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Hearing to Examine the Challenges and Regional Solutions to Developing Transmission for Renewable Electricity Resources

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Mr. Chairman and Members of the Committee, thank you for this opportunity to testify before you today on the challenges of building transmission to meet the growing demand of renewable electric generation capacity.

Decades of reliable electric service have made it easy to take for granted the availability of and access to electricity that powers our electronics, heats and cools our homes, and operates our businesses. However, electricity is the backbone of our economy, and without a robust, reliable and affordable supply, the operation of commerce, transportation, finance, food and water systems, and our national security will be severely threatened.

OE Mission

The mission of the Office of Electricity Delivery and Energy Reliability (OE) at the Department of Energy (DOE) is to lead national efforts to modernize the electricity delivery system, enhance the security and reliability of America's energy infrastructure, and facilitate recovery from disruptions of energy supply. These functions are vital to DOE's strategic goal of protecting our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally responsible energy.

Meeting our Future Electricity Needs

As our Nation's economy continues to grow, consumers' demand for more electricity will steadily increase. Even when accounting for advances in energy efficiency, the Energy Information Administration estimates that by the year 2030, U.S. electricity consumption will increase by almost 30 percent from the 2006 level. Although this is a positive indicator of a growing economy, it means a significant amount of new demand on electricity generations and transmission systems that are already stressed and aging.

And while we as a nation should place great emphasis on updating and upgrading the grid we have today, that alone will not be enough. Significant new transmission will be necessary in the 21st century, largely because much of the Nation's future electricity demands will be met by generation sources located in areas that currently lack adequate grid connectivity. This applies to almost every type of generation:

- Most of the Nation's best wind and solar resources are located in remote areas where existing transmission capacity is either minimal or non-existent;
- Most new nuclear plants will not be sited in populous areas, and will likely require additional transmission capacity;
- Clean coal with Carbon Capture and Storage (CCS) will presumably be sited near geologic formations suitable for CO_2 storage, and may not be near major existing transmission facilities.

This means that if you want to support clean energy, you have to support transmission expansion in appropriate areas.

So it's clear that meeting our future electricity needs will not occur overnight or with one solution. The new demand will only be met through National and regional cooperation on a combination of options, such as new generation and transmission, advanced technologies, demand response programs, and improved efficiency. However, while the technical hurdles to continued reliable electric service are considerable, they will be

overcome. This Nation is rapidly surmounting our current technical challenges, and I expect this will continue.

There is another obstacle, however, that does threaten the long-term provision of reliable electricity; we must harmonize the multitude of local, state and Federal regulatory rules such that they complement, not conflict with each other. And to do this, we must coordinate efforts to meet electricity demands regionally, and not just at the state level. Today, the greatest challenge to developing the appropriate network of wires and other facilities to reliably and responsibly generate and deliver the electricity to the American public is the difficulty of coordinating state and Federal permitting efforts and authorities.

DOE Support for Regional Electricity Planning

For that reason, the Department strongly supports regional approaches to addressing the challenges of electricity resource planning. In most parts of the country, wholesale electricity markets have become regional in scale. The present pattern of siting much generation distant from load – and often in another state – will continue for many years to come, so state-level planning needs to be followed with regional-scale planning and coordination. To begin this process, each state, after considering its future electricity objectives, strengths, and needs, must engage with its neighbors to consider some basic questions that include:

- The mix and locations of the region's generation resources;
- What transmission facilities are required and where; and,
- How urban areas should strike an appropriate balance between local generation, energy efficiency programs, and imports via transmission.

We will all benefit if states in a region are able to work in a coordinated way to bring their shared view to reality. I'm pleased to note the Department has a number of activities where we are helping states think through electricity choices regionally: Initiatives such as the Mid-Atlantic Distributed Resources Initiative (MADRI), and the

National Action Plan for Energy Efficiency are two good examples. The Western Governors Association's Western Renewable Energy Zones effort (WREZ) is the latest, and the Department is tremendously pleased to have the opportunity to support this groundbreaking initiative.

The WREZ project seeks to provide a framework to tackle the hurdles facing the western region as it seeks to bolster the growth of renewable energy sources, increase regional electricity planning, and work in an open stakeholder process to consider transmission plans for the delivery of these resources.

