NATIONAL GOVERNORS ASSOCIATION

State Summit on Clean Power and Efficiency

The Role of Clean Power Generation

by

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Thank you so much for having me here today. I want to congratulate the National Governors Association for focusing on these critically important subjects. I want to also recognize Governor Tim Pawlenty for his leadership in these areas. His leadership, along with that of other Governors who are committed to clean energy, will be absolutely necessary as we work to drive change in our State energy policies.

Electricity is the backbone of our economy, and it must be reliable and affordable, but these two fundamental requirements are increasing pressure. Although the rate of electricity demand growth in the U.S. has slowed over the past several decades, overall electricity demand is still growing. DOE's Energy Information Administration projects that total U.S. electricity demand will increase by 30 percent by 2030. And, whereas generation growth has kept pace with demand, we are seeing increasing challenges to this necessary comparable growth. Assuming the challenges to new baseload generation will continue, if we are to continue to meet reliability requirements at reasonable cost, and with the lowest reasonable environmental impact, we must speed improvements in overall energy efficiency to accelerate the penetration of clean energy sources.

This is no easy task. As Yogi Berra noted, “Predictions are difficult, especially about the future.” And each of the options on the generation menu, whether from renewable energy, clean coal with carbon capture and sequestration, nuclear, or natural gas face unique hurdles. They include regulatory uncertainties, technological challenges, rising construction costs, concerns about fuel prices and availability, impact on grid operations, and in many cases, public opposition.

Yet, in the face of all this, significant strides *are* being made today in the advancement of clean energy. For example, FPL Energy announced earlier this month their plans to build, own, and operate a 250 MW solar plant in the Mojave Desert.

Dominion Power in Virginia has just announced that it will work with BP to develop wind farms in Virginia to meet a goal of providing 12 percent of its energy from renewables by 2022. Southern California Edison announced on April 1 their intention to launch the largest-ever rooftop solar installation project, with an estimated cost of $875 million. And in Texas, Boone Pickens has unveiled plans to develop 4 gigawatts of wind generation to serve the State.

The Department has also taken significant strides with respect to clean generation and transmission to move that additional electricity to market.

The U.S. has had the fastest growing wind sector in the world for the last three years and is likely to become the world leader for installed wind capacity by the end of 2009. Eighty-five percent of the total wind capacity in the U.S. has been installed since President Bush took office in January 2001. Thanks largely to wind energy's contribution, renewable energy accounted for 30 percent of all new nameplate electricity capacity additions in the U.S. in 2007 – up from just 2 percent in 2004.

Through DOE's Wind Energy program, competitively selected, cost-shared R&D projects are addressing the barriers to operability, reliability and storage needed to bring wind's costs down further and enable even greater industry growth.

Much of the wind industry's current success is attributable to the research conducted by the National Wind Technology Center funded by DOE and located at the National Renewable Energy Lab. Research at the Center has led to the development of multi-megawatt wind turbines that produce electricity at a cost that is starting to compete with conventional energy sources in the marketplace. To make wind energy fully cost competitive and increase wind energy development, researchers at the Center are working with industry to develop larger, more efficient, utility-scale wind turbines for land-based and for offshore installations, as well as more efficient and quiet small wind turbines for distributed applications.

In the area of solar power, DOE is pursuing a two-pronged approach to reducing cost. The Department is funding aggressive and innovative R&D programs – many in partnership with industry and universities. In March DOE announced that it will invest up to $13.7 million over three years for 11 university-led projects that will focus on developing advanced solar photovoltaic (PV) technology manufacturing processes and products. These projects are integral to the Solar America Initiative, which aims to make solar energy cost-competitive with conventional forms of electricity by 2015.

At the same time, DOE is working to integrate new technologies into the marketplace and into the grid efficiently and cost-effectively. Earlier this year, Secretary Bodman announced the selection of 12 Solar America Cities through DOE's Solar America Cities program. The goal of the Solar America Initiative is to ensure that solar energy technologies will play a growing role in U.S. energy supplies by making the technology cost competitive. The Solar Cities Program provides support to cities to integrate solar energy into their planning processes.

