



Intelligent Energy Management For Industrial and Commercial Facilities

OVERVIEW

- State of U.S. Power Industry
- Why Important for Industrial Engineers?
- Energy Management Methods for Industrials
 - Energy Efficiency
 - Demand Control
 - Demand Response
 - Real Time Pricing
- Case Study Example

THE AMERICAN POWER INDUSTRY: 20TH vs. 21ST CENTURY

20th

- Economies of scale create ever-cheaper power
- Traditional fuels and sources
- Primarily supply-focused
- Passive “one-way” grid



21st

- Cost of key materials and fuels increasing costs for all parts of the industry
- Cleaner supply technologies and greatly reduced carbon emissions
- Energy efficiency and demand response critical for customer value, reliability, and environment
- Transformation to “Smart” Power Grid



* Slide from The Brattle Group presentation “Transforming America’s Power Industry: The Investment Challenge” April 21, 2008

POWER INDUSTRY TRANSFORMATION

America's electric utilities are facing the greatest challenge in their history:

- Fuel costs remain at record-setting levels
- Plant construction costs have soared in the past several years
- Combating global climate change requires
 - “decarbonization” of supply
 - enhanced energy efficiency
- New technologies require a larger, “smarter” grid

* Slide from The Brattle Group presentation “Transforming America’s Power Industry: The Investment Challenge” April 21, 2008

OVERALL POWER INDUSTRY OUTLOOK

Investment on the order of \$1.5 trillion will be required over the 2010 – 2030 period

- Distribution - \$675 billion
- Transmission - \$233 billion
- Generation - \$560 billion with no changes in carbon policy

* Slide from The Brattle Group presentation “Transforming America’s Power Industry: The Investment Challenge” April 21, 2008

OVERALL POWER INDUSTRY OUTLOOK

"So we have a choice to make. We can remain one of the world's leading importers of foreign oil, or we can make the investments that would allow us to become the world's leading exporter of renewable energy. We can let climate change continue to go unchecked, or we can help stop it. We can let the jobs of tomorrow be created abroad, or we can create those jobs right here in America and lay the foundation for lasting prosperity." – President Obama, March 19, 2009

WHY IMPORTANT FOR IE's?

- Industrials consume 29% of U.S. electricity
– (2002 U.S. Energy Information Administration Study)
- “Energy placed second in this year’s survey of biggest cost challenges, moving up from fifth place last year.” – (2005 Food Processing Magazine Survey)
- IE's eliminate waste

