Metropolitan Washington Council of Governments

BUILT ENVIRONMENT AND ENERGY ADVISORY COMMITTEE (BEEAC)

Meeting Summary: December 14, 2017

BEEAC Members IN Attendance:
Gina Mathias, Takoma Park (Chair)
Tim Stevens, City of Falls Church, Sierra Club
Debra Jacobson, Sierra Club
Kevin Milsted, Prince William County (*)
Dyan Backe, City of Gaithersburg (*)
Lindsey Shaw, Montgomery County (*)
Ellen Eggerton, City of Alexandria (*)

Additional Attendees:
Niels Crone, Customer First Renewables
Bill Thomas, Level Ten Energy
Eric Coffman, Montgomery County
Blaine Collison, Edison Energy
Jessica Lavender, Fairfax County (*)
Elizabeth Pinsker, General Services Administration (*)
Abdulrahman Almogbil, WMATA
Chris Somers, Arlington County
Emma West, WMATA
Harry Warren, Clean Grid Advisors (*)
Taresa Lawrence, DOEE (*)

COG Staff:
Leah Boggs, COG DEP
Jeff King, COG DEP
Maia Davis, COG DEP
Amanda Campbell, 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 October 19, 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:

Tim Stevens, Sierra Club (on behalf of Kate Walker, City of Falls Church) –

- City of Falls Church is in the process of issuing an RFP for the rebuild of George Mason High School. They were successful in getting many of the energy efficiency issues included in the process (e.g. the geothermal heat pump system, LEED Gold, solar ready, etc.). Thank you to COG and Arlington County for their help.

Gina Mathias, City of Takoma Park –

- Working with Pepco on streetlighting project, which is moving along. LED conversion to take place this spring.
- Ranked 3rd nationwide in final round of Georgetown University Energy Prize competition.

Dyan Backe, City of Gaithersburg –

- Moving through process of opting into Montgomery County's Building Energy Benchmarking ordinance. First public hearing on January 2, 2018. Final action should be in February.

Eric Coffman, Montgomery County –

- Closing in on retrofit of solar operated streetlights. Wrapping up contracting now. Intend to go to Public Service Commission (PSC) and adjust tariffs. No longer have a penalty on efficient lighting in Maryland.
- One of the conditions of the Exelon/Pepco merger was for Pepco to propose a public purpose microgrid. There are two of them; one in Prince George's County and one in Montgomery County. Counties could choose locations. Montgomery County honing in on a Rockville location. A public service microgrid is not a community microgrid. It is designed to support key amenities and critical services during an outage. Pepco will finalize details and then bring proposal before the Maryland PSC for approval.

Chris Somers, Arlington County –

- Arlington County adopted PACE ordinance and a PACE program will be launched early next year.
- Tesla is looking to expand supercharger network and they contacted Arlington County regarding locations for charging infrastructure, which is great, but the issue is only Tesla vehicles can make use of these specific chargers.

  Tim Stevens: The City of Falls Church has reached out to them and they indicated that while the DC fast charger would be proprietary, that they would be willing to entertain some level two charger discussions that would be universal.

  Eric Coffman: That is interesting because they approached Montgomery County about level twos in parking structures and they were very firm that they would only charge Tesla. Montgomery County can charge Teslas, but it is not in the public interest to have a public asset under a proprietary company. Tesla has made progress in the private sector arena.

4. COG Updates/Announcements

COG Staff

Leah Boggs, COG

- Fleets for the Future – COG in partnership with National Association of Regional Councils (NARC) and four other regional councils (including Boston, North Central Texas COG, Pima Association of Governments and Mid-America Regional Council) developing cooperative purchasing program for alternative fuel vehicles and infrastructure. COG covered metropolitan Washington region, as well as the full mid-Atlantic region including three jurisdictions in Pennsylvania, down to southern Virginia. Bids for infrastructure vendors will go out at the end of December for 4-5 weeks. Then jurisdictions will provide definitive direction to vendors regarding vehicle and infrastructure needs.
- CEEPC/MWAQC joint meeting on January 25, 2018 from 3pm-5pm at the Washington Auto Show. Meeting on Thursday as opposed to usual fourth Wednesday. BEEAC and ACPAC will be invited. EV deployment and infrastructure implementation will be the focus of the meeting.

