The Changing Utility Business Model

Historically, electric utilities have been concerned with energy affordability, reliability, and a predictable rate of return for the capital investment required to deliver power. The basic model of the industry has been to send high voltages over long distances and then distribute it to customers at lower voltages.

Power stations are big and costly, and utilities’ chief concerns have been to supply electricity, meet peak demands, and keep energy affordable for customers. In North Carolina, in particular, affordability is critical, as the state has long relied on low energy costs for industrial recruitment.

This world appears to be changing, however. Customer control, economics, and cost are all driving huge changes in the utility business model, and all of these forces are playing out across power generation, transmission, and distribution. The changes faced by the electric utility industry will result in a much more fragmented future, where independent generators and new entrants revolutionize the way electricity is sold and used.

These disruptive challenges are caused, in part, by changing consumer demand. Demand for electricity in the United States is no longer expanding. From 2007 through 2014, the U.S. economy grew 8 percent, but energy use...
remained flat. This is partially due to energy efficiency efforts and greater customer engagement in the energy business than ever before. Consumers may generate their own electricity on site and bypass the utility entirely, or, at the minimum, control the timing and amount of their electricity use. An Internet-enabled thermostat, for instance, such as the Nest, allows residents to control home heating and cooling remotely.

Additionally, the vertically integrated model of electric energy provision, like we have in North Carolina, is being challenged to adapt to the growing number of large solar and wind generators being added statewide. In the future, we are likely to have these renewable generators grow to the point that the energy market increasingly resembles the economics of the Internet. In this way, the marginal cost of renewable energy generation, on a per kwh basis, is nearly negligible once capital costs are recovered. Plus, if supply exceeds demand at any time in the day, utilities in states like North Carolina are required to take their generating units off the grid and accept power from the independent producers that were installed under the federal Public Utility Regulatory Policies Act. For utilities that are part of a regional transmission organization, the lowest-bid generation must be accepted. This is already happening in Germany, and it is beginning to occur in California. However, until battery or another type of energy storage becomes economical, utilities will need to provide backup generation for intermittent solar and wind generation.

If this pattern continues, the total amount of generation, including the intermittent and standby generation, will likely greatly increase, as it has in Germany. This increase in total generating capacity with little growth in overall demand has led to higher electricity rates in Germany. How, then, will the utilities in the United States, which are growing more rapidly in terms of renewables, keep their costs down to stay competitive with other states that have been slower to accommodate renewable generation? While North Carolina was number two behind California in the amount of solar added last year and third in the country in the total amount of solar installed, the rest of the nation may not be far behind. The EPA’s new Clean Power Plan rule may put all states on a
faster path toward widespread use of renewables.

Traditional energy companies still have a place in this new world order, but new entrants, such as solar power companies, can now lease panels to energy users directly. This combination of distributed generation, future breakthroughs in energy storage, and increasingly intelligent consumption has created a perfect storm for utilities: They are stuck with the costs of maintaining the grid and meeting peak demand but lack the means to make customers pay for it properly, as electricity pricing structures have not evolved in much of the country.

In addition to the utility business model shakeup pressures, the sector is undergoing a significant workforce challenge with the impending retirement of large numbers of hard-to-replace workers, including front line supervisors, managers, and general managers. According to the Bureau of Labor Statistics, the average age of a utility worker is almost 50. As a result, more than one-half of the current utility workforce will be eligible to retire in the next 6-8 years, taking with them legacy knowledge and understanding built up over years of utility experience. This looming wave of retirements has the potential to greatly impact utilities’ ability to continue to innovate and solve the energy challenges of tomorrow.

This February, IEI’s 31st Annual Emerging Issues Forum, FutureWork directly confronts the great challenge of creating enough good jobs for a vibrant North Carolina future. The Forum includes a special session on Day Two that looks at the energy sector. Join us! Register now at early-bird rates through Nov. 30.

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