POWERIT AT WORK

E.&J. Gallo

4 sites



4 sites



2 sites



4 sites



8 sites



Constellation

2 sites



2 sites

The Buck Company



2 sites



The Miami Herald

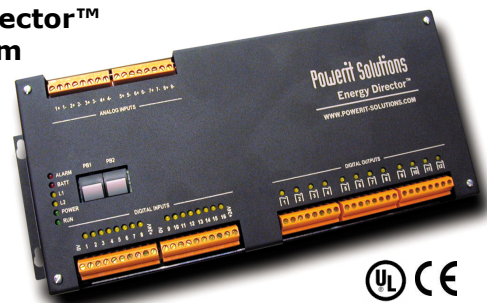
INTELLIGENT ENERGY MANAGEMENT



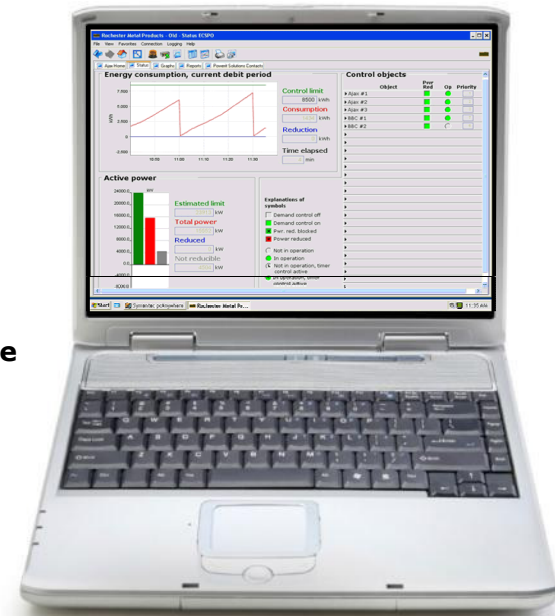
INTELLIGENCE

Powerit Solutions Product Line

**Energy Director™
EMS System**



**Predikt™
GUI Software**



**Konnekt™
Wireless Radios**



TWO TYPES OF ELECTRICITY CHARGES

- Consumption
 - kWh
 - Example - \$0.10/kWh
- Demand
 - kW
 - Example - \$10/kW

INTELLIGENT ENERGY EFFICIENCY



Using advanced technology and smart program management to lower kWh spending while balancing the needs of production, safety, and comfort.

