PEAK POWER

ENDVR ENERGY
POWERED BY MILTON HYDRO HOLDINGS INC.

The Strategic Guide to Load Curtailment

for Commercial and Industrial Facilities

Maximize Savings.
Reduce Peak Demand Costs.
Simplify Energy Management.

Running a large facility today means navigating rising energy costs, market uncertainty, and sustainability targets — all without disrupting daily operations. One of the most powerful ways to take back control? Load Curtailment.

Why Load Curtailment **Matters**

Energy-intensive facilities are in a great position to take advantage of demand reduction strategies. In some regions, Coincident Peak Demand charges can represent up to 70% of a facility's electricity bill, making proactive curtailment not just an opportunity but a necessity.

Load curtailment turns a reactive cost burden into a proactive performance advantage. By strategically reducing energy usage during these periods, facilities can dramatically lower demand costs, improve operational efficiency, earn grid revenue, and build a more resilient energy strategy.

The most effective approach blends immediate action with long-term vision. Short-term tactics—like responding to peak demand alerts—deliver quick wins, while long-term investments in infrastructure and automation lay the foundation for sustainable savings and energy resilience.

Successful load curtailment programs typically combine:

- Operational adjustments (e.g., staggered production schedules)
- Strategic planning (e.g., peak forecasting and incentive alignment)
- Advanced technology (e.g., battery storage, energy management systems)

By leveraging these elements in tandem, facilities can reduce operating costs, generate grid revenues, and enhance operational resiliency.

Short-Term Solutions

Focus on low-cost, easily implemented strategies that can start yielding results quickly (within months). These are great for immediate reductions in energy consumption and cost without requiring significant capital investment.

Peak Event Notifications

- **Demand Response (DR):** When the grid experiences high demand, utilities may call a "demand response event." Participants are notified in advance or in real-time (one hour prior) when the event is triggered.
- **Peak Notifications:** Outside of DR events, there are many opportunities to reduce peak demand costs for both Coincident Peak and Non-Coincident Peak Events . Realized savings are based on the highest demand period for a specified timeframe in an ISO region. Peak Power provides a notification service, GridPredict, for customers across North America.

The two primary methods of generating savings on your energy bill, regardless of your utility and region, are:

- **Coincident Peak (CP) Charges:** Different regions have different names for this charge. In Ontario, it is Global Adjustment, and in Massachusetts and New York, it is ICAP. These savings are based on the highest demand period of an entire ISO region.
- **Non-Coincident Peak (NCP) Charges:** The savings generated on this area of the bill are known as “demand savings.” These savings are based on a facility’s highest demand hour in every month.

Peak Shaving & Load Shifting

- **Load Shifting Non-Critical Loads:** Rescheduling non-essential activities like equipment testing to off-peak hours can reduce energy consumption during peak events.
- **Peak Shaving with Strategic Equipment Shutdown:** Temporarily shutting down or reducing the load on non-essential equipment, or bringing auxiliary systems offline for a short period.

Lighting and HVAC Optimization

- **LED Retrofit & Smart Lighting:** Retrofitting with LEDs and integrating smart controls to automatically adjust lighting levels. In some cases, dimming or shutting off non-essential lighting during peak events can significantly reduce energy usage.
- **HVAC Scheduling:** Pre-cool or make slight temperature adjustments in offices, control rooms and storage areas that do not affect critical storage or production.

Short-Term Solutions

Behavioral and Operational Changes

- **Training and Engagement:** Educating operators, facility managers, and employees about energy-saving practices, like turning off lights or equipment when not in use.
- **Establish Standard Operating Procedures (SOPs):** Provide SOPs for curtailment protocols during peak demand events, including any pre-set adjustments and contingency plans.
- **Optimization of Facility Operations:** Implementing changes such as adjusting operating hours for certain equipment, better coordination of HVAC systems, or limiting high-energy-demand processes during peak events.

Energy Audits and Continuous Monitoring

- **Energy Audits:** Regular energy audits help identify areas for improvement in energy use or to identify waste, inefficiencies or curtailment opportunities.
- **Real-Time Monitoring:** Installing smart meters and sensors to continuously monitor, track, and analyze load patterns to enable proactive management.

