

Societal Benefits of the Smart Grid

Smart Grid: A Trillion Dollars, but what are the long-term benefits?

There are many social and customer benefits associated with the smart grid including lower costs, improved customer service, reduced emissions, decreased outage time and increased reliability, support for electric vehicles, ability to facilitate distribution generation and new energy technologies, including renewable, intermittent and distributed sources. But, Rome was not built in a day. We need time and support for the technology and associated services to be deployed and the corresponding adoption window for consumers and energy service providers to leverage these new opportunities and deliver tangible and measurable benefit.

Being impatient and expecting habits we have developed over hundreds of years to change in a moment is a mistake – we need patience, yet the urgency to invest and hold the industry and each other accountable to usher in a new era of energy awareness and efficiency. Even today, Smart grids have helped to lower operating costs, for example by eliminating utility visits to customer premises for services like turn on/turn off, trouble shooting and off cycle meter reads. This helps to reduce and manage not only utility costs but also customer costs.

For instance, in Enel's project in Italy, they are delivering over \$750M per year of benefits on an investment of \$3B – offering energy awareness and efficiency for Italians, having with the benefit of reduced costs for years to come. Besides new technologies that enable efficiencies, we also have service benefits that deliver new opportunities for services that save consumers money today. From simple applications enabled by new tariffs that incent customers to use energy in off peak times to reduce overall load. Or, more advanced applications like networked in-home displays where customers can set simple demand response preferences to dynamically adjust energy consumption – we are at the beginning of a new era of opportunity of awareness and efficiency. By decreasing electric demand and usage, generation can also be reduced which improves environmental conditions by decreasing pollutants. While it may not seem like a lot, if we multiply the benefits over millions of customer, the results are extraordinary and very encouraging.

Here are some other relevant examples. E.ON has experienced a significant reduction in customer service calls associated with both meter-reading and invoice-related issues. This has let service representative's focus on other tasks and has improved call centre efficiency. Vattenfall, another large European utility, now uses the load-limiting function associated with the Echelon NES meter's integrated disconnect switch to better manage customers and their associated contract size restrictions. Vattenfall also uses outage information and power-quality data to manage its distribution network and proactively identify issues or problems. Besides services benefits, solutions like Echelon's NES also provide advanced monitoring opportunities and power quality data that enable energy service providers to detect outages before they happen, saving money, time and improving the overall service experiences for the customer.

Where there is an outage, the new systems help provide accurate representations of the grid compared with agreed data in antiquated IT systems, so the Mean Time to Repair (MTTR) is much faster. In the near future, Smart Grids provide the necessary infrastructure and management needed to support electric vehicles and their challenging charging requirements. The current grid cannot support the influx of electric cars, but a smart grid enabled by Echelon will be able energy service providers to manage the charging intervals, therefore reducing peak load and minimizing the need to invest in new power plants, hence saving the taxpayer money and protecting the environment.



There are many opportunities that provide short and long term benefits, but we must be patient, yet dedicated to the future we know we can achieve. In just the last 5 years which are just seconds in energy time, we have made so much progress. This progress can be measured in the simple awareness of users who are just using less to massive returns through grid modernization that has lead to the high efficiency and applications that will enable a new energy future. Rome was not built in a day, but throughout its construction it delivered unprecedented benefits to its citizens that have stood as the beacon pro progress for modern society for thousands of years. The key is being bold, yet patient and holding all members of the new grid accountable for the benefits that we all know are ahead.

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