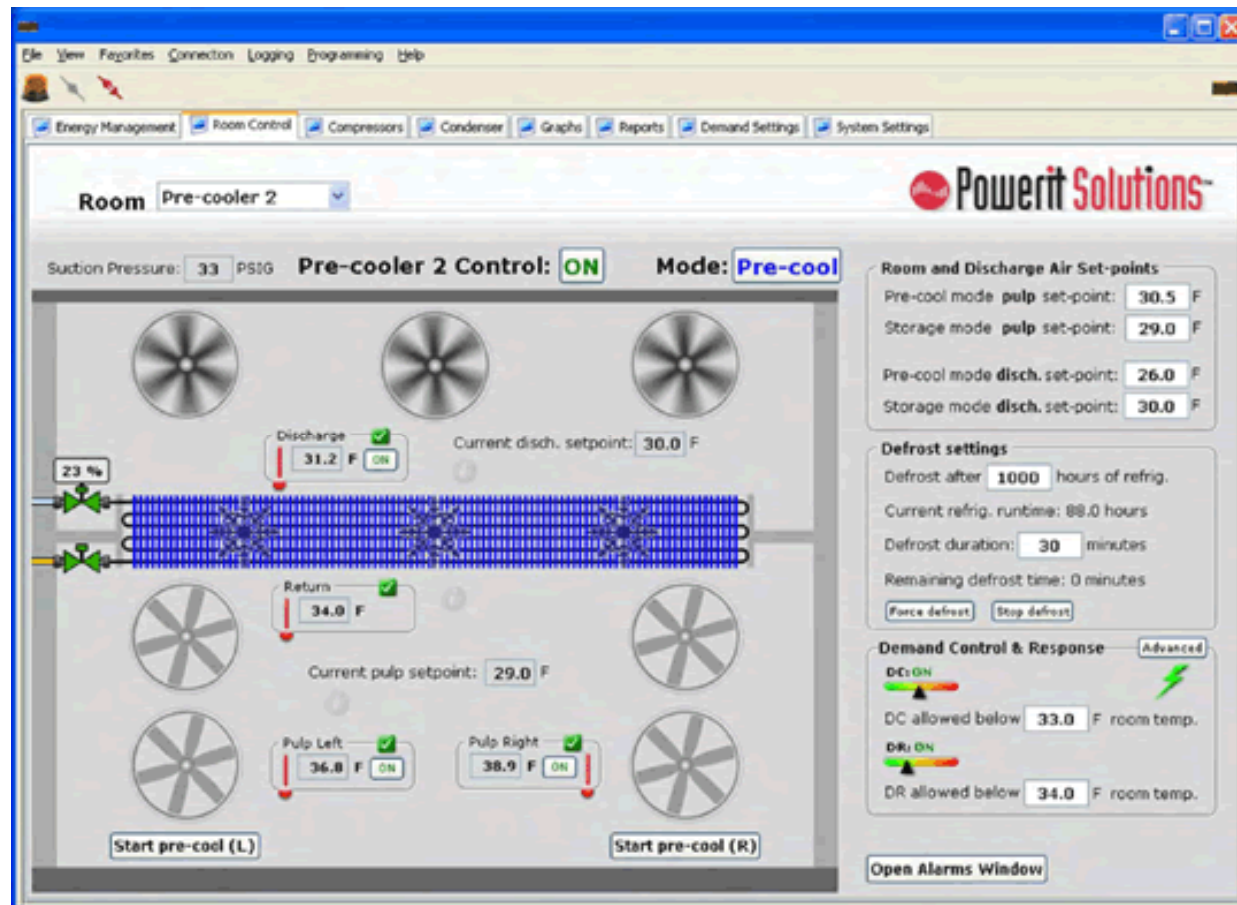
INTELLIGENT ENERGY EFFICIENCY

Intelligent Energy Efficiency Examples:

- Run-time Scheduling
- Temperature Setpoint Scheduling
- VFD Optimization
- Load Optimization

