From: Downes, Mary
Sent: Wednesday, January 24, 2018 3:43:24 PM
To: Nixon, Elizabeth
Subject: example lighting project

Liz,

Given the conversation at the EM&V meeting yesterday, I thought it might be helpful to show you the kind of backup we typically get for a lighting job. This should be fairly easy to follow and corresponds to the raw field data we get, which gets rolled up into our tracking system into one project (with three lines of data – one for indoor lighting, one for outdoor and one for non-energy savings). That project then gets put into our B/C model under those two distinct lighting measure lines, along with all the savings from all the other lighting indoor and outdoor projects. The same loadshape (e.g., when the energy is used) and ISO peak demand coincidence factors are used for all of the projects of these types. There are hundreds of such projects per year, each with similar kinds of backup.

This lighting is considered "prescriptive", which means the same loadshapes and coincidence factors are applied in the B/C model, but the wattages and hours of use are calculated based on the actual site conditions according to a standard algorithm (i.e., delta watts x hours of use = kWh).

The "delta watts" is very site-specific in this case, and is not something we can just copy from what we assumed in our planning model. It is the actual difference in wattage installed. Lighting is the easiest example, but the same idea would apply to most equipment.

In some cases, the calculation is made in advance and is the same for all equipment of a certain type (e.g., all refrigerators in the resi appliance program are assigned the same kW and kWh savings based on an evaluation of average size and hours of use that is referenced in the MA TRM. This assumption that is revisited and (if needed) updated at the start of each program year. In other cases, the implementer/vendor calculates the savings based on a formula, which is often more complicated than just delta watts x hours of use.

The "max demand factor" is used primarily as a planning tool, as a means of estimating the relationship between kWh and kW in the absence of actual data. It would also be legitimate to estimate future kW based on an average of the kWh/kW relationship from past projects. This simply reflects the average number of hours such equipment is typically in use during a year. That's the same thing as the max demand factor – it's just a shortcut to the planner doing their own analysis based on their own data – both ways are legitimate. Reporting, on the other hand, typically reflects what actually happened based on the data coming from the field, though the max demand factor can be used to provide a good check on those results. The role of EM&V is to periodically confirm that the assumptions and algorithms being used to calculate savings are resulting in a reasonable approximation of actual energy (and demand) savings, based on a sample of completed projects.

Please let me know if I can help answer any questions about this. I really want you to be able to understand what we are doing, and how it all ties together. It IS really complicated, and it took me months to understand it all when I started working here, but that's because there is so much data from so many real world applications, and for so many different kinds of measures, which are constantly evolving.

Mary