

October 17, 2007

Large-Scale DR Demands More From Utility Back Office

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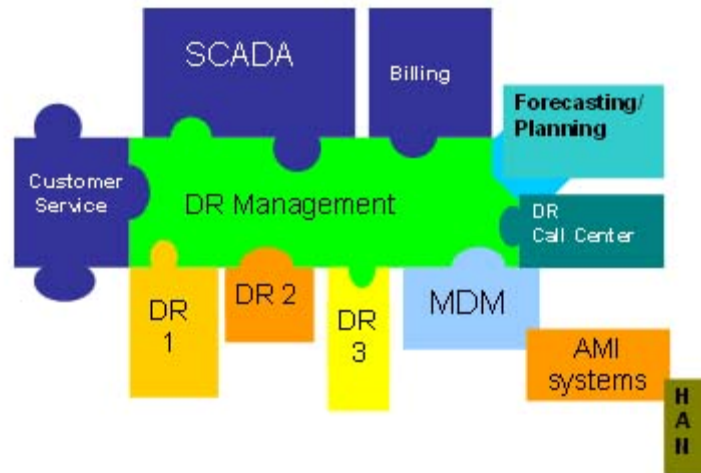
A few thousand customers participating in a load cycling or dynamic pricing program can be managed without a huge investment in back office software. You can get by with a system that allows you to send messages to the field equipment at the beginning and end of demand response (DR) events, and later on marry up what load data you have with the DR event to measure response. The picture changes dramatically if the number of participants is expected to reach 30 percent or more of your customers. Since the North American market is moving toward larger and larger DR programs for residential customers, utilities will need software products to manage large numbers of eligible customers and participants.

The number of large utilities that are planning and/or implementing large scale DR programs is growing as regulators and utilities face unprecedented growth in peak demand that is outpacing available peaking generation supply, and in some regions, fuel to operate peaking plants. DR programs tend to be designed to be opt-in or -out programs. Most are opt-in, and that is likely to continue. In an ongoing survey with regulators in North America, all but two regulatory authorities indicated that DR programs would likely be implemented as opt-in programs.

Opt-in DR Programs

For these programs, utilities need to recruit eligible customers to participate. Eligible customers might be defined as customers with central A/C or all residential customers, depending on the nature of the DR program. This will require new software functionality to handle DR recruitment, enrollment, customer management, and DR program management, as well as some functions provided by some meter data management (MDM) systems: management of communications to field devices, tracking of devices and their relationships to customers and premises, and provisioning of devices upon installation. The new software will have to be able to scale, allow multiple users, and interface with the DR call center, an IVR, and the Internet. It will also need to interface with CIS, MDM, the DR equipment installation company, and various DR communication systems. The diagram below shows the DR Manager interfaces within the utility back office.

Vision of DR Mgmt Implemented



Opt-out Programs

These programs do not require that utilities recruit customers but they do need to track participants, as well as those customers that opt to not participate. With an opt-out program the number of participants ramps up more quickly with the growth in participants corresponding to the rollout of necessary equipment such as smart meters, smart thermostats and/or switches, etc. One advantage of opt-out programs is that the level of demand response benefits is much higher, since demand response is directly related to the number of participants, and opt-out programs result in much higher participation. For regions where demand response is critical, opt-out may be more appropriate than opt-in because it avoids the time dedicated to customer recruitment and provides a higher participation level.

DR Manager Role

There may be benefits in having one system to manage all of the DR programs sponsored by the utility. Most utilities will have more than one DR program, perhaps nine or ten. The DR Manager would track customer participation in each program and recruitment efforts in each program. Within each DR program, information needs to be provided for different functions by using a variety of channels. For example, customers may need to be notified before a DR event. Customers may have choices as to how they wish to be notified, perhaps by phone, email, or text message. The DR Manager would track that and support the DR call center to access those preferences and modify at customer request. The utility may also wish to publicize the DR event via the media.

On the systems side, the DR Manager is expected to manage communications with the specific communication system for reach DR communication channel. DR equipment communications will cover a variety of communications methods including but not limited to: AMI (where the DR device is seen as another endpoint on the network), paging, HD radio, home area network (HAN) via AMI, the Internet, etc. It may be that different types of information are sent using different communication channels. Perhaps the current price is sent to the customers' in-home display via the

Internet but the actual load control signal to the smart thermostat is sent via a paging system. Or it may be that the initial version of the DR program uses the AMI HAN channel to send every DR message but a decade later, the AMI HAN channel isn't used for DR event messaging. The AMI HAN channel might be used only to send the current meter read to a customer owned energy management system the customer had installed independent of the utility.

In data model terminology, this means that the DR Manager owns the communication method for each data element provided to the customer or field equipment for each participant for each DR program. To the DR Manager, the MDM represents the head end for an AMI-based DR communication channel. MDM also will provide meter data to the DR Manager to analyze the load reduction provided by the DR program by each customer.

Which Companies are Likely to Build DR Managers?

The types of companies that have expressed interest to UtiliPoint in developing a DR Manager or are in the process of development include MDM providers, billing systems providers, and DR vendors willing to interface with equipment from other vendors. As with MDM, UtiliPoint suggests the following minimal functionality for DR Manager System:

- Willingness to develop interfaces with equipment from any and all DR vendors currently being used or contemplated by utility
- Willingness to develop interfaces with any back office system currently used or contemplated by utility including:
 - CIS
 - DR call center
 - DR equipment installer work management
 - Customer data presentment
 - MDM
 - CADA
- Ability to manage a variety of different DR programs, such as:
 - Direct load control
 - Dynamic pricing
 - Combination of dynamic pricing and load control
- Ability to support customer recruitment, enrollment, and participation by customers

Advantages of Implementing DR Manager

One big advantage of a single system is the ability to manage all of the DR programs sponsored by a utility using the system. Instead of issuing a call for DR on seven or eight different systems to initiate a DR event, the utility would have an estimate of the amount of DR load reduction available from each DR program option, and select what is needed. Customers are partners with utilities in demand response programs and utilities need to be careful to not over-exercise DR programs and cause customers to become dissatisfied with programs.

Another major benefit is the ability to see what programs customers are enrolled in across the board by program managers who would understand the significance of participating in more than one or only one. The DR Manager should also

independently assess the performance of DR programs and provide critical information along with the performance data to allow program managers to increase DR load reduction by addressing problem areas or redirecting recruitment efforts toward the more successful programs.