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Bringing Energy Closer to Home: Why Distributed Generation Works

By Jeff Bladen, CCO, Mark Group | September 14, 2011

For all the talk in the last few years about smart grid, it's amazing how little has changed in the American electric industry since Thomas Edison first fired up his power station on Pearl Street, New York City in 1882. In many ways, Edison would have no trouble recognizing today's grid. It still relies on the same basic tenets that allowed him to found the Edison Illuminating Company. His pioneering construct of a central station power generator with transmission and distribution lines linking inexpensively to provide power to businesses and homes persists today, supplying nearly all the electricity needs in the Western world.

The only problem is that the real costs of that power are no longer so inexpensive in dollars or other impacts.

If we are to reap the potential of the smart grid, we need to fight against a century-plus of momentum that continues to favor central over distributed, or local, resources. A future smart grid can only bring fundamental change if we recognize the true value of distributed resources and get smarter about how efficient we are in our use of energy more generally.

What's really wrong with Edison's model? The reality today is central station power has many negative externalities that are not effectively priced into the electricity they make — like raising the cost of water to everyone. In fact, according to the [National Atlas of the United States](#), cooling power plants is the single largest use of fresh water in the United States at more than 50 percent of total consumption. And then there are the costs of new or upgraded transmission lines that impact many along their path.

We should be focusing on the next generation of the power grid by making everyone as efficient as possible and favoring distributed resources. Doing so would create many benefits, like those noted above, while also bolstering our country's security. With more distributed resources, the vulnerabilities of the grid are minimized. Bottom line: Investment in distributed resources and efficiency accrue many benefits that central station power plants and transmission lines can't claim.

Saving energy through new efficiencies is the most cost-effective and cleanest "resource," yet it's among the least supported of U.S. policies. The British, for example, retrofit more than 1.6 million homes over 12 months ending April 2011, government sources say.

Moreover, putting distributed generation like solar at the site of consumption avoids many negative impacts like emissions, as well as disruptions caused by long-distance transmission. Yet again, distributed solar installs get no more credit from U.S. government incentives than those constructed in the middle of the desert where transmission still needs to be built.

The key question we must ask ourselves is whether it's possible to deliver on the promise of the smart grid

without a fundamental paradigm shift. This is a promise that offers opportunities for exponential growth like the distributed nature of the Internet has enabled in commerce. While the old paradigm assumes we need a centrally directed hub-and-spoke network running our grid, the new paradigm looks to distribute resources – to meet needs automatically as they emerge with non-conventional resources like plug-in electric vehicles, home solar arrays and back-up sources like fuel cells.

What's needed? We need to replace the paltry and soon-to-expire \$500 per homeowner tax credit for efficiency improvements with a much more aggressive 80 percent credit for the first \$2,500 and 40 percent credit for the next \$7,500 for ENERGY STAR® qualified home efficiency improvements. We should leave this in place until at least half the homes in the U.S. have been retrofit, driving as much as a 10 percent reduction in energy use across the residential sector, with no fundamental change in behavior.

The benefits of this incentive flow not just to homeowners who can cut their energy bills by up to 20 percent, but also to the creation of good jobs in manufacturing and installing the improvements.

For distributed gen, we should double the current 30 percent tax credit for any resources installed behind the meter. This additional incentive reflects the fact that nearly half the cost of our power grid is a “wires” charge associated with moving power from distant power plants to homes and businesses. We should let it expire in 2016 just like the current incentive to allow technologies like solar to reach scale efficiency.

The Internet revolution has shown us that distributed resources can be an incredibly powerful engine of growth. The only question now is whether we are ready to finally advance from Edison's empire of light and move toward that LED at the end of the tunnel.

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