  Jeff King, COG: The intention of January meeting is to update the regional EV plan and create an updated framework to support local implementation of EV infrastructure deployment.

  COG, with some funding from Electrify America, was asked to be part of a steering committee to develop a northeast corridor EV infrastructure strategy – from Northern Virginia to Maine. Kickoff meeting will be in Providence, Rhode Island on January 8, 2018.

  COG has also been invited to be work with the George Mason University Energy Innovation Institute (led by Walter McLeod) – industry-backed coalition around the electrification of transportation. The first thing they have done is delineate guiding principles for EV implementation that the group itself has adopted. The group includes Tesla, Lyft, and others. From industry perspective, how do we want to see the industry transform. COG will be working on a resource guide to aid in the region's adoption of these guiding principles. May be space to adopt these principles as regional principles.

  A bill in 2009 – could be fee-based EV charging by any person (defined as individual, organization, or partnership) and school boards realized they were not a part of that, so they got it amended. Fairfax realized that they were not a part of it.

Jeff King, COG

- COG actively involved with Steve Morgan who can provide help with organizing states around state energy program grant cycles. MEA at the lead, DMME has signed on, NVRC and COG. The aim is to access funding to allow locals to retrofit streetlights. One of the requests will be finding out which local communities want to take part in this opportunity.
- Dominion Energy's Virginia Solar Pathways Strategy has been released.

4. 2018 BEEAC Priorities and Draft 2018 Meeting Topics

Tim Masters, COG

The results of the BEEAC survey were submitted at the beginning of November. COG has analyzed the results and will be focusing on making improvements based on members' feedback. 18 responses were received for this survey (15 jurisdictions, 1 school district, 1 transport agency, and 1 regional commission). Members were asked to rank topics according to their jurisdiction's priorities

and according to interest in having these topics discussed at BEEAC. The results show that 'Energy Efficiency' is the biggest priority for jurisdictions. 'High Performance Buildings' was also a high priority (ranked 2nd), as well as 'Technical Assistance and Implementation for Clean Energy Technologies Projects' (ranked 3rd). These priorities are linked to 'Local Actions' in the 2017-2020 Regional Climate and Energy Action Plan (presentation with local action linkages can be found under meeting materials on *BEEAC event page*). Additional topics of interest were mainly energy related (e.g. energy planning and reporting, energy grid infrastructure, energy efficiency standards, solar markets, etc.). Community engagement, financing topics, and climate change resilience were also cited as additional topics of interest.

Members found the networking opportunities, especially with regard to engaging with regional counterparts/jurisdictions, to be the most useful aspect of BEEAC meetings, as well as the informative and applicable presentations. Based on member response, the least useful aspects of BEEAC meetings included having too many speakers that rushed through presentations, leaving little room for discussion. Meeting frequency (monthly) was also not useful. BEEAC has addressed this and in 2018 there will be meetings every second month. Lastly, presenters that promoted their interests instead of informing jurisdictions was found to be unhelpful. Many examples of existing programs that were linked to BEEAC priorities were provided by members, which gave a good view of the programs and initiatives that are being implemented in member jurisdictions. Energy efficiency topics had the greatest impact on member jurisdictions' programs and initiatives. Solar energy and high-performance building topics were also cited as having direct impacts on programs. In 2018, members will be focusing on public outreach and engagement initiatives that are concentrated on energy efficiency, deployment of renewable energy, and EV infrastructure development. Topics that members want to see more of and have greater discussion on are mostly energy-related topics with more case studies from member jurisdictions. Members expressed that all the BEEAC priorities should be linked to CEEPC. Legislative priorities that members felt should be advanced to CEEPC included a range of topics from utility rate legislation to federal solar tax credits to renewable portfolio standards and EV infrastructure-related regulations. Finally, members were asked what implementations BEEAC could make to better support their needs. Again, a range of responses was received for this question. Greater support for sustainability activities and technical assistance to move specific projects forward was one member's response. Other responses included things like continued updates of GHG inventories for jurisdictions, more workshops, aid in acquiring funding for sustainability initiatives, etc.

