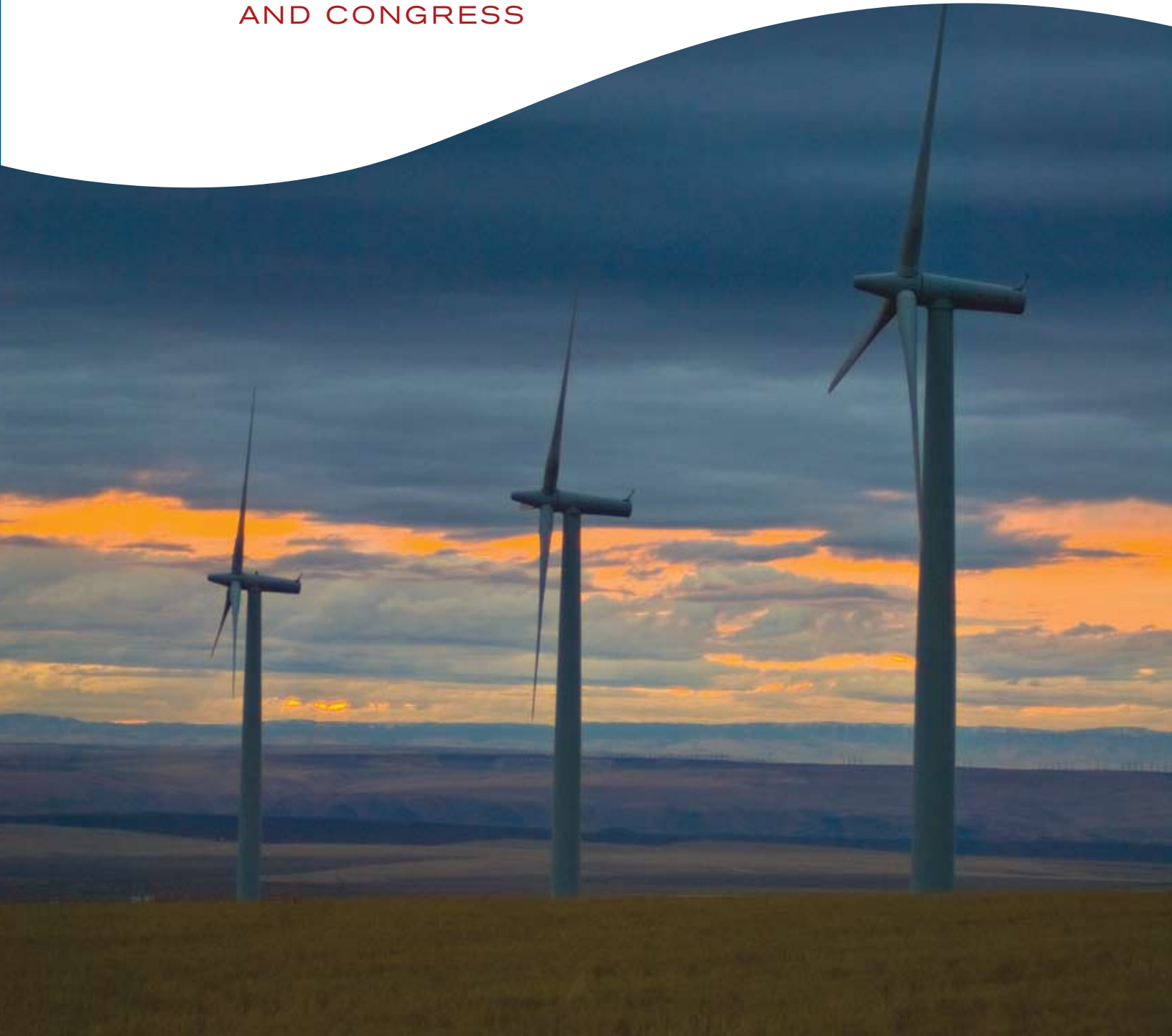


# WIND ENERGY FOR A NEW ERA



**AN AGENDA**  
FOR THE NEW PRESIDENT  
AND CONGRESS



AMERICAN WIND ENERGY ASSOCIATION

**American Wind Energy Association**  
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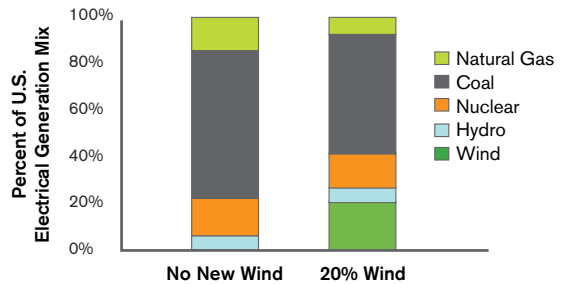
AWEA is the national trade association of America's wind energy industry, with more than 1,600 member companies, including global leaders in wind power and energy development, wind turbine manufacturing, component and service suppliers, and the world's largest wind power trade show. AWEA is the voice of wind energy in the U.S., promoting renewable energy to power a cleaner, stronger America.

