



Peak Load Management Guide

How to fully capture the value of peak load management



Peak Load Management

As a consumer of electricity from the grid, you pay for both the actual energy you consume (kWh) and the amount of energy that needs to be available to serve your account based on your peak load (kW demand). This peak kW, or peak load contribution / capacity tag / cap obligation (various names depending on market), can comprise up to 50% of your supply bill and more than 30% of your total electricity bill (supply + delivery). Through conscious management of your load, or Peak Load Management (PLM), you can clip these peaks and significantly reduce your electricity costs, both in the current period (delivery) and during the next capacity period (supply). Learn more about the importance of peak load management, how your peak load contribution is determined, how you can start actively managing your peak load, and how to fully capture the value of PLM in this extensive guide to peak load management.



Why You Should Care

Supply/ESCO Rates: The higher your ICAP tag, the more capacity you will need to purchase, and the higher your \$/kWh price (all else equal) because the grid has to be prepared to meet your peak demand at any time. This is similar to a mall parking lot. It needs to be big enough for the busiest day of the year (i.e. build for maximum capacity), even though it is not used to full capacity most of the time. Your monthly payments are determined by both the actual energy you consume (kWh) and the amount of energy that needs to be available to serve your account based on your peak load kW demand. Your PLC/ICAP tag sticks with you for a full year period, regardless of your actual monthly demand moving forward.

Delivery/LDC Rates: For most utility territories, C&I customers (generally accounts with a peak kW>300) are billed both kWh and kW demand charges (as opposed to residential which is just based on kWh consumed). The delivery demand charge you're assessed each month is based on the peak kW you register during that billing period, even if it was just for a 30 minute interval. In some territories, this rate varies seasonally (higher in the summer, lower in winter), varies based on the time the demand is registered (on-peak vs. off-peak hours), and can be subject to ratchets. A ratchet demand schedule generally bills you for your demand that month, or some percentage of the peak demand

for prior months. For example, if your account registers 1000 kW demand this month and is subject to a 75% ratchet, then next month you pay the greater of the month's demand or 750 kW (75% of 1000 kW), even if your actual demand that month was only 550 kW. This would continue for a rolling 12 month period based on the 75% of the max peak kW of the prior 12 months.

How Your PLC is Calculated

- **NYISO** – Your peak load contribution (PLC), or installed capacity tag (ICAP tag), is determined by your usage during the single highest peak hour from the previous year. The peak hour is the hour during which the usage was the highest across the entire NYISO grid (not just your zone or utility). Your ICAP tag is effective each May 1 to April 30.
- **PJM** – Your PLC tag is based on your peak demand usage during PJM's five Coincident Peak Hours during the previous June 1 through September 30 period. PLCs are effective each June 1 to May 31.
- **ISO-NE** – Your peak load contribution (ICAP tag), is determined by your usage during the single highest peak hour from the previous year. The peak hour is the hour during which the usage was the highest across the entire ISO-NE grid (not just your zone or utility). Your ICAP tag is effective each June 1 to May 31.



Developing a Peak Load Management Plan

Low-Cost Operational Strategies:

- Starting up building's systems earlier or before peak hours, allowing building more time to reach the desired temperature, thus thinning out the energy use
- Generating a startup schedule, staggering the turning on of equipment
- Tweaking operational times of energy-intensive equipment (scheduling so that not all machines run at once)
- Turning up the thermostat for blocks of the day and using fans (while shading sunlight in large windows to minimize radiated outdoor heat)
- Pre-cooling the building – running the building's air conditioning overnight (when demand is low) so it does not require as much energy to maintain temperature the following day
- Making sure lights are turned off when not in use (or installing dimmers)
- Promoting tenant energy demand responsibility – use of power strips, timers for electricity, installing LED light bulbs

Capital-Intensive Investments:

- Energy storage systems:
 - **Battery storage** – The battery charges while the grid is at its base load, or minimum level of demand, and electricity prices are low. Then, this charged power is used by the building during peak hours to decrease their load
 - **Thermal (ice) storage** – This technology generates ice overnight, again when the grid is at its base load, to then be used during the day for cooling of the building
- Adding capacity via on-site generation – The generation of your own electricity through renewable energy sources, such as solar, wind, etc. to limit your reliance on the grid
- Motor controllers of Variable Frequency Drives – This will adjust the motor driven equipment's (such as an escalator) output and speed to meet the exact demand, while recognizing opportunities for the motor to run at less than 100% power

Measure & Verify PLM Plan:

To ensure your efforts are successful, your energy management program should measure & verify your peak load reducing capital improvements and new operational strategies

