



How would you revamp our regulatory models and related business models so that our industry can optimize the potential benefits of a smarter grid while ensuring ongoing key goals of serving the public with economic rates, operational excellence, high standards for safety, and service reliability, are still met?

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Meet the Author:

An IEEE Fellow, electricity industry visionary, and leader, Dr. Mani Vadari delivers strategic services to a global set of utilities, vendors, and service providers seeking deep subject matter expertise in setting the business and technical direction to develop the next-generation electric/energy system. As a Business Architect, Dr. Vadari has been delivering solutions focusing on Transmission/ Distribution/ generation operations, Energy markets, and Smart Grid for over 35 years. In addition, he is an Adjunct Professor at Washington State University and an Affiliate Professor at the University of Washington. He has published two popular books, "[Smart Grid Redefined: Transformation of the Electric Utility](#)" and "[Electric System Operations – Evolving to the Modern Grid, 2nd Edition](#)", in addition to over a hundred industry papers, articles, and blogs. His books are serving as textbooks at several universities in the US and around the world

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The title has three key elements:

Regulatory Models: The United States has possibly the most complex regulatory model. We have a complex set of interactions between federal, state, and other jurisdictions, supported by a lack of energy policy at any level. As a result, every state functions differently and under a different set of rules.

We have created a situation that is sorely in need of change.

Business Models: Since PUHCA, the utility business model has been mostly unchanged with the exception of FERC orders 888 and 889 which resulted in the separation of wholesale generation from the rest of the utility.

I believe Distributed Energy is the disruptor that will challenge this model.

Our industry: For the longest period of time our industry has been focused on delivering reliable power to the customer. This mandate has almost been sacrosanct in that it has been the core mantra that has virtually driven every decision made by utilities.

I believe this mandate needs to stay –

electricity is too critical for just about everything and civilization will come to a halt without it.

The first set of questions we need to ask ourselves is that:

Is there a lesson to be learned from the telecom industry?

It is widely believed that the breakup of Ma Bell in the mid-80s led to several major innovations including cellular technologies, the wide dispersion of the internet, Voice-over IP, and the Smartphone. Are there similar opportunities that await the next generation electric utility and if so, what would that look like?

orders have the potential to allow the customer to take less power from the incumbent utility. Potential future technologies may allow the customer to completely disconnect from the utility.

Does that create the potential to create a stranded asset problem for the utility coming from customers purchasing less power from the utility for the same asset cost?

The example of an upstart telecom wireless provider such as Cingular buying out AT&T and becoming the new giant that it is in all aspects of telecom, wireless, cable and so on gives way to new lines of thought in our industry.

Is something like this possible in the electricity industry – and if so, who will be the first player? Will existing utilities have the incumbent advantage to move?

The New York REV effort of creating a DSP focused on standardizing the DER interactions in a state through the creation of a retail market, centralized planning, and an independent grid operator is something that is being watched very carefully by almost every state in the country. In addition, several European countries are also experimenting with this model.

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Will this or a similar model spread to other states in the US and if so – what will be the role of the Independent Distribution Operator? Will we finally get some level of standardization at the retail level and if so, how will these entities interact with the wholesale markets?

The electric utility has survived for over 100 years - does it need to survive another 100?

Is there an alternative to today's T&D approach to delivering power – and if so (1) what would it look like and (2) when would it become a reality?

The second major question that still needs to be asked is:

Do we still need an entity that has the job of ensuring ongoing key goals of serving the public with economic rates, operational excellence, high standards for safety, and service reliability, are still met?

I believe that the answer to this is a YES – however, I am not sure whether the best way to achieve this needs to be the utility. In the near and mid-term, it does need to be the utility. The role of the grid as the infrastructure provider for the lowest-cost electricity will not be in jeopardy. However, in the long term, this responsibility could be provided by any number of entities – some still fully connected to the grid, some using the grid as a backup option and some completely disconnected.

This movement away from a utility would be enabled by newer technologies such as microgrids, storage, and other DER technologies and accelerated as their costs come down.

However, the movement away from utilities is also not a foregone conclusion – as the current provider, they will have the best opportunity to continue their present strong position but they will also need to transform themselves into the most optimal and flexible provider of services focused on the customer instead of the infrastructure buildout.

So what?

*As can be seen in this blog, there are more questions than answers. Given the pace of change, one cannot predict where this future will lead us – but one thing is certain. *

- ***Today's utility will need to change.***
- ***Today's regulatory regime will need to change***

If these changes do not happen – we will have an extended period of chaos before the legislative arm needs to jump in and enforce something that may make the situation worse.