Grid Politics. Solar power is getting cheaper—and Big Electric is fighting back

BY MICHAEL GRUNWALD

AMERICA IS HAVING A SOLAR REVOLUTION, and it's a big deal. Solar installations increased more than 1,000% during President Barack Obama's first term and contributed nearly half the new power capacity added to the grid in the first quarter of this year. We've always gotten energy from the sun—oil, gas and coal are essentially millions of years' worth of photosynthesized sunlight—but now we're getting it directly, without drilling or spilling or earth-broiling emissions. Solar prices have plunged 80% since 2009, a boon to installers like SolarCity, Sungevity and Sunrun, which have grown from a few hundred customers to more than 35,000 today. It's also good for consumers, who can get clean power that's cheaper than coal in large swaths of the country.

Generating Savings

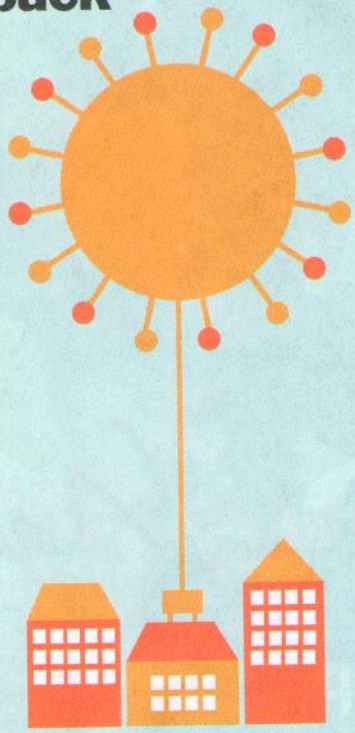
MAYBE YOU'RE NOT INTERESTED IN REDUCing our dependence on fossil fuels or promoting one of our fastest-growing domestic industries. Maybe you'll never put solar panels on your roof. But you should still care about the solar revolution, because it's on the verge of blowing up the electricity business. The shift from centralized plants to decentralized rooftops won't be as widespread as the shift from landlines to cell phones, but it could be just as disruptive.

The power sector is dull and complex. But the key thing to know is that utilities make most of their money in two ways: selling electricity to their customers and building stuff that gets factored into regulators' formulas on rates. So they want their customers to buy as much of their juice as possible, partly for the revenue, partly so they can justify building more power plants at a guaranteed profit. That makes it awful for a utility when a customer goes solar. He won't need as much power from the grid during peak daytime hours, and he can even sell power back to the grid, which means lower revenue for the utility and flimsier justifications for new plants. It's like having a new mini-competitor.

Utilities are fighting back in states like California, pushing to roll back solar ratepayers' right to sell power back to the grid. They justify their efforts by arguing that so-called net metering hurts nonsolar customers. A Californian's electric bill is calculated by multiplying the amount of power he uses by a rate that's supposed to cover all the utility's costs plus some profit. So it's true that if he goes solar and needs less power from the grid, other ratepayers will have to pay a larger share of the cost of distribution lines, service calls, decommissioned nuclear plants and so forth. But studies suggest that even nonsolar ratepayers benefit from the solar stampede because their utilities don't need to turn on expensive fossil-fueled "peaking plants" as often to meet high demand and won't need to build as many new plants to meet future demand.

That raises a separate question: Why are utility bills calculated in ways that have so little to do with the services provided? For example, wholesale prices in electricity markets are usually very high during peak hours and very low overnight, but consumers generally pay the same retail price no matter when they consume. It's like paying a set monthly rate for groceries on the basis of weight, regardless of whether you're buying caviar or crackers. Now imagine a system of dynamic pricing that reflected the real cost of power at the time of purchase and then empowered consumers to make choices accordingly. They'd have an incentive to run their dishwashers at off-peak hours, which would help utilities manage their loads. Solar would be even more cost-effective, especially when combined with fuel cells, batteries or other emerging technologies that could store power for when the sun stops shining. Electric vehicles could become roving utilities, charging at night when power is cheap and selling power back to the grid at peak hours.

Most of these changes would be devastating for utilities, which is why so many are lobbying to hold back the tide. But eventually, change will come. Utilities are going to have to find new ways to do business, or they will go where the landline is going—away. ■



Bright Spots in Solar Energy

5.74

Factor by which the rate of job growth in the solar industry was greater than in the rest of the economy last year

3 in 4 Americans want the U.S. to pursue more solar energy; 71% want further development of wind power

Amount per watt that the average price of residential solar-panel systems fell this year

122,000

Number of solar-paneled rooftops in California, generating 1.3 gigawatts of solar power

Source: Solar Energy Industries Association

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ILLUSTRATION BY OLYMPIA ZAGNOLI FOR TIME