

## Ferguson: Energy Matters

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### Wind Doesn't Blow All The Time—Duh!

Whining about the variability of electricity from wind has exceeded mere aggravation and has become increasingly unprofessional. We all know the wind doesn't blow all the time.

I freely admit that managing a variable resource like wind power is a pain in the butt for grid operators. I understand that handling large amounts of wind power requires more forethought and flexibility than a similar amount of gas-fired power.

I also know that the professionals operating the California grid can solve these problems. Let's get on with it.

This issue came to a head recently in Texas when a cold front moved through a wind resource area and generation dropped more than 1000 megawatts in about 15 minutes. Not as big a problem as a nuclear plant dropping off line in a few seconds, but the anti-wind gang seized on this event as further proof that wind power is more trouble than it's worth.

Good heavens, the Texans even had to resort to their load management program. *Quelle horreur!*

The arrival of cold fronts can be predicted with considerable accuracy and tracked closely. Whether the wind forecasts were inaccurate or the Texas grid operators just weren't paying attention is not known. Either way, the event should not have caused as much angst among professionals as it reportedly did.

As the fraction of our electricity supply generated from wind increases—as it inevitably will—grid operators must have the tools and the flexibility needed to respond to variations.

The California ISO has come up with a good list of a dozen or so projects to make their life with wind easier. High on the list is better forecasting and displays to let grid operators anticipate changes in wind output. These measures have been discussed in California for years but for some reason have not yet been adequately developed.

More—and more flexible—energy storage is also on the list. The advanced pumped storage facility proposed for Lake Elsinore (LEAPS) that would use state-of-the-art pump/generators would help a lot but is being opposed by utilities. The antiquated facilities at Helms and Castaic could be made much more flexible with modern equipment.

The ability to share resources easily between the CAISO and other control areas would also be valuable. The list of helpful measures goes on and on.

Perhaps the most frustrating fiction is that somehow wind energy requires burning more natural gas rather than less. This is nonsense.

The 'more gas' myth apparently arises from the fact that gas-fired power is used to fill in the gaps when the wind isn't blowing. The logic appears to be that with more wind energy, there will be more and larger such gaps and hence need for more gas. In reality, however, if we had no wind energy at all, there would be one huge gap that would **all** be filled with gas-fired power. Every kilowatt-hour of wind energy we get reduces our already huge dependence on gas by reducing the amount of gas burned.

Yes, it's too bad that we can't turn the wind on and off as we can combustion turbines. Darn old Mother Nature anyway. But let's be grateful for the carbon-free energy She does provide.

When the Tehachapi wind resource area is built out, it will provide nearly as much electric energy in a year as both nuclear units at Diablo Canyon and displace an enormous amount of gas that otherwise would be imported as LNG.

Moreover, with today's gas prices, wind energy is cheaper than electricity from a gas-fired combustion turbine.

Study after study has shown that California's system, with lots of gas and hydro, is flexible enough to handle wind providing more than 20% of our annual electric energy, compared to today's measly 2%. Moreover, the cost of managing wind variability is small and down in the monetary noise created by gas price volatility, droughts, changes in loads, etc.

Jim Detmers, the CAISO VP for grid operations, can manage very large amounts of wind if he is given the tools he needs to work with. My colleagues at LADWP assure me that they can, too. It will be even easier when the ISO and DWP learn the art of cooperation, but even with the current balkanization, getting 20% of our electric energy from wind poses no insurmountable problems.

European systems manage as much as 40% of their energy from wind in some months. I refuse to believe that our folks can't do as well.

Let's face it—dealing with global warming means changing our energy system. We'll need all the energy we can get from wind together with energy from solar, geothermal and biomass as well. Electrifying our transportation system with plug-in hybrids and high-speed rail will make renewable energy even more vital.

California's electricity system will remain dependent on gas-fired generation capacity in the foreseeable future. The more wind power we bring on line, the less often this capacity will need to burn gas. Ideally, gas-fired capacity would run only during emergencies like the heat storm California suffered in July 2006.

The wind does not blow all the time. Are we all agreed? Now let's get on with the task of getting wind energy into the grid whenever it does blow and giving grid operators the tools they need to manage variable resources.

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*Opinions expressed by DrF are not necessarily those of any organization with which he is affiliated.*