Comparing Energy Savings Methodologies: C-PACE vs. CT Utility PSD Webinar

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Presented by:

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January 31, 2017

Questions & Answers from the Webinar

Thank you for participating in the Connecticut Green Bank and Sustainable Real Estate Solutions, Inc. sponsored webinar, *Comparing Energy Savings Methodologies: C-PACE versus CT Utility PSD.* As discussed on the webinar, below are listed the participant questions and the answers provided by Mr. Buonicore.

(1) What is ASTM and how can I obtain the E2797 standard you referred to in your presentation?

ASTM is the U.S. national standard-setting body. Today, there are more than 13,000 ASTM standards, on everything from baby cribs to the acquisition of commercial real estate. ASTM headquarters are located in West Conshohocken, PA and its web site is at www.astm.org.

The ASTM E2797-15 Building Energy Performance Assessment (BEPA) standard can be obtained by going to the ASTM website, inserting E2797-15 in the search box, and when the standard comes up, click on purchasing it. I believe it costs $65.

(2) Do prescriptive utility incentives care about the energy savings?

Yes, they effectively do because they specify the minimum performance of the equipment they will give the incentive on. For example, the minimum energy efficiency ratio (EER) of a new unitary air conditioner or heat pump is specified in order to get the prescriptive $/ton incentive from the utility. Or the minimum annual fuel utilization efficiency (AFUE) of a condensing gas boiler is specified to get the prescriptive $/heat input (MBH) incentive from the utility.

(3) Can you explain again how the ASTM BEPA standard utilizes historical utility data to establish the building baseline?

The ASTM BEPA standard essentially fits a statistical model – the building energy use equation - relating energy consumption data in kWh or kBtu to independent variables believed to influence the building's energy use such as HDD, CDD, occupancy, building operating hours, and so on. When fitting the model to the data, the coefficients of the equation are adjusted until the sum of the squared differences between actual consumption data and modeled consumption data is minimized. A linear equation is frequently used for the statistical model, and that's why it is often referred to as "linear regression."

Once the building energy use equation is established for the baseline utility data, "typical or average" data can be inserted for the independent variables to obtain the "normalized" building energy use. This would be the representative (under normalized conditions) building baseline energy use without ECMs. Since the building's energy use with ECMs is also typically projected under "normalized" or "average value" conditions, the whole building energy consumption savings can then be determined by the difference between the two.

(4) Why does the ASTM BEPA standard have a preference to collect utility data for a three year period rather than one year?

Utilizing energy use data over 36 months provides 36 datasets or points for the regression analysis. In addition, collecting data over a three year period is better able to deal with the impact of an unusual season, such as a relatively warm winter or cool summer. The 36 datasets or points have been found to be more than reasonable to obtain an acceptable correlation coefficient (r) when using the building energy use equation. As you might suspect, a one year period will only provide 12 datasets or points and may result in a lower correlation coefficient.

(5) If I understood correctly, if a piece of mechanical equipment such as an RTU is being replaced at the end of its useful life, the utility would only consider the lost opportunity savings. Is this correct?

Yes. This is correct. The utility PSD would define the lifetime energy savings in this case as the difference between the performance of the new high efficiency equipment presumably exceeding the current building energy code and a baseline energy performance, which would exist if the equipment were designed to only comply with the current energy code.

(6) When C-PACE determines the savings, the "S" term you referred to, is this only the energy savings?

In the CT C-PACE program, the savings in the SIR calculation consists not only of the life cycle energy cost savings, but also any documented maintenance savings (such as the difference in cost between service contracts on the equipment pre- and post-ECM installation). Also, for Solar PV systems, the "savings" includes the ZREC annual utility incentive received for 15 years.

(7) When do you get the incentive payment from the utility for installing energy efficiency equipment?

You typically would get the incentive after the ECMs have been installed and commissioned. The utility will need to verify that the required equipment has been installed and is operating in accordance with the energy analysis report prepared by the utility in support of the incentive. The utility will also need to verify the final installed cost of all the measures.

(8) Where can I obtain a copy of the utility CT Program Savings Document?

A copy of the most recent utility Program Savings Document can be downloaded from the internet by searching under "CT Program Savings Document – Energize CT." The document is 332 pages and addresses both residential and commercial energy conservation measures. I will include the web address when we provide you with the written answers to your questions.

The web address for the PSD is:

http://www.energizect.com/sites/default/files/2016%20Program%20Savings%20Document.pdf