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Western Business Roundtable

Joint Oversight Hearing of the House Natural Resources
Subcommittee on Water and Power
and Subcommittee on Energy and Minerals

"Getting Past Gridlock: Models for Renewable Energy Siting and Transmission"

Nov. 5, 2009

Chairman Costa and Ranking Member Lamborn, Chairwoman Napolitano and Ranking Member McClintock, Members of the Subcommittees, thank you for the opportunity to testify today on behalf of the Western Business Roundtable.

About The Roundtable

The Western Business Roundtable is a broad-based coalition of companies engaged in a wide array of enterprises, including: manufacturing; agriculture; retail energy sales; mining; electric power generation and transmission; engineering and construction; energy infrastructure development; oil and gas exploration development, transportation and distribution; energy services and many others.

We work to defend the interests of the West and we support policies that encourage economic growth and opportunity, freedom of enterprise and a common-sense, balanced approach to conservation and environmental stewardship.

As the co-founder and former head of what is now known as the Geothermal Energy Association, I have served as an advocate for renewable energy technologies for more than 15 years. I served in the White House as Director of Communication and renewable energy advisor to President Bush's National Energy Policy Development Group. I also served as the principle staff coordinator for the Frontier Line Gubernatorial Coalition, where I had the privilege of being able to help a number of states overcome years of inertia and hesitancy to work together on regional transmission projects.

One of the reasons that the Western U.S. is as far down the road as we are on regional cooperation on multi-state transmission line development is because of the leadership and pioneering work of Governors Freudenthal, Schwarzenegger, Huntsman and Gibbons as partners in the Frontier Line Coalition. That effort helped to build public awareness of the many benefits – and the urgency – of multi-billion-dollar investments in multi-state transmission lines.

Testimony Outline

1. Roundtable's Views on Transmission
2. Urgency of Action
3. Separating Facts From Wishful Thinking on Transmission
4. Key Barriers to Transmission Expansion
5. Solutions: Top 10 Do's and Don'ts

Roundtable's Views on Transmission

The Roundtable's membership includes players in virtually all elements of the energy production, power generation and electricity distribution arenas. Our group long has been a strong proponent of greater interstate cooperation on high voltage transmission. While there are differences of opinion on aspects of transmission policy, there are several areas where the vast majority of our members agree:

1. Transmission is the one element of the U.S. power system where **more is almost always better**.
2. Adding more transmission to the grid is **a critical and immediate necessity** for a system that is already under near-constant stress and which faces increasing risks of potentially catastrophic outages.
3. The interstate transmission system works best when we don't discriminate in terms of access to the system. The grid is and should remain "color blind" as to the electrons that flow across it.
4. Proposals to add massive amounts of highly intermittent renewable to the grid **can be accomplished more swiftly** if simply government gets out of the way and lets transmission get built. Governmental micro-management of this highly complex process will slow, not speed, actual steel in the ground.

Urgency of Action

While many elected officials understand that America needs to modernize and build out its electricity grids, few understand the relatively urgency of the situation. The fact is that some parts of America – including the Western grid – face a near-term reliability crisis as reserve capacity margins approach and threaten to dip below minimum recommended levels.

In plain English, that means that we remain dangerously exposed to having the lights go out across major portions of the U.S. if we don't take immediate and aggressive action to hang more power lines across the landscape.

The graphic below shows the 2007 forecast of electricity capacity margins for various regions of the country as measured and monitored by the National Electric Reliability Council (NERC), widely recognized as the foremost authority on such matters.

