

Planning Next Generation Distribution with the Distribution RoadMap



The Distribution System of Tomorrow

The distribution grid of 2025 will be a demanding place, even if it were to come about without the economy's need for more electricity. Demanding customers will desire affordable, reliable and high-quality power, at the same high level of service and accommodation that they receive from every other industry. Their demands will drive public utility commissioners to push for the most effective and efficient grid, and tariff structures will grow ever more sophisticated.

The utility companies who succeed in that environment will be operating a self-diagnosing and self-healing electric distribution grid that's connected to a large number of consumer-owned energy sources. They will be managing multidirectional power flows in a predominantly live-line environment and making both regulated and non-regulated income from asset utilization offerings. And utility employees will be self-learning knowledge workers gainfully deployed in this asset-intensive sector of the economy.

Choosing to retain today's design standards and equipment, opting for small incremental changes in the way that business is done today, is like what an ostrich would do, and surely will result in an un-profitable future for a distribution utility.

A Daunting Challenge

Given the needed changes, how does the utility go about planning its future? A few things are known: The grid must become more "intelligent," sending signals and data to central locations where oversight is proactive, not reactive. Cutting edge technologies will greatly impact all aspects of the distribution value chain – they need to be "planned-in" to future budgets and adapted in the most rational way possible. And distribution companies will have to come to terms with ever more rates, tariffs and operating rules.

In general, the entire distribution organization must become more capable in developing a more complex and sophisticated distribution system. But how?

Achieving Now

The Smart Energy Alliance™ (SEA™), comprised of six of the world's leading technology companies, was created in 2006 to help utilities turn such distribution planning challenges into opportunities to transform the entire utility organization. The SEA believes that tomorrow's distribution grid is possible if only utilities will begin developing a roadmap now. The SEA members are working with utilities on asking questions and coming up with plans for improving the value of distribution

inside the house, from the house to the transformer to the substation, inside the substation and in the operations center. The SEA is asking futuristic questions, like what is possible with physics, chemistry and engineering and what would be the impact of those sciences on tomorrow's grid. And last but not least, how should the utility organize itself now to position itself for the future?

The Smart Energy Alliance recommends that utilities engage in Distribution Roadmap Workshops – a series of meetings and seminars – that find what a particular utility is doing to position itself for the electric distribution utility environment 15-20 years from now. The workshops help the distribution utility to determine where it needs to modify its current design, planning, construction, maintenance, and operating practices. These workshops are not based on what a consultant thinks, but rather on the work of several years with a large group of forward thinking utilities under the banner of CEATI. Ultimately, the workshops produce a source document to aid in identifying technical and information gaps that need to be closed, in order to prepare effectively for change in its technical, business, and regulatory environment. More than a dozen such Roadmap sessions have already occurred, with some utilities already in their second or third planning seminar. The answers keep getting better the more they plan, they say. And the Roadmap is gaining international recommendation – it serves as a basis for IEEE PES 'smart grid' subcommittee that started operation in January 2007.

The Distribution Roadmap is but one more way the SEA demonstrates its commitment to providing a defined process for engaging with a utility to understand how it is managing its systems and how it position itself for the future. Using a collaborative process with the utility and the six SEA members – Capgemini, Cisco, GE Energy, HP, Intel, and Oracle Corporation – there is a proven methodology for creating a distribution system that makes sense.

The Smart Energy Alliance combines deep industry experience with a broad understanding of technology solutions from Capgemini, Cisco Systems, GE Energy, Hewlett-Packard Company, Intel and Oracle Corporation to accelerate adoption of new technologies in the utility industry worldwide.

For more information on the Smart Energy Alliance, visit <http://www.smart-energy-alliance.com>.

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