

Utility-sponsored projects develop the project inhouse and then run the program themselves. In some cases, there is a third party who will sell power under a power purchase agreement (PPA) to the utility, and then the utility interacts with their customers.

A few questions to be aware of: regarding SREC treatment, who retains ownership over SREC (utility, service provider, or participant)? Are there additional transmission and distribution charges? How does transferability factor in? If a participant moves, can they take those shares with them? If moving inside the utility provider's service territory, then this is usually possible. If moving outside that territory, what happens to those shares? Is there a minimum subscription time? Two or three years is a common timeframe and there may be penalties for unsubscribing prior to this. Are there requirements for low-income participation? Is there a maximum size you can subscribe for? What do you do with that unsubscribed power?

Examples:

Lafayette, Colorado
This example is sponsor-driven, third-party owned. The City of Lafayette provided the land to the developer at no cost. A portion of the array is for low-income participants (also with no cost). Xcel is an investor-owned utility that provides credits to customers of this program.

Orlando, Florida
This project is utility-sponsored and third-party owned. The first part of the project was a 400kW canopy that was very successfully subscribed. This offering has expanded to a 12MW array, which will be constructed on top of an old landfill, near a fossil fuel power plant. The municipal utility is purchasing the electricity from that third party under a PPA.

Salt Lake City, Utah
This is a very large (20MW) community solar array for large subscribers including Salt Lake City, Summit County, and Park City, as well as individual participants. This is a fixed cost project over the course of the subscription, but because their peak demand is higher over the summer months, it is possible to see some savings during the summer depending on their electricity use. This project also has a subscription termination fee if cancelled before three years.

Freemont, Nebraska
This example is a 1.5MW project currently under construction. It has two separate offerings; it can be subscribed or portions can be fully sold. Participants may be willing to pay a premium for green electricity procurement. Other participants may be looking for savings on their electricity bills through a subscription. For those paying the premium, they will own their portion of the panels and pay a maintenance fee over the course of 20 years. The other option is to subscribe for a 150kW block, this is one cent above their current rate. Their current rate is 5 cents/kWh; a very low rate for residential solar. For the block subscription, it was self-financed from the utility's own reserves. They held some surveys and community engagement forums and decided to have the community portion of the project be at the forefront.

Things to consider when selecting a model: different financing structures (loans, third-party investors, grant-funding, direct ownership), location (tied to utility service provider's area, also ideally located to have benefits for the grid – this is why utilities are a very important part of this discussion), LMI component, ease of customer acquisition (across the solar industry, this is the biggest challenge now) and building a wait list (important in case participants move or there's a credit risk or default).

Local governments should consider a few things, such as are there transparent processes and guidelines in place? A third-party developer needs to know what permits they need to develop a community solar project. Are local governments able to address this? Make sure this information is known upfront, as it can save time and money. Zoning is another key consideration. Solar groundmounts, for example, need a regulatory pathway to allow a project to be zoned and permitted in an appropriate way. Making sure there is a clear regulatory pathway for developers, as well as making sure the information is readily available can greatly aid community solar deployment. Helping developers identify possible sites can also be beneficial. There's a project outside Madison, Wisconsin where Madison Gas and Electric use the public property rooftop for their community solar array. Instead of purchasing it for the facility in the city itself, they opened it up to the entire community. Last, local governments can support customer acquisition efforts.

Comments and Q&A

Q: In an urban area, there is a lot of room for deployment on parking lots or in suburbs. If locating to more open spaces is necessary, how far does it make sense to have transmission? In terms of losses in efficiency.
A: That is not really a major issue. The system losses are insubstantial unless the site is located hundreds of miles away. Generally, if the site is under 100 miles away, those transmission losses are negligible. The bigger issue is the perception people have of community solar and how far away it is to constitute "community".

Q: Regarding the Nebraska project, were they able to do those unique things because they are a cooperative?
A: They are a municipal utility. This is likely why they could do what they have done. They also had a lot of community buy in, they had overwhelming support. Community support is key. The Orlando project had enormous success after a TV appearance on the news. They had money set aside for a marketing campaign, but they were sold out before they could start marketing, as support was huge due to local news coverage. The coop in Wisconsin is another example. The day they opened subscriptions, there were people coming to write checks. It was a coop, which has a more unique model. Whenever there is support and a drive for it, it moves quickly. Freemont had people lining up outside on the first day of subscription signup. Solar tends to capture people's imaginations in ways that energy efficiency and demand response do not. Also, the economics of solar has become very favorable. Coupling this enthusiasm with other issues such as energy efficiency and demand response can produce impressive results. There is a coop in Minnesota that took their community solar program and said if the customers allow them to dispatch their water heaters for demand response, the coop will give those customers the first panel on the community solar project for free because there is great value in an underutilized demand response program on water heating. They have used this to get people to do demand response.

