Built Environment & Energy Advisory Committee Meeting
Meeting Summary: 12/19/13

Attendance:
Olayinka Kolawole, DDOE
Joan Kelsch, Arlington County
Najib Salehi, Loudoun County
Erica Bannerman, Prince Georges County
Jeannine Altavilla, Arlington County
Bill Eger, Alexandria
Emil King, DDOE
Marshall Duer-Balkind, DDOE
Heather Langford, USGBC
Steve Walz, NVRC
Nathan Costa, WPI
Mai Tomida, WPI
Jiedong Wang, WPI
George Nichols, DCSEU
David Pirtle, Pepco Holdings
John Andreoni, Institute for Market Transformation

By Phone:
Luisa Robles, Greenbelt
Tim Stevens, Sierra Club
Marie Genovese, Loudoun County
Kristen Larson, City of Bowie

COG Staff
Leah Boggs, COG DEP
Jeff King, COG DEP
Isabel Ricker, COG DEP
Maia Davis, COG DEP

1. **Call to Order –** Olayinka Kolawole, District of Columbia/Joan Kelsch, Arlington County, Co-Chairs

2. **DC Benchmarking Requirements and Data Results** – Marshall Duer-Balkind, District Department of the Environment

Marshall Duer-Balkind manages the implementation of DC's new Benchmarking requirements for private buildings. The initiative arose out of the Mayor's Sustainability agenda, which calls for DC to be the greenest and most sustainable city in the US in one generation. This includes goals to increase renewable energy to 50% of the power supply, and to reduce energy consumption by 50%.

Benchmarking energy use is important because you can't control what you don't measure. Energy is a big part of costs for businesses - utilities are on average 32% of non-fixed expenses. Tracking energy use allows you to measure progress and has the potential to save people a lot of money.

DC uses Energy Star Portfolio Manager (PM) for the benchmarking program. This is a standard tool created by EPA, which gives a building an operational score from 1-100, higher meaning better energy performance. It is now available for most types of buildings, and EPA will be adding multifamily buildings soon. PM covers 40% of the commercial office space in the country. There are nine other cities doing similar benchmarking programs.

DC passed the law in 2006, to require all buildings over 50,000 square feet, and all government buildings over 10,000 square feet to benchmark in PM. DC is also modeling projected performance for government buildings, which is handled by DCRA.

There are 128,000 buildings in the city, most are single family. Only 1.6% of buildings fall under the benchmarking requirement, but these comprise about half of the square footage in the city. Thus far, only buildings over 100,000 square feet have had to report data. The next reporting date will be April 1 2014, which will include all buildings over 50,000 square feet.

Findings from the first reporting date will be disclosed in January. Tomorrow (December 20) DDOE is releasing a green building report on the city's progress on green buildings and the benchmarking initiative so far. 83% of the buildings that fall under the law are in compliance so far. (Compliance means submitting, via Energy Star Portfolio Manager, a benchmark report for energy and water performance for 2012).This compliance rate is higher than the rates NYC or Seattle saw within the first year. Compliance varies between building types - 90% of offices, but only 42% of hospitals have complied.

So far it seems DC buildings are performing well: the city has the highest per capita green building density in the country. The average Energy Star score is 70 and the median is 77. LEED certification currently requires a score of 67, but the new standards will increase the cutoff to 75. 2/3 of the buildings DC is benchmarking have been certified at some point. They have also found that there is no correlation between age of a building and performance. This is consistent with EPA findings.

Data quality leaves some room for improvement: 10 of the buildings had scores of 100, but none are labeled, which means that either they are passing up a good opportunity, or there were errors with their reporting. Manual entries open up the possibility for intentionally and accidentally skewing the data. They have found that when reporting floor area, many buildings enter a number different from tax data. In this case, DC believed the owners but it is unclear why there was so much discrepancy.

Other data quality problems include: relatively infrequent reporting (annually), incomplete reporting (particularly leaving out gas and water data), quality assurance, continuity at scale and aggregation.

