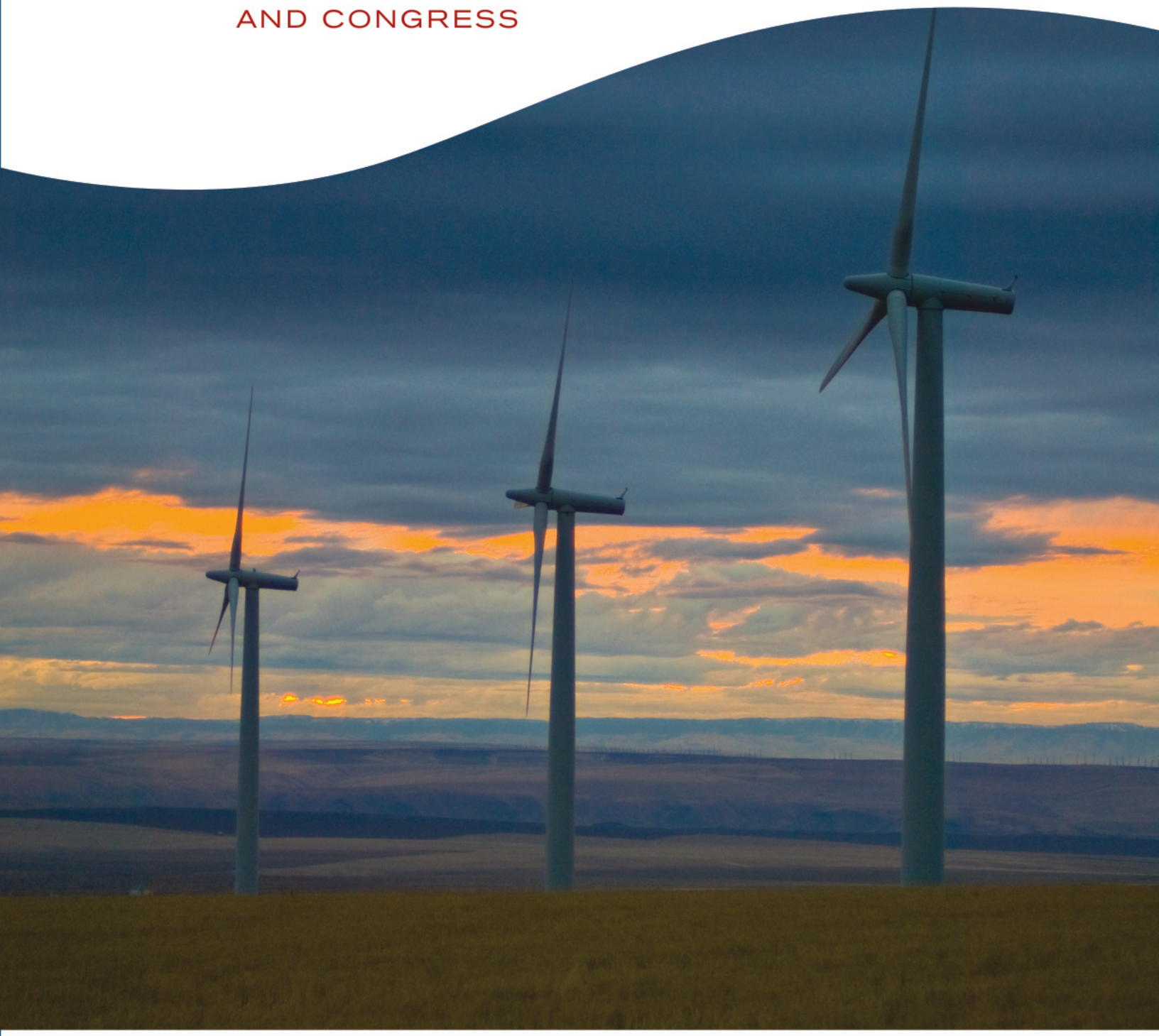
WIND ENERGY
FOR A NEW ERA

AN AGENDA
FOR THE NEW PRESIDENT
AND CONGRESS



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.

