

**Testimony of Reid Detchon
Executive Director, Energy Future Coalition**

**Senate Committee on Energy and Natural Resources
March 12, 2009**

Mr. Chairman, thank you for inviting me to testify and for your conciliatory leadership of this Committee. My name is Reid Detchon, and I am the Executive Director of the Energy Future Coalition, a non-partisan public policy group, supported by foundations, that works to bring together business, labor, and environmental groups around common energy policy objectives.

The Energy Future Coalition was formed seven years ago, in the wake of the 9/11 attack, because of concerns that U.S. energy policy was not adequately addressing issues of national security and climate change. The condition of the nation's electric power grid was an immediate topic of concern and the focus of one of our initial working groups. Since that time, we have advocated for and applauded action by this Committee and Congress as a whole to support advanced transmission and smart grid technologies in the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007, and the American Recovery and Reinvestment Act of 2009.

Several months ago, it became apparent that, thanks in part to the advocacy of T. Boone Pickens, a new groundswell of support was emerging for modernizing the nation's transmission grid and expanding it to serve stranded large-scale renewable energy resources. Without such steps, it would be challenging to meet a national renewable energy standard, including the 25x'25 target that we have long supported.

Accordingly, the Energy Future Coalition, in partnership with the Center for American Progress and later the Energy Foundation, began a series of listening sessions with a wide range of stakeholder groups to determine where the areas of agreement and disagreement were. We found remarkably broad support for a new network of extra high-voltage lines (345 kilovolts or above) to bring high-quality renewable energy resources – wind in the Great Plains, solar in the desert Southwest – to market.

With a smaller group of stakeholders, notably including the American Wind Energy Association and the Solar Energy Industries Association (whose joint white paper last summer, "Green Power Superhighways," was an important outline of the challenge and opportunity – <http://seia.org/galleries/pdf/GreenPowerSuperhighways.pdf>), Mesa Power, and the Sierra Club, we then collaboratively crafted a vision statement for the National Clean Energy Smart Grid, which I will describe in some detail. The full statement appears at the end of this testimony, along with a list of some 55 endorsing organizations. These include the AFL-CIO, the Council on Competitiveness, and the Digital Energy Solutions Campaign, along with many renewable energy advocates and environmental groups, such as the National Audubon Society, the National Wildlife Federation, the Natural Resources Defense Council, Union of Concerned Scientists, and the Wilderness

Society. I mention them because they are not usually prominent supporters of new transmission lines.

What brought these environmental groups to the table and ultimately to agreement was the imperative of action to address with urgency the growing global climate crisis. The Sierra Club's Carl Zichella, who ably represented the environmental participants, repeatedly noted that his constituency could accept the construction of new transmission lines if and only if they transported low-carbon energy. Building new lines to deliver electricity more efficiently from conventional coal-fired power plants was unacceptable.

The group agreed that a national Clean Energy Smart Grid is an economic, environmental, and national security imperative – vital to renewing America's economic growth, strengthening national security, and addressing the threat of global climate change. Investments are needed in both interstate transmission and in smart grid technologies to make the system more reliable, resilient, and secure, to accommodate renewable power and enable more energy efficiency by individuals and businesses.

These same conclusions were reflected in a white paper entitled "Wired for Progress," prepared by our partner in this project, Bracken Hendricks of the Center for American Progress, and available on the Internet at:

http://www.americanprogress.org/issues/2009/02/wired_for_progress.html.

They were also the subject of a remarkable one-day forum on February 23, chaired by Senator Reid with the Center for American Progress, on the "National Clean Energy Project: Building the New Economy." Participants included Senators Bingaman and Dorgan, Speaker Pelosi, former President Clinton and Vice President Gore, Energy Secretary Steven Chu, Interior Secretary Ken Salazar, former New York Governor George Pataki, T. Boone Pickens of BP Capital, Lee Scott of Wal-Mart, John Sweeney of the AFL-CIO, Andy Stern of the SEIU, and Carl Pope of the Sierra Club.

What are some of the benefits of a modernized grid?

- According to the Department of Energy, obtaining 20% of U.S. electricity from wind in 2030 would reduce electric sector CO₂ emissions by 25% - the equivalent of taking 140 million cars off the road – while creating 500,000 jobs and \$450 billion in economic impact.
- Almost 300,000 MW of proposed wind projects, more than enough to meet 20% of our electricity needs, are waiting to connect to the grid because there is inadequate transmission capacity to carry the electricity they would produce. California alone has over 18,000 MW of wind plants and almost 30,000 MW of solar plants waiting to connect to the grid.
- The Electric Power Research Institute estimates that making the grid smarter with modern control technology could reduce electricity consumption by 5-10%,

carbon dioxide emissions by 13-25%, and the cost of power-related disturbances to business (estimated to be more than \$100 billion per year) by 87%.

In our discussions, the three most important issues standing in the way of new long-distance transmission lines for renewable energy were planning, siting, and cost allocation. Siting was seen as the most pressing issue, because opposition to new lines makes siting extremely time-consuming, difficult, and expensive. However, planning turned out to be the more important issue, as the group concluded that better planning could reduce the difficulty of siting new lines and provide the basis for equitable allocation of costs.