Q: I'm not sure I understood the size or scope of solar canopies that were mentioned. In DC, there are a lot hotels that have roof space, but they are putting bars and restaurants on their roofs. How does canopy fit into this?
A: Canopy and carport are one and the same. The word "canopy" can refer to much more than just parking though. Solar that is elevated on a steel structure constitutes canopy. It can provide great mixed use in a number of ways, but it is not necessarily the best strategy, as costs can be a big barrier due to the amount of steel.

Q: For the Lafayette project, how do they get subscribers? Especially with regard to LMI participation.
A: That project is developer-sponsored, so Xcel Energy is not involved with customer acquisition. They may have reached out to LMI apartment owners and signed them up. Direct outreach may have been a big factor for this project.

Q: Have you seen projects in which the landowner has taken some type of lease payment for providing land or is it typically donated?
A: It depends. Cities have more flexibility. If a third-party host is involved, some form of lease payment will be involved.

Q: Are you saying that municipalities who do not have their own utility act as the instigator for community solar?

A: Yes. Definitely. The community will have to work with the service provider, but they need to go to the public utility commission (PUC) to get a program set up. Adding to that, the fact that DC has such a robust SREC market is a direct result of their RPS, which has instigated a lot of action.

Segment 2 – Regional Policies that Support Community Solar

Emil King, DOEE
Community solar in DC comes under the DOEE's Solar for All initiative. This initiative is primarily for low-income residents. It was established through legislation in 2016 with the main goal of increasing solar energy consumption in the District, particularly amongst low-income groups. Their mandate is to serve 100,000 low-income households; encompassing all of DC's low-income households, while having an equivalent of at least 50% of the District's average residential electric bill. The DOEE works together with Pepco to determine what 50% of the average bill is in the District across all their residential rate classes. This is the baseline of what Solar for All will have to cover. It is funded by the Renewable Energy Development Fund, which has a revenue stream from alternate compliance payments through DC's Renewable Portfolio Standards (RPS). The RPS provides funding from suppliers who are unable to meet their obligations. They pay a fine of $500/MWh at the time of this meeting. This is used to fund Solar for All and any other initiatives that increase solar capacity in the District. DC Sun and Groundswell have worked on the Solar for All initiative, as well as many affordable housing advocates and a variety of stakeholders.

In the District, there is a lack of real estate for solar arrays to be built, a lack of willing hosts, customer acquisition and management can be difficult, and customer education and workforce development pose further challenges. Community solar can be a solution to many of these challenges in the context of DC.

Community solar started in DC in the summer of 2011. There was a working group that spent time researching many of the community solar projects from across the country to find out what models and what rules and regulations would be appropriate for the District. In 2013, the council passed a bill based on the recommendations of that workgroup. That process has brought about a lot of the projects being implemented in the region now. The Public Service Commission (PSC) then began to finalize the rules for community solar programs. In 2015, the PSC completed a final ruling, but there was a slight problem as there was only a partial credit for community net metering customers. This is important because the program is primarily a billing program, and community solar in DC revolves around billing. In 2016, there was a clarification that amended that credit. A regular, metered customer at that time would have received a one-to-one credit for any excess energy that they sent back to the grid. Under the initial regulations, the distribution portion was excluded. Thus, a customer with a community solar credit would not be paid as much as a customer with a standard solar credit, which meant no one wanted to go the community solar route. In 2016, Pepco began accepting applications for CREFs (community renewable energy facilities). This year, the PSC submitted their latest final rules, including the one-on-one credit (for residential customers – not commercial).

Pepco is responsible for administering this program in DC. The CREF produces the energy. Subscribers are either paying an upfront fee or monthly payments. The utility credits go to the subscribers. The subscribers pay the supply, delivery and administration charges. Pepco pays the owner of the CREF for any of the unsubscribed energy from these systems.