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November 2008

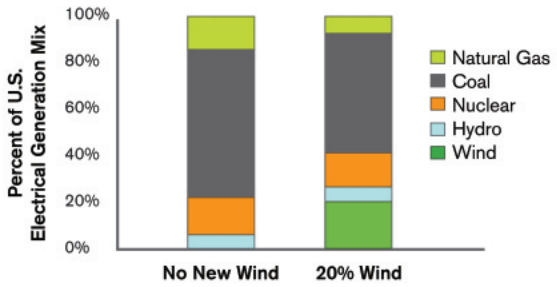
BACK GROUND

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 avings, 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.[1]
  - $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.[2]

SUMMARY

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[1], save consumers $128 billion through lower natural gas prices[2], 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

4 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

5 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

6 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

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

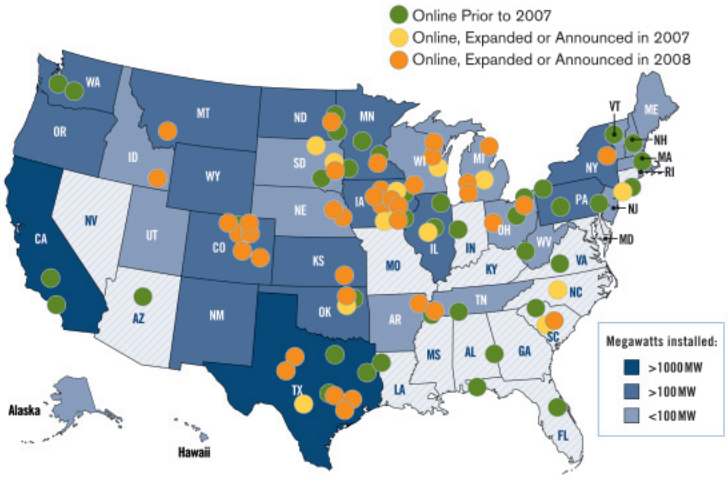
A national renewable electricity standard (RES), sometimes called a renewable portfolio standard (RPS), would call on retail electricity suppliers to provide a specified, minimum percentage of their electricity sales from renewable sources by a certain date, or to purchase the equivalent amount of renewable 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.[1] 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.[2]

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*

- 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
- 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

Key Recommendations on a National Renewable Electricity Standard

Required Renewable Percentage

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

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

To provide greater flexibility, most national RES proposals 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

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 110th 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

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 110th 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.

2 Renewable Energy Production Tax Credit

Established in 1992, the renewable energy production tax credit (PTC) has been a driving force behind the growth of the wind industry in the United States. The PTC is the primary federal policy to encourage wind energy growth in the near term. Unfortunately, however, there are two important problems with the PTC: the credit's limited utility in an adverse financial climate and the history of short-term extensions.

Key Recommendations on the Production Tax Credit

Making the Credit Work in an Adverse Financial Climate

The PTC should be restructured to facilitate its efficient usage, even in an economic downturn. The credit should be made refundable and wind energy developers should be allowed to carry credits generated in 2008 and 2009 back against tax liability over the prior decade.

It is an increasingly serious concern that tax benefits associated with wind projects (production tax credits and accelerated depreciation) offer limited value in an adverse financial climate where there is little need or demand for tax benefits. The wind power industry is seeking changes that make it possible to fully realize the economic benefits of these tax provisions, particularly during an economic downturn. Specifically, we seek changes that would foster efficient use of all tax incentives by making the credit and depreciation benefit refundable and by increasing flexibility to allow the credit to be utilized to offset tax liabilities from the prior decade. These changes are essential if tax incentives are to promote the development of renewable energy as effectively as they have in the past.