Leah Boggs, COG
The BEEAC 2018 calendar (including CEEPC and ACPAC meetings) has been updated with input from the BEEAC survey, especially concerning the top three or four topics of interest. BEEAC will not be meeting in January, however, on January 25 BEEAC is invited to the CEEPC-MWAQC joint meeting at the Washington Auto Show. BEEAC's February meeting will be looking at PJM's Demand Response Program, which has been a running topic that was on 2017's list of meetings, but was postponed. Since this topic still fits into the Priority updates from the BEEAC survey, it will be looked at in February. In March, there will be the last of BEEAC's Solar Market Series Workshops. One of the comments from the survey was a call for more workshop. While BEEAC hopes to also meet desires for less meetings, staff still hopes to provide members with workshops on occasion, hence the presence of three items for the first three months of 2018 (with one BEEAC meeting). In April, the BEEAC meeting will be focused on net zero energy to net positive energy buildings, as well as downscaling to reach higher performance buildings. There is no BEEAC meeting in May. In June, energy resiliency will be looked at with regard to planning energy resilient communities. July will be an off month, but BEEAC members will be invited to the CEEPC meeting on July 25 for a GHG

inventory workshop. There will not be any meetings in August, but there may be a tour of the Discovery School in Virginia. In September, cooperative contracts will be discussed. Materials supply chain management will be discussed in October (potentially as a workshop instead of a formal BEEAC meeting), which will possibly be a joint meeting with the Recycling Committee. In November, LEED Cities, urban farming, integrating SITES and the Living Building Community Challenge will be discussed in the context of city-wide initiatives. In December, there will not be a BEEAC meeting. Topics may change over the course of the year and are open to discussion.

Jeff King, COG
Related to topics coming up in 2018. Divestiture of fossil fuel is most likely going to be a topic for CEEPC as the new Chair, Mary Lehman, has been vocal about taking this position forward. She championed an initiative in Prince George's County to divest the county investment fund. Growing interest from labor unions in this divestment movement.

Gina Mathias, City of Takoma Park
Montgomery County has been thinking of this too. It is timely and a great next step for the region. Divesting portfolios feels impossible. Any assistance or workshop would be very helpful.

5. Solar Workshop 2: How to Meet Large-Scale Renewable Customer Needs

Facilitated discussion about how practitioners, project advisors, and electric utilities can meet customer needs for large-scale renewables.
(2017-2020 Regional Climate and Energy Action Plan Local Actions: 2c, 2d, 2h)

Facilitator: Blaine Collison, Edison Energy
Eric Coffman, Montgomery County
Bill Thomas, LevelTen Energy
Neils Crone and Kevin Rackstraw, Customer First Renewables

Blaine Collison, Edison Energy
The objective of this discussion is to provide a refresh of what the broad suite of options are regarding large-scale renewable energy deployment. All the jurisdictions that are members of COG have options for incorporating renewable energy solutions into their strategies.

Jeff King, COG
To give some context, CEEPC heard a detailed panel (same group) talk on this topic and the outcome was that the ideas of synthetic Power Purchase Agreements (PPAs) was very exciting, but difficult to understand in such a short presentation. The role of BEEAC in this meeting is to have a more detailed discussion on the topic to come away with a better understanding and bring recommendations back to CEEPC. The NVRC put together an RFP to get technical assistance on this issue for the northern Virginia stakeholders and held a meeting on December 11. Large, offsite solar is the focus of this meeting, with special emphasis on synthetic PPAs, bearing in mind that this is not the only way of reaching renewable energy goals (as there are other options), but it may be a valuable tool for some.