There are four major players. The first is CREFs, which can be 5MW or less and must be in the city. It can be any type of renewable energy allowable under DC's RPS. Electricity is provided to the grid directly and used as part of Pepco's energy supply (different to a customer generator who has a rooftop array supplying their home or office). Subscriber organizations are the second major player. They sell to Pepco's customers. DC allows subscription or upfront payment models, but the subscription option is more popular. Subscribers (Pepco customers in DC) can subscribe to as many CREFs as they want to, if the total subscription does not exceed 120% of their previous year's annual energy consumption. Subscribers also receive a Community Net Metering (CNM) credit for their share of the electricity produced. Neither the panels nor energy meter are installed at the subscriber's premises.

Community solar in DC is focused on renters (65% of DC residents) and low-income groups. The 5MW cap on the systems is probably the maximum CREF possible in DC. On average, systems will likely be around 100kW in size. Currently, there is only one community solar project in the District. In 2016, DOEE provided Nixon Peabody with a grant to install solar arrays on three downtown office buildings. They developed a way for commercial property owners to donate and/or lease their rooftops for community solar projects. They had this idea with Brookfield Properties, who manage their building, to put a solar array on the building. They have a partner in the National Housing Trust (NHT) and decided to shift the credits to people that the NHT deems fit to receive them, as NHT manages affordable housing throughout the country with many properties in the District. They developed a structure that allowed Brookfield Properties to donate some of their rooftops in exchange for array installation. Across these properties, there are 187kW installed serving around 100 residents. They are looking to expand this model. This is an example of an affordable housing developer having a ready population of recipients with each household having a separate account which is sent to Pepco each month; the billing is managed on-site.

Solar for All recently awarded 'innovation grants' (over $23M for this fiscal year) to solar developers, aggregators, and community organizations. The goal is to directly address the barriers to community solar. Additionally, there is a job training program called Solar Works DC working on community solar projects, as well as various other organizations that DOEE will be supporting that are working on community solar. Finally, there are municipal projects for community solar resiliency and innovation. DOEE put out $5M for small businesses, non-profit organizations, and low-income/single-family homes. They put out a separate tranche of $8M for multi-family, commercial, and institutional buildings, as well as nonresidential surface spaces (i.e. carport canopies and brownfields). There were 10 grantees, five of which will be community solar and coop projects. Groundswell and DC Sun are two of the recipients. In partnership with the Department of General Services, DOEE is also working on developing a 1MW-1.5MW array on a brownfield site in southeast DC. All the energy will go to low-income residents served through LIHEAP (Low Income Home Energy Assistance Program). DOEE is managing the subscriptions for the 20,000 LIHEAP recipients. Working on creating a task force with council members and the local community to prioritize who receives these benefits. This will be a model for the District government for using their own facilities and properties to lease or donate them to private developers/non-profits to develop community solar projects.

Comments and Q&A

Q: How many households is DOEE serving so far?
A: The goal is 100,000 by 2032. With the grantees, it will be less than 1,000 (in the high hundreds) this fiscal year.

Q: Regarding the Nixon Peabody project, if a business donates their roof for solar panels for low-

income housing projects, does the business get a tax deduction?
A: It can be unique. Nixon Peabody developed three different approaches. They are looking to expand to 12 more rooftops, many of which are law firm buildings. Further work may reveal what the tax environment is like regarding these projects.

Q: Regarding the Oxon Run project, are the subscribers already in place or is DOEE working towards this?
A: DOEE has 20,000 potential subscribers. DOEE is working with their grantees to deal with the customer acquisition factor. Many of these projects will have a market rate component. The basis of this project is to be a community solar array for low-income households. If the project needs higher credit, that will be a different scenario. That project will serve about 300 households. All the projects have strong pipelines.

Corey Ramsden, Solar United Neighbors
MD Sun recently rebranded (they are Solar United Neighbors of Maryland now) and launched a membership program with Solar Health Desk. Broadly, SUN MD's community solar program is available to any customer class in the state, and the full retail credit of power generated from project will be applied to a subscriber's bill. All investor-owned utilities are required to participate and there is also support for LMI projects. The program itself is relatively small and it's under Maryland's net metering count (2MW AC). The minimum number of subscribers is two, which provides a lot of flexibility. The subscriber must be in the same utility area as the project.

SUN MD expects that customer acquisition will begin in April 2018. There is support for smaller local projects. The Office of People's Counsel found that there are very good consumer protections in the regulations. There is much interest in LMI projects and many projects focused on this have accessed the program in several territories. The equity component is the most important aspect for SUN MD. Financing is expected to be a challenge, especially regarding LMI projects. They will be looking for customers in the next few months, but there will likely need to be some level of convincing of investors so that they do not view these customers as a risk. Some LMI projects may seek support from philanthropic backing or through a large non-profit organization or municipality.

