AEI

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Case Study

Carlisle Gleason Library Prepares for Demand Charge Increases

The Opportunity

The Town of Carlisle's Gleason Library is a recently renovated 11,000ft^2 facility and is a relatively small piece of the Town's energy footprint. But like many facilities on "demand charge" utility rate schedules, 60% of its monthly bill is based on the highest demand used by the customer in the billing period.

At Gleason Library, each kW of peak demand in the period costs about $200/year and with typical peaks around 40kW, a 10% reduction is worth about $800 per year but could be worth up to $3,200/yr if utility demand charges will increase as rumored.

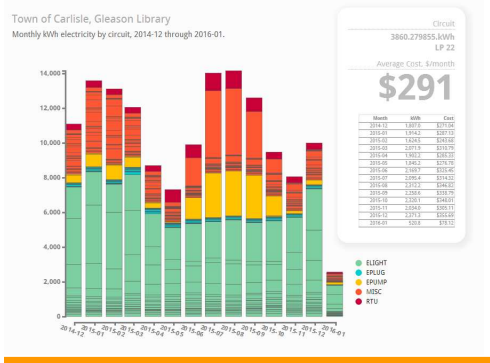
Discovery and Next Steps

Period	Peak Demand Date/Time	Period Max 15' kW
Jul-15	2015-07-30 14:00 Thu	42.38

Temp, 88°F	
Humidity, 57%	
Top Circuits	**kW**
3860.279859.kW:RTU	11.43
3860.279849.kW:Outside AC	9.11
3860.279855.kW:LP 22	5.91
3860.279799.kW:Pump #2	3.46
3860.279846.kW:LP 21	2.86
3860.279810.kW:Hot Water Heater	1.36
3860.279843.kW:LP12	1.33

Using GC Grant Program funding in FY2014, the Library installed an expensive and underutilized SiteSage sub-metering system for all electric circuits in the building. With a small amount of 2015 GC funding, AEI used its software to automate data collection from the library and better understand how the energy is used. Based on preliminary findings, we see that demand is 60% to 100% higher in the heating and cooling season than during shoulder months. Electric demand is dominated by lighting first and then cooling.

Even when outside air is as low as 65°F, the AC and the RTU run together and consume half the total load of the building. It makes sense in those cases to limit the next top 5 loads in the building, which are a combination of lighting circuits and pumps. The value of having sub-metered data is that we can establish a few basic responses for the building in cases on hot days with low to medium occupancy states, and we can do so with advanced notice to the facility. For example, if OAT is 80°F at 8am in the morning, there's a good chance that the billing period peak will occur that afternoon. In those cases, consistently limiting occupancy to fewer controlled spaces could lead to lower average and peak demands.



While an aggressive DR stance might only amount to $1,000 in savings per year, the Library supports our contention that the only way to reduce peak and average demand is to have the data that points to the next largest negotiable loads and knowing well in enough in advance to take action.

View the interactive AEI report to Town of Carlisle and learn more about AEI at www.aeintelligence.com/town-of-carlisle.

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Building Energy Efficiency with AEI

Take Back Control with AEI SoftStart™

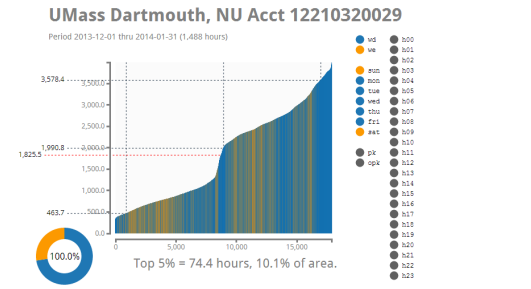
AEI energy data analytics help you take back control of your facility's energy use. The first step is an inexpensive main meter AEI SoftStart™ review using the data collected by your time-of-use (TOU) facility meters. Even with just the main meter, we can:

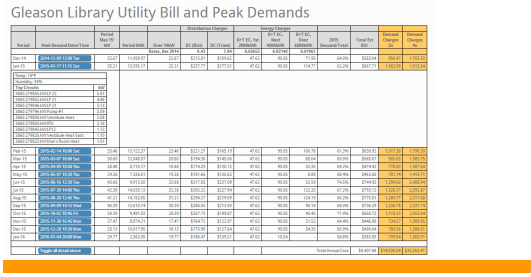
- Profile your facility's energy use by time of day, day of week, season/ season, year/year, including weather normalization,
- Show dynamic demand visualizations that quickly identify your peak demands during the year,
- Calculate the Energy Use Intensity (EUI) of your buildings and compare them to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

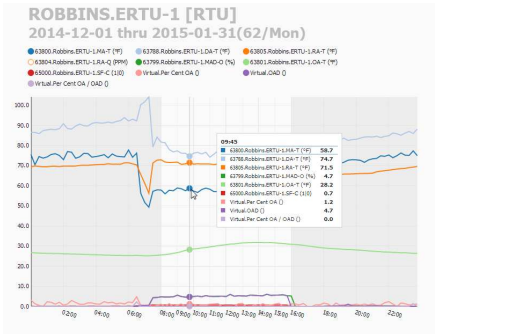
An AEI SoftStart review is the inexpensive way to answer these questions and others, pointing you in the right direction to choose the next best steps toward energy efficiency.





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 ventilation, VFDs in override, and hundreds of other performance indicators. We'll identify the simple and quick ROI O&M savings opportunities, and 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 life cycle of your building, from early main meter insight, through renovations, and all the way to steady-state continuous commissioning. As your energy management partner, AEI and its CEMs deliver 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.

For more information, please visit our web site at www.aeintelligence.com, write to us at info@aeintelligence.com, or call us at +1 (978) 758-8883.