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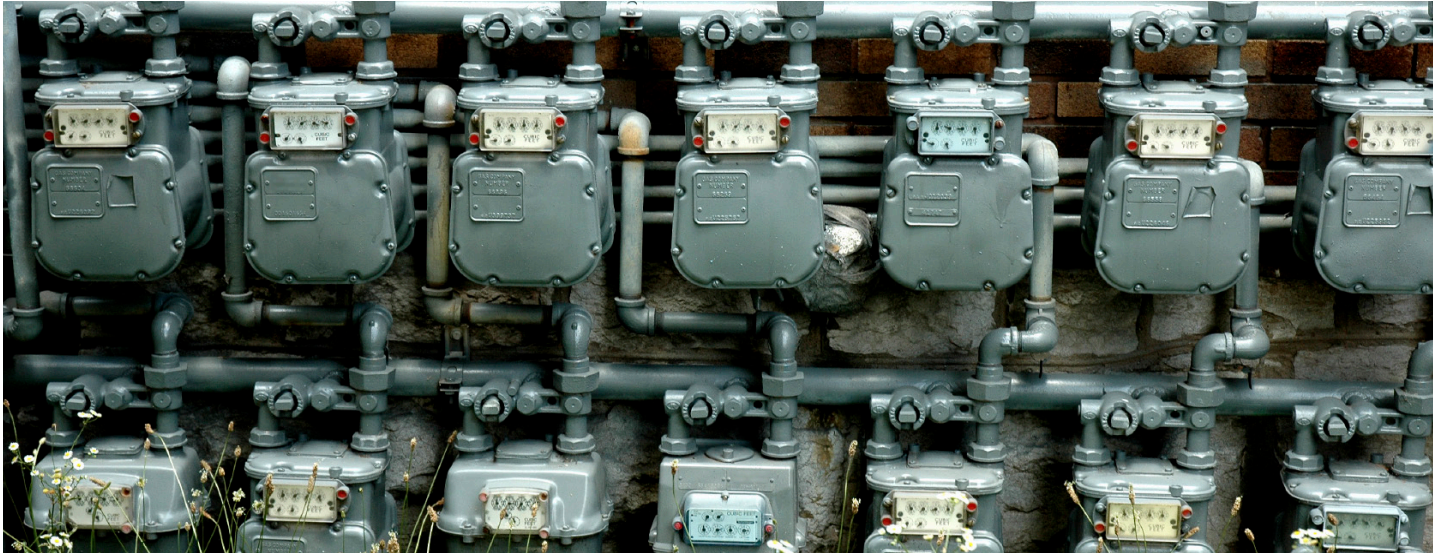
Consert Virtual Peak Plant℠ Solution

Solution Overview

The Consert Virtual Peak Plant℠ Solution brings together home energy management devices, a utility web portal, a consumer web portal and a back-end system to allow utility companies to provide demand management service, and give end-users control over the use of their high energy appliances for a more efficient consumption of energy.

At the consumer's home or small business premises, a traditional meter and thermostat are replaced with a smart meter with integrated gateway module and a programmable communicating thermostat. Measurement and control devices are installed on such home appliances as the heating and air conditioning system, water heater and pool pump. Jointly, these appliances typically account for 40-60% of the home energy consumption at peak times. Consumers set up their energy use profile via a web portal on any internet enabled device (laptop, tablet, smart phone, etc).

Consert's home measurement and control devices communicate in real-time with a smart energy gateway embedded in a smart meter. The utility company uses the meter data readings for billing and uses the aggregated data for demand management and load resources; remotely cycling home appliances off to shed the peak electricity load during times of high demand within guidelines established by the consumer's energy profile.

Core Technologies

The Consert Virtual Peak Plant Solution utilizes a 3G or 4G Verizon Wireless modem for communicating with the Consert Data Center via the public cellular network (Wide Area Network or WAN). Within the Home Area Network (HAN), the communication takes place via ZigBee.

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Benefits of the solution

■ The utility receives a new source of generating capacity, by shedding peak load and integrating renewables; achieving operational savings.

■ Demand management used for load acting as a resource provides a new revenue stream for the utility that helps recover investment into a smart grid.

■ In addition to addressing the peak load demand, the utility is able to measure and verify how much load is shed and released in real time.

■ Mobile 3G and 4G networks enable real-time data transfer between Consert's smart meter in the home, the data center and the utility.

Success to date

On June 21, 2011 Consert announced a commercial agreement with CPS Energy of San Antonio, the largest municipal electric power provider in the United States. CPS will install Consert's system on 140,000 in San Antonio homes and small businesses that will result in the reduction of 250 megawatts of peak demand over the next four years using Consert's patented Virtual Peak Plant software.

The Consert Virtual Peak Plant Solution is also offered commercially by Wake Electric Membership Corporation (WEMC) and Fayetteville Public Works Commission (PWC) both based in North Carolina. The initial results have shown that consumers saved as much as 15-20% of their overall electricity usage, compared to previous years.

PWC is the largest municipal electric provider in North Carolina, serving more than 78,000 customers. Its decision to implement the Virtual Peak Plant solution was driven by the need to reduce coincident peak energy demand, create capacity reserves, address renewable energy requirements and supplement service offerings for its customers. The PWC SmartWorks pilot program was initially rolled out to 100 residential and small commercial customers, and is now offered commercially to PWC customers.

Consert also is conducting pilot programs with other investor-owned, municipal and co-op utilities, such as Bluebonnet Electric Cooperative, Central Hudson Gas and Electric Corporation, Grayson-Collin Electric Membership Cooperative, and Pedernales Electric Cooperative among others.

Key Learnings / Best Practises

The Consert Virtual Peak Plant Solution application goes beyond the Automatic Meter Reading (AMR)/ Advanced Metering Infrastructure (AMI) projects implemented by the majority of utilities at this time. In addition to enabling the control of home appliances, it allows energy retailers to introduce innovative tariffs, for example, time-of-use pricing. Predictive models allow utilities to determine the future level of consumption and minimize demand uncertainty. It also establishes a home area network (HAN) for the delivery of future innovative smart energy services.

The advantage of using cellular lies in controlling appliances in real-time, with delays measured in milliseconds, is a significant improvement on the traditional data communication that takes place every 15 minutes.

Customer experience is an important consideration for the success of demand management and load resource service. Reduction of energy is unnoticeable by consumers if controlled intelligently.

Embedded
Mobile