INTELLIGENT ENERGY EFFICIENCY

Predikt™ Energy Management Software for Refrigeration



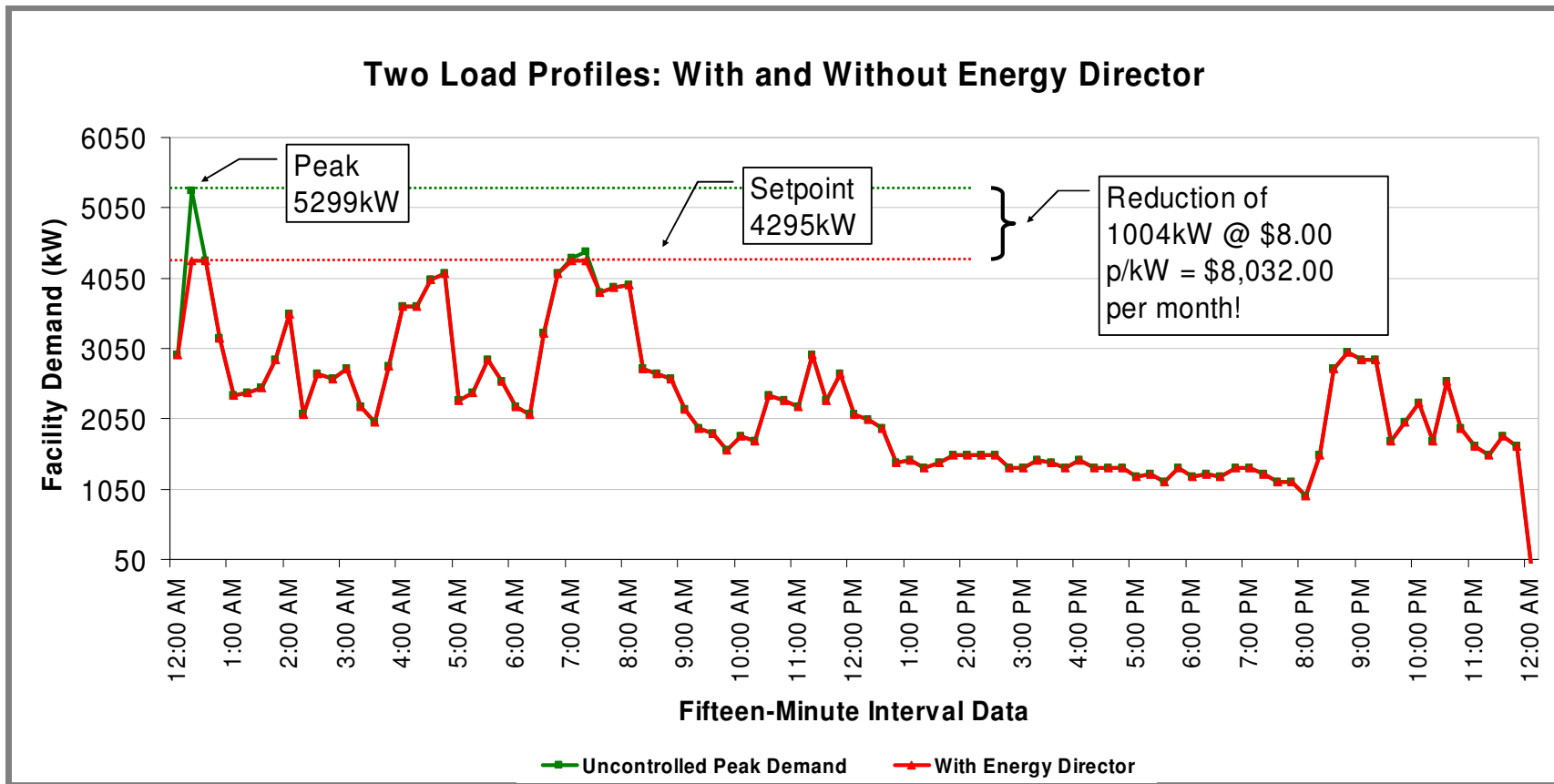
INTELLIGENT DEMAND CONTROL



Using dedicated automation systems to predict and mitigate peak demand charges while maintaining strict control over operations .

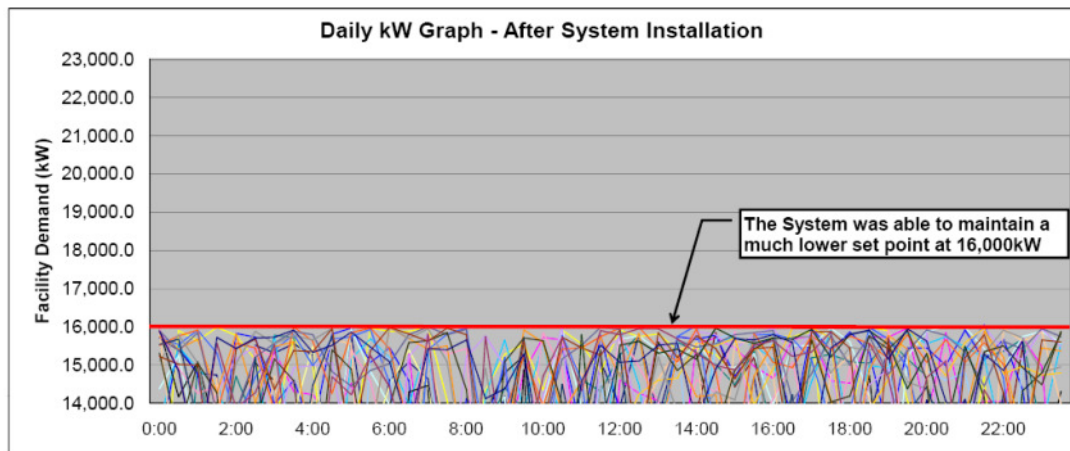
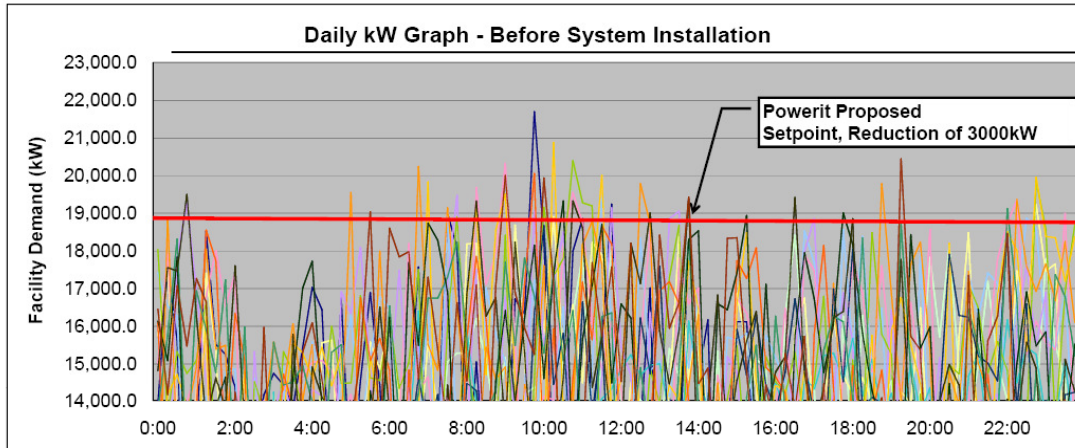
INTELLIGENT DEMAND CONTROL

Demand Control Via Load Shedding



BEFORE AND AFTER

Sheds Loads to Reduce Peak Demand Charges



By managing their peak demand, our client saves over \$65,000 a month with no negative impact to production.

