AEI

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Case Study

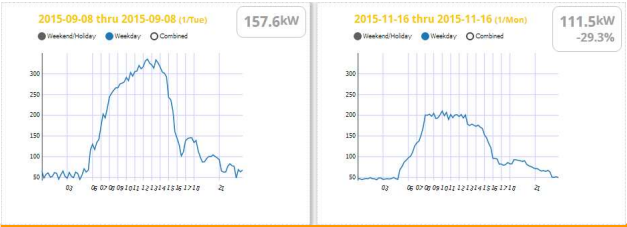
Carlisle Public School Develops Usage Baselines in Preparation for Demand Charge Increases

The Opportunity

The Town of Carlisle, like many towns in MA, has several facilities on utility rate schedules where 70% or more of the bill is composed of "demand charges" that are based on the highest demand used by the customer in the billing period. In the case of the Carlisle Public School, each kW of peak demand in the period costs $19.19 and with typical peaks exceeding 250kW, a 10% reduction is worth over $480/month. If rumored increases in demand charges come true in 2016 and beyond, the risk of doing nothing could cost an extra $5,000 to $15,000 per year at the school alone. Carlisle, like many towns, is driven to efficiency by an Energy Task Force composed of top-flight "professional volunteers", and there is general agreement that a data-driven approach to understanding the current usage profiles is key to determining the next best conservation measures they might employ.

Discovery and Next Steps

With funding from the MA Green Communities Grant Program, AEI continues to develop a baseline of utility usage for the Town of Carlisle.



In 2015, the Carlisle Public School complex had an average electric demand of 52.3kW, yet regularly had peak demands five times that. In the worst-case month of September, the school hit its peak on the first day of school when all of the buildings were at full tilt, with outside air at 91°F. The peak demand for that month was 349.8kW, nearly 7 times the average month. That first day of school cost the Town $2,000 in demand charges compared to an "average" month when the peak demand is around 250kW.

AEI is proposing to Carlisle that we engage targeted low-cost sub-metering at key panels in the facility to learn the best opportunities for peak demand mitigation when weather and occupancy indicate that a peak for the billing period is imminent. In light of rumored increases in demand charges, a sub-metered approach to understanding the load profiles is also a low-cost insurance policy for the future. Reducing peaks also has the nice side-effect of reducing overall demand. In the case of CPS, a 10% kWh reduction is worth about $1,200/yr.

To view the interactive AEI report to Town of Carlisle, use our EUI visualization widget, or to learn more about AEI, please visit www.aeintelligence.com/town-of-carlisle.

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Building Energy Efficiency with AEI

Take Back Control with AEI SoftStart™

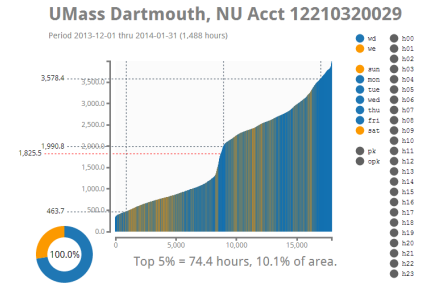
AEI energy data analytics help you take back control of your facility's energy use. The first step is an inexpensive main meter AEI SoftStart™ review using the EPO data collected by your time-of-use (TOU) facility meters. Even with just the main meter, we can:

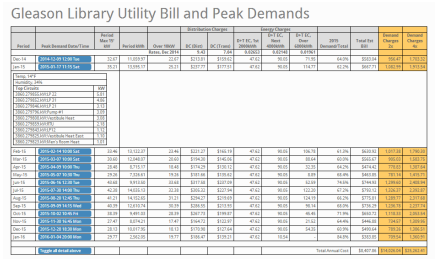
- Profile your facility's energy use by time of day, day of week, season/ season, year/year, including weather normalization,
- Show dynamic demand visualizations that quickly identify your peak demands during the year,
- Calculate the Energy Use Intensity (EUI) of your buildings and compare them to each other and to the DOE national database.

From these analytics, we can start to understand how your buildings operate:

- Do your buildings set back appropriately during unoccupied hours?
- What are the base, heating and cooling loads of the buildings?
- What are the top peak demand moments in the billing period? How does your peak demand compare to the average load?
- How do your buildings perform relative to each other per square foot, and to the national averages for similar building types?

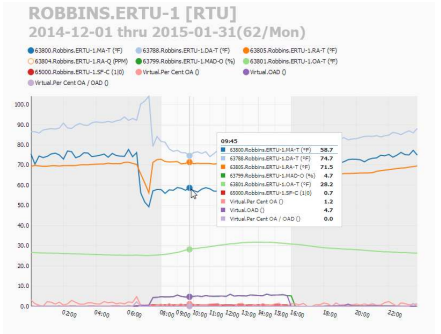
An AEI SoftStart review is the inexpensive way to answer these questions and others, pointing you in the right direction to choose the next best steps toward energy efficiency.





With BAS Data, Deeper Insights and Savings

With the Building Automation System (BAS) data from your facility, AEI kicks into high gear and goes well past what the main meter has told us. We'll dig deep into the air handlers, chillers, boilers and other assets to see that they are operating efficiently and to plan. We'll discover the typical inefficiencies such as simultaneous heating and cooling, excessive or insufficient ventilation, VFD efficiencies, and hundreds of other performance indicators. We'll identify the simple and quick ROI O&M savings opportunities, but also give you the reference data for making capital improvement decisions. How well do your current assets perform against an ideal cost-to-operate model? We'll tell you all this and more, and in plain English. Commissioning a new BAS? We can qualify the installation to be sure it's been properly configured.



Lower Costs and Maintained Savings over Time

AEI is with you through the entire process, from early main meter insight, through your retro-Cx, recommissioning and BAS commissioning projects, all the way to steady-state continuous commissioning to maintain the savings that were achieved. As your partner, AEI continues to monitor the main meter and the BAS under the watchful eye of our CEMs, delivering reporting and insight to your secure and private web portal. Your engineers and ours share a low-cost reference desk where your data is presented in logical and meaningful ways that are tuned to your staff's needs.