In February, DOE participated in the official opening of Nevada Solar One, the largest concentrated solar power plant built in the world in 15 years.

DOE has also promoted education, outreach and the deployment of new solar technologies through programs such as the Solar Decathlon, an international competition that brings some of the world's leading engineering and design students to Washington to demonstrate commercially viable ways to power homes using transformative building technologies.

DOE continues research on conventional hydropower technologies and is beginning work on innovative hydro technologies, such as thermal and wave. These innovative technologies, called “hydrokinetic energy,” have the potential, according to the Federal Energy Regulatory Commission, to more than double hydropower’s contribution to our supply needs – from just under ten percent today to a future twenty percent or more.

It is clear from the wind and solar examples that past federal support for energy R&D, and policies and regulations to support deployment of promising technologies is bearing fruit. It is also clear that DOE can and must do more, not only in aggressive R&D, but also in terms of predictable and durable policies to enable greater private sector investment, and not just for renewables.

Toward that end, the Department of Energy is arranging more than $38 billion in loan guarantees over the next three years to help commercialize any technology that avoids, sequesters or reduces greenhouse gas emissions. The goal of the loan guarantee program is to support early commercial use of advanced energy technologies by helping qualifying projects to achieve and demonstrate lifecycle profitability.

There are exciting advancements in clean generation taking place right now, both at the Department and in the private sector. But there are some implications surrounding this growth that exist that I fear are not often talked about enough.

For example, in a recent EIA forecast, revised after the passage of the Energy Independence and Security Act last December to include demand reduction policies in that legislation, projects that generate energy from renewables will increase significantly by 2020, providing as much as one-third of the additional electricity that will be needed. However, even assuming that all existing generation continues to operate through 2020, two-thirds of the new demand will have to be met by conventional generation sources.

This means that we will have to continue using natural gas, coal, and nuclear.

Another interesting assessment done by the EIA to this end is its recent cost estimates for the Lieberman/Warner's legislation, entitled "America's Climate Security Act" (S. 2191). EIA's projections show that the bill would "only" reduce GDP by about 1/2 of 1 percent by 2030. At first glance, this cost prediction provides some comfort. However, EIA arrived at this prediction by first assuming that there will be a 350 percent increase in nuclear generation capacity in the U.S. by 2030. This is assuming that 60% of our energy generation would come from nuclear power.

I am reminded of the classic joke about economists -- if asked how you would get out of a ditch, they say, "First, let's assume there is a ladder." Unfortunately, no new nuclear ladders have been built in the last 15 years. The Department strongly encourages building nuclear power. We would be thrilled if over 150 new nuclear plants could be built and put into operation over the next 20 years. However, we cannot bet the economy on whether we can achieve that one goal.

As for nuclear, the Department is aggressively pursuing a number of ways to encourage development of new nuclear facilities. Under President Bush, we are working to reduce the barriers to development of nuclear power plants.

The Department is investing significant funds in nuclear technology through providing Risk insurance, which was authorized by the Energy Policy Act of 2005, which will provide and important incentive to begin the licensing and construction of new nuclear nuclear power plants. Federal risk insurance is an important step in speeding the nuclear renaissance in this country. The Department is also working in a joint government/industry cost-shared effort through its Nuclear Power 2010 program to identify sites for new nuclear power plants, develop and bring to market advanced nuclear plant technologies, evaluate the business case for building new nuclear power plants, and demonstrate untested regulatory processes. Through this important work industry has planned 33 new reactors at 20 locations across the country.

The Global Nuclear Energy Partnership, is working with international energy partnership, that seeks to develop a worldwide consensus on enabling expanded use of economical, carbon-free nuclear energy to meet growing electricity demand. The Partnership would demonstrate the critical technologies needed to change the way used nuclear fuel is managed – to build recycling technologies that enhance energy security in a safe and environmentally responsible manner, while simultaneously promoting non-proliferation.

We also will need to continue the use of natural gas, which in recent years, has been built than any other type, and natural gas is now producing about 20 percent of the Nation's electricity.

The current wave of coal project cancellations is putting even more emphasis on building natural gas generation to meet new demand.