# 20% Wind Energy By 2030

*20% Wind Energy By 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply*, a report released in May 2008 by the U.S. Department of Energy, concludes that the U.S. possesses sufficient and affordable wind resources to obtain at least 20% of its electricity from wind. No technological breakthroughs are required and the costs would be modest. But the benefits are substantial. Achieving the 20% wind vision will dramatically cut greenhouse gas emissions, reduce electricity costs, foster long-term price stability, promote our energy security, and support hundreds of thousands of new American jobs.

The 20% report is the driver of the wind industry's proposed agenda for the new President and Congress.

## 20% Wind Vision: Impact on U.S. Electrical Generation Mix in 2030



*Building to 20% wind power in 2030 would reduce electric utility natural gas consumption by 50%, reduce electric utility coal consumption by 18%, and avoid the construction of 80 GW of new coal power plants. Source: U.S. Department of Energy, 20% Wind Energy By 2030*

## Benefits of Achieving the 20% Wind Energy by 2030 Vision

### Environment:

- ▶ Reduces carbon dioxide emissions from the electric sector 25% by 2030, the equivalent of taking 140 million vehicles off the road, and nearly single-handedly keeps electric sector emissions at today's levels while helping meet growing electricity demand.
- ▶ Reduces water consumption in the electric sector by 4 trillion gallons between 2007 and 2030 (or 17% in 2030), with nearly one-third of this reduction occurring in the arid Western states.
- ▶ Does not contribute to acid rain, urban smog, mercury contamination, or other toxic pollution associated with the extraction, transport, and combustion of fossil fuels.

### Economy:

- ▶ Directly stimulates 150,000 domestic jobs in wind turbine manufacturing, installation, operations, maintenance, and management.
- ▶ Indirectly generates 350,000 domestic jobs in support of the wind industry, including steel workers, electrical manufacturing workers, accountants, lawyers, and additional positions related to increased local spending.
- ▶ Pays rural land owners more than \$600 million a year by 2030 through lease payments that range from \$2,000 to \$4,000 per megawatt annually.
- ▶ Increases property tax revenue in rural communities by as much as \$1.5 billion annually by 2030. These funds can be and are being allocated to schools, infrastructure, medical centers, and other public services.

### U.S. Energy Security:

- ▶ Generates electricity from a domestic, safe, and inexhaustible source.
- ▶ Reduces natural gas demand by 50% in the electric sector and 11% overall, relieving supply and price pressure in the domestic natural gas market and potentially reducing future need for imported liquefied natural gas from the Middle East, Russia, or other areas.
- ▶ Potentially reduces U.S. reliance on foreign oil by generating electricity that can be used for plug-in hybrid vehicles.

### Sound Economic Investment:

- ▶ Requires an initial investment of \$43 billion, just 2% more than meeting future projected energy demand without any new wind energy. Calculated over time, this expense amounts to about an additional 50 cents per month on an average household electricity bill.
- ▶ Provides fuel cost savings, economic investments, emission reductions, and other benefits valued at \$200 billion, including:
  - \$128 billion consumer savings from displacement of variable-priced natural gas-fired generation with fixed-price wind power, according to supplemental analysis.<sup>1</sup>
  - \$98 billion in consumer savings through reduced exposure to carbon regulation costs, depending on the stringency and timing of future carbon regulation, according to supplemental analysis.<sup>2</sup>

# Executive Summary

A new approach to energy offers a clear path to a more secure and prosperous future and a more livable world. Increased use of wind, solar, and other renewable energy sources will spur economic growth, create high-quality American jobs, enhance our national security, protect consumers from price spikes or supply shortages associated with global fuel markets, and dramatically reduce the pollution that is warming the planet.