Origination of WGA WREZ Project

The idea for the WREZ project originated at a Western Governors' Association (WGA) meeting in Fort Collins, Colorado in September 2007 to discuss the challenges regarding new demand for renewable energy generation, the transmission necessary to deliver this power to consumers, and integration of these clean resources into the electric transmission grid. Out of this meeting came the idea to apply the Competitive Renewable Energy Zones (CREZ) concept used in Texas to promote the development of wind to the Western Interconnect. A number of Western states, including Colorado, Nevada, New Mexico, and California, have already begun or completed identification of renewable energy zones within their own state boundaries.

The West has great potential for the development of renewables as evidenced by the work the states are doing on their own. But the scope of this work has been restricted to renewable energy potential within each state's boundaries and, as we all know, renewable resources do not recognize state borders. Limiting efforts solely to the state level may lead to fractionalization among the states and complicate decisions for a resource planner. The WREZ project applies existing WGA policy and facilitates the work being done at the state level to the entire Western Interconnect to create a regional market for new generation capacity from wind, solar, geothermal, biomass and hydro technologies. But this is only half the effort; the next step is to consider the transmission needed to carry this load to consumer centers.

The work that the states, through the WGA, will be doing on this project will be divided into several phases;

1) Identification of the renewable energy zones (REZ) using technical resource assessments, economic analysis, and stakeholder evaluation and feedback;
2) Development of conceptual transmission plans and balancing requirements for REZs through existing Western Electricity Coordinating Council-sponsored transmission planning process; and
3) Coordinating load serving entity procurement to support development of a regional market for renewable energy.

Finally, later in the process, the WGA project aims to develop interstate cooperation to address permitting and multi-state cost-allocation issues. Phase I began on May 29, 2008, in Salt Lake City with the expectation that the initial phase will be completed at the end of this year or early 2009.

Stakeholder Involvement

Increasing public attention to new energy infrastructure requires greater stakeholder involvement to address concerns raised by opponents and to ensure a greater success in siting new clean energy projects. The WREZ project recognizes this point and has created an open and transparent process for including stakeholders of various interests, whether it is renewable generators, load serving entities, wildlife and land conservationists, Native American tribes, or local citizens groups concerned about their community.

Non-REZ Renewables

While the WREZ holds tremendous potential for bringing considerable clean energy to the West, not all generation in the region is abundant enough to be located in specific, large “zones.” In fact, some of the renewable resources, such as water power,

geothermal, biopower, and distributed solar (or solar photovoltaics) may not be needed to be identified as existing in a "zone", or at least may be able to serve nearby load without new transmission.

Thus, Phase I of the WGA WREZ project will also include identification, particularly with GIS-based maps as appropriate, of non-REZ renewable resources. This will include a state-by-state estimate of potential for distributed renewables such as roof-top solar photovoltaics. By supplying information on all of the renewable resources that are available to states- not solely those to be used at the bulk power level- potential developers and load-serving entities can make their own choices on whether to tap remote, distant renewables, or local renewables to meet their customers' electricity needs.

DOE Support for Clean and Diversified Energy

Finally, on the Federal side, the Department continues to invest heavily in the research and development of a wide range of advanced clean energy technologies, including clean coal technologies with carbon capture and storage, next generation nuclear reactors, as well as energy efficiency and related demand side technologies. Indeed, the demand-side measures, such as conservation and increased efficiency, are often cheaper and can be implemented much faster than supply side resources. Maturation of these efforts, advancement of the previously mentioned technologies and their increased market penetration, and modernization of the existing electricity transmission and distribution infrastructure are critical components of the President's vision of a cleaner, more secure energy future.

As we move toward that secure energy future, renewables will play a leading role in helping to reach our goal of a clean and diverse fuel mix. The WREZ project is one example of how a region is responding to this challenge of using new sources of energy to meet the Nation's electricity needs. The Department is pleased to be a part of this initiative and looks forward to continuing its work with the Western Governors'

Association and other regional state efforts to promote the development of clean and reliable energy sources.

This concludes my statement, Mr. Chairman. I look forward to answering any questions you and your colleagues may have.