Since the mid-1990's, over three times as much natural gas generation capacity has been added compared to coal or nuclear additions. Recently, the vast majority of additions have been natural gas-fired units. In 2006, natural gas capacity constituted over 70 percent of generation additions in that year. And, according to EIA, the net generation additions in 2006 from all energy sources equaled the increase in electricity demand for that year. Nevertheless, we are excessively relying on natural gas as we go forward.

During 2007, natural gas provided over 20 percent of all our electricity needs, and natural gas provided almost 30 (28.6) percent of the electricity used during the peak summer month of August of 2007.

As we are seeing, natural gas is now a world commodity, and is becoming very expensive. The competition for LNG imports has become intense, as liquefaction capacity is not keeping pace with world gasification capabilities.

Further, we also must address and resolve the obstacles to timely and sufficient investments in new nuclear and clean coal with carbon capture and sequestration.

Many of you will recall that in January Secretary Bodman announced a restructured approach to DOE's FutureGen project that aims to demonstrate cutting-edge carbon capture and storage (CCS) technology at several commercial-scale Integrated Gasification Combined Cycle (IGCC) or other advanced clean coal power plants. Under this new strategy, DOE will join industry in its efforts to build these facilities by providing funding for the addition of CCS technology at several plants that will be operational by 2015. This approach builds on technological research and development advancements in IGCC and CCS technology achieved over the past five years and is expected to at least double the amount of carbon dioxide sequestered compared to the FutureGen concept announced in 2003.

Clean coal technology is a vital component of DOE's vision for a cleaner, more secure energy future. This more cost-effective approach will demonstrate clean coal technology with CCS more broadly and enable commercialization more rapidly. This restructured approach allows DOE to maximize the role of private sector innovation, provides a ceiling on federal contributions, and accelerates the application of clean energy technologies while also mitigating greenhouse gas emissions.

Under this plan, DOE's investment would provide funding support only for the CCS component of the power plant – not the entire plant. This will allow commercial application of CCS technology to begin as soon as the plants are put into operation, between 2015 and 2016.

In order to keep pace with changing generation mix we must also expand and modernize the existing transmission and distribution infrastructure to ensure we are able to achieve our objectives with respect to increasing energy efficiency, reducing consumption during peak periods, and increasing our reliance on clean energy sources.

First, much of the new clean generation capacity that we will need will be built distant from urban areas. Most of the 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 CCS will presumably be sited near geologic formations suitable for CO2 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.

Second, we are on the edge of a major technological and institutional transformation of electric distribution; a transformation often referred to as “building a smart grid.” When built, this new infrastructure will feature advanced components that will be developed with computerized intelligence and communications links that will increase overall system efficiency and energy efficiency.

It will enable delivery of a richer and broader menu of services to customers at reasonable cost, and enable consumers to become interactive users of the system. These new local-level systems will be more resilient and adaptable when grid operators are faced with natural disasters, severe weather, unplanned outages of major generation sources or transmission lines – in short, they will offer major improvements in electricity efficiency, reliability and security. As electricity transmission and distribution is regulated at the retail level by the States, this is of no small interest to NGA.

Pursuant to requirements in the Energy Independence and Security Act of 2007, my office has established and leads an interagency Smart Grid Task Force, which is to ensure the coordination needed among Federal agencies to facilitate the smart-grid transformation.

The smart grid is more than just talk: just two weeks ago, I announced the Department's plans to invest up to $50 million over five years (Fiscal Years 2008 - 2012), subject to appropriations from Congress, in nine demonstration projects competitively selected to increase efficiency in the nation's electricity grid. The Renewable and Distributed Systems Integration (RDSI) technologies demonstrated in these projects aim to reduce peak load electricity demand by at least 15 percent at distribution feeders – the power lines delivering electricity to consumers – and are part of the Bush Administration's ongoing efforts to enhance the efficiency and reliability of the Nation's energy infrastructure to ensure a reliable supply of energy to all Americans.