Wind energy is already a clean, mainstream source of electric power and a major force for economic growth. In 2008, the United States became the largest generator of wind power in the world, producing enough electricity to power more than 5 million homes. In 2007, wind power provided 35% of the nation's new electric generating capacity and contributed critical growth to the hard-pressed U.S. manufacturing sector. Since the beginning of 2007, more than 50 wind industry manufacturing plants have been opened, expanded, or announced, creating many thousands of permanent, high-paying American jobs in a difficult economic climate.

And that is just the start. In May 2008, the U.S. Department of Energy released a major report documenting the potential for wind energy to provide at least 20% of the nation's electricity by the year 2030. Wind power at this level would support 500,000 jobs<sup>1</sup>, save consumers \$128 billion through lower natural gas prices<sup>2</sup>, and cut greenhouse gas emissions as much as taking 140 million automobiles off the road. No technological breakthroughs are required for wind power to reach this level. All that is needed are supportive government policies that reflect a long-term national commitment to clean, home-grown renewable energy.

This report offers an in-depth review of the key national policies needed to support the growth of wind energy consistent with the 20% vision. A brief summary of those policies follows.

“A green, renewable energy economy isn't some pie-in-the-sky, far-off future – it is now. It is creating jobs – now. It is providing cheap alternatives to \$140-per-barrel oil – now. And it can create millions of additional jobs, an entire new industry, if we act – now.”

*Barack Obama*

*June 24, 2008, Las Vegas, Nevada*



# Key National Policies Needed to Achieve 20% Wind Power

## National Renewable Electricity Standard

**1** A national renewable electricity standard (RES) – also known as a renewable portfolio standard – would, for the first time, signal a long-term, national commitment to expand the use of renewable energy in the U.S. Utilities in every state would obtain a minimum percentage of their electricity from renewable sources by a certain date or purchase tradable credits for renewable electricity produced elsewhere. This vital incentive would drive new and greater investment in domestic wind industry manufacturing. Twenty-eight states already have RES policies, which have been effective and economical incentives for the development of wind and other renewable energy sources. A national policy would streamline this uneven patchwork and bring renewable energy benefits to all parts of the country. A national RES should call for 25% of the nation's electricity to come from renewable energy by 2025. An aggressive near-term target, such as the 10% by 2012 objective called for in the Obama-Biden *New Energy for America* plan, is essential to ensure rapid deployment of renewables. The target levels should increase incrementally in the years that follow.

## Renewable Energy Production Tax Credit

**2** The renewable energy production tax credit (PTC), a credit of 2.1 cents per kilowatt-hour, is the primary federal incentive for wind energy and has been essential to the industry's growth. Other electricity generation technologies have their own forms of federal support, often permanent in tax law, so wind power would be disadvantaged in the absence of a PTC or other comparable incentive.

Still, there are two significant problems with the PTC. First, it offers little benefit in an adverse financial climate, where demand for a tax credit is limited. The renewable energy sector is seeking changes to the structure of the credit that make it possible to fully realize its value, particularly in a down market, and allow participation by a broader pool of investors.

Second, the credit has routinely been extended for only one-year or two-year terms, and has been allowed to expire on three separate occasions -- in 1999, 2001, and 2003. The uncertainty of this on-again, off-again pattern has discouraged companies from making long-term, sizeable investments in wind power manufacturing and development. An extension of at least five years would, for the first time, provide the wind energy industry with the policy stability that other energy industries have long enjoyed.

Lastly, small wind systems, used to power homes, farms, and small businesses, are ineligible for the PTC and instead rely on a federal investment tax credit. This credit needs to be adjusted to remove the cost caps, which greatly reduce its effectiveness.

## Federal Renewable Energy Transmission Policy

**3** Perhaps the biggest obstacle to the long-term growth of wind power and other renewables in the U.S. is the lack of available transmission. Simply put, we don't have enough transmission capacity to deliver electricity from the rural, windy areas where it is generated most abundantly and cost-effectively to the populated areas where most electricity is consumed. The wind industry supports federal policies that would bring about the construction of a high-voltage interstate transmission highway system for renewable energy, as envisioned in DOE's 20% wind report. Our agenda includes federal legislation, regulatory initiatives by the Federal Energy Regulatory Commission and the Department of Energy, and federal financial support. The cost would be an increase in annual transmission investment from approximately \$8 billion today to \$11 billion, but this investment would quickly be offset by lower electricity costs and reduced fuel costs, and would lead to greater energy independence.