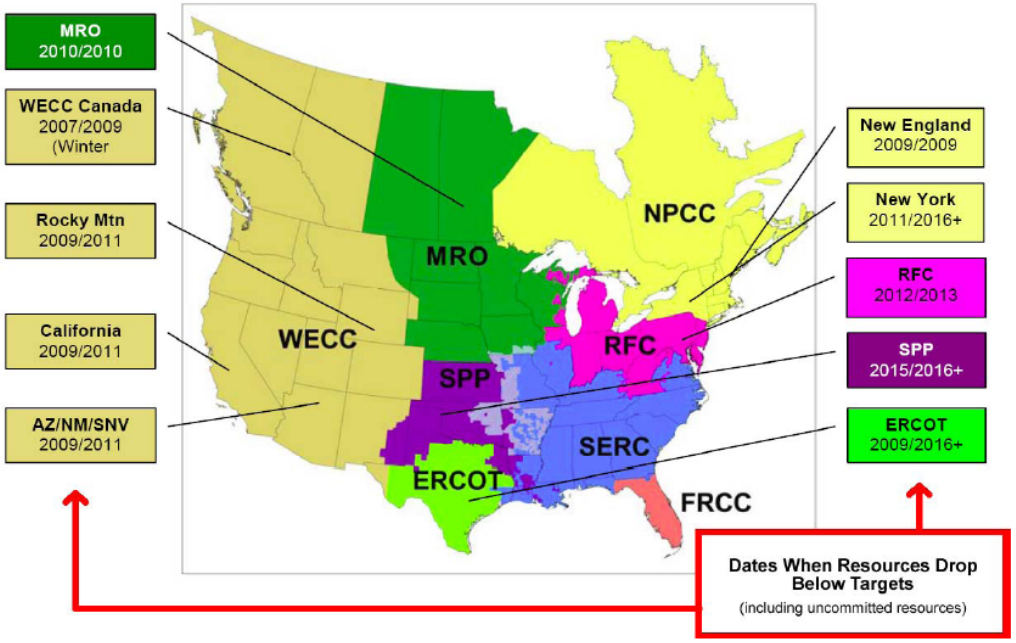


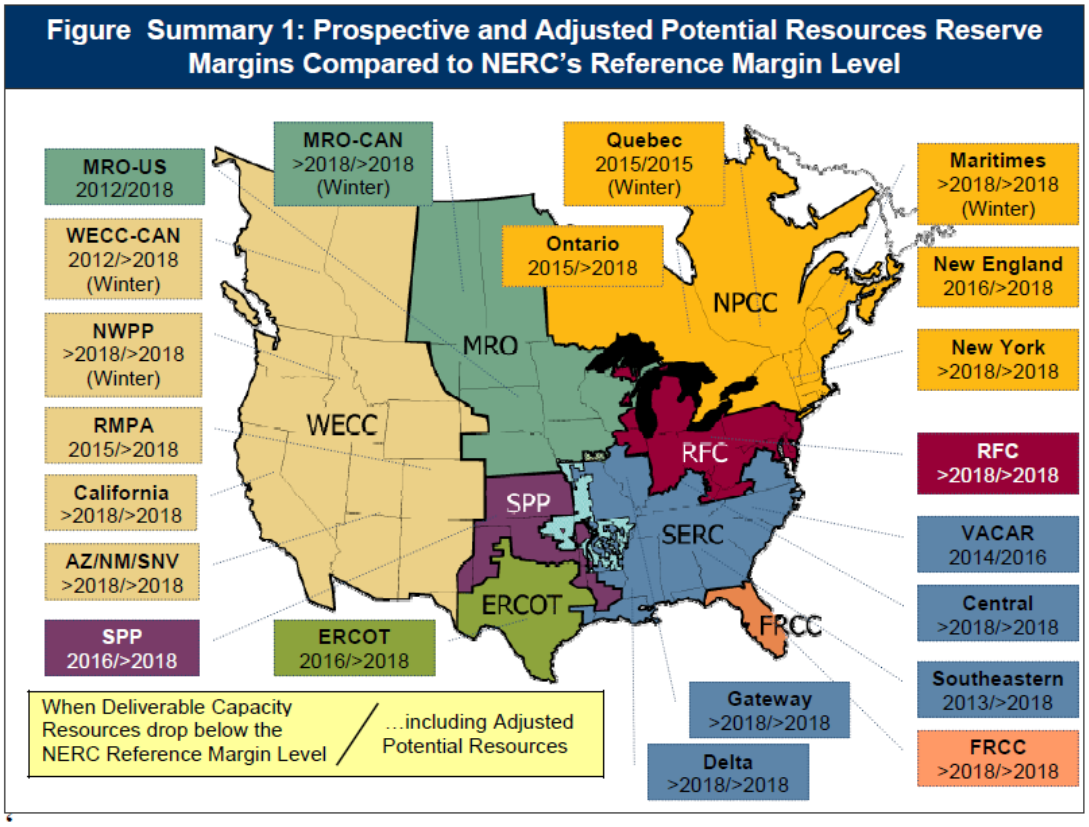
Figure 3: NERC Forecasts of U.S. Electricity Capacity Margins
Source: NERC *2007 Long-Term Reliability Assessment*, October 2007