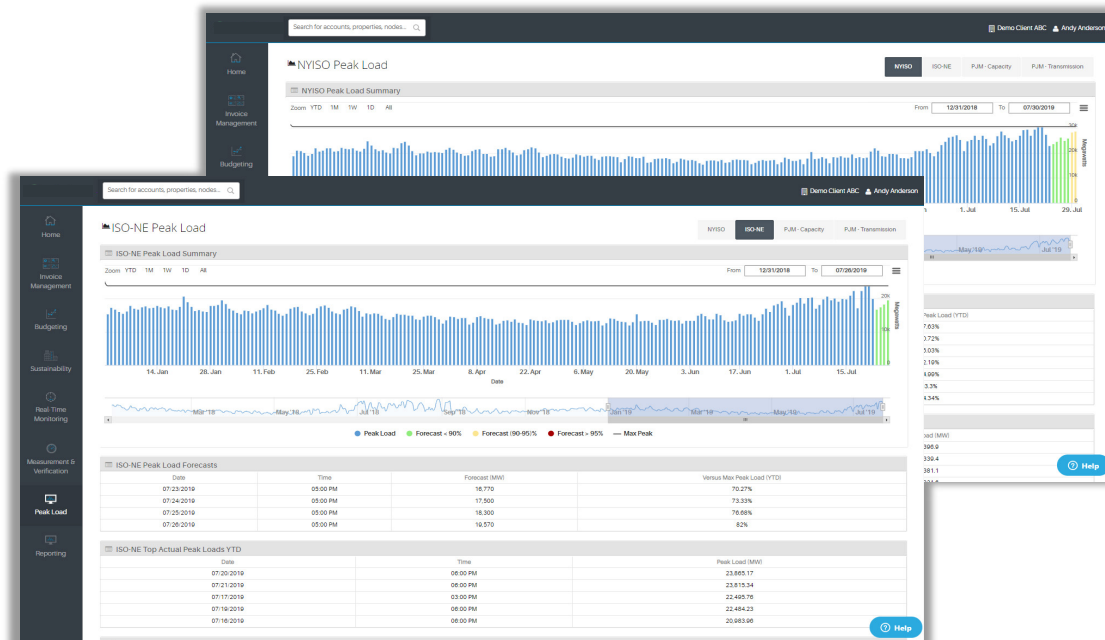
Our M&V services:

- Track all the invoice and metering information real-time to uncover any inconsistencies
- Act as a neutral third party
- Comply with guidelines outlined in the International Performance Measurement and Verification Protocol (IPMVP) and ASHRAE Guideline 14, the national measurement and verification standards in the United States and many other countries
- Provide oversight from an AEE Certified Measurement & Verification Professional

How can we help you capture the full value of peak load management?

Our cloud-based energy management solution, eReveal, can help your peak load management plan with:

- **Monitoring and Alerts:** Predictive analytics monitors the grid's consumption and weather in real-time and predicts when peak load hours are likely to occur. In this event, we alert you through day-ahead and day-of emails, giving you enough time to take action to reduce your demand when its most important
- **Energy Procurement Strategies:** To ensure full advantage of your peak load reductions when managing your RFP for electricity supply, we can:
 1. Pass through capacity, rather than hedging for the contract term. When you hedge beyond the capacity period, and the supplier is absorbing the risk of capacity tag and price fluctuations, then you will not be able to realize the reduced capacity payments costs when you have reduced your capacity tag until a new contract is signed
 2. Negotiate capacity adjustment clauses in the supply contract. If you're actively reducing peak demand, but want to hedge capacity for a period longer than 12 months, then negotiate that suppliers will adjust the capacity tag when new tags are released
 3. If you're reducing peak load through load shifting strategies such as battery or ice storage, pass through energy costs as well in order to take advantage of the difference between on-peak and off-peak hourly pricing. If you're contracted under a fully fixed rate, then the only advantage is the peak demand savings, and you're not realizing the value of the arbitrage between on- and off-peak LMPs
- **Measurement & Verification:** eReveal can measure & verify all of your peak load capital improvements and operational strategies to ensure your plan is effective



Conclusion:

Peak load management saves money and reduces greenhouse gas emissions. PLM should be a strategy adopted by all C&I facilities, regardless of budget. PLM does not require expensive capital upgrades and installations such as battery storage and on-site generation, since meaningful results can be achieved with low cost / no cost strategies. When you add gas to the fire by way of capital improvements, PLM can save hundreds of thousands of dollars annually, while reducing GHG emissions by shifting load overnight (baseload nuclear and wind power) and avoiding the dispatch of the dirtiest generation used during the peak hours (oil peakers).

Ultimately, to manage your peak load contribution effectively and efficiently, you need to know what the utilities will not tell you – when the peak load hours are going to occur. With a predictive analytics platform, like eReveal, you will be alerted when peak load hours are likely to occur so you are prepared to act out your peak load management plan and reduce your load while saving your company money.

About Efficient Power Tech

Efficient Power Tech was formed in 2015 to provide all commercial and industrial businesses with the same high quality advanced energy technologies available to their mega-large competitors at affordable price points. Our products and services can make an immediate positive impact on a business's ability to control and manage how they buy and use energy. Measurement, Verification, Low Capex, Services (Design, integration, Procurement, Installation, Financing) all combine to give your facility the resources necessary to finally move the electric meter in your direction.

Where Energy Technology Drives Better Business – Welcome To The Energy Future

To learn more, visit our website: www.efficientpowertech.com