Global Renewable News
Powered by

Subscribe to the GRN Newsletter Enter e-mail Subscribe

Featured Article

The Growth of Distributed Generation

Volume 4 - Issue 9

By Scott Zajkowski, North American Business Development group

With the steady implementation of the smart grid across the United States, distributed generation has continued as a growing trend year over year. Today these renewable energy technologies such as wind and solar provide a promising approach for generation. In order to support this additional distributed generation, utilities will need to invest and implement more smart grid technologies throughout the distribution line, providing control at the edge of the grid.

There are many benefits from the integration of distributed generation. As consumers demand more electricity, distributed generation can help alleviate the demand concern and the need to develop and build costly generation facilities. Distributed generation brings the source of power closer to its customers thereby lowering line loses; and in total, lowering customer's electric bills.

Distributed generation can directly affect the electric grid operation, largely on the distribution side. Some forms of renewable distributed generation such as solar and wind have highly variable power output, resulting in voltage fluctuations that reduce the overall power supply on the feeder. These types of issues must be mitigated through the implementation of distribution monitoring and control through the distribution system. Grid operators need to have a full view of distributed generation operating status; continuously monitoring distributed energy resources allowing utilities to ensure that power quality is maintained. By implementing end of line monitoring devices throughout the distribution grid as well as equipping distributed energy resources with smart inverters and intelligent controllers will allow distributed generation to provide Volt VAR and other distribution automation applications support.

One form of distributed generation are micro-grids, these systems can help increase grid reliability, stability and security. However, other forms of distributed generation such as portable generation have been previously unable to integrate into the grid. Smart grid improvements will allow portable generation to tie back into the electric grid.

Utilities must understand the impact of distributed generation on their grid, and that the two go hand in hand. As new regulations and mandates come into play, utilities will be forced to reduce their carbon footprint and deploy further renewable generation. Together, distributed generation and the smart grid provide several advancements such as better peak load management, voltage support, and other supply constraints.

Utilities also benefit from integrating renewable distributed generation into their grid, and many states are beginning to implement renewable energy goals or mandates in order to utilize renewables for a percentage of their electric power needs. During peak demand, utilities often need to purchase additional power in the market in order to meet the supply their customer's demand. This power

in the market in order to meet the supply their customer's demand. This power comes at a high price to both the utility and the consumer. Distributed generation solves this issue by providing utilities with other means of generated power as well as increasing the reliability for themselves and their customers.

A distribution management system (DMS) with volt/VAR optimization (VVO) will help control distributed energy resources output, which will thereby achieve the utility's VVO objectives to increase overall efficiency, lower electrical demand, encourage energy conservation, and improve power quality. DMS systems are necessary to support microgrids by monitoring their load, voltage, and frequency. These systems must interact to ensure there is a balance between the load, customer need, and the microgrids' generation capacity. When there is an imbalance, the DMS utilizing demand response (DR) programs can implement load shaving. Utilities are able to currently manage power flow on circuits through voltage reduction or DR programs; however, when distributed energy resources are present on the circuit the utility is able to better control power flow and lessen the substation.

Distributed generation has many advantages, but in order to support a wider deployment, utilities will need to increase their smart grid investment by intertwining their smart grid objectives and roadmap with distributed generation. There are many benefits for both the utilities and their customers when these two technologies are integrated into the grid. Growing demand and tighter regulations provide an opportunity for the electric utilities to update their grid in order to meet these new requirements, and as new CO2 and greenhouse gas emissions mandates are also put in, legislation for lower emissions renewable distributed generation and distribution automation programs such as VVO and volt/VAR control will enable utilities to meet these new requirements – a win-win for all involved.

_____

About the author

Scott Zajkowski is part of the North American Business Development group with IUS Technologies, who develops products for the Smart Grid using distribution automation. He has an MBA from Indiana University Kelley School of Business. Scott is an ambitious and driven marketing professional with proven success in developing and executing strategic marketing and advertising campaigns with companies such as Lakeshore Energy and HP Products. Previous to IUS, Scott worked at International Truck and Burger King in Packaging Engineering and Management utilizing his undergraduate degree in Packaging Engineering from Michigan State University.

Scott Zajkowski, North American Business Development group