Sorting through the maze of labels and lines, you see that NERC was warning us in 2007 that virtually every region in North America was poised to dip below the minimum recommended capacity margins by 2012 – several in 2009 (this year). In essence, this meant that those regions faced a heightened risk of major service interruptions – what the public knows as brownouts and blackouts – because of deficiencies in the amount of power we could generate to meet demand and/or our ability to wheel that power where it is needed.

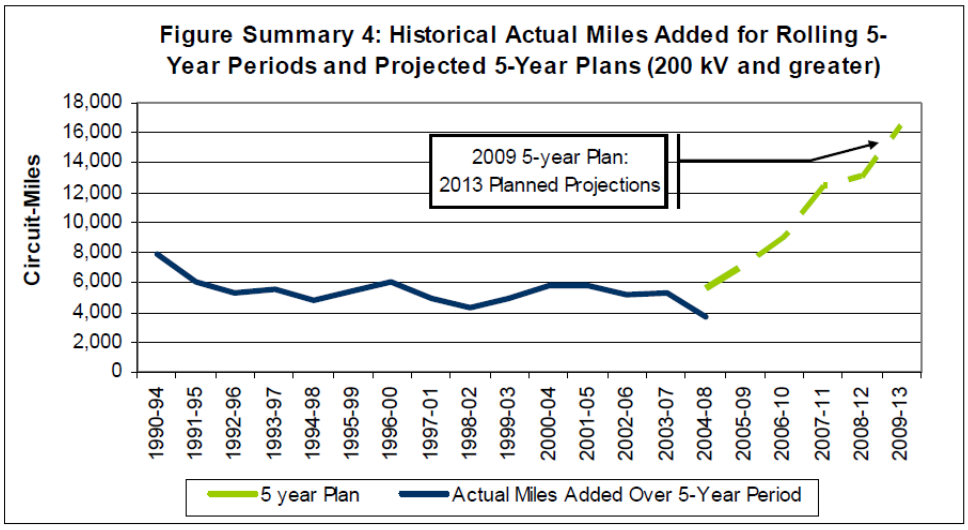
This should have set off some pretty major alarm bells here in the Congress, in my humble opinion, but I'm afraid that most folks simply were not briefed on this looming threat. After all, transmission has only become a "sexy" political issue in the past year or two.

Fast forward to NERC's current 2009 reliability forecast (seen in the graph below) and you will see that the dates where regions will dip below the minimum capacity margins has eased a bit.

Now, before everyone breathes a sigh of relief and concludes that we are out of the danger zone, keep in mind why NERC is now forecasting this extra time before we hit the danger zone: the recession. Demand for power has decreased with the recession, and states have done a better job in reducing demand through additional demand side management programs. But as our economy begins (hopefully!) to roar back into a growth phase, we are likely to head right back into the danger zone in terms of system reliability – **if we don't' start building more baseload power plants and lots and lots of miles of new transmission lines.**



NERC is now saying that we need build more than 11,000 miles of transmission facilities by 2013 in order to ensure reliability over the next five years, especially because of the large amount of intermittent renewables that we all hope to add. However, constructing that amount of transmission will require us to more than double the average number of transmission-miles constructed over any five-year period since 1990. NERC graphs this challenge thus:



If that green line seems pretty steep, it is. Keep in mind that building transmission is very, very difficult to accomplish even when plans call for relatively small additions to maintain system reliability.