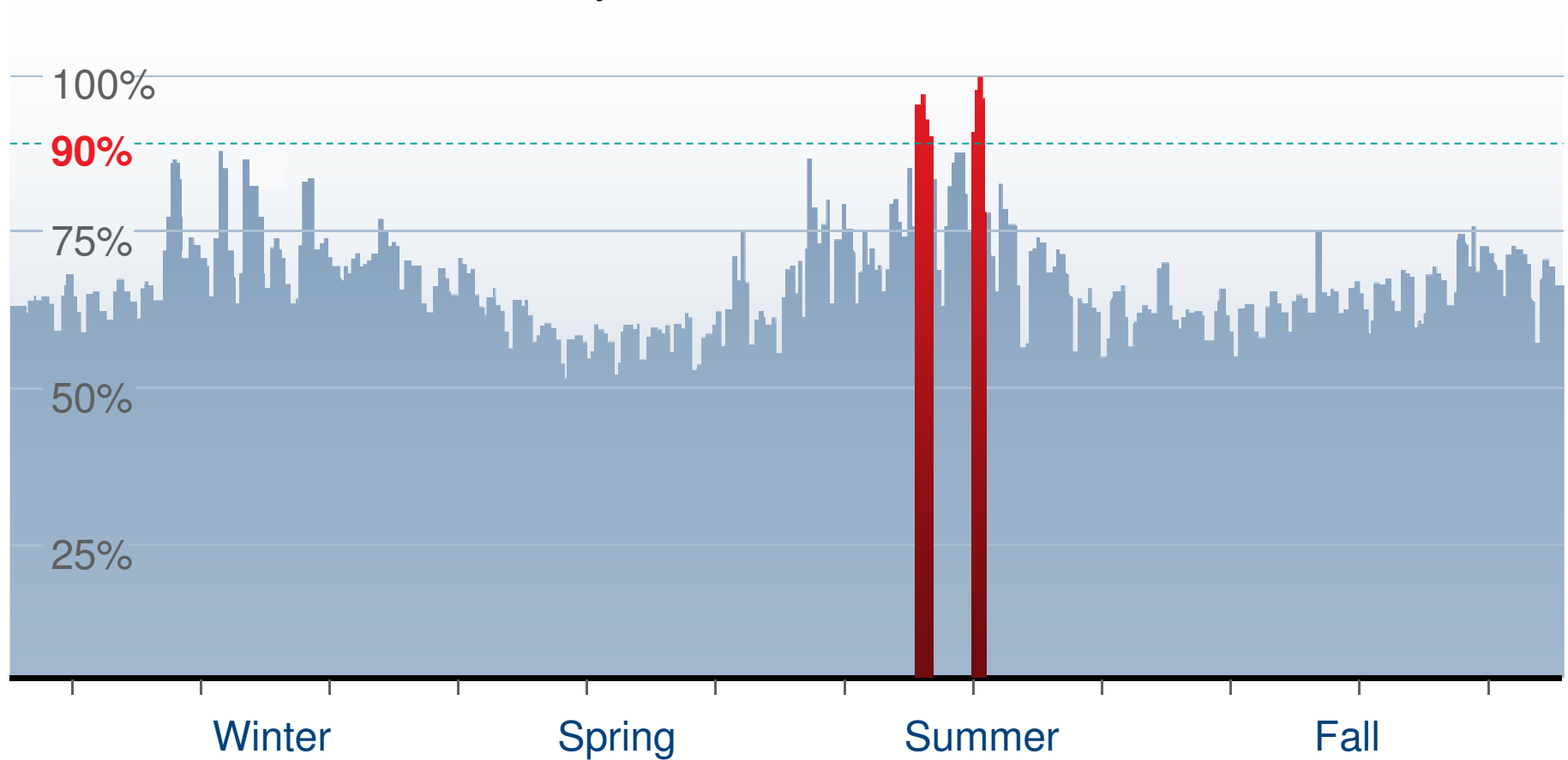
INTELLIGENT DEMAND RESPONSE



When a smart system implements sophisticated control schemes designed to tightly coordinate externally triggered curtailment events.