For these reasons, more than 55 stakeholder groups came forward to endorse the following policies:

1. Interconnection-wide planning for transmission networks to move renewable power from remote areas to population centers while ensuring the efficiency and reliability of the transmission grid, using a participatory and analytically robust process designed to engage all interested parties early and avoid later conflicts, minimize environmental impacts, and overcome the geographic and procedural limitations of current planning approaches.
2. A simple mechanism to pay for transmission investments and smart grid transmission upgrades identified in the interconnection-wide plans, which would minimize individual economic impacts by allocating costs broadly among ratepayers.
3. Consolidated certification and siting authority to expedite transmission projects identified in the interconnection-wide plans to serve urgently needed renewable energy resources while ensuring the efficiency and reliability of the transmission grid.
4. New policies to make electric grid security a priority, and to coordinate and pay for investments that will rapidly reduce the grid's vulnerability to cyber and physical attacks and natural disasters.
5. Strong financial incentives for rapid deployment of smart grid distribution and metering technologies.
6. Education and training to create the workforce we will need to build, manage and maintain the National Clean Energy Smart Grid.

Recognizing the complex nature of the electric grid, its importance to the future of our economy, and its impact on our environment, these new policies and authorities should be developed and implemented in accordance with several key principles:

1. Interconnection-wide grid planning should not duplicate or supplant already ongoing planning efforts at the utility and regional level, but rather should build on them.
2. The interconnection-wide planning process should take into account: opportunities for improved end-use energy efficiency, customer demand response, clean distributed generation, and energy storage; opportunities to improve the efficiency of the grid; and opportunities to diversify and transform the Nation's power supply resources.
3. New transmission plans should dramatically enhance our capacity to meet steep greenhouse gas emission reduction goals by targeting new clean renewable energy resources and limiting interconnection for new high-emitting generation (while still ensuring reliability).

We have been gratified to see many of these recommendations reflected in S. 539, introduced last week by Senator Reid, and in the Majority Staff draft circulated prior to this hearing – notably, a system of interconnection-wide transmission planning under strict timetables, with the Federal Energy Regulatory Commission empowered to act if the states do not, supported by broad-based cost allocation and underpinned by federal siting authority. The two bills give preference to renewable energy in different ways; the approach chosen by our group was to limit access to new transmission lines built with these special authorities to energy generators whose greenhouse gas emissions are no greater than that of a single-cycle natural gas-fired combustion turbine – on the basis that gas will be needed on the lines to compensate for the variability of renewable resources. The Majority Staff draft does not appear to provide that same level of assurance.

Neither of these bills, however, yet includes provisions dealing with the security of the grid, especially against cybersecurity threats, the importance of which was recognized in Title XIII of EISA. It is vitally important that the electricity grid be capable of real-time management and instant correction, in order to minimize the risk of disruption and the time for recovery, if a terrorist attack on the system does occur. This will require the ability to monitor the status of the grid on a real-time basis, to instantly recognize and diagnose any unusual events on the system, and to respond intelligently with adaptive changes in power flows, generating unit operations, and load management.

For those of you unfamiliar with the Defense Science Board's 2008 report on energy, "More Fight – Less Fuel," it found that "critical national security and homeland defense missions are at an unacceptably high risk of extended outage from failure of the grid."

The report warns: "Informed and capable saboteurs can inflict damage that would take down significant portions of the grid and other critical infrastructure for long periods and make restoration, even work-around measures, difficult, costly, time consuming and marginally effective...."

“Grid control systems are continuously probed electronically, and there have been numerous attempted attacks on the Supervisory Control and Data Acquisition (SCADA) systems that operate the grid. None have yet resulted in major problems in the U.S., but the potential exists for major outages....

“The grid is a relatively easy target for a terrorist. It is brittle, increasingly centralized, capacity-strained, and largely unprotected from physical attack, with little stockpiling of critical hardware. Although the system is designed to survive single points of failure, increasing demand on the system and increasing network constraints make multiple points of failure more likely. These are difficult to anticipate and more likely to result in cascading outages and catastrophic outages that cover large areas for long periods of time. Network Single Points of Failure (NSPF) are abundant. High voltage transformers, breakers, and other long-lead time items are particularly critical system elements. They can be easily targeted and destroyed. Grid sections could be taken down for months even if replacement transformers and breakers could be found; or for years if certain components need to be newly manufactured and transported. There are only limited backups located around the country—generally co-located with operating equipment. For some of the largest equipment, there is no domestic supply and only limited overseas production capacity which is fully booked years ahead. For example, 765 kV transformers are manufactured only by one company in Canada. Armed with the right knowledge, a small number of people could shut down electricity over significant areas for an extended period of time, including power to critical DoD missions. The grid is not designed to withstand a coordinated multi-pronged or wide-area attack.”

