Background Notes
for
October 8th Utility Business Model of the Future En Banc

Introduction

Bloomberg Businessweek recently published an article entitled, "Why the U.S. Power Grid's Days are Numbered." In it they state,

> "Regulators set rates; utilities get guaranteed returns; investors get sure-thing dividends. It's a model that hasn't changed much since Thomas Edison invented the light bulb. And it's doomed to obsolescence."

This is a sentiment they attribute to David Crane, chief executive officer of NRG Energy, a wholesale power company based in Princeton, N.J. They go on to say,

> "What's afoot is a confluence of green energy and computer technology, deregulation, cheap natural gas, and political pressure that, as Crane starkly frames it, poses 'a mortal threat to the existing utility system.' He says that in about the time it has taken cell phones to supplant land lines in most U.S. homes, the grid will become increasingly irrelevant as customers move toward decentralized homegrown green energy. Rooftop solar, in particular, is turning tens of thousands of businesses and households into power producers. Such distributed generation, to use the industry's term for power produced outside the grid, is certain to grow." Tony Early of PG&E is quoted as saying in agreement, "No less than the stability of the grid is at stake."

That is just the most recent article. Everyone from Edison Electric Institute (EEI) to Rocky Mountain Institute (RMI), and Ron Binz (former Colorado PUC commissioner, founder of Utility 2020, and FERC-Chairman elect) to all of major consulting firms including Accenture, Bain, McKinsey, and IBM have published on the topic. Energy Foundation is funding 24 efforts around the country and Stanford's Steyer-Taylor Center for Energy Policy is hosting conferences on the topic. Former DOE Secretary Chui also weighed in, and President Obama recently asked former Colorado Governor Ritter to write a series of articles on the energy sector including one on transforming the business model.

So what's got everyone so riled up? The following are the two main industry concerns we derive from the various discussions, and are at the crux of our discussion for the October 8th en banc.

Two Main Industry Concerns

There are two main concerns regarding the application of the current business model to the future utility:

- The cost-of-service model as the traditional utility business model is starting to be challenged because its fundamental operating principles are based on the concepts of sales growth and asset acquisition, both of which oppose current energy policy.

- The monopoly role of the utility is changing profoundly because new applications of technology and new financial innovations are leading to a more competitive market.

The current business model is called the "cost-of-service model" and it relies on two fundamental premises in order to meet the system goals of safety, reliability, and reasonable rates. This traditional utility business model is starting to be challenged because its two fundamental premises are beginning an inevitable and profound shift.

1) The first fundamental premise of the current model is that the primary mechanism for the utility to make a profit is through a guaranteed rate of return on equity on capital investments. This means that the utility's primary profit motive is asset acquisition (such as generation, transmission and distribution), as almost all other activities such as procurement are pass through costs, on which there are no shareholder earnings.

2) The second fundamental premise has been that ever-increasing sales would spread the cost of this asset acquisition among a large and growing pool of customers, keeping prices relatively low per unit of sales.

3) These two fundamental principles worked for over 100 years, when the object of the system was to grow to meet the growing demands of a growing population with growing energy demands.

4) Now fundamental changes are affecting both premises and are starting to challenge this model: fixed costs are rising faster than historical norms (due to a number of factors including updating an aging infrastructure and accommodating distributed generation) and sales are flattening or declining (due to energy efficiency, distributed generation, and less manufacturing in the state.)

5) These fundamental changes challenge the current model because:

    a) If utilities continue to invest in grid safety and reliability on behalf of ratepayers, and costs and rates increase, customers may increase the pace at which they seek alternative sources of power (such as through distributed generation) and alternative companies to provide power (such as Community Choice Aggregators). These customer departures continue to increase the rates for the remaining customers, causing more customers to leave.

    b) A decreasing customer base may also increase the investment risk profile of the utility (because the fear of higher costs of capital, failing the reasonableness test, and/or stranded assets). (Redesigning rates may stall the pace at which customers leave the system due to higher rates, but it will not fix the fact that the fundamental premise of the model has changed.)

    c) Conversely, if utilities become hesitant to invest on behalf of ratepayers to ensure reliable service to retail customers at fair and reasonable rates because the costs (and hence rates) will potentially rise beyond what the rate payers can tolerate, it will result in less earnings growth than the shareholders demand and less service than the customers demand.

d) Both the shareholders and the ratepayers suffer under conditions where investments are less than robust (lower returns for the shareholders and less service for the customer). And both also suffer under conditions where investments continue at a healthy rate (higher risk profile for the shareholder and higher costs for the customer.)

e) While CA has decoupled revenues from electric sales, we have not decoupled revenues from rates – the amount we need to recover through rates is directly tied to the cost of service and the quantity of service customers consume. Where the customers and utilities used to be aligned, they are now no longer aligned. If these two things should not be inextricably tied together, what would we replace it with?

The monopoly role of the utility is changing profoundly because of new applications of technology and new financial innovations, both of which are leading to a more competitive market.

1) Technology changes the status of the utility as the sole provider of energy.

   a) Microgrids, storage, DG, and EVs are all increasingly less expensive and allow customers to produce their own power, making them "prosumers" not just "consumers." New financial innovations allow customers of many different types access to financing options in order to acquire these new technologies.

   b) Technologies such as those associated with the smart grid allows for more services and service providers. Data collection, solar installation, micro grid technologies, and high tech thermostats are only a few of the services that vendors are providing to customers that brings them away from the grid and provide services the utilities generally do not provide as cost effectively.

   c) Adding internet capabilities to the grid changes the relationship of customers to their energy and their energy supply. Customers have higher expectations of information and data exchange and service reliability. Many competitors have emerged to meet the growing needs of the customers.

2) The number of opportunities for a utility to earn a guaranteed rate of return are diminishing.

   a) Utilities now own fewer assets for generation. Older generation assets are retiring and are not being replaced with UOG, which means this number is likely to diminish further.

   b) Utilities still own the pipes and wires, but those assets are becoming the sole income stream. But is it enough to sustain the business model as it currently stands, or does it push the IOUs towards becoming pipes and wires companies only.

   c) The more investments the IOUs make in the newer smarter grid, the more money they will ultimately lose because each smarter element provides a new avenue for a new market entrant competing for their customers.

3) The utility needs a new value proposition.

a) What do utilities offer the system in the future that no one else can or will?

b) If they are just a competitor in the marketplace like any other, is the monopoly status warranted? Alternatively, would they just become a pipes and wires company and establish subsidiaries to compete for the rest of the services? If that is the case, what does the customer and society lose or gain?

c) If they were to offer services that no one else does, is there a mechanism to pay them for those services?

    i) Can they charge for services such as fees for information/data? Fees to run the distribution system? Unbundling rates to pay for varying degrees of reliability, etc. What would ratepayers want in return for opening up additional revenue streams?

    ii) Would IOUs be paid for their performance on certain criteria (often called Performance Based Rate Making)

    iii) How would increasing opportunities for revenue and profit and shareholder benefit not have a detrimental effect on the ratepayers? How would we realign incentives on both sides of the relationship?

There are five main questions to ask to begin to investigate a business model of the future:

1. What are our societal goals as they relate to the electricity sector? What is our vision of our future? How does the business model enable our regulatory and societal goals?

2. What role should the utility play in attaining those goals? How is that role different than the role that the customer and the rest of the market should play? What role does the regulator play?

3. What products and services should the utility sell and to whom?

4. How should the utility be compensated for those products and services? And how much?

5. What other players should be in the market, how should they be compensated and what would the relationship to the utility, if any, be?