## National Climate Change Legislation

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As the most readily deployable source of carbon-free electricity generation, wind power is uniquely positioned to contribute to the global warming solution, especially in the early years of the climate protection effort when few other options are available. Generating 20% of U.S. electricity from wind would be the climate equivalent of removing 140 million vehicles from the roadways. But that potential will not be realized unless climate legislation provides an economic incentive to switch to clean energy sources. Under a cap-and-trade system, any method of distributing emission allowances must include a fair allocation to renewable energy. In addition, climate legislation must include an aggressive near-term goal, such as a 15% to 20% carbon dioxide emissions reduction by 2020, in order to promote a near-term shift to renewable energy and get the quick start on greenhouse gas emissions reductions scientists tell us is needed. Finally, a portion of the revenues generated by auctioning allowances should be used to finance key renewable energy priorities, including a renewable energy production incentive, a new interstate transmission highway system, training for the growing renewable industry workforce, incentives for manufacturers, and research and development. For small wind systems, climate legislation should also include consumer rebates and incentives for states, utilities, and manufacturers.

## Wind Power Project Siting Policies

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Federal agencies have a key part to play in developing our renewable energy potential because of their role in the siting of wind projects and new transmission lines, especially on federal lands. Proposals for responsibly-sited renewable energy projects on federal lands (including offshore waters) should be prioritized and federal agencies should create review processes that are streamlined, transparent and timely, with permitting and review capabilities that are scaled up as needed to meet demand. In addition, the President should direct the Department of Defense, the Federal Aviation

Administration, and the Department of Homeland Security to adopt a cooperative approach to resolving possible conflicts between wind projects and radar operations. Each federal agency should be asked to plan how it will use its authority to facilitate the growth of wind power and other renewable energy sources.

## Federal Research & Development and Wind Program Funding

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Federal funding for wind energy research and development (R&D) and other programs is inadequate, especially when compared with funding levels for other fuels and energy sources. The DOE wind program currently receives about \$50 million annually, which is well below its all-time high of \$63 million appropriated in Fiscal Year (FY) 1980. In comparison, the annual R&D budget for nuclear power is over \$960 million, while coal receives nearly \$500 million, solar receives over \$160 million, and biomass receives roughly \$200 million. The overall program budget for DOE's Office of Energy Efficiency and Renewable Energy for FY 2008 was over \$1.7 billion. The wind industry recommends increasing the annual funding level for wind R&D and other programs to \$217 million over the course of the next three to five years. Most of this funding should be directed to DOE's Office of Energy Efficiency and Renewable Energy's wind program.

## Conclusion: A Rare Opportunity

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With the right policies in place, wind power can make a major contribution in the effort to protect the planet's climate, while spurring tens of billions of dollars in economic investment, supporting hundreds of thousands of new American jobs, making America more independent and secure, and saving consumers more than \$100 billion.

Let's act – now – to put the right policies in place.

# 1

## National Renewable Electricity Standard

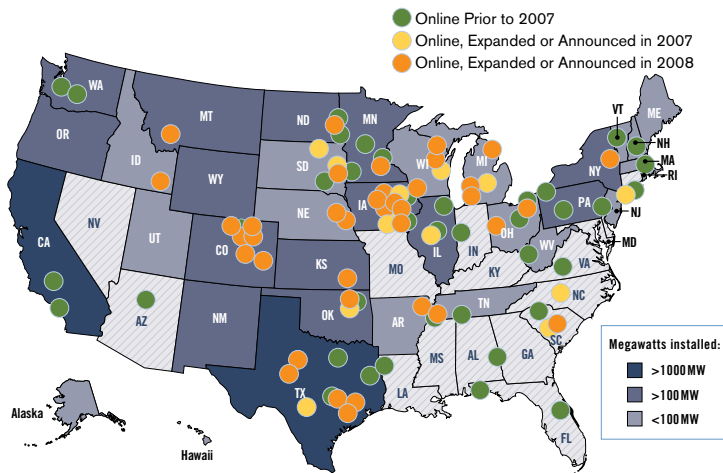
A national renewable electricity standard (RES), sometimes called a renewable portfolio standard (RPS), would call on retail electricity suppliers to provide a specified, minimum percentage of their electricity sales from renewable sources by a certain date, or to purchase the equivalent amount of renewable energy certificates (RECs) to meet the standard.