This situation represents an unacceptable threat to our national security. Addressing it by modernizing the grid with smarter technology to serve a digital economy would pay immediate dividends. In the last Congress, the House Energy and Commerce Committee prepared draft legislation to address the cybersecurity threat in particular; that is a good place to start.

Mr. Chairman, you and your colleagues are well on your way to writing legislation that will enhance our transmission system in important ways. I urge you to take the next step and incorporate measures to ensure the protection of that system from external threats. Our economy and security deserve no less.

Thank you for inviting me to participate in this hearing.

The National Clean Energy Smart Grid: An Economic, Environmental, and National Security Imperative

Expanding and upgrading our electric power transmission and distribution system are vital to renewing America's economic growth, strengthening national security, and addressing the threat of global climate change. Two critical investments are needed: (1) Efficient, secure and reliable interstate transmission networks – incorporating renewable collection lines and extra-high voltage (EHV) backbone facilities – which will enable massive domestic renewable energy resources currently stranded in our country's remote areas to be developed and delivered to population centers; and (2) "Smart Grid" technologies to make the transmission and distribution grid more reliable, resilient, and secure, and to accommodate renewable power and enable more energy efficiency by consumers and businesses.

At a time of serious economic distress and mounting pressure to address the widespread environmental, economic, and geopolitical consequences of our excessive reliance on fossil fuels, the case for a National Clean Energy Smart Grid has never been stronger. We recommend that Congress and the President move rapidly to adopt the following policies:

- Interconnection-wide planning for transmission networks to move renewable power from remote areas to population centers while ensuring the efficiency and reliability of the transmission grid, using a participatory and analytically robust process designed to engage all interested parties early and avoid later conflicts, minimize environmental impacts, and overcome the geographic and procedural limitations of current planning approaches.
- A simple mechanism to pay for transmission investments and smart grid transmission upgrades identified in the interconnection-wide plans, which would minimize individual economic impacts by allocating costs broadly among ratepayers.
- Consolidated certification and siting authority to expedite transmission projects identified in the interconnection-wide plans to serve urgently-needed renewable energy resources while ensuring the efficiency and reliability of the transmission grid.
- New policies to make electric grid security a priority, and to coordinate and pay for investments that will rapidly reduce the grid's vulnerability to cyber and physical attacks and natural disasters.
- Provide strong financial incentives for rapid deployment of smart grid distribution and metering technologies.
- Invest in education and training to create the workforce we will need to build, manage and maintain the National Clean Energy Smart Grid.

Recognizing the complex nature of the electric grid, its importance to the future of our economy, and its impact on our environment, these new policies and authorities should be developed and implemented in accordance with several key principles:

- Interconnection-wide grid planning should not duplicate or supplant already ongoing planning efforts at the utility and regional level, but rather should build on them.
- The interconnection-wide planning process should take into account: opportunities for improved end-use energy efficiency, customer demand response, clean distributed generation, and energy storage; opportunities to improve the efficiency of the grid; and opportunities to diversify and transform the Nation's power supply resources.
- New transmission plans should dramatically enhance our capacity to meet steep greenhouse gas emission reduction goals by targeting new clean renewable energy resources and limiting interconnection for new high-emitting generation (while still ensuring reliability).
- Use of federal project certification and siting procedures to expedite construction of new grid facilities identified in interconnection-wide transmission plans is critical to reliable and efficient delivery of remote renewable energy to load centers, with a special role for state and local agencies on siting considerations to minimize adverse impacts.

Supporters of the Clean Energy Smart Grid Vision

As of March 10, 2009

Vision Statement Planning Group and Endorsers

American Wind Energy Association
Center for American Progress
Energy Future Coalition
Iberdrola Renewables
ITC Holdings
Mesa Power
National Wildlife Federation
Natural Resources Defense Council
Project for Sustainable FERC Energy Policy
Sierra Club
Solar Energy Industries Association

Other Endorsers

AFL-CIO	Mainstream Renewable Power
American Council on Renewable Energy (ACORE)	MMA Renewable Ventures
Ausra	National Audubon Society
Babcock & Brown	National Hydropower Association
BrightSource Energy	Northwest Energy Coalition
California Wind Energy Association	Oerlikon Solar
Center for Rural Affairs	OptiSolar
Citizens Utility Board of Wisconsin	Pace Energy and Climate Center
Climate Solutions	Puget Sound Energy
Council on Competitiveness	Sharp Solar
Digital Energy Solutions Campaign	Solar Nation
E.ON Climate & Renewables North America Inc.	Solutia, Inc.
enXco	Sun Action Solar, LLC
Geothermal Energy Association	Sundt Construction, Inc.
GlobalSmartEnergy	The Solar Alliance
GreenVolts, Inc.	The Stella Group
Horizon Wind Energy	Union of Concerned Scientists
Infinia	Vestas
Intel Corporation	Vote Solar Initiative
InterWest Energy Alliance	Western Grid Group
Invenergy	Wilderness Society
Large-scale Solar Association	Wind on the Wires
	Windustry

For more information, please check our website:

<http://www.energyfuturecoalition.org/What-Were-Doing/-Smart-Grid>