Powerit Solutions®

How It Works: Load Shedding with Spara

The Spara energy management system (EMS) continuously coordinates facility energy usage driven by all types of equipment—chillers, heat-treating ovens, blowers, fans, pumps, and more—and manages demand for cost savings and efficiency. It does this by prioritizing, optimizing, and controlling energy loads based on rules and parameters you define.

Briefly, here's how Spara works to execute four key load-shedding strategies.

Demand Control in Action

Spara helps you understand how and where energy spikes occur so you can minimize peak demand charges. The system's rules-based structure lets you adjust strategies according to how aggressively you want to curtail loads—ensuring that you don't compromise product quality or production.

To meet demand control goals, Spara reduces power to, or shuts down equipment to control a peak demand level based on curtailment rules and conditions, including current stage of the process, type of material, time limits, or when a load was last curtailed.

Some common load shed actions might include:

- Slow the speed of or shut down fans to produce additional savings from kW reduction, when facility status allows
- Decrease power to pump or conveyor motors, based on time limits
- Reduce power to finishing equipment such as grinders and welders when not needed

Demand Response in Action

Demand response (DR) programs let you earn money from your utility or system operator by curtailing use for specific durations on demand. Spara's advanced technology allows you to participate in the newest generation of automated DR programs.

Spara is one of the first commercial products to incorporate a Smart DRAS (demand response automation server) client, which "talks" with a utility or grid operator's system in real time via OpenADR (automated demand response), an emerging industry standard. The Smart DRAS client gives you a dynamic connection: your electricity supplier's system notifies your system of a DR event, and Spara takes action according to your rules.

Typically, DR requires less-frequent kilowatt reductions than demand control, but the reductions are deeper and they last longer. To achieve these cuts, Spara might take any of the demand control actions, but will curtail some loads more dramatically and follow a different set of rules. It will take these actions *only* if your settings allow them. We know that the rate at which power is applied to a process and the profile of how power is applied over time can affect performance or the quality of the product produced. That is why *you* decide what level of curtailment you will tolerate to earn DR payments or reduce your demand charges.

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Dynamic Pricing Optimization in Action

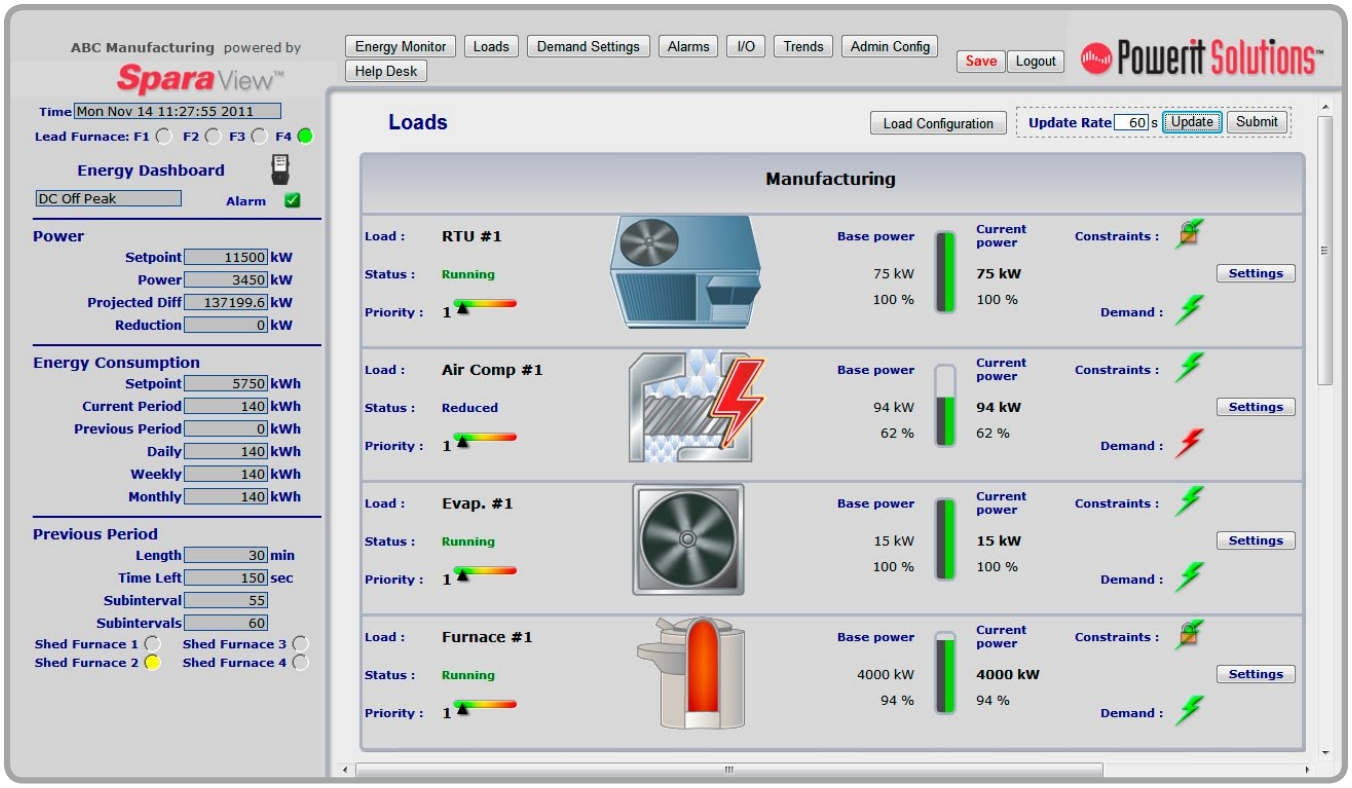
Many utilities and power system operators have rates that can vary by the hour or even by the minute. With these rate structures, the price per kilowatt might be attractively low most of the time—but can spike dramatically on short notice.

Spara's Price Response™ technology obtains pricing data directly from the utility and integrates it, in real time, into preset load-shedding strategies. This ensures you never pay higher rates than necessary. The strategies run automatically, based on electricity pricing thresholds and rules you set. Spara tracks and reports the savings to you, along with historical rate and system data for context.

Energy Efficiency in Action

Curtailing power to both processing and facility loads is the primary method of reducing energy consumption. By adjusting *when* and *how* you use power throughout the plant, you can achieve efficiencies that reduce electrical bills. Spara helps you achieve these efficiencies while avoiding potential downsides. For example:

- Fans can be shut down automatically when an associated process shuts down as determined by regular facility work schedules.
- Real-time access to electrical consumption data can provide information needed to reduce waste.
- Air compressors can be monitored and shut down or staged automatically.



SparaView shows the real-time status of controlled loads, including whether the unit is on, its current power consumption, and whether it is being curtailed for demand control, demand response, or to respond to dynamic pricing. Each piece of equipment is prioritized for load-shedding actions.

Phone: 1.866.499.3030 **Fax:** 1.206.621.8545 **Email General:** info@poweritsolutions.com **Email Sales:** sales@poweritsolutions.com **Web:** www.poweritsolutions.com