



“Smart Grid Systems for managing facility power usage without negatively impacting operations. “



Powerit Solutions

Industrial & Commercial Energy Management Systems

About Powerit Solutions

The Solution

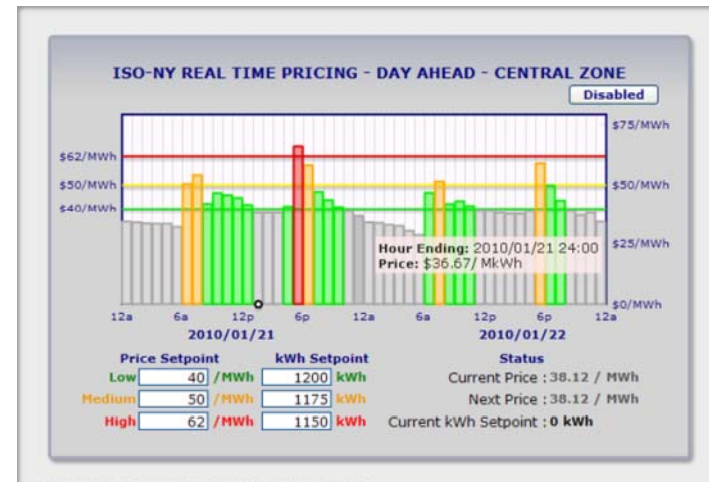
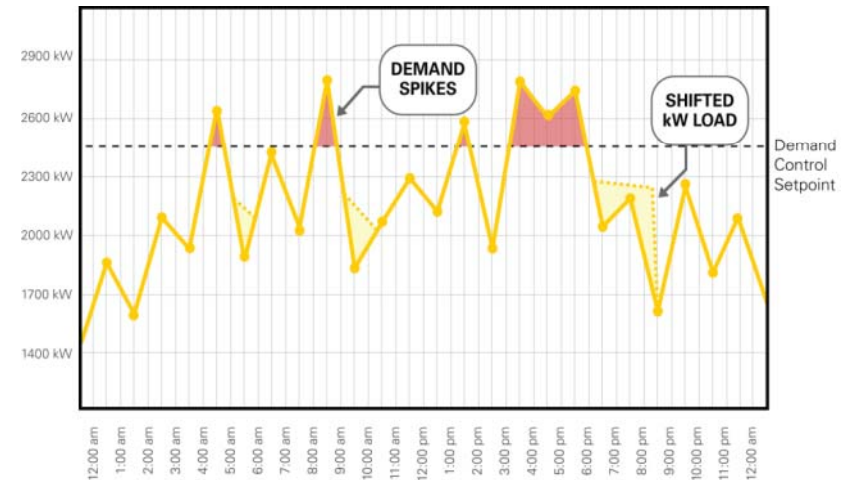
- **Energy Management Control System:**
 - Web-based system, high level of integration with existing PLC / BCS systems, TCP/IP & wireless communication, embedded & productized energy management strategies and GUI
 - Creates comprehensive user benefit via reduced demand control charges, enhanced demand response performance, lower kWh usage and coordination of dynamic electricity pricing strategies
 - Packaged controls tools to manage load curtailments; unique configurations that contain any impact to production and building comfort
 - Integrated wireless communication for networking and remote I/O (900 MHz, 2.4 GHz, Spread Spectrum, FHSS technology)
 - Vertical product & marketing structure; hardware, software & services productized for verticals



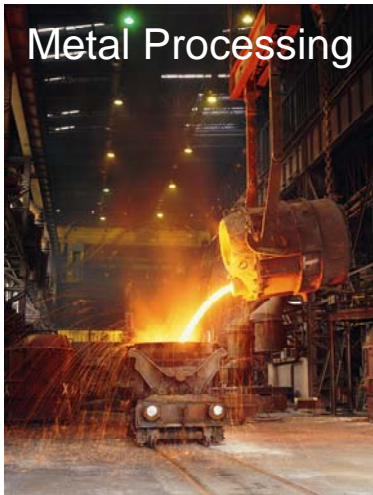
About Spara Product Solutions

Managing Active Energy Solutions

- **Demand Control:**
 - Lowers end user's peak demand charges
 - Eases balance of savings vs. productivity & comfort
- **Demand Response:**
 - Increases kW participation; user manages DR earnings
 - Auto DR enabler; capabilities covered by utilities & aggregators
 - OpenADR compliant
- **Dynamic Pricing:**
 - Live link to pricing data; links curtailment decisions to moving price
- **Energy Efficiency:**
 - Specific "products" created around defined kWh savings strategies
 - Reporting & Sub-metering components