Currently, Renewable Energy Credit (REC) prices are extremely low in Maryland. This will likely translate into less savings that developers will be able to offer to their customers, but this will vary depending on the size and location of projects. Regarding zoning challenges in the state, there have been temporary moratoriums to look at this issue. Revising zoning regulations has been important. In some cases, such as in Montgomery County, there is a question of whether ground-based systems are even possible with current zoning laws. Energy system impacts also present a challenge, as there are conflicts regarding creating an artificial overage for customers. The problem is complex in Maryland and current regulations discourage LMI customers from subscribing.

Each utility is required to provide information about who's being permitted into the program. The overall program over three years is 196MW, which is segmented into multiple years, by territories and by a few categories. The 'Open' category is any project. The 'LMI' category includes projects that have 30% of kWh going to LMI households of its subscription base. The 'SBO' category includes small brownfield projects, which also includes canopies, parking lots, and brownfield sites. Pepco is lagging regarding LMI projects (currently they have zero allocated to this category). In the 'Open' category, Pepco has already filled this category for the year. This causes greater competition for smaller developers who don't necessarily have the resources to develop projects in the 'LMI' category. Local governments may be able to assist these smaller developers in shifting from the

'Open' category to the 'LMI' category.

SUN MD believes a broad mix of large-scale projects with smaller community-driven projects is important. Many communities have the capacity to enroll in these programs or they have land for these projects, and sometimes they have both. They are willing to work with developers to make those projects happen and keep that economic value in the community. Subscribers can achieve this by negotiating together. Communities can build up interest in their neighborhoods and then collectively shop that interest to developers. Developers usually have a pipeline of subscribers, but this strategy may result in a better deal in some instances, while also educating many residents on these issues. This is possible in SUN MD's program and they expect this to happen with or without their input. Another option that can be more complicated, is that the community members can figure out a way to finance a system themselves, either owning and operating it themselves or contracting someone else to do that on their behalf, while they own the project. There are many possibilities with community solar, from large-scale commercial projects where there is a low cost of installation to small-scale projects where the cost may be higher, but there is a direct connection to the community and their benefits. SUN MD believes these factors will build the market more broadly in Maryland.

Comments and Q&A

Q: The Pepco 0MW bucket – what is the maximum amount that can fit in that bucket for the first year?
A: The maximum is 6MW.

Q: Montgomery County would like to see if they can make some connections between solar developers and LMI in the county. There is a zone in question for ground mount, but there are also apartment buildings that could be a location for them.
A: Before that issue gets resolved, you could certainly work with a developer with property in Prince George's County and have subscriptions reserved for Montgomery County residents.

Q: PG County doesn't have that same limitation that Montgomery County has for ground mounts?
A: Not that SUN MD has seen. There is confusion about what process must happen because of the Capital Planning Commission. It appears that they do not work under the same rules.

Q: Are there developers that SUN MD knows of that were shut out of the first round of the pilot project that have projects ready to go, but were not in the 'Open' category?
A: Yes, the utilities have a list of everybody who has applied. Some of those are listed as 'waiting'. Those are the ones that are publicly available because they had sent in their applications and were denied. There are others out there, but they have not submitted because they know it is full.

Kate Staples, Dominion Energy

Community solar benefits specific to Dominion Energy's pilot include support provided to additional solar development in Virginia. All the facilities that are part of the pilot must be built in 2017 or later. There is already a lot of interest in community solar in VA. A community solar project back in 2015 fell through, but from this experience Dominion Energy saw great levels of interest and this has grown over the past two years.

The community solar pilot was developed through the establishment of a Solar Policy Workgroup including a number of stakeholders representing utilities, cooperatives, solar advocates (including

the local Solar Industries Association group, Powered by Facts, and the Solar Research Institute), and other partners, while also including an independent moderator (from Virginia Commonwealth University), which is highly recommended for anyone attempting something like this, as it allowed the workgroup to form a clear goal and aim for a specific outcome. The goal of the group was to develop a community solar program that is equitable, sustainable and repeatable. Legislation was developed collaboratively and there was little opposition to it. It became law in July 2017 (Senate Bill 1393). This legislation resulted in the requirement of a three-year pilot program for community solar. Dominion Energy and Appalachian Power are required to offer a program, while it is optional for cooperatives.

