

Who Pays for Grid Expansions When Homeowners Generate Their Own Electricity?

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Grid operators have met their match and it's a growing number of distributed generators—erstwhile electricity consumers who've ended their reliance on the grid because their needs are met by rooftop solar panels. But this exodus from the grid is occurring just as transmission systems are being expanded to prevent congestion and to handle more centrally-generated renewable energy. The utilities say the cost of these upgrades is the financial responsibility of everyone, including those who've become energy independent. Now state regulators are trying to find solutions.



On Wednesday, the system operator in Texas announced plans to spend billions to expand and upgrade the transmission lines crisscrossing the state. That decision has profound implications, considering that Texas is expected to see its power use rise by 2.1 percent a year compared with 1.5 percent for the rest of the nation.

The Electric Reliability Council of Texas (http://www.ercot.com/news/press_releases/show/26579) (ERCOT), says it will, by 2018, plow \$3.6 billion into fixing up or expanding a total of 16 different deals, amounting to 5300 kilometers of transmission lines. Some of those upgrades are needed to transport wind energy from remote locations to the urban areas where it is consumed.

Similarly, Northeast Utilities (<http://seekingalpha.com/article/1797722-northeast-utilities-management-discusses-q3-2013-results-earnings-call-transcript>), which serves 3.6 million electric and natural gas customers in Connecticut, Massachusetts and New Hampshire, wants to add transmission infrastructure throughout its area and plans to spend \$4 billion doing just that. It needs to make up for capacity shortfalls and to replace 2700 megawatts that will be lost by 2017 as several coal and nuclear power plants are retired. Meanwhile, new wind power generated in Maine is expected to come online and be transported into the utility's load centers in Boston.

The proposed expansions in Texas and in the Northeast coincide with a conflicting trend—residential customers who detach from the local utility to become self-sufficient by generating their own power. Those distributed systems would reduce the number of customers linked to the grid and could erode the ability of other grid operators or utilities to widen their networks; such expansions require billions of dollars, which would be harder to come by if substantial numbers of customers thumb their noses at their utilities.

The outcome will largely depend on how the states configure their net metering laws, which establish the amount of money that distributed energy generators should get relative to retail electricity prices. Utilities, generally, want to offer the

wholesale rate, while former power customers who now feed electricity into the grid want the retail rate. Regulators are thus challenged to find a middle ground whereby utilities can afford to maintain their systems and homeowners are motivated to go green. So, state regulators are trying to formulate how the cost of maintaining and expanding the network will be shared.

The most vociferous debates over net metering are occurring in Arizona, California, and Colorado. Consider that the price of rooftop solar panels has been falling fast—in some measure because of federal and state incentives.

Those who "unplug," or use distributed generation, note that because they are not using the grid as much, they are preventing maintenance and saving a utility money. (Any excess power, though, is sold back to a utility through its lines.) Power companies refute the distributed generators' stance, noting that the billions they spend on upgrades and maintenance each year are done with everyone in mind—even those whose intent is to be self-sufficient. They point out that the sun does not always shine, and therefore they have to keep enough power available to ensure that the homes of those who use on-site power don't go dark.

Last October, the California Public Utility Commission issued its own findings on net metering, declaring that utilities generally benefit because the power companies have less traffic and are thus able to avoid certain costs associated with grid upkeep. About a month later, the Arizona Corporate Commission settled on a small charge for on-site generators because of their occasional need for access to the grid. Arizona Public Service, the incumbent generator, had asked for a \$50 charge but the commission voted, for now, to implement a \$5 monthly charge.

Now Colorado is having the same debate. There, residential customers want a credit of 10.5 cents per kilowatt-hour for the power they sell back to the utility. Xcel Energy, meanwhile, says that the rate should be 4.6 cents. Any more than that would be tantamount to Xcel subsidizing distributed generators, the utility says.

The discourse is also occurring in Europe, albeit in the form of "feed-in tariffs." Those government incentives guarantee that green energy plant operators receive a fixed tariff for the amount of electricity they generate that is channeled into the grid. The fee, or tariff, is greater than the retail cost of electricity, which gives those renewable energy developers an economic reason to build new projects.

In Germany, for example, renewables comprise 23 percent of the electricity mix. But just this week, the country's energy minister, Sigmar Gabriel (http://www.nytimes.com/2014/01/22/business/energy-environment/german-energy-official-sounds-a-warning.html?hpw&rref=business&_r=0), said in a speech that the annual cost to customers is about \$32.5 billion and that the country needs to walk a fine line between promoting green energy and maintaining a stable industrial base. Germany, in fact, plans to cut its support to the solar sector there by about \$2.5 billion.

How other U.S. state regulators—and Europe's national governments—will settle the rift between those who want to become independent of their utilities and those who operate and use the grid remains to be seen.

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