For example, Arizona regulators rejected a transmission line to connect Arizona generation with California electric consumers, and four years after the filing of the initial application with the California Commission, this transmission project remains suspended. As another example, it took American Electric Power 14 years to site and two years to construct a single 90-mile, 765 kV line.

Separating Facts from Wishful Thinking

1. Renewables Can Do It All?

A lot of what the public – and Members of Congress -- hear is that all our nation needs to do to solve our energy crisis is to commence a massive shutdown of all fossil-fueled power plants and replace them with renewable and demand-side management programs within the next 10 years. One of our witnesses today comes from an environmental group that has ensured that every single new baseload power plant proposed to be fired by America's abundant coal resources is dragged into court.

Of course, those very baseload power plants are precisely what are needed to keep the grid stable as we look to add increasing amounts of intermittent, and often unpredictable. renewable power generation.

We even have a former Vice President of the United States claiming – in multi-million-dollar TV advertising campaigns-- that renewables can do everything.

Well, as we say out West, that kind of talk is all hat and no cattle. It just ain't so. And those engaged in such public misinformation campaigns ironically are setting back the cause of renewable energy deployment.

Let me explain. The fact is that distributed generation by wind and solar backup power from other sources, such as natural gas, coal, nuclear or hydro. To have power on demand, solar and wind require virtually 100 percent backup capacity, since the lowest level of output from solar and wind can be, and often is, zero. After all, consumers require power on demand, not some fraction of the time.

Regrettably, this simple fact doesn't make it into all of the TV ads. And, I would argue, those who promote this fallacy end up misleading Congress into thinking that our transmission system is not in need of immediate and urgent attention.

The physics of the grid informs us that, until we achieve a technological breakthrough in superconductivity – giving us the ability to store electricity without loss and thus allowing renewable to act more like baseload resources – the system is going to continue to require an almost equal amount of non-renewable power generation to allow renewable systems to reliably integrate into the grid.

For further evidence of this, look to the latest NERC report. NERC is very bullish on adding more renewable to the grid. But they also acknowledge that a massive build-out of intermittent resources like wind will require both major and costly changes to the transmission and distribution systems.

It will also require the construction of more baseload power resources.

For example, NERC predicts that 260,000 MW of new renewable "nameplate" capacity (biomass, geothermal, hydro, solar, and wind) will be built out in the next 10 years. "Roughly 96 percent of this total is comprised of wind (229,000 MW) and solar (20,000 MW). But due to its limited availability during times of peak demand, however, wind will account for only about three percent (or 38,000 MW) of the peak resource mix," NERC says.

Thus, NERC is saying that in terms of planning the effective capacity factor for wind is in the range of 15 – 20 percent. This is noteworthy because the usual capacity factor for wind is assumed to be in the range of 30 – 35 percent (EIA uses 34 percent), while renewable energy advocates and environmental groups contend that it is really 40 – 45 percent. NERC indicates that the actual capacity factor for wind is really only ½ to 1/3 of what the wind promoters would have us believe.

The Electric Reliability Council of Texas (ERCOT) has analyzed the capacity factor of wind and estimated it to be less than nine percent. In a 2007 report, ERCOT determined that only "8.7 percent of the installed wind capability can be counted on as dependable capacity during the peak demand period for the next year." It went on to say: "Conventional generation must be available to provide the remaining capacity needed to meet forecast load and reserve requirements."

In 2009, ERCOT re-affirmed its decision to use the 8.7 percent capacity factor. Thus, the wind capacity factor may be 8.7 percent instead of 15 – 20 percent, and the 229,000 MW of new wind anticipated by NERC may, in fact, have an actually capacity value of less than 20,000 MW – even assuming new, adequate transmission.

