Setting the Proper Baseline for New Buildings

in a Metered Energy Efficiency Transaction

In a transaction using the Metered Energy Efficiency Transaction Structure (“MEETS™”) the utility pays based on the idea of actual measured performance. Performance means the difference between a baseline and actual use. Both the baseline and actual performance measurements are constructed for the particular building, providing a consistent, transparent, and defined approach to the definition of the baseline, the metering, and the mathematics.

To assure accuracy of measurement, MEETS™ requires the use of a dynamic baseline meter system as a whole-building measurement solution. Such a meter must meet utility resource grade standards. (The DeltaMeter® is one such tool.) This requirement is based on the strong principle linking a building’s current performance (metered consumption) and the performance it would have demonstrated under its historical baseline conditions, through the dynamic baseline meter.

Setting the MEETS Baseline in New Buildings

Establishing a baseline that is accurate and fair to utilities, ratepayers and customers is essential. A baseline that is set too high can cost ratepayers, and tenants, too much. A baseline that is set too low will result in developers designing less energy efficiency into buildings because they will not be rewarded for the energy benefits those designs create.

The proper baseline for a retrofitted building is ordinarily determined by using that specific building’s past performance to establish historic usage. The resulting baseline, adjusted for the weather, number of tenants and activities of the tenants, represents the amount of energy the building would have used if the additional efficiency investments had not been made.

Determining the proper baseline for a new building requires a different approach, because historical information for the specific building does not exist. Constructing a new building baseline begins with an understanding of the utility’s fundamental resource planning problem.

Background and the Utility’s “Obligation to Serve”

Utilities are required by law and regulation to serve the energy needs of the buildings that make up their service territories, regardless of the efficiency of the buildings. This requirement is referred to as the “obligation to serve.”

Relationship of Obligation to Serve to New Building Code.

Building codes frame an expectation for how a building will perform. However, utilities have learned that they cannot rely narrowly on a “projected code performance,” based on computer models, for resource planning.

1 The baseline is adjusted over time for routine and non-routine changes in the building. The methodology for those adjustments is part of the definition of a compliant dynamic baseline meter.
Utilities, knowing they have an “obligation to serve” all the demand of the customers in their service territory, base their plans on their experience with how newly constructed buildings actually perform. This may or may not comport with the predictions of an engineering model. In other words, a utility’s real-world experience dictates the amount of energy they plan to purchase, and hence this same real-world experience is the appropriate standard for determining baselines for new buildings.

**The Method**

Using the utility’s own power planning database for existing buildings, it is straightforward to develop a baseline for a planned, new building from a sample of recently constructed buildings of similar use and size from the previous several years.

The sample should be adjusted for new buildings that have already installed utility-incented energy efficiency enhancements, so as to represent how standard, conventional, code-complying new buildings actually perform.

The difference between this baseline and the new building’s actual energy use represents the real benefit to the utility from “better-than-code” building construction. The accurate measurement of energy saved compared to this baseline is the heart of the “metered savings” approach to efficiency in a Metered Energy Efficiency transaction.

This approach to setting the baseline has several advantages:

1. Unlike a baseline based on a modeling protocol, this baseline is based on reality. The numbers are from actual new buildings, with verified operational performance.
2. It provides the building owner/developer with a realistic assessment of the value of the investment in efficiency beyond what is required by current code.
3. It is a transparently fair evaluation, even for lay persons.
4. It can be tailored by building use/type (office, hospital, school, etc.)
5. It simplifies the evaluation of persistence, as well as routine and non-routine changes going forward.

**For more information**

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2 Recent research by New Buildings Institute on over a hundred LEED projects found that:
   a) building modeling using traditional tools is a poor predictor of real performance – it is almost a random relationship, and
   b) the more efficient the building, the greater the variation from predicted performance.
3 EnergyRM’s Chief Technology Officer, Howard Reichmuth, has extensive experience in developing these types of baselines.