Blaine Collison, Edison Energy
To set the context regarding offsite renewable energy purchase options, there are five main options that are commonly thought of: Direct Ownerships, Unbundled Renewable Energy Credits (RECs), Community Solar, Utility Green Tariffs, and Power Purchase Agreement (PPA)/Structured Transactions. Direct Ownership usually requires a very specific set of criteria, especially with large-

scale projects in mind. For organizations who do not have an appetite for taxes, this option is a little less compelling. Unbundled RECs is where a lot of buyers in the market started and has enabled a fair amount of compelling work. Community solar was dealt with in detail in last month's BEEAC meeting (see Meeting Summary). Utility Green Tariffs are becoming more interesting, as utilities' attitudes towards distributed renewables and customer-sited renewables have varied considerably. Finally, PPAs are what will be discussed most in today's meeting.

Kevin Rackstraw, Customer First Renewables
In addition, for those not in Virginia, PPA products can be taken and implemented with retail supply, which provides an alternative option. It does not have to be only a long-term option. There are other players in the market who will sell green products that may not require a 20-year agreement, but will generally require some longer-term commitment, and it may or may not be new capacity. These kinds of products do exist in the market. Driving new renewable deployment requires stakeholders to be specific about that aspect. For instance, many of the RECs currently available are from existing projects, so these purchases may not necessarily drive greater deployment of renewables.

Eric Coffman, Montgomery County
In Montgomery County, additionality is a function of their clean energy policies. With RECs, additionality has to be addressed. From the community's perspective, it is becoming challenging to explain the benefits of RECs to the broader community. If the community sees a project, that makes sense. They do not necessarily care where the RECs went. Bundled or with the project. Obviously, there is a GHG accounting integrity issue there. It is becoming more challenging to simply say the county is purchasing RECs. The community wants to envision the wire, a reasonable path, to a specific project.

Blaine Collison, Edison Energy
The organizations that are coming to the voluntary renewables market are doing this because they want the result of their engagement to be not only cost savings, budget stability and emission reductions, but also new generation facilities. This idea is wrapped up in the term 'additionality'. 'Additionality' is a term that come from the carbon market; carbon offsets. In the carbon world, 'additionality' refers to a very specific, financial test. Would the carbon offset project have gone forward without the marginal revenue stream from the carbon offsets? Strict financial additionality is never the test. This is particularly true in this part of the market. Renewables are in many cases superior economically to existing grid supplies. Part of the assumption of the carbon additionality test is that it has to cost more (there has to be a premium). The promise of renewables is that not only is it better for the world than fossil energy, but it is also cheaper. Therefore, a financial additionality test does not apply in this case.

Kevin Rackstraw, Customer First Renewables
This can be simplified by simply ignoring the 'additionality' piece of it in the carbon world and just focusing on whether the project adds new capacity or not. Whether the organization helped additionality happen. This is what most customers care about. Getting the carbon market's 'additionality' in the renewable energy market is very complicated. Not that this cannot be done, but because of the financial test it is not easy to do. The PPA structures are exciting because scale can be achieved by pooling resources and they can push new renewables onto the grid, without waiting for utilities or being blocked by rules. The fact that it is the wholesale market means that customers can still do this without many of the rules that apply to the retail market.

Eric Coffman, Montgomery County
At the end of the day, the tax payer or community care about making something new happen that would not have otherwise happened without their participation.

Bill Thomas, LevelTen Energy
If you consider a world where today there are very low concentrations of renewable energy in the USA. Last year was a tipping point where megawatt hours generated from renewables went over 10 percent of the total energy generated. This is relatively low compared to other places around the globe. Twenty years from now, if the new paradigm of carbon-free, electric generation has been fully adopted, what does 'additionality' mean then? There is the function of the machines (generating electricity) and separate to that, there is everybody's interpretation of participation in the markets created by those machines.

Neils Crone, Customer First Renewables
In the conservation context, NGOs are still arguing amongst each other how to count carbon additionality. Companies do not need to get too involved in these debates. Focusing on new projects should be their aim.

