**Smart Home Energy Management Systems**

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Smart Home Energy Management systems (HEMS) are bringing the Smart Grid into the Home and getting the consumer engaged in electricity conservation. Connectivity of devices in the home has been discussed over the last 15 years; however there was no compelling case for a consumer to invest money in the internet connectivity of non-computing devices in the home. However as the need for electricity grows, compounded by environmental concerns, the addition of new generating sources is becoming difficult and expensive. Residential Electricity consumption continues to grow with peak consumption growing faster than average consumption. If consumers can be engaged in a real time basis, to avoid peak loads, the capacity utilization of the grid can be increased, resulting in lesser investment in new power plants

Deployment of HEMS has a number of technical and commercial challenges:

- It is a nascent market with no standardization, resulting in a lot of competing technologies and protocols.
- Devices in the home are very different, and consumer expectations on usability and the value proposition for connectivity is varied.
- Cost is a very important consideration; however electricity tariff structure to incentivize the consumer for altering their consumption and save money, is not easily implementable.
- Connectivity for a non-computing device with a limited or no user interface is a very new concept.
- Regulatory support for deployment of HEMS is still in the initial stages
- The Technology landscape is rapidly changing with a high degree of obsolescence
- Security and data privacy concerns need to addressed to make consumers comfortable with the new technology in the home

Venkat will start the presentation with some US data on how consumers can make a real difference in a smarter grid by reducing capital investment in new generation. This will be followed a brief on consumers' expectation on HEMS and the technical challenges in designing a system that can serve both the consumer and utility needs. The talk will conclude GE' experience in designing and deploying HEMS in US smart grid pilots.