Hooking Up

New Entrants, Many Ways to Engage

BY STEVE HUNTOON

No, not our kids' notion of hooking up. This is about interconnecting new generation to the grid.

The ability of new entrants to interconnect new generation on a timely and fair basis is sine qua non for reliability and for just and reasonable prices. It is even more important now as the country makes a massive transition from coal to natural gas and renewables.[1]

Recent studies by the National Renewable Energy Laboratory, PJM Interconnection, and others inform us that the transition is manageable. What we don't know is how cooperative, or uncooperative, incumbents will be about it.

FERC has always understood that incumbents are incented to frustrate new entry. In organized markets, new entrants drive down energy and capacity market prices for incumbents' fleets to competitive levels. Outside of organized markets, new entrants compete with the incumbents' own proposed projects for rate base treatment.

FERC has prescribed a kind of Golden Rule. Transmission owners with affiliated generation should treat new entrants the same as they would treat their affiliated generation company. By that standard there's a whole lotta sinnin' goin' on.

Until recently, interconnection infighting has been between the well-heeled new entrants and the incumbents over new natural gas plants. Those new entrants have tended to have knowledgeable folks to help navigate the intricacies of interconnection.

But more and more we are seeing non-traditional renewable energy developers of wind and solar projects. Some of these newer entities may not fully understand these intricacies.

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The biggest setback for these projects may be getting a "feasibility study" or subsequent "system impact study," saying that the project is responsible for tens of millions of dollars in "network upgrades" that will take years to construct. The project sponsors often assume nothing can be done, and they give up.

And that's a tragedy. Because these interconnection studies should be far from the last word. And here are some reasons why.

At the feasibility and system impact study level, transmission owners and RTOs where they exist provide what are often called "desktop" studies. Typically these studies are done using a planning model of a future year, with potential overloads determined relative to existing circuit ratings.

Such studies are based on modeling the system in a future year with various input assumptions, which may include worst-case scenarios that assume, for example, that all other proposed generation projects actually go forward. This is unlikely to be the case.

Assuming that the modeling itself is reasonable, let's consider what it means when the modeling identifies an overload on a given circuit. Usually the overload is "mitigated" by a desktop fix that may assume, again on a worst-case basis, a need to rebuild or reconductor the entire circuit.

But many times the circuit rating in the model is based on field conditions

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So how do we get back on track? We must get back to pricing fundamentals. The goals of performance and or incentive-based regulation apply to consumers and not just producers.

We need to keep in mind that there's been growth in distributed generation, demand response, and energy efficiency awareness. Retail pricing directly affects the level of metered electricity required and the iterative interplay between usage and price.

with the underlying wholesale market for electricity? This also includes independent system operator rules beyond pricing, such as demand response eligibility.

Does the rate design generate a reasonable revenue requirement? Efficient pricing might generate more or less than a reasonable rate of return. How is this resolved so as to have the least effect upon efficiency?

How are costs recovered? For example, are fixed charges recovered from variable charges and what is the effect upon economic efficiency?

The long-ignored issue of electric utility rate design is finally getting its day in the sun.

Here are some key questions that every rate design investigation should consider. The rate design issue may be net metering, feed-in tariff, exit fees, standby rates, decoupling adjustments, straight-fixed variable rates, time-of-use rates, demand charges, or low-income discounts, etc. In any case, be certain to ask:

Is the proposed rate design consistent with the overarching public interest goal of encouraging economically efficient consumption and production of electricity as if the industry did not require regulation?

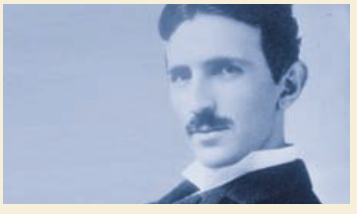
Always note that rate design affects production and consumption. For example, fuel clauses in the 1970s and 1980s encouraged power plant inefficiency and higher costs. Poorly-structured feed-in tariffs can create an excess supply of high-cost renewable energy.

Does the rate design correspond

Is the proposed rate design targeted to a specific issue problem or the efficiency challenges for rate design? If targeted, how important is the issue and what is the effect on efficiency?

Does the proposed rate design cause economic dislocations or other inequities? Related questions might include: who can participate, and does the rate design make power unaffordable to a certain class of customers?

The long-ignored issue of electric utility rate design is finally getting its day in the sun. Be objective! First focus on the public interest of efficient consumption and production of electricity and only then on other goals. This challenge applies to commissions and their staff, utilities, consumer advocates and other interveners. PUF



Nikola Tesla's breakthrough in 1881, leading to AC grids, was to eliminate the commutator from DC motors, inventing the polyphase AC motor.

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determined by prior LiDAR studies, rather than the thermal rating of the conductor itself. The circuit rating may be suppressed due to clearance issues from things like distribution line underbuilds that are easily remedied. Or it may be due to a discrete rating of substation equipment that can be inexpensively upgraded.

There are other potential fixes. Projects earlier in the queue might withdraw to eliminate a cumulative overload. The point of interconnection might be changed to eliminate the overload.

Special protection schemes might be developed to avoid the overload entirely, or the project might face only occasional curtailments. Indeed, the circuit may never actually overload, especially if the renewable project is unlikely to be operating at its peak capability at the same time the system is peaking.

And project size might be reduced to eliminate the overload.

So the good news is that new entrants have many potential ways to get hooked up.

The bad news is, so do our kids. PUF

Endnotes:

1. It's not just the competition between new renewables and existing coal that needs to be fair. It's also the competition between grid-scale renewables and distributed renewables like home solar. I noted in the July 2016 Public Utilities Fortnightly that grid-scale solar is one third the cost of home solar. So the subsidies for home solar in the form of net metering (free distribution and storage services) are handicapping efficient grid-scale solar. And raising utility rates for everyone else. It's economic insanity.

   Advocates of home solar have claimed that their subsidies are justified by an alleged benefit, reducing distribution system costs. But as I noted in the April 2016 Public Utilities Fortnightly, home solar in California is *increasing* distribution system costs by billions of dollars.