Bill Thomas, LevelTen Energy
Whether unbundled RECs from new projects are better than bundled RECs from existing projects is not particularly worth arguing. New projects tend to have a better image because customers perceive their electricity bills to be paying for new renewable energy facilities that are presumably displacing the existing fleet of fossil fuel generation.

Eric Coffman, Montgomery County
In terms of policy, Montgomery County has a County Council and others who are questioning REC purchases. At one end of the spectrum is an unbundled REC purchase, which is making a shift toward renewable sources. A little further along the spectrum are RECs tied to specific clean energy projects, which are bundled projects. Then there is the best option, which is when customers have helped build the clean energy project. In terms of a local government's responsibilities, an unbundled REC is always going to come at a premium. If the county can get a project with cost parity to what the clean energy asset delivers, factoring in risk, and the price of the unbundled RECs, then the county will know better. Putting additional money on the table and going above and beyond the cost of electricity, then county has to start looking at new projects that are verifiable where the county can say they made a difference and grew the fleet of green energy in the community.

Blaine Collison, Edison Energy
In this market, where commercial, industrial and institutional organizations might say they are not satisfied by what they are getting from their utility, many are engaging in the power markets themselves. There are many different customers with different needs. The solution for one organization might not work for another. The good news is that there is a lot of flexibility in this range of products, particularly in the PPA structures. Going down this path requires many conversations with various stakeholders, and additionality will likely be discussed at some point.

Neils Crone, Customer First Renewables
There is usually a portfolio of solutions that can be built together with stakeholders. Sometimes something that exists on the market is bought on a short-term basis, until the customer can get something else. PPAs can give the customer a big scale fairly quickly, but often companies then build things around it.

Blaine Collison, Edison Energy
Part of the traction around renewables has been around risk management. General Motors (GM) has a global 100% renewable energy goal. GM uses 9TW of electricity globally. It is a big goal and they are in a few countries, and they have no idea how to get to that goal. They have done an interesting portfolio of renewable solutions in the US, and they just announced a really big EV goal. In their case, where they have been buying utility power, they are 100% short of that goal. They are 100% exposed to utility risk. If utilities decide to raise their prices, GM has to pay it. A lot of the problems arise from that risk exposure. If a customer can lock in electricity prices over a 10-, 15-, 20-year period, a lot of value can be derived from the certainty inherent in these types of PPA structures. Thinking about the distribution of risk, DC and Montgomery County has gone from 100% REC portfolios to onsite projects. Green tariffs have also been explored. DC has an offsite deal. They have an interesting and growing onsite solar portfolio. This is a risk distribution play. GM has not simply wanted to find a 1.5GW wind farm in the US and buy it all to declare victory. They are putting together a whole portfolio of deals to distribute that risk.

Bill Thomas, LevelTen Energy
The reality of the energy market is that nobody knows what the cost of electricity is going to be, even wholesale electricity 10 years from now. There is not a lot of transparency beyond five years from now with regard to price. The renewable energy industry has almost become the benchmark for electricity cost forecasts going forward because building these projects requires returning sponsor equity that allows the project to get going and there is also a debt finance piece that works with this. If a 15- or 20-year cost of electricity can be locked in today at rates that seem to be reasonable, this seems like a very prudent choice for larger institutions. Managing that risk is a part of providing clean energy to larger operations.

Eric Coffman, Montgomery County
It has been roughly 10 years since Montgomery County did its first PPA. Back then, 8c/kWh sounded fantastic. There was no anticipation that prices would go down as much as they have. Now, that price is hitting barriers. Hedging is important, and that's how these agreements are best approached. For example, the county may put 20% in of today's price. The county may look at a 5-year contract or a merchant contract, which there are not many of in the renewable energy world. That would be the next goal. Typically, a stack is created.