What does this mean? It means we will need to build a lot more baseload power plants in order to leverage our ability to build out a lot more wind and solar. Activist groups that make their living suing against the construction of virtually every fossil and nuclear baseload power plant need to understand a key unintended consequence of their litigiousness: **restraining the deployment of major renewable power generation.**

2. Wind Farms Help Reduce GHG Emissions?

Unfortunately, this is not always true. Consider the fact that wind farms require backup and load shaping technologies that can be ramped off and on relatively quickly. Natural gas plants can do this readily. But the type of natural gas power plant that is used to support wind power is a single cycle gas turbine – essentially a jet engine strapped onto a concrete pad. This type of power plant is significantly less efficient than more modern combined cycle natural gas power plants and emits more GHG emissions per unit of energy generated than a combined cycle plant.

For example, a newer combined cycle combustion turbine power plant will produce approx. 0.7lb CO2 per kW output. This is 35 percent less than a simple cycle combustion turbine, which produces approx. 1.035lb CO2 per kW output.

Thus, in my home state of Colorado, the build-out of wind power has required more natural gas to flow through single cycle plants rather than combined cycle plants. That has led to a rather perverse outcome: more wind in Colorado has led by an increase in GHG emissions compared to the emissions that have would resulted if that natural gas had been combusted in more efficient, combined cycle plants.

3. Can Avoid All New Power Lines Through Energy Efficiency?

Energy efficiency can and should play an increasingly important role in alleviating our need for more power production. But as our population grows, and as our economy roars back to positive growth, the only way we can avoid most or all new power plant additions, and new transmission lines, is to force the American people to adopt energy efficiency measures to such an extent that the effect will be a lowering of the American standard of living.

For example, in its pursuit of very aggressive energy conservation, the California Energy is expected soon to ban certain plasma TVs because of their relatively high energy use compared to LCD TVs. Now, I'm not going to argue that a chicken in every pot and a plasma TV on every wall is key to the American standard of living, but this approach to energy conservation tends to turn consumers off to the entire concept. It smacks a bit of "nanny government." More important, it undermines the public's willingness to accept and embrace conservation measures, which as we all know is absolutely essential to the long-term success of this effort.

4. Should Limit Transmission Additions To Renewable-Only Lines?

First of all, there isn't any such thing as "renewables-only" transmission, although you hear a lot of about this, including in some of the testimony submitted to you today. The physics of power grids simply don't work that way. There are transmission projects that can be particularly focused on enabling site-specific renewable resources, and there are lines (sometimes called as extension cords) that can be energized largely by renewable power facilities (when the wind blows or the sun shines). But all major transmission lines connected to the grid essentially allow electrons from across the grid to flow throughout the system along paths of least resistance.

Transmission additions can be built to unlock remotely located renewable resources, but seeking in law or by regulation to limit access to the capacity of those lines to only "green" power flies in the face of the physical realities of the system and introduces discriminatory access to a system that operates best as a non-discriminatory public good.

5. Identifying "Renewable Energy Zones" Is The Best Way To Deploy Renewables

While the goals of the Western Governors Association's Western Renewable Energy Zones (WREZ) process are laudable, several things should be noted.

- WGA managed this process, as it does with most of its initiatives these days, with environmental groups that are often fundamentally opposed to transmission expansion in key leadership positions. This resulted in a process that morphed from an initial focus – as directed by the Governors – on identifying areas with strong potential renewable resources into a process that focused on lands to exclude for development. The end result was a large amount of land that is legally available for energy development being proposed for exclusion

simply because it is targeted by advocacy groups as proposed wilderness or proposed roadless or some one's favorite corner of the West. Such exclusions by the WREZ process could result in a de facto limitation on further discussion of renewable energy in those areas. This may in turn result in a shortsighted and unnecessary limiting of renewable energy development. We believe that such an outcome was not intended by the Governors in this initiative.