An RES would, for the first time, signal a long-term, national commitment to expand the use of renewable energy in the United States. This stable policy would enable the wind industry to attract investment capital and achieve economies of scale in the domestic manufacturing sector, lower consumer electricity prices, and slow global warming. A 2007 U.S. Energy Information Administration (EIA) study shows that 25% by 2025 RES would save consumers money by reducing the amount of natural gas used for electric generation and lowering natural gas prices overall.<sup>1</sup> The EIA analysis also shows that a 25% by 2025 RES would prevent over eight billion tons of carbon dioxide from being emitted into the atmosphere, stabilizing electric sector emissions at today's levels.<sup>2</sup>

Twenty-eight states and the District of Columbia have enacted RES policies, but an RES has never been established at the national level. A national policy would streamline this uneven patchwork and bring renewable energy benefits to all parts of the country.

National RES legislation was first considered by the U.S. Congress in 1997. Since that time, the Senate has passed RES proposals on three separate occasions and the House has passed an RES proposal on one occasion. During the 109th Congress, the Senate passed a 10% renewable electricity by 2020 standard as part of the *Energy Policy Act of 2005*, but the RES was not included in the final version of the bill. A slightly stronger 15% by 2020 draft proposal gained momentum in the Senate during the 110th Congress, but this proposal was never considered by the full Senate. During the 110th Congress, the House passed a 15% by 2020 standard as part of the *New Direction of Energy Independence, National Security, and Consumer Protection Act*, but the RES was not included in the final version of the bill. The Obama-Biden *New Energy for America* plan calls for a 25% by 2025 renewable electricity standard.

### Creating Jobs With Wind Industry Manufacturing Facilities



A national RES would foster significant growth in manufacturing investment across the country. Since 2007, over 50 wind industry manufacturing facilities have been opened, expanded, or announced in the U.S., creating many thousands of American jobs once complete. *Sample of Manufacturing Facilities, November 2008*

- PPG Industries, Lexington, NC
- Siemens, Fort Madison, IA
- Tower Tech, Manitowoc, WI
- Trinity Structural Towers, Clinton, IL
- Winergy Drive Systems, Elgin, IL
- Acciona, West Branch, IA
- Ahlstrom Specialty Reinforcements, Bishopville, SC
- ATI Casting Service, Alpena, MI
- DMI, West Fargo, ND
- DMI, Tulsa, OK
- Dragon Wind, Lamar, CO
- Fuhrlander AG, Butte, MT
- GE Energy, Memphis, TN
- GE Energy, Schenectady, NY
- Genzink Steel, Holland, MI
- Hexcel, TBD, CO
- K&M Machine Fabricating, Casseopolis, MI
- Katana Summit, Columbus, NE
- Martifer, San Angelo, TX
- Merit Gear, Antigo, WI
- Minster Wind, Minster, OH
- Moventas, Faribault, MN
- Rotek, Aurora, OH
- Nordex, Jonesboro, AR
- Nordic WindPower, Pocatello, ID
- Northstar Wind Towers, Blair, NE
- RTLC Windtowers, MacGregor, TX
- Sector5, Oelwein, IA
- Siemens, Boulder, CO
- Siemens, Elgin, IL
- Siemens, Fort Madison, IA
- Tower Tech Systems, Abilene, TX
- Tower Tech Systems, Sioux Falls, SD
- TPI Composites, Newton, IA
- Trinity Structural Towers, Newton, IA
- Vestas, Pueblo, CO
- Vestas, Brighton, CO
- Vestas, Houston, TX
- Vestas, Windsor, CO
- Wausaukee Composites, Cuba City, WI
- Wausaukee Composites, Wausaukee, WI
- Wind Energy Services, Independence, KS
- DeWind, Round Rock, TX
- DMI, Tulsa, OK
- Dowding, Eaton Rapids, MI
- Hailo LLC, Holbrook, NY
- Hendricks, Keokuk, IA
- Kaydon Corp., Sumter, SC
- Knight & Carver, Howard, SD
- Molded Fiberglass, Aberdeen, SD

## Key Recommendations on a National Renewable Electricity Standard

### Required Renewable Percentage

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The national RES should call for 25% of the nation's electricity to come from renewable sources by 2025. An aggressive near-term target, such as the 10% by 2012 objective called for in the Obama-Biden *New Energy for America* plan, is essential to ensure rapid deployment of renewables. Target levels should increase incrementally in the years that follow.

An RES specifies the minimum percentage of renewable electricity needed by a certain date. The ramp-up rate of the required renewable percentage is as important as the ultimate percentage of renewable electricity that the legislation requires. Low percentage targets in the early years could adversely impact the deployment of renewable electricity sources like wind power. A national RES program should require meaningful additional renewable electricity generation in any given one-year or two-year period. Aggressive targets throughout the entire program are critical to deploy substantial wind power on a steady basis.