Tenant utility data has proven to be a big challenge. Owners can make their commercial tenants provide energy data (DC could sue them if they don't provide it) but this does not apply to residential tenants, which are protected for privacy reasons. Pepco will now provide aggregate data for buildings with 5+ meters if the owner provides them the meter numbers. The Pepco reporting system will be updated to automatically upload directly to PM each month beginning in 2014.

The Mayor introduced two laws mandating whole building data for gas, water and electricity in 2014. Additionally, when a building in sold, the former owner must transfer the benchmark data to the new owner to allow them to complete the reporting for that year.

DC is giving the SEU all the data to help them actively engage with customers and target customers most effectively. The SEU also houses the help center for benchmarking, so they can help buildings report, and then to implement energy saving measures. 70% of those who successfully completed the benchmark process did so with help from the SEU help center.

For DC Government buildings, 15 min interval data is publicly available on buildsmartdc.com. For the private buildings, there will be a spreadsheet with all the information for each year, but they are hoping to move toward an API that will allow software developers to access and pull the data into other tools including GBIG and COSTAR. They will be rolling out a new version in the spring of 2014 that will have the capability to aggregate data for multiple buildings.

DC is looking at lessons learned by other cities. The Mayor created a task force to look into creating a minimum standard for existing buildings, which would first apply to government buildings and then to private buildings, based on what other cities have done.

Jeff King asked how the data accounts for self-generated electricity, such as net metered solar panels. Marshall explained that many such buildings have a separate meter for their renewable energy source, and people can also track consumption from self-generated energy with their RECs. However, Pepco only reports net consumption, and sometimes has errors in their data, so DC is encouraging people to double-check the Pepco automated data.

Next steps include working with the SEU to contact building owners to help them improve performance and working to improve data quality. DC may do "audits" to ensure that data is correct. There are no specific mandates to make poorly performing buildings make energy improvements, but the SEU is doing outreach to poor performing buildings to make sure they takes steps toward improvement. They will also reach out the high scoring buildings to ensure that the scores are valid (and if they are valid but not LEED rated, to help them with that process).

DC is also working to increase compliance rates through direct outreach. They will be giving a presentation to area hospitals on the requirements, process and resources. The city has had some trouble finding out whom at the hospital to get the information to. Hospitals also have large and highly variegated loads, so reporting can be quite complicated. They usually need technical assistance on both obtaining and entering the data.

In response to a question about the technical assistance provided by the SEU, Marshall asked John Andreoni of IMT to discuss because he worked with the SEU on this. John said that multifamily buildings, hotels and hospitals needed the most help. Most commercial office space owners are pretty familiar with energy reporting.

Energy Star for Multifamily is currently in development. There was a webinar on the standards recently, which DDOE can send around. They are working hard to create a 1-100 score, and have committed to say whether they have the data to create the score by February. The model needed to build the score on requires robust whole building data, which presents data collection challenges. However, even if the data is not statistically significant enough to create the scores, it will have been a good exercise and can still be used for comparative purposes.

3. Northern Virginia Building Energy Benchmarking and Labeling – Steve Walz, NVRC Nathan Costa, WPI Mai Tomida, WPI Jiedong Wang, WPI

Steve Walz gave a brief introduction to three undergraduate students at Worcester Polytechnic Institute (WPI) who spent the last 8 weeks doing their required junior year project in Alexandria, VA. The students are studying chemical and mechanical engineering and for their project created a benchmarking and labeling plan for the City, and developed a voluntary commercial building plan for the Northern VA region.

Benchmarking generally follows the following steps: data collection, benchmarking, labeling, market transparency, energy efficiency improvements. The students collected data for government buildings over 5,000 square feet for which there was accessible property data and a minimum of 12 months of utility data. This included 41 properties, which amounted to about 41% of the City's total building area, and 60% of the City's total energy use. They did not benchmark schools, of which there are 19 properties amounting to 34% of the city energy use

The age of the benchmarked buildings varied widely, from 1773-2011. Like DC, they found no correlation between age and performance. Most of the buildings were constructed in the 80s, so took efficiency into account at least somewhat. 60% of the buildings used electricity, 40% used natural gas.