Credit Duration

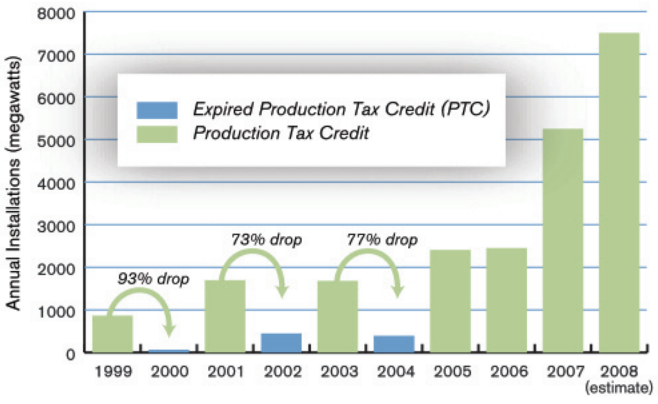
The PTC should be extended for at least five years.

While the PTC was originally enacted in 1992 for eight years, subsequent short-term extensions have led to boom-and-bust cycles for wind energy development. The credit has typically been extended for only one-year or two-year terms, and has been allowed to expire on three separate occasions – at the end of 1999, 2001, and 2003. As a result of this on-again, off-again pattern, the wind power industry has been denied the certainty needed to make long-term investments in wind power manufacturing and development.

In the 110th Congress, it took 18 House and Senate floor votes to secure a one-year PTC extension. Early in the Congressional session, the House Ways and Means Committee and Senate Finance Committee each proposed multi-year PTC extensions (four years and five years, respectively). In the end, however, the credit was extended for one year on the last day of the session and is now set to expire again on December 31, 2009.

The proposed extension of at least five additional years would, at last, provide wind energy with the kind of policy stability that other energy industries have long enjoyed. Such a step is essential for the wind industry to achieve growth consistent with the 20% by 2030 vision.

Historic Impact of PTC Expiration on Annual Installation of Wind Capacity



This on-again, off-again pattern has discouraged companies from making long-term, sizeable investments in wind power manufacturing and development.

Expanding the Small Wind Credit

The small wind turbine investment tax credit (ITC) should be improved by removing the current cost caps.

Small wind systems with 100 kilowatts (kW) or less of capacity are used to power homes, farms, and small businesses. Such wind power systems are ineligible for the PTC and instead benefit from a new small wind turbine ITC enacted in 2008. The ITC provides owners of small wind systems with a credit for 30% of the total installed cost of the system, up to $4,000. For turbines used for homes, the credit is additionally limited to the lesser of $4,000 or $1,000 per kW of capacity. The cost caps should be removed to maximize the incentive for small wind deployment.

Clean Renewable Energy Bonds

Annual funding for the Clean Renewable Energy Bonds (CREBs) program should be increased to provide an incentive for renewable energy development that can be utilized by non-profit entities, such as rural electric cooperatives, that are not taxed and cannot take advantage of the PTC.

In order to help non-taxed entities finance renewable energy projects, the *Energy Policy Act of 2005* established the CREBs program. But demand for CREBs has been stronger than anticipated and funding has not been sufficient to allow the majority of project applications to qualify for funding.

3 Federal Renewable Energy Transmission Policy

Transmission of wind power from windy rural areas, where it is generated, to population centers, where it is demanded, is the wind industry's biggest long-term growth barrier. There are two separate but related needs: expanding America's transmission infrastructure to establish a green interstate transmission highway system and securing a more coherent national electrical grid comprised of coordinated regional operations.

The lack of transmission infrastructure is already limiting generation development in many areas. The existing long lines for access to transmission lines, termed interconnection queue logjams, are largely a symptom of that constraint. Transmission plans are currently in progress to connect approximately 35,000 more megawatts (MW) of wind power to the electrical grid over the next five years, or 7,000 MW per year. With a concerted effort to build transmission, wind development could well exceed that installment rate over the longer term.

To achieve the proposed transmission expansion for the 20% wind vision, DOE's report says that 19,000 miles of high capacity lines will be required, at a cost of just over $20 billion in net present value, if spread out over the time period (or $60 billion, in undiscounted terms, if spent right now). Completion of such an effort would allow 16,000 MW per year of wind power development. To build the large interstate lines that are needed to achieve this vision, policies will need to address allocating the costs across utilities, easing siting challenges, promoting interconnection-wide planning, and providing assurance of retail electric rate recovery.