The pilot will be a voluntary program offered by the utility (utility-sponsored and utility-offered, but the facilities will not be utility-owned). The facilities must be third party-owned. Dominion Energy will execute PPAs for a minimum of 10MW (legislation allows for a maximum of 40MW after additional approval has been applied for and received) of local, new, distributed solar in their service territory. It will be a mix of small-scale and large-scale projects. Each site can only be up to 2MW at most, but there is no floor, so small projects are also possible. If the economics are not there, Dominion Energy can get a carve out of a larger facility.

The legislation allows Dominion Energy to include transmission and distribution costs, the PPA costs, any balancing cost, any costs associated with RFP, and administration and marketing costs. All the costs of the pilot must be recovered through the rate schedule or the tariff offered to customers. Those costs cannot be passed on to non-participants. Any non-subscribed energy cannot be socialized. This is major difference between this pilot program and those seen with other utilities around the country.

In developing the legislation, Dominion had 50-60 meetings with stakeholders. After the legislation was signed, there were more public stakeholder meetings where input was solicited from customer groups, environmental groups, and solar developers specifically about the design of the solar fleet. Because the program costs cannot be socialized, creative feedback was also needed regarding low-income options. After these meetings, Dominion issued a public RFP on September 11 (responses were due by October 23) for 15-year PPAs for new solar facilities in Dominion's service territory. Dominion is now evaluating those responses. They are not sure what the pricing is going to be like, so this will be a major driver on their program design. Program design and pricing will need to be finalized before filing for approval. The legislation requires Dominion to file the program design and rate tariff with their regulators (the State Corporation Commission). Dominion hopes to have this done by the end of this year, if not early next year.

Quentin Anderson, Groundswell
There are many benefits that community solar can provide for low-income families in the District. Groundswell sees energy equity as a way of providing access to clean energy to people who could not have it or afford it before. Groundswell searched for partners who were mission-aligned; organizations who saw their property as a resource that needed to be used to extend their community outreach and impact. For Groundswell, these partners are primarily faith institutions. These institutions, particularly in communities of color, have always been a source of refuge and resources. If there is a need, the church can often help provide for that need or at least point people to a source of what they need.

In the 21st century, people are struggling with their bills, particularly utility bills. These bills can also form barriers to advancement in other areas. For a church looking to extend its benevolence ministry

into the 21st century, community solar is a way of doing it. Groundswell facilitates faith institutions in installing solar panels on their buildings or parking lots, and offering low-income subscriptions. A quarter of the subscriptions of Groundswell's investor-based models are low-income subscribers. The integrity of the project that Groundswell presents to investors is not impacted by the low-income subscribers because of how Groundswell finance their projects. The LMI component for the investor-based model is the piece that the churches are most interested in. They can have anywhere between 5-50 families that they provide these benefits to. This can be a powerful ministry for these churches and it also revitalizes these churches.

Groundswell has two models for developing community solar. The investor-based model (called "Sharing Power" model); for every three market rate subscribers paying a flat monthly fee for their subscription, Groundswell cross-subsidizes a low-income family to get that same subscription at no cost. This usually cuts a low-income family's utility bill by 40-60%.

When Groundswell first started, they saw community solar as an equitable form of energy, but soon realized that other barriers exist. For example, people who subscribed to community solar were receiving two bills. If Groundswell allowed them to subscribe to their projects just like any other market rate subscriber they would have been paying two bills. Low-income families want to streamline their billing so that the essentials are covered. This led Groundswell to a second observation; if they allowed low-income families to subscribe to projects like market rate subscribers, the savings were going to be marginal (maybe 10%). A 10% value proposition is not enough for a low-income family to take on the stress of an additional bill. Another barrier was a fear of innovation or new things. This was addressed by who Groundswell partnered with. Groundswell was not a known entity in these communities, but the churches were. By partnering with them, Groundswell gained credibility.

Groundswell recognized that there were two types of subscribers; people who cared about clean energy, the values, climate change, and addressing these issues, and those who cared about savings and making their lives easier. With this knowledge, Groundswell came up with a model that would satisfy both groups. LMI customers subscribe through the church. Groundswell trains volunteers within the churches to be able to sign up customers. Groundswell works with these churches and USGBC (Green Building Council) to offer energy efficiency and workforce training, specifically focused on the LMI component. Ideally, LMI customers are better off six months to a year after they sign up, eventually becoming a market rate subscriber and being able to pay it forward. As it pertains to LMI customers, the biggest threat to community solar is commercial development.

Groundswell has another tool (called "Switch and Share") which is used to switch the customers' utilities for 100% wind energy, usually saving them between 25-40% on their utility bills. Then they talk about the sharing aspect, which is the community solar part of the program. If a church feels the threat of gentrification, this becomes a very attractive tool, as it assists with their bottom line and aligns with their mission.

