



THE FUTURE OF POWER DEMAND

By: Phil Carroll, VP, P.E.

While demand for power has continued to grow over the last 130+ years, some forecasters believe that demand for power in the future, while it won't decrease, certainly will NOT grow as quickly as population and GDP.

There are several reasons for this, many of which are already having an impact. Among these are more efficient residential appliances and light bulbs; more energy-efficient networks, systems and equipment in commercial buildings and industrial facilities; the increased popularity of demand/response programs, primarily in industrial facilities, but gaining traction in commercial buildings, and even, to some extent, in residential settings; and, of course, the increasing popularity of residential, commercial and industrial self-generation (distributed generation, especially rooftop solar).

Of course, much of this has been welcomed, and even promoted, by electric utilities, for two reasons. In the short term, lower demand for electricity helps reduce the demand for peak power generation. In the longer term, the lower demand helps reduce the need for new power plants, which, for various reasons (such as increasing EPA regulations surrounding coal-fired plants, and exorbitant costs and years of red tape in the NRC for nuclear plants), are becoming increasingly difficult to site.

Yet, some are suggesting, while some demand reduction is a good thing, too much reduction is not. It can, and in some instances already is, hurting utilities' bottom lines.

According to the U.S. Energy Information Administration's (EIA) "Annual Energy Outlook 2014" (released May 2014), average energy use per person will decline from 2012 to 2040. It noted that, "(T)he structure and efficiency of the U.S. economy are changing in ways that can lower energy use."

The report noted that, while the U.S. population is expected to increase by 0.7 percent per year from 2012 to 2040, and GDP is expected to increase by 2.4 percent per year, total energy consumption is expected to increase by only 0.4 percent per year. "As a result, energy intensity, measured both as energy use per person and as energy use per dollar of GDP, declines over the projection period," said the report.

Research from Fitch Ratings shows similar trends to those suggested by the EIA, with some of the same reasons. According to a report published by Fitch Ratings, titled "Power Down II: Efficiency Gains Short Circuit kWh Sales," published in October 2013, U.S. electric utilities face an ongoing period of low sales growth that will challenge their traditional operating profiles and force utilities to broaden their product offerings. Even with the economic recovery that has occurred since 2009, according to the

report, electricity sales have not increased appreciably. "We have generally thought of demand for electricity as flat, and this is what we have been using in our model," said Glen Grabelsky, managing director, utilities, power & gas, for Fitch Ratings, and an author of the report.

The report noted that electricity efficiency gains, demand-side management programs, and distributed generation are reducing consumer consumption and "cannibalizing" traditional, utility-supplied power.

"The economics of energy efficiency are compelling," said the report. The benchmark leveled cost of electricity used to compare the cost of energy efficiency programs is substantially less than all forms of conventional or renewable power generation. "Efficiency is an effective tool in displacing new power generation, produces peak load shaving, and avoids or at least reduces the highest cost sources of electricity generation," said the report.

Overall, according to the report, low electricity sales growth will pressure unit costs and challenge the economics and benefits of future capital investments and rate design, and need to be restructured, as costs are allocated over a changing customer profile.

Given the EIA and Fitch Ratings projections, utilities will need to broaden their product offerings to include efficiency, distributed generation, and demand-side management. "We think that the business model utilities are using needs to be adapted to reflect efficiency as a business line," said Grabelsky. "In fact, a number of utilities are starting to offer energy efficiency retrofits in their service areas. Some utilities are also moving a bit into the distributed generation side."

In addition, several utilities are focusing on new ways to generate revenue. One of the most effective is electrification. Examples include: encouraging more residential customers to purchase electric appliances instead of non-electric, encouraging industrial and warehousing customers to purchase and use more electric-powered forklifts than fuel-powered forklifts, and promoting the purchase and use of electric plug-in vehicles.

Finally, utilities need to have serious conversations with their ratepayers around the need to re-look at rate design. These days, commodity energy isn't the only service that utilities offer to their customers, but it is the only one they are paid for. They need to find ways to charge for the other services they provide, such as access to the grid in general for distributed generation customers.

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