2500+ Industrial / Commercial Sites



4 sites



2 sites



4 sites



E&J. Gallo

4 sites

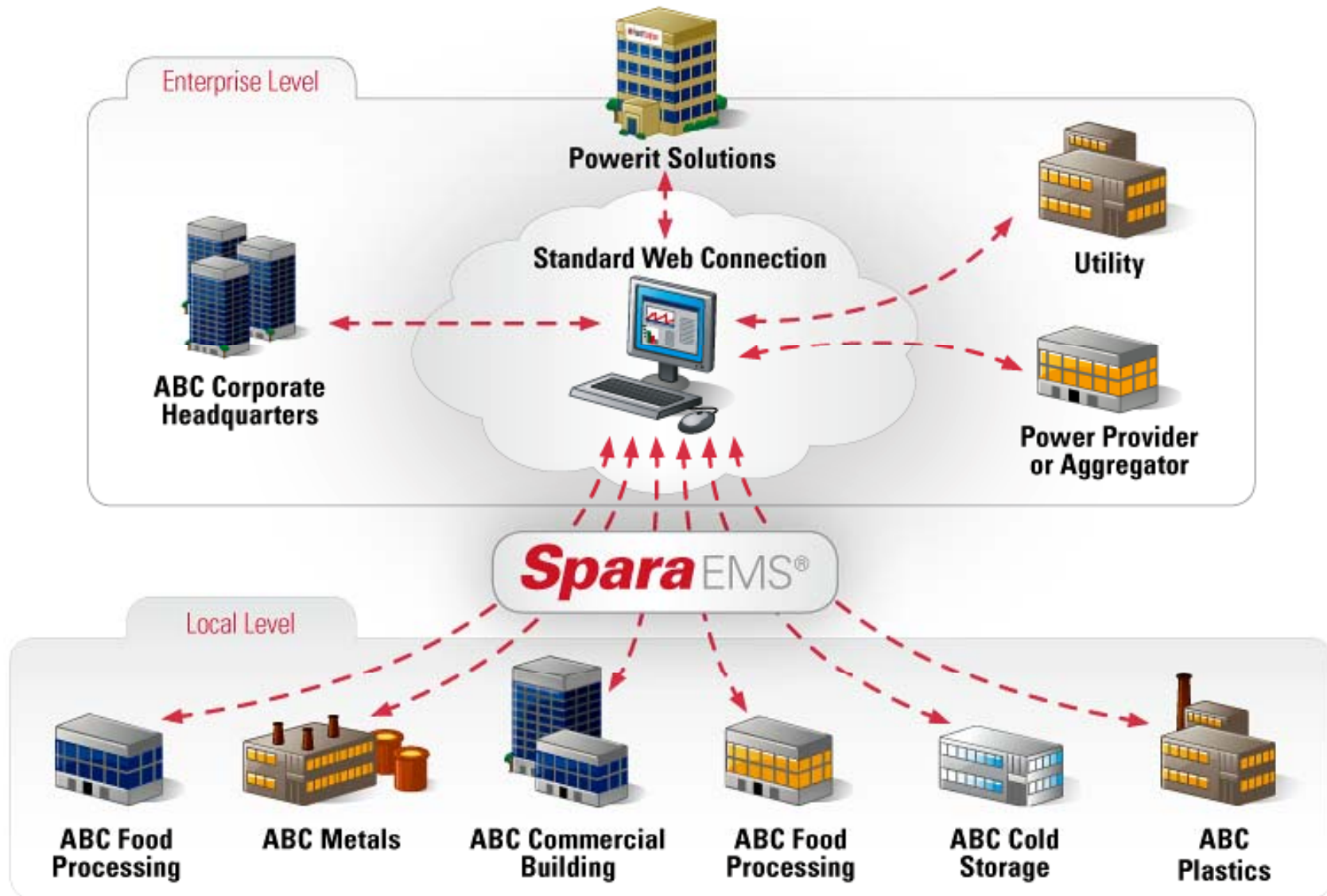


4 sites

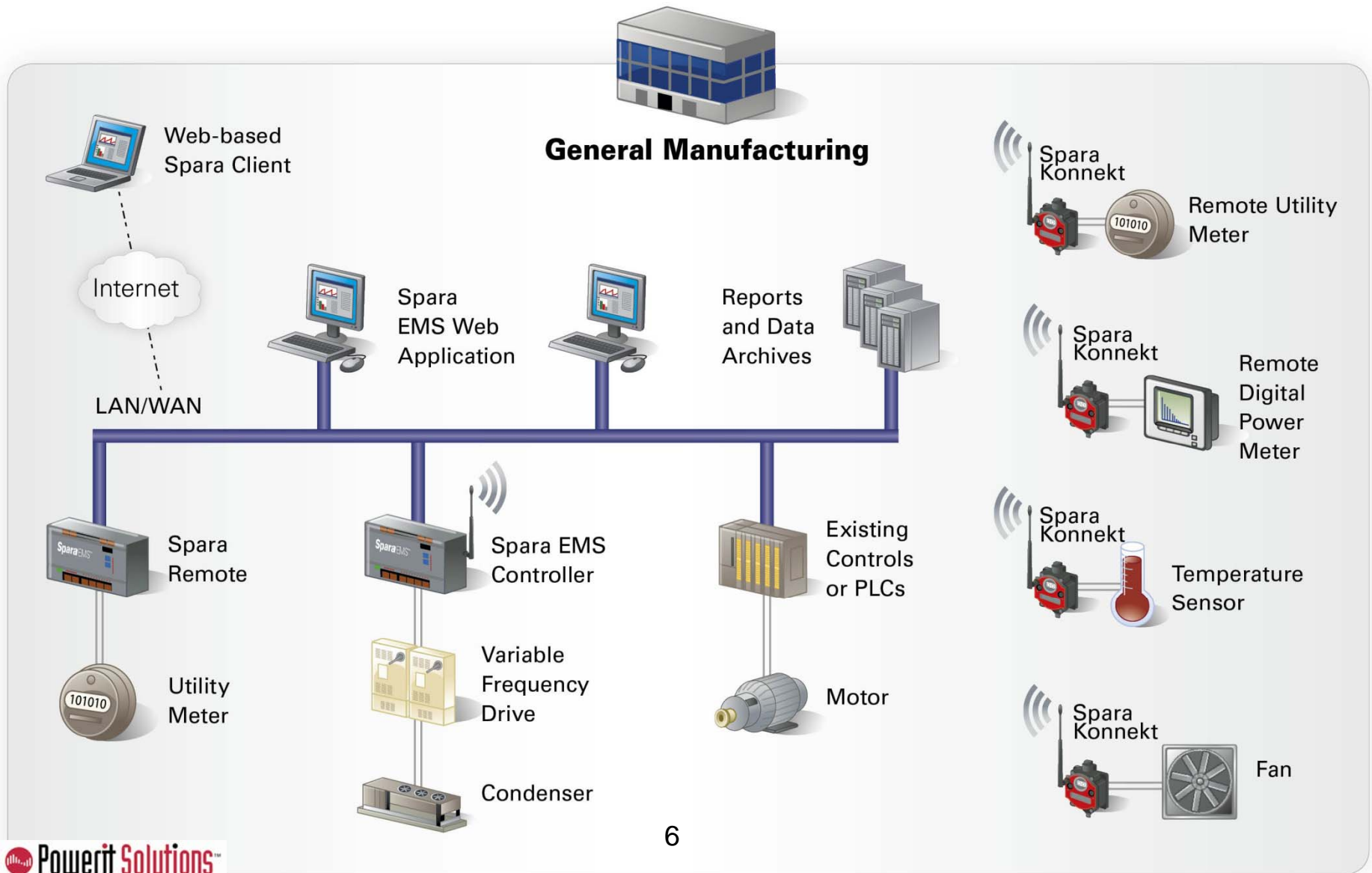


2 sites

Comprehensive Solutions



Comprehensive Solutions



Embedded Control

- Spara has productized energy management by embedding utility and load control intelligence into program “blocks”
- Spara synchronizes the separate measures to create a comprehensive control scheme and avoid measure conflict
- Library of embedded measures continues to grow in response to user and utility-based requirements

	DC	DR	RTP	EE
Algorithms for demand prediction				
Control blocks for load shedding				
Vertical market GUI objects				
Energy Efficiency Sub-routines				
DR Baseline Calculation				
Real-time Price Management				
Active RTP Table				
Real-time, Archived Energy graphs				
RTP Pricing threshold setup				
Advanced curtailment constraint blocks				
Server-based Architecture				
Curailment optimization decision engine				
Auto-DR Interface / Utility				
OpenADR protocol				
Curtailment event scheduler				
Multiple TOU rate scheduler				
Web-based GUI				
Advanced, rolling curtailment routines				
Adaptive Demand setpoint				
Curtailment rules library				
Dynamic load prioritization				
KYZ Utility pulse interface				
Event enter/exit email notification				
Pending event notification				
Utility website pricing container				
Demand savings report				
Embedded Feature				
Not-applicable				