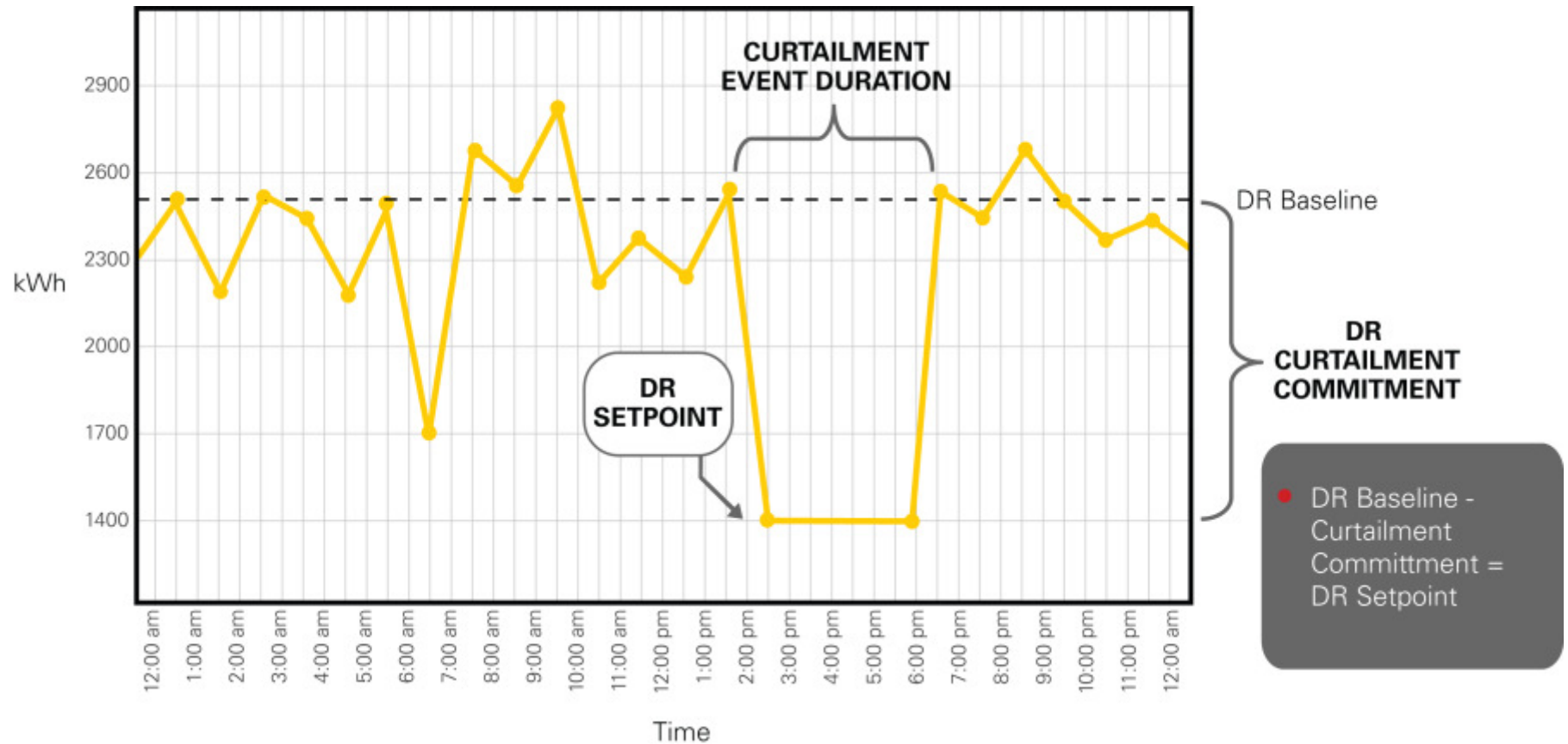
DEMAND RESPONSE DRIVER

Annual Electricity Demand As a Percent of Available



INTELLIGENT DEMAND RESPONSE

Accurate & Reliable Demand Response



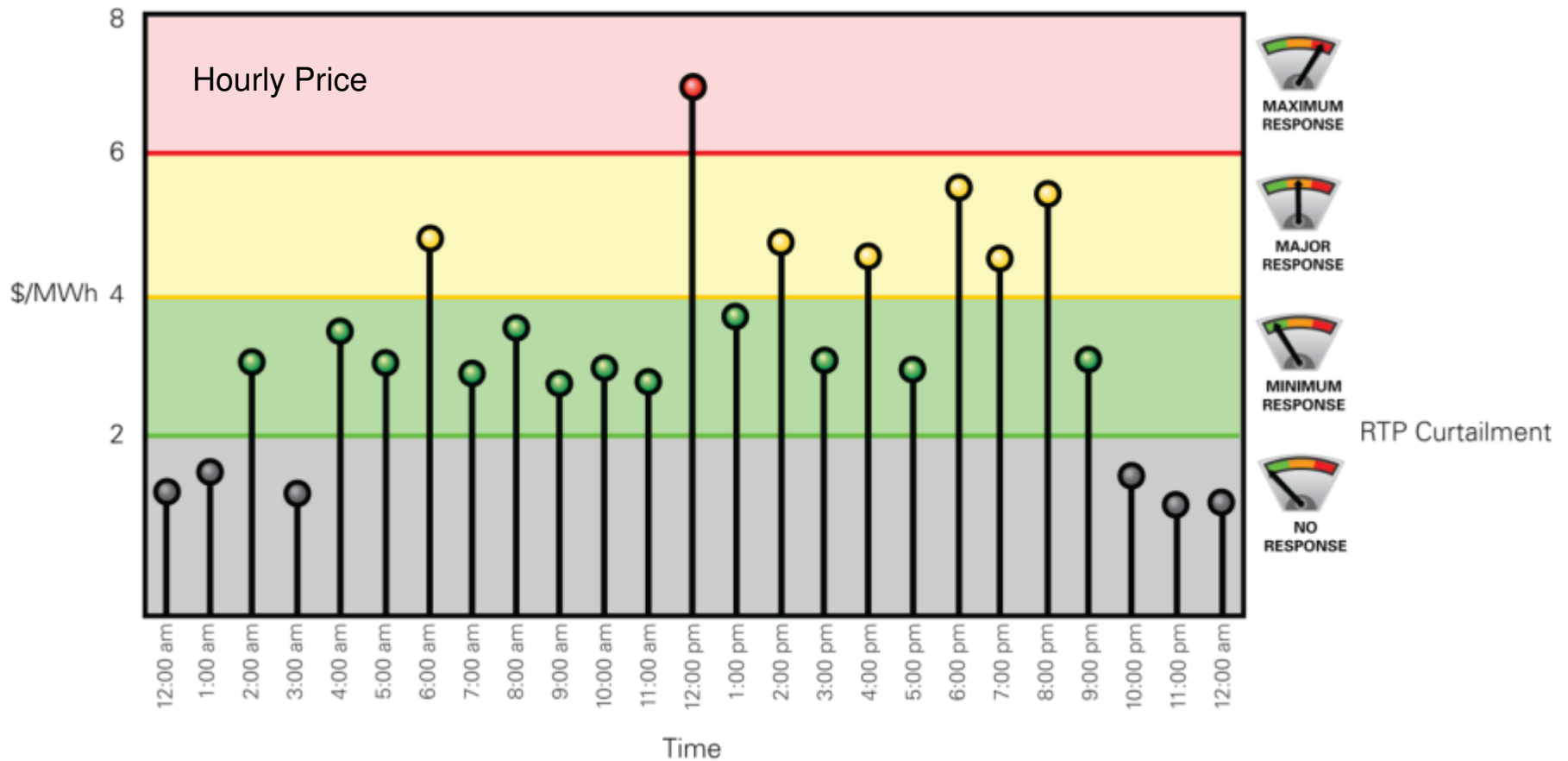
Intelligent Pricing Response



Automatically adjusting power usage based on real-time utility prices. Pre-defined curtailment strategies are implemented in response to changing price thresholds.

