

Start with the End in Mind – Utility of the Near Future

by Steve Pullins, Team Leader, DOE/NETL Modern Grid Strategy

Some of my grid friends and I have been discussing the emotional staying power of the utility industry to deploy a Smart Grid over a very long period, maybe the next 15 to 20 years. For me, this raises a very interesting question about vision. Over the last three years, we have seen a few Utility of the Future (UoF) efforts at utilities as they formulate an over-the-horizon vision of what they need to be to better serve the customer in the future. The question is: How far out do you cast the vision? Is it 20 years? Or, maybe something more practical at 5 or 10 years?

I would suggest that there is risk in developing a vision that only looks at the next 5 to 10 years; we will call it Utility of the Near Future (UoNF). Let me explain.

First: The Challenge of the Long-Term Vision (UoF)

A 20-year vision is very difficult to sustain and often seems too much like peering into the abyss where there are 5 new questions for every question answered. This can be emotionally draining for the organization. Over time it can be difficult to keep that very important emotional intensity in delivering new solutions.

We had this discussion in 2006 with the San Diego Smart Grid Study team. I remember Terry Mohn of San Diego Gas & Electric suggesting that we divide the overall 20-year vision into 5-year increments to enable a measure of success along the path while staying the long-term course. This helped the team develop definable steps, orient progress to be a recognizable step toward the long-term goal, and help the recommendations stay grounded in the real world.

The lesson in this is that a UoNF is not the end point, but a great step in the direction of the overall vision, UoF.

Now, with the President’s American Recovery and Reinvestment Act of 2009 front and center, we may soon see Section 1306 of the Energy Independence and Security Act of 2007 become a reality. This is the section that incentivizes grid investments that meet the definition of Smart Grid in Title XIII of the Act. There is risk if the focus for these investments is based on a UoNF vision versus a UoF vision. The Stimulus Package funds could be used to create short-term benefits from deployment strategies only looking 5 to 10 years out. This would be inconsistent with the original intent of Section 1306 of the Act. We need to keep our eye on the horizon to steer a straight course.

Examples of UoNF vs. UoF

Let’s compare how a different focus can generate a different result if we fail to “begin with the end in mind” as Dr. Stephen Covey would say.

Utility of the Near Future	Utility of the Future
<i>New Communications Infrastructure</i>	
New communications system to support Advanced Metering Infrastructure (AMI) and Demand Response (DR)	New communications infrastructure that supports AMI, advanced distribution operations, advanced transmission operations, and advanced asset management. Maybe even a converged communications network that

	supports fixed and mobile, voice and data.
<i>Responding to the Peak</i>	
Developing a suite of DR programs for load shedding	Developing programs that change the shape of the load profile; DR + dispatchable consumer distributed generation (DG) + advanced energy storage
<i>Purchasing Energy Efficiency Devices</i>	
EnergyStar Light bulbs, hot water heaters, high efficiency heat pumps, etc	Smart loads (chip-enabled) DR-enabled / Home Area Network-enabled devices
<i>Siting New Physical Infrastructure</i>	
Siting of new transmission lines to reduce congestion and access large wind farms	Pushing network designs of the grid (transmission and distribution) to enable access to distributed renewables

It's not that the UoNF is bad. Quite the contrary. If the UoNF is a more scalable or open-ended solution whereby the UoNF becomes the first step in a technology continuum that leads to a Utility of the Future (UoF), then by all means take the well-defined UoNF first step. Plus, the benefits may not outweigh the costs in the early stage of a Smart Grid (UoNF), but later a small incremental cost can generate substantial benefits (UoF in mind) because of the earlier work.

The Modern Grid Strategy (MGS) team has been exploring the Smart Grid Maturity Model as a way to help the industry with a changing Smart Grid vision over many years. The Smart Grid vision may change with changes in society and technology, so flexibility is the key.

Bottom Line

Implementation of a more intelligent, flexible, resilient grid is a long-term transformation. Long-term transformations have the risk of becoming an unrecognizable series of short-term modifications that result in something different than the original vision.

Here is where the industry leadership must be wise. It must be able to recognize the difference between a long-term deployment veering off path (vision) and one that is wisely incorporating new knowledge along the path for a better outcome.

This is my last Smart Grid News article as the Team Leader of the DOE/NETL Modern Grid Strategy. After three and a half years leading the team, I am turning over the leadership as other equally important duties press. As of January 31, 2009, Joe Miller is the new Team Leader. Joe has been with the team for three years and is already recognized as a national leader in the transformational aspects and needs of the Smart Grid. Please wish Joe well in this new challenge when you see him next.

Email Steve Pullins
Steve's previous column