Intelligent Demand Response

Demand Response Hierarchy

Manual DR

Operators receive notification (fax, email, phone), make reductions by hand

Controlled Manual DR

Operators receive notification, make reduction manually using installed control system (mouse clicks)

Auto DR

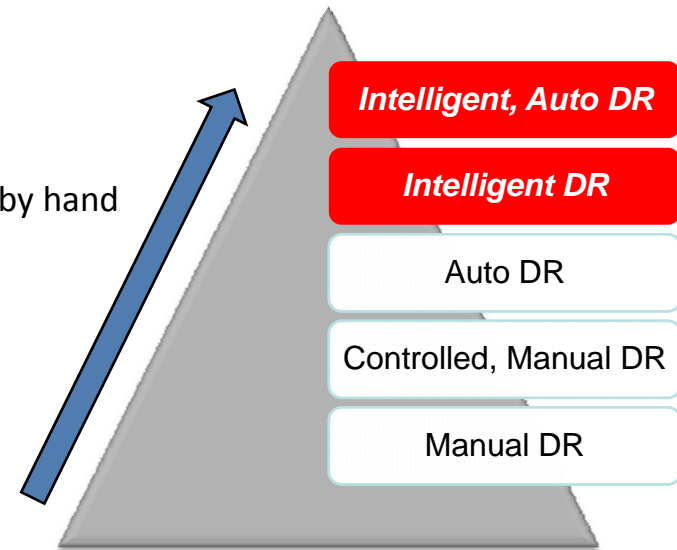
Signal sent by utility or aggregator to site and triggers simple automated reduction usually using fixed list of loads

Spara EMS Intelligent DR

Signal received by utility initiates DR automation & rolling curtailment begins based on user-defined action plan and rules

Spara EMS Intelligent Auto DR

Enables all the qualities of Intelligent DR with the added complexity of a decision tree that allows for the event to be triggered without human interaction at the time of the event as well as receive web-based event data from DR enabling entity. This is high-end DR.

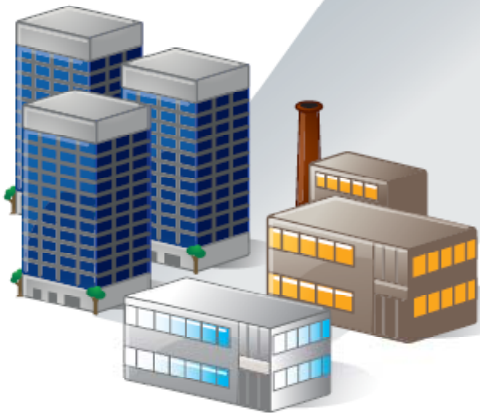


Dynamic Pricing

Spara Real-time Pricing

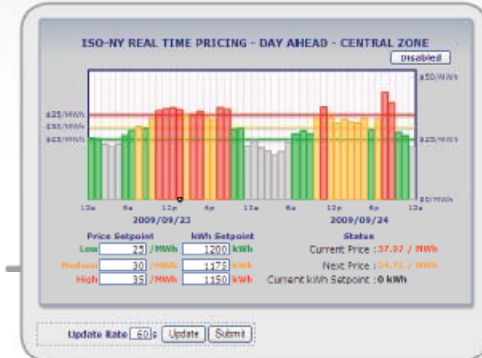


- Utility communicates pricing data via web, CSV, database link, etc.



