

New Technologies, Regulation and Risk

By
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How difficult is it to predict when a certain technology will become obsolete? The trick is to both identify the new replacement technology and estimate some penetration rate as in how quickly the new will replace the existing technology. In the regulated utility industry that's in essence the role of the depreciation engineer or analyst. There is also the additional consideration of whether the new technology presents new heretofore unrecognized risks.

Sometimes new technologies appear quickly and are quickly replaced. Eight track recording cartridges, the "Walkman", CB radios, Betamax video tapes and so on come to mind.

Some were fads, others represented real innovation. The fax machine and personal computer have lingered longer than many expected and are now mostly replaced with a fax function on the laptop computer. For many uses the mobile telephone has replaced many functions of the laptop and it is clear that few buy a new digital camera for social uses anymore when the cell phone is so convenient with high consumer acceptance of its picture and video quality.

In the electric utility industry, while end use appliances and electronic devices have experienced significant innovation, the production, transmission, and delivery systems have not. On an inspection tour today Thomas Edison and Nikola Tesla would recognize most equipment and its function. Yes, I recognize that we now install solar and wind for generation and we have new battery technologies but other than solar PV I think the rest would be recognizable. (Incidentally both Edison and Tesla were great advocates of solar power). One question that comes to mind is whether there is

something inherent in the nature of the industry or in its regulation or both which impedes the introduction of new technologies.

As a former utility CEO, I can tell you that while a CEO I was averse to taking any risks which could possibly degrade services, cause unrecoverable expenses or be detrimental to my relationship with my customers or regulators. Besides, the results of risk taking in a regulated utility were asymmetrical. If I, as a utility CEO, took a risk on a new technology and the technology was successful the result would most likely be a reduction in revenue requirement but no long-term improvement in rate of return. If I took a risk and the decision resulted in failure to perform adequately then the regulator was sure to insulate the customer from losses and the financial loss would be incurred by my shareholders. Thus, I would stick to, and the regulator would likely only approve, the acquisition of assets with proven technologies and operating experience.

There is one approach the utility industry and regulators have come up with to address the problem of introduction of new technologies and that is the establishment of a limited "pilot test". In that case volunteers would be recruited to be among customers as the test subjects with limited investment and small potential for harm. Certainly, on first consideration that seems a perfect solution. Test the new technology first on a few customers and then make a decision about universally adopting the new technology when the test results are in.

One problem however, according to technology vendors, is the perception held by many state regulators, and perhaps some utility managements, that their utility, territory, and customers are so unique that any extensive test results from other parts of the country or even neighboring states or utilities are not valid in their jurisdictional utility. This results in a real slow down in technology introduction by creating individual state barriers. Perhaps, there may be identifiable unique; soil, weather, or other physical considerations which invalidate transfer of test results. But just as likely the same physical, electrical, and mechanical laws apply equally across the nation's electric utilities so that results in one test area or a series of test areas can be accepted universally.

The late Richard Feynman, a world-renowned physicist, remarked that:

"For a successful technology, reality must take precedence over public relations, for Nature cannot be fooled."

In the case of the regulated electric utility industry too often the working proposition is that:

For a successful technology, regulation takes precedence over reality, nature cannot be fooled, but public opinion can.

This does not need to be the case. The system underpinning state utility regulation, “scientific regulation” has the investigative and public hearing tools to evaluate evidence and make the right decision when it comes to technology adoption in a timely manner.

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