

QER Public Meeting
Santa Fe, NM

**Electricity Infrastructure Transmission, Storage, and Distribution –
Jurisdictional issues and priorities**

Remarks of Susan Ackerman,
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Let me begin with some observations that are foundational to my comments. BTW, these were mentioned in the DOE memo.

First, electric industry is an increasingly fragmented industry:

- Mostly due to restructuring in 1990s
- Also emerging technologies are giving consumers increasing freedom from the utility
- New and untraditional players—Google? Tesla?
- Last but not least, there are just some natural differences among the regions (--geography, resource bases, culture, economic goals, you name it) and these differences will persist.

This means, we'll stay fragmented.

Second, the changing power supply mix has implications for reliability and affordability.

This is going to be a long-developing trend, particularly now with the proposed 111d rules. And it will vary from state-to-state and region-to-region. We're going to continue to see:

- More wind and solar generation.
- More distributed generation
- More storage

- More natural gas generation
- And less coal

I see no let-up in policies to encourage the development of no- and low-carbon resources, with the accompanying challenges these resources pose to our power system.

Many of these newer resources are intermittent and require new things of the grid such as technology support, planning, and traditional generation.

Third, we are probably going to underinvest in grid innovation - innovative tools, technologies, data analytics, applications, and reforms that could enhance the efficiency and reliability of the grid.

Many of these innovative tools have the quality of a public good. They are certainly good for society, but transmission owners cannot capture the benefits to offset their costs. Industry fragmentation makes this more difficult. So, the investment may not happen.

An example of what I mean by technology as a public good: Synchronphasors. Synchronphasors can advance the wide area awareness of grid operators, leading to greater reliability. Except that, the benefit of the enhanced reliability accrues to societally generally, not to the transmission owner. So the investment may not happen without some external driver.

So, with those observations, here are the danger spots that I can see:

- Increasing penetration of renewable resources means an increased need for flexible and traditional generation for reliability purposes. But, wholesale markets in some RTO/ISO regions are not providing the right incentive for the right kind of

resource to support this changing energy mix. This is a particularly critical area to watch as more coal plants retire. This is FERC's domain, and the agency recognizes the challenge and will address it. ---See recent FERC notice about Energy and Ancillary Services price formation -----

--In my view, the traditional IRP planning process used in vertically integrated states is probably the best way to assure a safe, reliable, secure, affordable and environmentally responsible power supply. But that world is gone in many cases. The substitute planning processes are more cumbersome, difficult, and expensive.

The FERC Order 1000 planning process is valuable for getting the various players to the table, but it doesn't have the depth or breadth or quality of integrated resource planning.

--The interface between transmission and distribution is a potential problem. Increasing DG on the distribution system, especially intermittent DG, can roll up and cause reliability problems on the grid.

--The line between the bulk system and distribution is blurring.

--We'll need to improve operator visibility and control at the distribution system level.

--We'll need seamless two-way information flows between systems.

So, to wrap this up. No issue concerns me as much as the fact that it is difficult in a fragmenting industry to plan the ongoing evolution of the industry in a way that meets all the goals of safety, reliability, affordability, and environmental sensitivity.

But you're already doing things about this that have worked, and will continue to work.

Federal funding for energy projects in the PNW and the western region has made a huge difference. And it should be used as a guide for future DOE action.

Let me give you some examples:

Under the Western Governor's Association, substantially enabled with federal funding, there has been state and provincial planning and coordinating for a decade, including:

- Grid reliability,
- Grid planning,
- Integrating wind and solar into the grid,
- Promoting efficient use of existing lines, and
- Advancing promising technologies and applications,

The common aim of these planning groups effort was to promote a **more efficient, reliable, resilient, and flexible grid.** It has worked.

With federal funds:

We made the major investment in synchrophasors; this would not have happened without the federal funds (stimulus dollars) and it advanced transmission in the west by decades.

We created our first interconnection-wide transmission plan,

We produced the first interconnection-wide assessment of the impacts of increased natural gas generation in the west.

We examined the costs and benefits of a voluntary energy imbalance market and the design of such a market

– all which led up to the first EIM in the West becoming operational in October this year.

We conducted the first-ever survey and evaluation of solar and wind forecasting practices in the West. We investigated the use of dynamic scheduling and ways to foster greater use of it. And we studied the potential for demand response to provide ancillary services.

That's my point: Keep doing what you're doing. You're driving innovation by filling the gaps in necessary analyses and projects that won't be done without your intervention.

And, thank you for your past significant contributions.