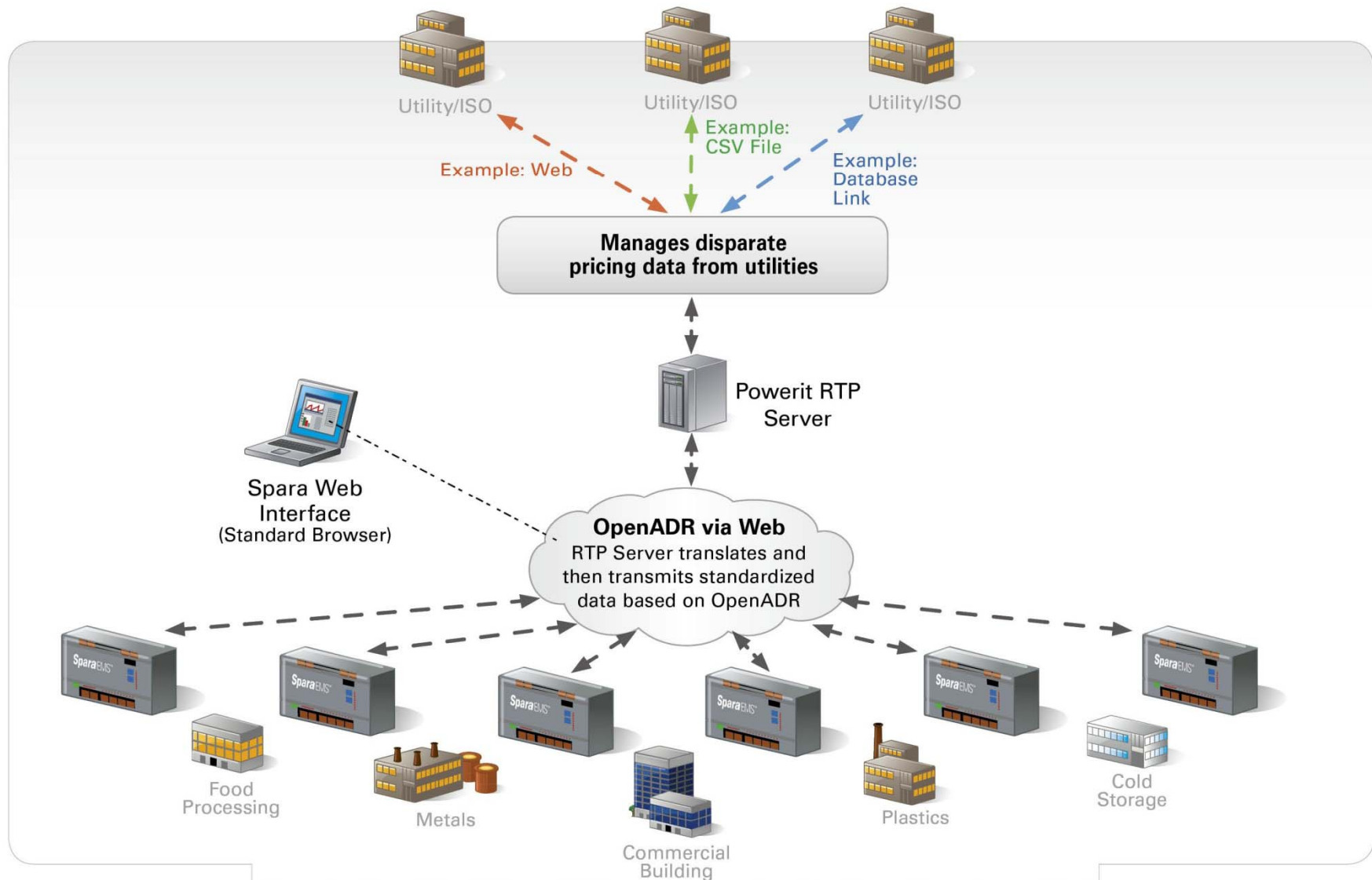
Load connections

- Pricing is collected by Spara Real-time Pricing and integrated into a preset load-shedding strategy.
- Strategies run automatically based on their intended electricity price thresholds.
- To protect the site, Spara Real-time Pricing incorporates custom rules (e.g. time, occupancy, product, growing season).



- Easy-to-use web interface allows users to make multiple price threshold changes.
- Spara Real-time Pricing tracks and reports savings and provides historical rate and system data.

Powerit Pricing Server Communications



Standardized Real-Time Pricing communication based on OpenADR

It All Boils Down to ROI

Anchor Warehouse

- 35% Decrease in Peak Demand
- 13% Reduction in daily kWh usage, while production increased 15%
- 17% Savings on Energy Bill
- ROI Immediately upon installation - incentives



Amy's Kitchen

- 150kW decrease in Peak Demand (approx 10%)
- 580kW available for Auto-Demand Response reduction (approx 44%)
- ROI: 6 months

Mission Produce

- 279kW decrease in Peak Demand
- 500kW available for Demand Response
- 141,112kWh first year savings
- ROI: 20 months
- Significant operational improvement

Thank You



Industrial & Commercial Energy Management Systems



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