The students used site Energy Use Intensity (EUI), or energy use per square foot, to compare buildings. About 60% of buildings have a higher site EUI than the national average for their building type. The goal will be to target the buildings that are almost at the average site EUI level which can probably make small changes to see big improvements, as well as and the high site EUI buildings which are the most wasteful. Next year Alexandria will implement annual benchmarking reporting rules to break down the energy use for each building by energy source.

The students developed a template label, or report card, for the buildings that includes basic data on the building and notes anything that makes it vary from the average for that building type. Because it is a prototype, other jurisdictions are encouraged to use it as a model for their own labeling programs.

The Northern VA commercial building benchmarking plan the students developed includes a step by step guide for building owners on benchmarking. Using lessons from the Arlington Green Game, They decided it should be a voluntary program. It will be important to target the right audience, i.e. those who will be willing to put in the effort early on and to pave the way for others, and to have easy-to-use tools and accessible data. The program they designed would be a 12 month competition with activities and events throughout to keep engagement.

Marshall Duer-Balkind asked why they chose to use site EUI, since the Energy Star score is based on source EUI which is a better comparison of energy use when there are different energy consumption types. With site EUI, electric power will appear to have a lower score than natural gas, but natural gas gains when you factor in efficiency losses for electricity transmission. The students explained that they used site EUI used because that is the number owners can control and what they see on the bill, and they want the data to be accessible and transparent to the owner.

Erica Bannerman asked if they saw a difference in LEED versus non LEED buildings in terms of performance. They did not, but this is likely because most LEED buildings in Alexandria are special use buildings with high loads, such as the bus terminals and the police station. Therefore it looks like they are high consumers, but the buildings are much more efficient than they would be otherwise. It was noted that buildings can be built to be efficient, but the actual performance depends on how it is

operated. Marshall Duer-Balkind noted that some of the newer buildings in DC have similar issues because when they do renovations use goes up, and often new technology is a big energy user.

In response to a question about rewarding or recognizing buildings or facilities that make the most efficiency improvement, Bill Eger of Alexandria said that despite the value of this as a motivational tool, the City od not sure they want to start recognizing individual building managers because there are a lot of other factors that determine whether energy improvements are possible or practical. However, the voluntary commercial building program will have a recognition element to incentivize building owners to participate.

4. LEED v4 Changes to Building Certification – Heather Langford, USGBC

Ms. Langford works on the technical development of the LEED program, green codes and standards. She also works on demand response and doing outreach to utilities and LEED buildings to encourage participation. Education is the biggest obstacle to demand response particpation, but there are concerns that it might not have a very substantial impact on load. USGBC is doing research with Lawrence Berkley on demand response's effect grid reliability and load reduction, which will be released in several white papers this spring.

There are now 220,000 projects LEED registered or certified, covering 10.4 billion square feet. USGBC is registering another 1.5 million square feet each day. The majority of buildings are now earning silver and gold certifications, and platinum participation is skyrocketing. Because the industry is catching up to the standard, USGBC sees the need to raise the bar. LEED is the ceiling, and building codes are the floor for efficiency standards.

LEED v4 is a big jump from the 2007 version, although it was moderated a bit in response to industry concerns. There is a much bigger focus on technical rigor and performance in v4, due to criticism LEED has received on the lack of tracking and assurance that the building actually performs to the standard it should. Through the site GBIG.org buildings can track their energy use and compare to other comparable buildings.

Version 4 is still a 100 point system with regional priority credits, pilot credits and additional points for LEED AP credentialing. Changes in v4 include a new credit category, standards for 21 sectors, international standards and the focus on performance.

The Transportation and Location credits have improved ties to anticipated outcome: i.e. bike facilities must link to a bike network and focus on quality transit (trip frequency, walking distance, etc.). The sustainable sites section has simplified the light pollution credit, and now has a financial support option. NFWF will be managing the fund to direct these donations to conservation projects. The Water section was reorganized and now focuses on water budget. The whole building is required to have a water meter, and sub-metering gets extra points.