Long-Term Solutions

Tend to involve higher upfront costs but can result in greater energy savings over time, increased grid independence, and improved operational efficiency.

Energy Storage Systems

- **Battery Storage:** Installing batteries or other energy storage systems to store energy during off-peak times (when electricity rates are lower) and discharging that energy during peak events to avoid high peak demand costs.
- **Thermal Storage:** Using chilled water or ice storage systems to provide cooling during peak events without drawing power from the grid.

On-Site Generation

- **Solar Power:** Installing solar panels can offset energy consumption during the day and reduce reliance on grid power, particularly during peak demand events when costs are high.

Industrial Energy Management Systems (IEMS)

- **Automated Load Management:** Implementing IEMS software to control energy use based on external signals like real-time price signals or demand response requests. This helps prioritize energy use in non-essential systems or reduce consumption with minimal manual intervention.
- **Systems Integrations:** Use IEMS to coordinate with other building automation and plant systems like HVAC, air compressors, and chilled water plants.

System and Building Upgrades

- **Thermal Insulation:** Upgrading the building's insulation to minimize the need for cooling or heating during extreme weather conditions can lower energy consumption.
- **Windows & Doors:** Using smart window technology that can adjust to external light conditions (tinting automatically) and can reduce the need for HVAC or lighting systems. High-speed doors prevent the loss of temperature-controlled air and reduce HVAC costs.
- **Motors and Variable Frequency Drives:** Upgrading motors and VFDs can provide greater efficiency and control over process loads.

Production Load Shifting

- **Flexibility Measures:** leverage buffer capacity, pre-processing, or partial load operation to maintain output while reducing load during peak events.
- **Rescheduling:** Facilities could look to reschedule energy-intensive processes like smelting or injection moulding to off-peak times. Where possible, facilities could modify work hours to move the most energy-intensive processes to overnight or weekend periods when energy prices are lowest.

Table Summary

Strategy	Investment	Timeframe	Short Term	Long-Term
Peak Notifications	Low	Weeks	✓	
Peak Shaving and Load Shifting	Low to Moderate	Weeks to Months	✓	
Lighting and HVAC Optimization	Low to Moderate	Months	✓	
Behavioral and Operational Changes	Very low	Weeks	✓	
Energy Audits and Continuous Monitoring	High	Weeks to Months	✓	
Energy Storage Systems	High	Months to Years		✓
On-Site Generation	High	Months		✓
Industrial Energy Management Systems	High	Months to Year		✓
System and Building Upgrades	Moderate to High	Months to Year		✓
Production Load Shifting	Low	Months		✓

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END-TO-END BATTERY STORAGE

Monetize energy with battery storage and turn energy challenges into opportunities

Peak Power provides end-to-end battery storage solutions for large commercial, industrial, and manufacturing facilities. Powered by industry-leading peak forecasting and market intelligence, Peak Power is helping large energy users **reduce electricity costs, unlock new revenue streams,** and **achieve sustainability goals.**

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End-to-End Battery Development

No-cost battery solution through a proven battery development process. Shared savings aligns incentives to your objectives.

Battery Software & Operation

Battery operation and prediction software paired with energy markets expertise maximizes the value of existing battery storage.

Grid Event Forecasting & Notifications

No battery? No problem. Optimize energy management and cut energy costs with *GridPredict*. >90% accuracy.

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READY TO EMPOWER YOUR BUSINESS WITH CLEAN ENERGY SOLUTIONS?

Partner with ENDVR Energy, your Peak Power contact in the Milton area!

ENDVR Energy, a subsidiary of Milton Hydro Holdings Inc., delivers innovative, end-to-end energy solutions designed to help commercial and industrial customers improve efficiency, reduce costs, and achieve sustainability goals.

We provide turnkey expertise in design, engineering, construction, installation, inspections, and field services - supporting local distribution companies and businesses as they modernize infrastructure and gain a competitive edge.

From smart metering and EV charging to onsite clean energy generation and storage and grid upgrades, our solutions are built for scalability, reliability, and long-term performance. With a strong track record in delivering complex energy projects and working with trusted vendors like Peak Power, our collaborative approach ensures every customer benefits from optimized operations, reduced energy risks, and measurable ROI.

At ENDVR Energy, we don't just power facilities - we help power the future of your business.

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