Delivering Efficiency Through Optimized Demand Side Management

Energy companies expect more out of demand response (DR) programs than establishing last-call reserve margins or shifting the peak to later times in the day. And with the introduction of two-way communications, the deployment of advanced applications, and the approval of alternative business models, companies with the vision to utilize these new capabilities within their DR programs will gain a significant competitive advantage. GE understands the delivery of electricity across the grid and provides an end-to-end approach for companies to effectively manage load resources throughout the business process.

As GE’s Demand Response Management System (DRMS), PowerOn Precision provides a comprehensive platform for demand side management capabilities that enable complete DR program lifecycle support. Built on proven GE technology, our platform contains the workflows, data models, scheduling and asset management tools required to support demand response programs. From the office to the field, we’ve accounted for the level of detail required to support your customers. In addition, PowerOn Precision provides the level of accuracy in forecasting, dispatch and measurement that enables the optimization of load resources for true operational support.

Key Benefits

- Integration platform that works to drive productivity and standardization throughout the organization
- Reduces administration costs in migrating and maintaining data from various sources
- Increases economic value of load resources with scenario planning tools
- Maximizes flexibility for dispatching DR resources by geographic location
- Schedules precise reductions using load forecasting tools to avoid over-curtailment and load rebound
- Advanced algorithms that learn from experience and customer behavior
- Dashboard views and reports provide quick and easy access to summary data
- Complies with international industry standards such as IEC® CIM and Smart Energy Profile 2.0
- Service Oriented Architecture eases integration between products and reduces maintenance and future enhancement costs
- Has the ability to further integrate into other enterprise systems

Demand Optimization

The PowerOn Precision solution:

- Leverages a single system of record for managing all DR programs, field assets and operational activities
- Forecasts load reductions by aggregating historical and real-time data for greater accuracy
- Performs load shaping as opposed to peak shaving or peak shifting
- Dispatches load based on the needs of Distribution Management Systems
- Manages the load rebound after an event
- Delivers a greater ROI for demand response programs and investments

Customer Value

Customers recognize real value from PowerOn Precision, including:

- Increased productivity by centralizing all DR activities and data flows
- Applications and tools for DR program and asset lifecycle management
- Lower cost of ownership via supported integration between products, standard upgrades and minimal customizations
- Class A product supported through the GE help desk
Today’s Challenges & Opportunities

Energy companies have been using traditional, one-way demand response systems for several decades. While these systems provided significant benefits in a reserve capacity, many of these investments have reached their useful lifespan. Today’s technological innovations allow much more intelligence on demand response systems if a utility plans according to their future system needs.

In addition, several inherent challenges arise with scalable demand response programs. With a large number of customers or load, utilities must plan for the significant and simultaneous reduction of demand across the network and take steps to mitigate the impact on grid stability and operations. After a demand response event, utilities may then have a post-event phenomenon known as “rebound effect”—where load increases in large amounts as energy systems simultaneously return to normal operating conditions.

In response to these challenges, PowerOn Precision was designed as a platform in which information could be centralized and analyzed from either internal or external systems. This presents a significant value to companies by enabling load forecasting and scenario planning tools that allow them to accurately plan load reduction events. When combined with the right program and grid structure, demand response can be delivered in a manner that truly optimizes load reductions in support of customers.

Control, Choice, Cooperation & Insight

Today, GE delivers a unique value to our customers based on unparalleled decades of experience in the energy industry. This value is expressed through our commitment to deliver:

- **Control**: Companies can dispatch load resources to optimally achieve their objectives while taking into consideration the various risks and rewards of each strategy.
- **Choice**: Companies can manage and track the various consumer technologies being offered by several vendors, understand their effectiveness and dispatch optimally.
- **Cooperation**: Companies can analyze and understand how consumers make decisions about using electricity when peak prices are offered.
- **Insight**: Companies can begin measuring the true impact, both operationally and economically, of calling a demand response pricing or load control event across their business.

The PowerOn Precision platform is well suited to provide a common infrastructure and integration layer for all the processes and information necessary to support demand response programs. Our systems can be deployed in a phased approach or as part of a fully integrated project. Interacting with currently deployed and future technologies, while managing an entire portfolio of products and services, makes PowerOn Precision the ideal solution for true Demand Optimization.

Solution Overview
PowerOn Precision Features

Core Platform

Operations
Calling a demand response event or setting dynamic pricing rates should be a normal part of business operations. Therefore, managers need a system that addresses:

- Pricing profiles that may vary by hour, day, month or season
- Effectively dispatching load control commands to the right consumers at the right time
- Confirming energy reductions against baseline calculations and participation targets
- Compiling summary information at any point in time, including data on load resources under management, how they were scheduled and the effectiveness of DR programs in achieving their goals

PowerOn Precision establishes a process-oriented approach aimed at meeting and exceeding these requirements. Whether operating with a day-ahead or a real-time program, the system provides a scheduling and dashboard capability that incorporates load management as a part of everyday operations.

Asset Management
The data requirements for implementing a comprehensive demand response program and managing a variety of assets can be daunting. To be effective, companies must be prepared to address:

- Establishing demand response programs or contracts with various tariff, policy or customer restrictions
- Tracking customer contracts and the installation of energy management technologies
- Maintaining communications with energy management technologies from a variety of vendors
- Understanding consumer profiles, location and contact information

PowerOn Precision provides a complete and scalable asset management capability that leverages GE best practices and experience. Based on Common Information Model (CIM) and Smart Energy Profile (SEP) standards, the system connects data in ways that assist users in actively managing and reporting on programs, consumers and load assets.

Administration
Each company has a specific organizational structure and business processes for how demand response programs will be managed. PowerOn Precision includes the tools needed to manage and address:

- Configurations and permissions that vary by user
- Automated scheduling of regular business and IT processes
- Audit logs for every action that happens in the cycle

PowerOn Precision ensures that information about consumers is securely managed using industry standards. As an industry expert, GE is prepared to advise on deployment strategies that adhere to strict regulatory guidelines, such as NERC® CIP.

Advanced Viewers

Grid Viewer
Managing significant load resources requires the right tools to optimize the full potential of those resources. Using the PowerOn Precision load forecast and scenario planning tools, grid operators can examine load at any level of the network and generate a dispatch strategy that allows them to perform load shaping as opposed to load shedding or load shifting.

Market Viewer
While market conditions vary by region, load resources can represent a potential value that can be maximized either internally or traded in an organized market. To fully take advantage of this potential, PowerOn Precision includes several tools for capacity planning and scheduling that optimize the load resources by weather conditions, network conditions or wholesale energy prices.
Demand Optimization Solutions

GE offers a complete portfolio of products and solutions for addressing demand response objectives. In addition to PowerOn Precision, GE provides infrastructure products such as Smart Meters, as well as a complete line of integrated solutions.

GE’s Asset Management and Control Solutions enable Demand Response and Work Force Efficiency

- **Smallworld™ Geospatial Information Systems**: Efficiently design and model complex networks while supporting asset management lifecycles.
- **Distribution Management Systems**: Enables proactive management of distribution networks and provides tools to deal with unplanned events and outages.
- **Smallworld Field Force Automation**: Create service requests, schedule and dispatch field staff, manage inventory and forecast workloads.
- **PowerOn Restore Outage Management Systems**: Advanced network management and workflow outage restoration.

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