Kevin Rackstraw, Customer First Renewables
Future energy prices need to be thought of if you're planning to enter an agreement for 15 or 20 years. The thing that is different today compared to when Montgomery County agreed to their first PPA is that energy markets have a greater diversity and costs are much lower and many existing power plants cannot operate at those levels. This is the way the market works with supply and demand. Supply is decreasing to slowly meet demand. Right now, the Department of Energy is discussing how prices are set in the market. Coal and nuclear energy power plants are no longer able to compete in the market and giving some kind of extra incentive to keep this infrastructure operating is being considered. This indicates that the market is reaching a natural floor.

Eric Coffman, Montgomery County
Communicating this concept in simple terms is very challenging. Explaining these aspects to stakeholders can be challenging without getting into some of the technical aspects. Some local governments cannot even enter into these longer-term contracts. Montgomery County is lucky that regulations have been in place for a long time, which have helped them come to these agreements.

Blaine Collison, Edison Energy
There are many organization's that find a 20-year agreement very unappealing. Having the contracting window move forward has had huge benefits for the market. 10-, 12-, 15-year PPAs are typical. This is due to accelerated depreciation, market conditions, and some other factors. It is good news for potential offtakers. In parallel, minimum offtake size has moved in a favorable direction for the buyers. Not everybody can offtake from a 100 MW windfarm by themselves. Think of the leadership of the Fortune 500 in this market. How do smaller market participants become engaged in this market? The move to 15 MW, 10 MW and 5 MW tranches have made the market more accessible to these offtakers.

In review, Direct Ownership is interesting, but most likely not very applicable to this audience. Unbundled RECs are very accessible and this audience is likely to have had plenty of experience with RECs. Community Solar is a great opportunity with a lot of alignment with the standard objectives of most governmental stakeholders, but it has very limited availability and can have a few constraints. Utility Green Tariffs are subject to ongoing debate. PPAs are likely a better option in a few respects for governmental organizations.

Kevin Rackstraw, Customer First Renewables
Direct Ownership can definitely include new capacity. Unbundled RECs are unclear with regard to adding new capacity or not. This depends on the terms. Community Solar is usually new capacity, but this can depend upon when an organization joins the process. Utility Green Tariffs generally do not add new capacity, with some exceptions. PPAs allow organizations to achieve scale and add new capacity.

Blaine Collison, Edison Energy
Two concepts to think about, include the physical and financial aspects of PPAs. Specifically, the discussion will focus on offsite renewable energy projects. Onsite renewables need the space and their costs are high (unless there are policies such as virtual net metering in place). Engaging at the level of the grid allows for flexibility, scale, and economic value. The financial PPA provides vastly increased range of flexibility. A physical PPA is payment made for delivery of the electrons generated by the offsite renewable energy source.

Kevin Rackstraw, Customer First Renewables
The only difference between physical and virtual is who owns rights to the electricity and the attributes. In the case of virtual PPAs, the developer maintains control and the owner gets the benefit or cost. It is purely financial. With physical PPAs, the customer is involved in the delivery of that electricity to the grid.

Bill Thomas, LevelTen Energy
Electricity is instantaneously generated and consumed. That's physics, it does not change. A consequence of that, no one ever knows where their electricity is from and how it got there. Every PPA is a financial PPA. A contract can be handed to somebody and effect a physical transaction, but that's energy accounting. There's no physical delivery. Unless a facility is wired to a renewable energy project, there is no such thing as physical delivery.

Blaine Collison, Edison Energy
Stakeholders can get hung up on this point. The electricity market is a lot like a water main. There is no way to tag the electrons that came from a windfarm in Pennsylvania and make them travel to a specific outlet. Physical and financial PPAs differ in complexity.

