Demand response challenges
Utilities seek to add demand response (DR) capacity to reduce peak load, avoid building new generation, and enable their customers to consume energy in a more responsible manner. However, realizing value from DR has presented a number of challenges:

- DR capacity has been difficult to scale in a cost-effective way because DR programs typically involve manual processes that are resource intensive and susceptible to human error.
- Demand response has not been fully integrated with other utility systems. Stand alone DR systems do not leverage other Smart Grid investments.
- Legacy DR programs use a system-wide, “shotgun” approach to ensure committed reduction levels are achieved.

Siemens DRMS solution
Siemens Demand Response Management System (DRMS) is a proven software platform that allows utilities to manage all aspects of their DR programs through a single, integrated system. DRMS solves the challenge of creating an automated, integrated, and flexible demand response solution.

Proven and reliable platform
Siemens DRMS has successfully been deployed at several utilities, each with their own unique requirements. The platform is designed to be compatible with other utility systems by using open standards like MultiSpeak and OpenADR. DRMS is highly scalable, supporting over several hundred thousand endpoints per customer class. The secure, web-based interface allows access from multiple locations. Role-based access can be defined by administrators and DRMS has full auditing of system activities. The platform can be installed locally in a utility’s control center or hosted remotely.

Flexible program support
Siemens DRMS can be configured to support multiple types of DR programs for both emergency and economic dispatch. DRMS can interface with residential, commercial, or industrial sites to provide more flexibility in how utilities create their DR programs. Also, DRMS provides the ability to define workflow processes so that DR events are managed according to utility business processes.
Scalable and automated
The DRMS platform allows utilities to scale DR capacity in a cost-effective way by automating processes across multiple programs and all customer classes. DRMS automates event notification and execution according to program definitions. After an event, DRMS automatically performs measurement and verification by retrieving billing grade meter data and then calculating baselines and billing determinants at the individual site and aggregation levels. DRMS has reporting capabilities to monitor the performance of DR programs and events. Collectively, these capabilities give utilities almost instant financial metrics to evaluate DR performance.

Surgical demand response
Utilities can provide for targeted demand reductions through the use of a flexible load aggregation engine that allows aggregations to be defined by substation, feeder line, zip code, map interface (Figure 1) or several other associations. This “surgical” approach uses DR program resources more efficiently and allows utilities to “condition the load” so that grid conditions are more favorable to safe and reliable operations. For example, DRMS can be configured to automatically execute DR events on loads serviced by specific substations or feeder lines when they are under operating stress and threaten reliability. Surgical DR gives utilities the ability to limit or avoid outages, restoration costs and contributes to longer, better performing assets.

The value of Siemens DRMS:
- Use DR program hours more efficiently by calling events at critical grid locations rather than shedding customer load unnecessarily
- Reduce DR execution costs by automating customer notification, event measurement and verification, baseline calculations and billing determinant calculations
- Add valuable commercial and industrial DR capacity by interfacing directly with existing building automation systems and industrial systems at customer sites
- Realize operational efficiencies and extend the life of grid assets with surgical DR and alleviate grid related stress where it is occurring
- Create valuable DR programs by defining program rules and workflow processes that guarantee DR capacity is used effectively

Fully integrated DR
DRMS has the ability to interface with other control room, back office and customer facing applications (Figure 2) through bi-directional communications so that DR-related assets and data are always accessible. Billing and settlement is accurate and accelerated because DRMS integrates to meter data management and customer information systems. DRMS also has a SCADA interface to enable real time demand monitoring and automated surgical control of substations.