- This focus on exclusion/avoid areas also potentially intrudes upon the authority of each state to site renewable energy facilities. Each state has its own process for determining the location of renewable energy facilities and the associated transmission infrastructure necessary to take the energy to load centers. That process will always include an environmental analysis of proposed projects and the surrounding areas at a level of detail far greater than what is happening in the WREZ process. While the WREZs are clearly not legally binding, the unintended result of this broad-brush exclusionary process could be to preclude the development of areas that have never been properly studied.

In short, we believe that the best and most efficient approach to identifying, siting and deploying low-carbon resources is for states to work directly with developers and utilities in promoting specific projects.

Key Barriers

There are a number of barriers to building new transmission. Some are not very politically correct to state in public, but they are nonetheless hurdles that transmission projects run into on a daily basis. The good news is that there are solutions to all of the above impediments, which I outline below.

- Political opposition and lawsuits by environmental groups against baseload power plants that are required to keep the grid energized and back-up renewable power generation.
- Political opposition and lawsuits by environmental groups and some landowners against transmission additions.
- Bureaucratic delays and outright opposition by federal land managers who fundamentally don't want transmission lines going across the public lands they manage.
- Reluctance by state regulators to pass through to their rate base cost increases for grid additions that are being built to serve remote loads and/or additions that are designed to put relatively high-priced, intermittent renewable resources on the grid.
- Market and regulatory uncertainty created by public statements and proposed federal legislation that would impose discriminatory access to the grid in favor of power developers and/or politically favored generation technologies.
- Market and regulatory uncertainty tied to climate change policy development;
- Technical challenges to putting large amounts of intermittent power sources on the grid;
- The relatively shorter-term approach to resource planning and acquisition that industry has been forced to adopt because of all of the above factors.

Solutions: The Do's and Don'ts

DO: Understand that while enabling renewables generation is very important and should be facilitated, it is not the most important consideration when it comes to decisions on transmission. Meeting current system reliability needs – and planning for future needs -- must continue to be the organizing principle and the top priority in transmission planning and construction efforts within the grids.

DON'T: Fall prey to the notion that the only good transmission project is one that facilitates renewable power facilities. Renewable generation, and the transmission system at-large, need a mix of resources to be properly supported.

DO: Understand that one the single biggest impediments to building transmission are litigious environmental groups.

DON'T: Consider reforms to laws which currently allow these groups to be reimbursed ***with taxpayer dollars*** for suing the federal government against projects such as transmission lines and prevailing. Actually, these groups only need to show that a government body changed some policy or program as a result of the suit in order to receive reimbursement. Many of the funds to pay the attorney fees are pulled from the budgets of cash-strapped regional offices of natural resource agencies. Consider changes to the law to remove or restrict this perverse and inequitable incentive.

DO: Understand that another of the largest impediments to transmission is federal land managers who oppose the use of "their" public lands for path siting.

DON'T: Stop depending solely on non-binding federal or federal-state MOUs to facilitate interstate transmission line siting. (With all due respect to the current MOU effort: been there, done that.) Rather, Congress needs to enact legislation that sets hard deadlines for these agencies to act along with the authority to significantly streamline permitting processes.

DO: Understand that the grid is color-blind with regard to the "color" of electrons that flow across the grid. There is no such thing as "green" electricity or "brown" electricity – all electrons do the same job of powering out economy, creating new jobs and keeping people alive. Both colors of electrons are necessary --at least for the near-term -- to maintain the reliability of the grid.

DON'T: Enact legislation instituting discriminatory access to the grid to preferred power providers or technologies.

DO: Encourage states to work together, along with FERC, to streamline decision processes on proposed transmission projects.

DON'T: Relegate multi-state coordination to quasi-governmental organizations that end up adding yet another layer of government bureaucracy and red tape to the transmission deployment process.

DO: Be cognizant that "socializing" the costs of transmission projects across areas and groups of consumers who will not directly benefit from such transmission will almost certainly build public opposition to such projects, as well as encourage the opposition of state-based public utility commissions.

DON'T: Whatever cost allocation regime is put in place, be sure there is transparency to retail consumers. Don't allow transmission funding regimes to become a Christmas Tree of "line charges" for all kinds of other "social" programs.