Bill Thomas, LevelTen Energy
If a jurisdiction has an ambition to procure some renewable energy, they will generally go through a process to arrive at what they feel is a suitable renewable energy project, which they will want to buy the energy and environmental attributes from. Environmental attributes, in the context of this discussion, are renewable energy credits. In a standard contract, a community pays their bill and gets grid electricity from their host utility. This happens with or without the PPA. The community can decide to purchase a portion of their electricity under a long-term contract. They can negotiate a contract with a renewable energy project, and the developer of that project is the seller of the energy and environmental attributes. The renewable energy project gets a contract to provide 15 years (for example) of fixed-price energy to the community. The developer can provide certainty to stakeholders with the contract, as it shows that they will be paid at a fixed-price per megawatt hour for the stipulated period. The bank can then do their due diligence and if they approve they can provide the funding for the developer to complete the project. The project can be built and then utilized. This project may be in another state and will be interconnected into the grid, where it is consumed by the grid and physically consumed usually around the location of that project. That energy is settled by PJM Interconnection. There are Locational Marginal Prices (LMPs) that are printed every five minutes for every commercial node (around 4,000 in PJM). There is a transactable, auditable, verifiable price of electricity, that can be known for every five-minute interval, as long as this market works. The revenue from that electricity sale to the grid is passed back to the buyer (the community). Presumably, those revenues would be used to pay their electricity bills to their local host utility. It's truly a financial transaction; electricity is generated and sold to the grid, the grid pays the developer, and through the developer, the consumer is also paid for that electricity. This payment to the community offsets their utility bills. Revenue from the wholesale market to the developer should be the same as the revenue passed on to the community.

Kevin Rackstraw, Customer First Renewables
There can be costs along the way, for example PJM operational costs and those kinds of costs, but these are usually part of negotiations.

Blaine Collison, Edison Energy
It becomes a question of who assumes the risk of the administrative costs of navigating the wholesale power market transaction – this is part of the negotiation.

Bill Thomas, LevelTen Energy
The revenue from the wholesale market flows from the wholesaler to the market, and the project agrees that they will give the community the revenues from that sale of power in exchange for the fixed price that has been agreed to for the specified period. It is now known as a "fixed for floating swap". Revenue can be affected by many factors.

Chris Somers, Arlington County
So, the community is paying for the environmental benefits in exchange for accepting risk. They may get additional revenue or lose money, but that uncertainty is what is taken on in exchange for environmental benefits.

Bill Thomas, LevelTen Energy
That's correct. It is a financial energy swap for the benefit of the bundled renewable energy attributes. In terms of additionality, these projects would not be built at all without the community's agreement over a fixed-price, fixed-term contract. Without the contract between the community and the developer, the renewable energy project cannot be built. There may be other potential customers

for a developer's project, but ultimately that agreement needs to be in place.

Blaine Collison, Edison Energy
The project is not going to be built on spec. The project needs to go to the capital markets and acquire funding. The bank needs to see that there is a credit worthy customer in order to fund a renewable energy project. They want an expression of demand.

Eric Coffman, Montgomery County
It is no different to any other commodity transaction. There's a partner on each end, playing their risk to get into the best position. If the community brings money to the table, then their risk in increased a little bit, while the developer's risk is reduced.

Kevin Rackstraw, Customer First Renewables
Investment banks are doing this, but at a pace that is far behind what people want to get a lot of new capacity.

Blaine Collison, Edison Energy
Offtakers are being asked to take on some risk, and there are methods of contextualizing the risk very specifically and manage it contractually. The community gets the fixed-price contract and it gets risk protection back because it has stability if cashflow is positive. This is not a strategy for making money, but there are potential economic upsides.

Bill Thomas, LevelTen Energy
It is supposed to serve as a mitigation for higher utility prices driven by commodity fundamentals (i.e. natural gas). Electricity prices in the US are tied to natural gas prices. If the community believes that natural gas supply and demand will continue on an upward trend then these types of PPA contracts may not be for them. If the community believes there is the potential for catastrophic environmental impacts, then maybe they would find the value of these PPAs.

Neils Crone, Customer First Renewables
There is risk inherent in these models of contracts, however, there is already risk today. There is uncertainty over what the utilities will be charging in a year from now. The business as usual electricity bills are not free of risk either.