### Alternative Compliance Program

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A national RES should include an alternative compliance payment that is set high enough to provide a robust incentive to build renewable energy projects.

As a means for providing greater flexibility, most national RES programs have included an alternative compliance mechanism to accommodate the possibility that a retail electricity supplier may not be able to purchase sufficient RECs at a reasonable cost to meet the renewable resource target. If the federal alternative compliance payment is too low, existing state RES programs would then be expected to lower their cost caps, undercutting a broad array of currently effective state programs. The interaction between the federal RES program and existing state programs should be considered in all aspects of the federal program design.

In the 110th Congress, the House RES proposal included an alternative compliance payment of 2.5 cents per kilowatt-hour (kWh). The Senate RES proposal set a 2 cents/kWh payment. National environmental groups, including the Union of Concerned Scientists, have been advocating for an alternative compliance payment of at least 3 cents/kWh. Senator Klobuchar's (D-MN) *American Renewable Energy Act of 2008* (S. 2642), which proposed a 20% by 2025 RES, originally included a 5 cents/kWh alternative compliance payment.

### Coordination with State Policies

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States should retain the latitude to impose more stringent renewable targets than the national RES.

A national RES should allow states with more stringent targets the latitude to determine how state compliance RECs should be treated where such RECs reflect reductions below national targets. Surplus state compliance RECs could, at the state's option, either be retired, thus realizing additional environmental benefit, or be made available for sale to other states to enable compliance with the national targets.

Both the House and Senate RES proposals in the 110<sup>th</sup> Congress addressed federal/state coordination. The Senate language specifically called for the Secretary of Energy to facilitate coordination between the federal program and state programs, while the House language stated that nothing in the federal RES law would diminish a state's authority to impose stricter RES requirements or to regulate the "acquisition and disposition" of federal RECs.

A key issue is how more stringent state RES programs treat RECs above the national RES requirements. The Senate language allows states to sell state RECs generated above the federal requirements to other states for compliance with the national RES, but does not provide express authority for states to retire credits generated by more stringent state programs. This approach does not show sufficient deference for stricter state RES programs or for the voluntary REC market, both of which allow progress beyond the national targets. To address this issue, California groups have developed legal language that gives states the authority to determine whether to allow RECs to be sold solely for state RES compliance or to be sold throughout the country for national RES compliance.

### Cost Recovery

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A national RES should include language that allows utilities to recover the cost of transmission projects built to comply with the standard.

The Senate proposal in the 110<sup>th</sup> Congress called for regulations that would allow utilities to recover reasonable costs associated with federal RES compliance. The House proposal specified that utilities would be allowed to "recover the full amount of the prudently incurred incremental cost of renewable energy and energy efficiency" to comply with the RES. Since expanding transmission capacity is critical to both overall utility system reliability and large-scale renewable energy development, national RES language should also provide for transmission facility cost recovery.



## NOTES

### Background: 20% Wind Energy by 2030:

<sup>1</sup> National Renewable Energy Laboratory. *Power System Modeling of 20% Wind-Generated Electricity by 2030*. June 2008; Number reflects mid-case secondary natural gas savings from 20% Wind (2006 dollars).

<sup>2</sup> *Ibid*; Number reflects mid-case carbon savings from 20% Wind (2006 dollars) and assumes a \$21.8/ton carbon cost.

### Executive Summary:

<sup>1</sup> U.S. Department of Energy. *20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply*. May 2008.

<sup>2</sup> National Renewable Energy Laboratory. *Power System Modeling of 20% Wind-Generated Electricity by 2030*. June 2008; Number reflects mid-case secondary natural gas savings from 20% Wind (2006 dollars).

### Renewable Electricity Standard:

<sup>1</sup> A March 2007 analysis conducted by energy research firm Wood Mackenzie, *Impact of a Federal Renewable Portfolio Standard*, found that a 15% renewable electricity by 2020 standard would save consumers more than \$100 billion. It is anticipated that the 25% RES would create an even more substantial consumer savings.

<sup>2</sup> Energy Information Administration. *Energy and Economic Impacts of Implementing Both a 25-Percent Renewable Portfolio Standard and a 25-Percent Renewable Fuel Standard by 2025*. August 2007.

## PHOTO CREDITS

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November 2008