The projects to be demonstrated will help to increase reliability in our electricity grid by defraying both the cost and effort associated with upgrading distribution lines or adding new generation capacity to meet peak electrical load, furthering our ongoing efforts to increase national economic and energy security.

These types of long term investments in our grid will add hugely to our quality of life and to our economic productivity. Consider, for example, the benefits we now enjoy from our predecessors' investments in the interstate highway system; the hydropower systems in the Tennessee Valley, the Pacific Northwest, and elsewhere; and our existing fleet of nuclear power plants.

I don’t hear anyone complaining about our parents having made those investments. Transmission investments, in particular, are typically extremely productive and beneficial. Their impact on consumer electric bills is miniscule, in comparison to the reliability, economic – and now environmental – benefits that they make possible.

As we move forward on developing generation and grid modernization, we should agree on some design fundamentals about what the new infrastructure should look like and in broad terms where its major components should be located. We need designs that reflect regional or even inter-regional assessments of electricity demand, potential for energy efficiency gains, potential renewable resources, the need to retire or upgrade some existing generation, transmission, or distribution facilities, and many other relevant considerations.

In this regard there are several important efforts underway worth noting. For example, the Western Governors Association and the Western Electricity Coordinating Council are working collaboratively with several sub-regional industry planning groups to develop coherent west-wide analyses and infrastructure development strategies. My office is proud to have been providing technical support to these organizations for more than a decade. Most recently, DOE has agreed to partner with the Western Governors' Association to promote regional planning and development of renewable generation in the Western Interconnection.

In the eastern U.S., the Midwest Independent System Operator, PJM, Tennessee Valley Authority, and the Southwest Power Pool have initiated a Joint Coordinated System Plan, and recently the New York and New England ISOs have joined this effort. This ambitious and commendable project is aimed at analyzing our generation and transmission infrastructure needs on an inter-regional scale.

I want to commend the Midwest Governors Association for its leadership in launching the Midwest Energy Security and Climate Stewardship Platform, demonstrate the governors' commitment to a lower-carbon energy economy, and their Regional Electricity Transmission Adequacy Initiative.

We also note the regional electricity planning efforts being undertaken by State Regional Committees such as the Organization of MISO States, the Organization of PJM States and the Southwest Power Pool Regional State Committee. Other regional efforts that deserve mention are the demand response regional initiatives such as the Mid-Atlantic Demand Response Initiative, the Midwest Demand Response Initiative and the Pacific Northwest Demand Response Program that we have been happy to support at the request of the affected state electricity regulators.

We will continue to work with national and regional groups and organizations to facilitate regional-scale transmission planning and planning for non-wires alternatives.

These types of collaboration are unprecedented and I believe they will drive the decision making that will see us successfully integrate clean energy sources into our energy portolio in far greater numbers.

In closing, I want to briefly mention some other significant activities under way in my office.

The Secretary has recently approved the creation of an executive-level DOE Electricity Advisory Committee. This group of talented experts will provide balanced advice to DOE on broad and strategically significant electricity-related issues, including matters related to the challenges of supplying adequate, clean, and affordable electricity over the next 15 years.

The committee will be chaired by former Deputy Secretary of Energy Linda Stuntz, and it will hold its first meeting in Washington DC on May 20.

Tomorrow, I am holding a briefing for State representatives and other stakeholders on our plans for the *2009 National Electric Transmission Congestion Study*, which the Energy Policy Act of 2005 requires the Department to publish by August 2009. As part of this process, my office will hold six regional workshops to obtain input from State policy makers, industry, and other interested parties on the study, particularly with respect to the analysis of transmission data and congestion metrics. In addition, we invite all interested States to meet with us on a bilateral basis to discuss the study.

As we develop the 2009 Congestion Study, we will have an "open door" policy, and will maintain a website for all submitted comments and workshop transcripts.

Despite the heterogeneity of the U.S. electricity sector, there is a long history of regional-scale collaboration and coordination, among companies, among states, and between federal and state agencies. Due to the magnitude, urgency, and complexity of the challenges now in front of us, even more intensive collaboration has become critical to our future. My DOE colleagues and I look forward to rolling up our sleeves and working with you to meet these challenges.