Kevin Rackstraw, Customer First Renewables
The risk of power prices going down has a floor. The risk of utility prices going up is huge (essentially unlimited). It is an asymmetric risk. The protection is happening where the majority of the risk lies.

Bill Thomas, LevelTen Energy
Utility risk refers to the commodity – electricity. The transmission and distribution charges are outside of this transaction. With regard to how jurisdictions can achieve goals such as "100% renewable" by a specific date, jurisdictions can employ all of the tools mentioned earlier; direct ownership, unbundled renewable energy credits (RECs), community solar, utility green tariffs, and power purchase agreements (PPAs).

Blaine Collison, Edison Energy
If a jurisdiction had to achieve 100% renewable energy by the end of the calendar year, it could all be done through unbundled RECs. There would be a premium of somewhere between 40c and $10 depending on the type of REC, but it could be done. The PPA route is probably where many

jurisdictions are heading towards because of their experiences with RECs and lofty goals and interest in having an impact and getting new projects on the ground. It is achievable, there is a fair bit of math that has to be done along the way, as well as stakeholder engagement. A major benefit is that a new project can be completed and the owners/developers will have made an impact on the electricity grid.

Eric Coffman, Montgomery County
The jurisdiction needs to think about what it wants to achieve. If it is just a case about mitigating the jurisdiction's "carbon balance sheet", plug that into their GHG inventory, then an unbundled REC is a very cost-effective method of achieving this efficiently with very little risk. If the jurisdiction is trying to move the grid and get new projects on the ground, which has more value when explaining it to a consumer, then the PPA route is the way to go. The struggle for Montgomery County is that their council has passed a resolution for an emergency climate mobilization, which is exciting, but hard to do, is figuring out what that means and how to effectively achieve the goals. It is not possible to achieve the goal without some form of unbundled REC purchases. That being said, the goal is to get new projects on the line, which necessitates taking on some of the financial risks to achieve greater renewable energy deployments.

Kevin Rackstraw, Customer First Renewables
NVRC is looking at the possibility of large, offsite projects (presumably in Virginia, but not strictly limited to the state). The process that NVRC is going through will probably lead to some kind of competitive solicitation for projects. There are two ways that this could work; there could be a wholesale, completely separate from their retail procurement now. The other option is going through Dominion under a certain tariff, as Dominion has done some deals with Amazon and Facebook in this way. At the moment, those look like they may be cost additive and might not be the right option. That is still an ongoing process. There are ways to optimize this process including changing the bloc strategy to improve the hedge value or the same project can be structured differently depending on other players that may potentially be linked to a project. Additionally, all the details do not strictly have to be ironed out before a project can be built if there are other players involved in this process.

Neils Crone, Customer First Renewables
Part of the effort with Northern Virginia is taking the small jurisdictions (such as the City of Manassas Park, which has a load of 9,000 MWh per year) and partnering them up with other jurisdictions and see if they can come with a large enough project.

Eric Coffman, Montgomery County
There is something very special about taking a project further up the pipe that everyone can take a cut of and then push it into however they do their end of the pipe transactions. It may be a much more interesting and easier play than some of the previous methods of renewable deployment.

Bill Thomas, LevelTen Energy
Aggregating a group of municipalities and local jurisdictions with varying degrees of credit worthiness and the complexity of contracting requirements, makes the hardest aspect of these types of deals getting to a viable contract that one or several developers could be comfortable with. The contracting complexity is challenging and the credit piece adds to that complexity.

Kevin Rackstraw, Customer First Renewables
The credit issues can be problematic, but it is solvable and it has not been a big issue to date. Supply of new projects is not an issue, as there are plenty of new projects being deployed at the moment.

6. Next BEEAC Meeting, Adjournment

Gina Mathias, BEEAC Chair

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/2017/12/21/beeac-meeting/
The next CEEPC meeting is January 25.

Reasonable accommodations are provided upon request, including alternative formats of meeting materials.
For more information, visit: www.mwcog.org/accommodations or call (202) 962-3300 or (202) 962-3213 (TDD)