

Small-scale solar plan clashes with big energy

David R. Baker, San Francisco Chronicle, 1-4-10

When it comes to renewable power, Californians tend to think big.

Big wind farms sprawl across our hills. Big solar power plants will soon blanket acres of desert. Big new power lines will bring that electricity to our cities.

This, Bill Powers insists, is exactly the wrong approach. He wants us to think small.

Powers, an engineer and energy consultant, argues that California should cover every available rooftop with photovoltaic solar panels, especially commercial buildings. The panels can be installed quickly, unlike large solar power plants that take years to win government permits. They don't require big new power lines. And their price has dropped about 40 percent in the past year.

Powers is involved in a simmering debate over renewable power development in California and the country.

Even though much of the environmental movement has rallied behind the construction of large wind farms and solar power plants, an undercurrent argues that they aren't necessary, or even desirable. Better to get energy from hundreds of smaller facilities close to home than a giant one far away.

Most industry professionals consider the idea unrealistic, but it keeps resurfacing.

Solar plants 'albatrosses'

"The solar plants in the desert are albatrosses," Powers said. "We've come to a point where (photovoltaic solar) is either going to be in the remote installations or it's going to be in the urban core. It'll be much more beneficial for those solar panels to be sitting in the urban core where they're going to be used."

It's an idea that could upend the traditional way of supplying electricity and weaken the control of utility companies. Supporters of the idea consider that a plus.

Photovoltaic solar "in the urban core is a fundamental threat to the utility business model," Powers said.

Most energy experts argue the small-scale approach won't work.

The hunger for energy, they say, is too huge, and it will keep growing. Solar panels are still a relatively expensive way to generate electricity. They cost more than large solar thermal plants, which use a different technology ill-suited to rooftops.

"It's not feasible, it's not economical, it's not realistic," said Mehdi Hosseini, an analyst who covers solar companies for FBR Capital Markets.

"Because of the economic and operational issues, I think we're going to see large-scale, grid-connected power for a long, long time," said Jonathan Marshall, a spokesman for Pacific Gas and Electric Co.

Many environmentalists reluctantly agree.

Carl Zichella, regional director for the Sierra Club in California, has been deeply involved in a state process to plan for new power lines linked to wind farms and solar plants. He wants as much small-scale generation - often called distributed generation - as possible. But that alone won't meet the state's demand for renewable power, he said.

"We need to do it all," Zichella said. "It's quite possible we can get more distributed generation than we thought, and if we get enough, we can build fewer big plants. But I haven't seen any studies I think are credible that say we won't need any."

Distrust and dislike of California's big utility companies, he says, fuel many supporters of the small-is-beautiful idea.

"A lot of the distributed power advocates really hate utilities," Zichella said. "They don't want utilities to own these facilities."

Renewables fall short

California has been trying to ramp up its use of renewable power as a way to combat global warming. Under state law, 20 percent of the electricity the utilities sell must come from renewable sources by the end of 2010, a deadline they will probably miss.

Progress has been slow.

In 2009, California added 331 megawatts of renewable power to its grid. A megawatt is a snapshot figure, roughly equal to the amount of electricity used by 750 typical homes at any given moment.

Viewed together, California's many wind farms, solar facilities and geothermal plants can generate 8,100 megawatts, according to the California Energy Commission.

That may sound like a lot, but it's still just a fraction of the electricity the state needs. On summer days, electricity demand can top 50,000 megawatts. And remember, the output from solar plants and wind farms isn't constant. It varies from day to day, hour to hour.

Time for permit varies

Developers are racing to build a new generation of large solar thermal power plants in the California desert. Together, the projects seeking approval from state regulators could generate an additional 4,980 megawatts of clean power. But the process of winning government permits can take years.

Rooftop solar, in contrast, doesn't need those permits.

It spreads one building at a time, in small increments that eventually add up. Since the start of 2007, enough panels have been bolted to California homes, office buildings and warehouses to generate 277 megawatts of electricity, according to the California Public Utilities Commission.

Price has always been photovoltaic solar's big problem. And by some estimates, it still is. Despite the recent drop in panel prices, electricity from new photovoltaic solar projects still costs 17 percent more than electricity from big solar thermal plants, according to the energy commission.

Price a problem

But other analysts say the price gap has disappeared.

Ryan Pletka, with the Black & Veatch consulting firm, has been working on the same transmission planning project as Zichella. By his estimate, solar thermal and photovoltaic projects now cost roughly the same, watt for watt, so long as the photovoltaic projects are big enough to generate at least 20 megawatts.

That's far too large for a single rooftop. But installations of that size could be built at electricity substations. Together, they could generate up to 15,000 megawatts in California by 2020, Pletka said.

"The upshot is, if the costs are really this low, then you can have all these 20 megawatt solar PV projects that are going to be neck-and-neck competitive with the central station projects," said Pletka, director of strategic planning for Black & Veatch.

The small-versus-large debate played a key role in the fight over Sunrise Powerlink, a proposed power line between Imperial County and San Diego.

The local utility, San Diego Gas & Electric Co., pitched the power line as a necessary tie to solar and geothermal power plants near the Salton Sea. Opponents rallied around a study that said San Diego wouldn't need Powerlink if the city focused on local generation and energy efficiency instead.

The study, written by Powers, called for cutting the San Diego area's energy use by 20 percent, installing more than 2,000 megawatts of solar panels and adding 700 megawatts of small, local power plants that would generate both electricity and heat for buildings.

The utility considered the study far too optimistic. Powerlink, which will cost \$1.88 billion, is still cheaper and more reliable than Powers' proposal, said SDG&E spokeswoman Jennifer Briscoe.

California energy regulators sided with SDG&E and approved the project in 2008. But the project's foes remain unconvinced.

"Why do we need to go way out into the desert for power?" asked Denis Trafecanty, a staunch Powerlink opponent. "We all can be generators in some way."