Lastly, Groundswell has the investor model and a grant-funded model. The grant-funded model is when an entire project is completely underwritten philanthropically (whether from a grant or from somewhere else). For this model, instead of the 3:1 ratio of market ratepayer to LMI customer, they can do 100% of their subscriptions for low-income families. The Solar for All grant from the DOEE funds Groundswell's Share Power project; six churches in the area, which will total 366kW – selling 3kW subscriptions. All those subscriptions will go to low-income families. Solar for All really accelerates Groundswell's ability to provide these benefits to LMI customers.

Alexander Bonelli, MWCOG
Residential consumers can benefit from community solar in several ways. Environmental benefits are obvious. Approximately five metric tons of CO2 emissions are offset each year if an average American household switches to solar. The benefit of community solar is that customers who would not want to or not have been able to put panels up on their property can have access to solar energy without this being an issue. A barrier to rooftop solar is that 22-27% of residential rooftop area is not suitable for installations, meaning that one in five people cannot install solar panels on their property. In terms of policy, community solar provides a means of achieving various environmental goals set by states or regions. Renewable Portfolio Standards (RPS) standards, which vary by state, may also be met through community solar. From a residential perspective, there is a potential return on investment of 10-30% annually. There is also the potential to sell bundled renewable energy credits (RECs) with the electricity produced from a community solar project.

The benefits of community solar often depend on the ownership rights of the project. For a community-owned example, they directly benefit from the energy produced based on amount invested. A subscription-based, third party-owned system allows the third party to receive RECs and energy bill credits from the off-site producer of energy. The nonprofit model has net metering for on-site producers, which allows customers to sell energy back to the grid at a retail rate and receive credit on their utility bill. For off-site producers, there are tax incentives and credits (e.g. Federal Investment Tax Credit – can be an equivalent of a 30% credit). Additionally, RECs can be earned by producing 1MWh of renewable energy. Often these credits are bundled with the electricity that consumers receive. Consumers can sell these back to the utility. Utilities may buy these to meet RPS requirements in their state. Virtual net metering is a new development in solar energy. The excess energy that is produced provides households with energy credits, which are worth about as much as the electricity from the utility. This is good for those who do not have the capacity to install their own solar panels in their community. This is available in DC, but not in VA. It is also available in MD with certain stipulations.

In DC, the RPS in mandatory with the requirement that by 2020, 20% of electricity will be generated by renewable sources and this figure rises to 50% for the year 2032. The RPS stipulates that 2.5% of electricity sales will be from solar sources by 2023. In Maryland, it is also mandatory with the goal of 20%-25% of energy from renewable sources by 2020. It also stipulates that 2.5% of retail electricity sales will be from solar sources by 2020. Virginia has a voluntary RPS. It is up to the utilities themselves to decide whether they want to invest in renewable energy, but the goal is that 15% of base year sales will be from renewable energy sources by 2025. With RECs, they receive two credits for every kWh derived from solar resources. Even though it is voluntary, many utilities are following this model.

In DC, virtual net metering is driving a lot of the community solar programs. In association with Pepco, DC also has legislation like the Community Renewable Energy Act in place. In Maryland, the Community Solar Pilot program was adopted, and smart energy commune grants which provide financial assistance to local governments that subscribe to the Maryland Smart Energy initiative. In DC, MD, and VA, RECs are traded. Virginia has the Virginia Saves program, which is a community loan program providing assistance to private, commercial and industrial users. Dominion's Solar Purchase program, which provides new incentive for producing 3MWh of solar power with 60% of the capacity reserved for residential customers.

Community solar is gaining ground, but there are still certain legislative restrictions, as well as economic difficulties in creating long-term contracts with this new method of energy deployment.

6. *COG Updates/Announcements, Next BEEAC Meeting, Adjournment*

Gina Mathias, BEEAC Chair

- Reminder to complete BEEAC survey by November 3.
- In early November, local governments will receive a doodle poll from Maia Davis (COG) regarding meeting to discuss the 2015 greenhouse gas (GHG) inventory review.

Chair Gina Mathias adjourned the meeting.

All meeting materials can be found on the MWCOG website or by clicking the link -
https://www.mwcog.org/events/2017/7/20/beeac-meeting/
The next BEEAC planning call is November 2.
Grid Ex is November 15-16.
The next CEEPC meeting is November 15.