The Energy section raised standards to 5% above the ASHRAE 90.1 standard, and raised the minimum Energy Star score to 75. You can now use Portfolio Manager for designs project as well as built projects. They have included a new credit for demand response. To qualify, the building systems must be designed to be compatible, and you must get in touch with your utility and demonstrate the savings you

could achieve. Generators are not allowed to be used in the demand response program. Building level metering required.

USGBC received 22,000 comments on the revision and responded to all of them. Many comments emphasized transparency, outcomes, and using a life cycle analysis (LCA) approach. There was a strong request for consideration of the chemicals and materials going into the building. USGBC was concerned about market readiness for materials that would qualify if they instituted these recommendations, but many new companies and products have popped up. There is now a manufacturing working group, emissions ratings for materials, and overall more focus on wellness, particularly in the indoor air quality section. 100 teams beta tested LEED v4 and they have seen much more responsiveness to LCA and wellness aspects.

LEED is trying to go global, and in v4 attempted to align with international requirements. 140 countries have LEED projects. The International group pays all the certification fees for the first LEED building in a country.

They have now established the standards for Existing Buildings for Schools and Retail, Multifamily Mid-Rise, and for Warehouse and Distribution centers. Existing Buildings Operations and Maintenance (EBOM) standards are more focused on establishment and performance. Establishment includes assets, such as meters and lighting, as well as policies. Performance includes activities like tracking and energy audits.

The new version of LEED should also greatly improve user experience. They reduced the number of forms by 80% and created a new online subscription -based reference guide with videos and links to other resources. The LEED Credit Library is also now online, and allows you to pull up system requirements for each credit, compare various versions of the requirement and link to the reference guide. Greenbuildexpo.org also includes free videos of some of the presentations at Green Build.

Transition credits for moving from New Constriction to EBOM are in development. EBOM does include 4 credits for certified New Construction buildings moving to the Existing Building certification. They are also starting a new program called dynamic plaque which tracks performance and consumption based on your score.

A question was raised about demand response, and how LEED handles cases where utilities don't offer incentives for participation. Heather said they are looking at this issue and the impact it has on participation. USGBC acknowledges that there are a lot of concerns about the sustainability of using various types of wood, but the credit, which is only one point, will stay in LEED v4. They are looking into making net zero programs or pledges part of the requirement at some point in the near future.

5. Roundtable

- Maia Davis: The Climate and Energy Awards pilot will launch in the spring. COG would like to get feedback on the program at the BEEAC meeting next month. As a reminder, the climate and energy surveys will go out in January.
- Fairfax Planning Commission is encouraging EV charging stations for parking sites and buildings, which is a big step but going slowly. They are also planning to generalize the green building codes to apply to the whole county.
- Emil King DDOE gave a brief explanation of DC's new Solar Mapping project: http://en.mapdwell.com/solarsystem/dc which displays rooftop solar PV potential and

estimates financial specs (loan conditions, new income, return on investment, etc.) for every building in DC.

- Steve Walz brought up DOE grant Virginia has received to create a "Yes Guide" for building owners to help them go through the energy improvement process. As part of the project they will be holding Webinars on the "Getting to Yes" initiative.
- Prince George's County finalized their plan to reduce petroleum consumption by 300,000 gallons in 5 years and increase renewables 20% by 2020.
- Arlington is doing an Energy Roadmap to help building owners make strategic decisions on implementing energy improvements. They plan to move to a full benchmarking process soon.
- Arlington also recently held a healthy buildings workshop because they found that the many tight, very energy efficient buildings had mold and other problems from lack of air circulation. The workshop underscored the importance of ventilation and healthy moisture levels while making the building energy efficient.

6. Next Meeting Date, Proposed Topics, Other Announcements and Adjournment

- BEEAC planning call – January 2
- BEEAC meeting – Jan. 16
- CEEPC meeting – Jan. 22