Savings via *Intelligent* Pricing Response

Automated Response to Active Price Changes



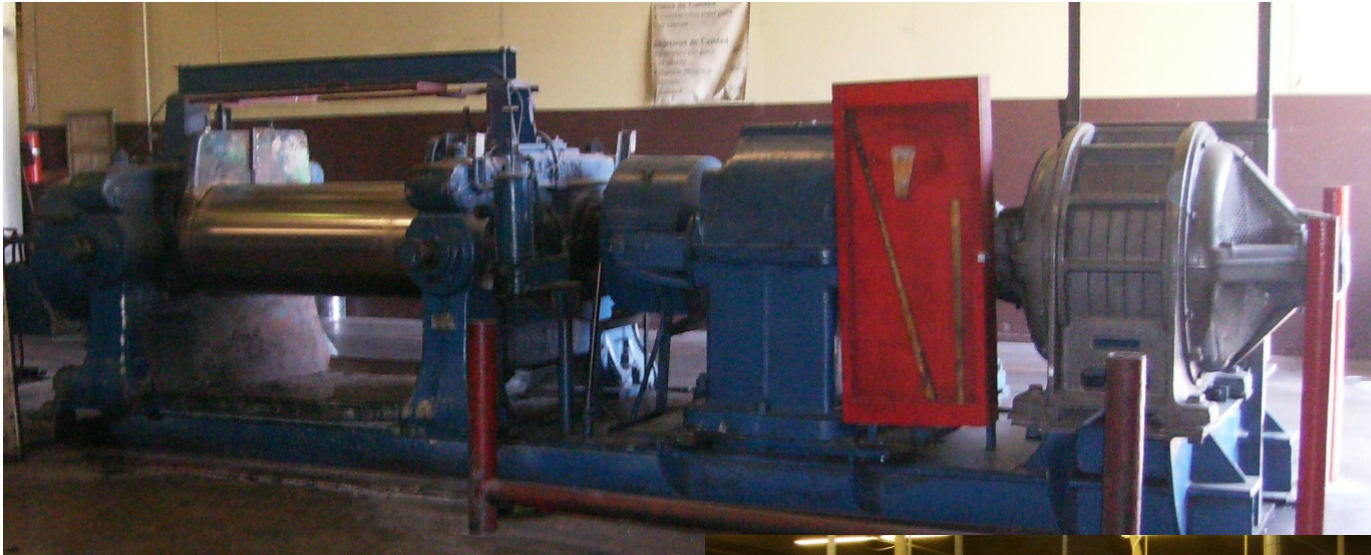
Case Study - WARCO

Facility Loads

- Mixers (2), Mills (18), Extruders (10), Microwaves (12), Steam Ovens (6), Injectors (3), Presses (9)



Case Study - WARCO



Case Study - WARCO

Implementation

- Auto Demand Response
 - Prevent additional batch processing
- Demand Control
 - Ensure shut down of some equipment during on-peak hours
- Monitoring
 - Real-time energy and load monitoring

Case Study - WARCO

Results

- Project Cost
 - \$245,570
- Auto-DR Incentive
 - Verified kW Shed = 899kW
 - Incentive = \$245,570
- Demand Control Savings
 - \$56,910/yr
- Payback = 0 months

THANK YOU



Demand more from the energy you use.

Corporate Headquarters

114 Alaskan Way South Suite 201,
Seattle, WA 98104

Phone: 206.467.3030

Toll Free: 866.499.3030

Email: info@poweritsolutions.com

www.poweritsolutions.com



www.poweritsolutions.com