Coordinated regional grid operations will be needed to integrate wind energy into power systems, and to promote reliability of the bulk power system. Today, America's electricity grid is divided into 140 separate "balancing areas," each of which must balance among available electricity generation options to ensure that electricity demand within the area is met. This highly balkanized system greatly complicates the difficulty of integrating variable resources like wind power into our electricity grid. If these small balancing areas can be expanded to allow operation on a larger regional basis, wind energy will be less variable because it can be aggregated across many areas, and system operators will have access to hundreds of generators that can be turned up or down in response to load and wind variation. Some areas, like Texas, the Midwest, and the Northeast have vastly improved system operations through regional grid operations structures over the last decade. But solutions also need to be found for the Northwest and the Interior West, and continued improvements need to be made in the South Central and the Midwest.

Today there is no national commitment to enhancing our transmission infrastructure or achieving regional grid operations. Renewable energy has only recently emerged as a major driver of electric industry infrastructure and operational changes. Policymakers are rapidly becoming aware of the need for transmission expansion to advance greenhouse gas emissions reductions and renewable energy goals. Legislative proposals by Senator Harry Reid (D-NV) and Representative Jay Inslee (D-WA), along with hearings on transmission and renewables in both the Senate and House, have changed the political dynamic on Capitol Hill. In 2008, the DOE 20% wind report, the Pickens Plan, North American Electric Reliability Corporation (NERC) reports, and a number of electric industry white papers and policy proposals have fundamentally changed the national transmission policy landscape.

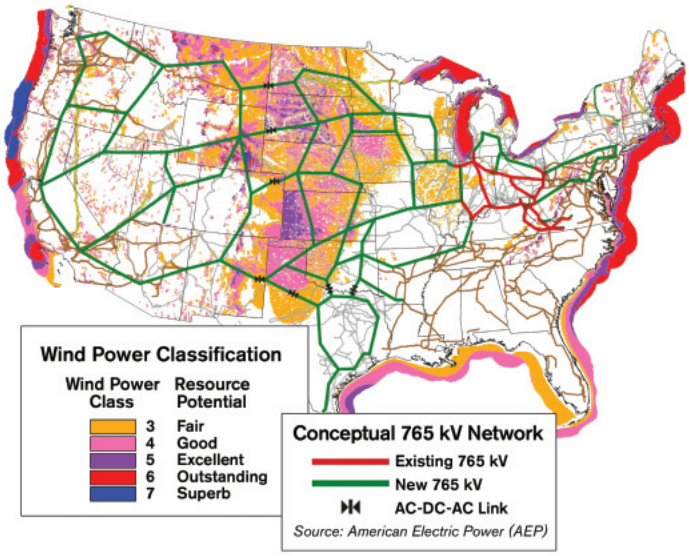
Key Recommendations on Renewable Energy Transmission Policy

Legislative Actions

Congress should pass legislation that provides more authority for the Federal Energy Regulatory Commission (FERC) and Department of Energy (DOE) to advance the development of a green interstate transmission highway system.

This legislation should include a regulatory structure for extra-high-capacity interstate transmission lines and feeder lines into renewable resource areas. The structure should include interconnection-wide transmission planning, broad regional cost allocation, and federal backstop transmission siting. The legislation should also include actions for federal utilities such as the Western Area Power Administration to promote renewable electricity resource development, reduce "seams" between the federal systems and neighboring utility grids, acquire renewable energy and renewable energy certificates on behalf of the federal government, and develop renewable energy integration programs.

Conceptual Transmission Expansion Plan



American Electric Power designed this transmission expansion plan, a conceptual design to accommodate 400 gigawatts of wind power.

Congress should pass legislation that promotes regional grid operations.

Legislation should direct the FERC, the NERC, and the electric industry to evaluate and pursue means of improving regional grid operations.

Such an effort is particularly important in the Interior West and Northwest, areas that do not have Regional Transmission Organizations (RTOs). Congress could require studies, provide "Sense of Congress" statements, and provide directives for FERC to consider the most efficient and reliable means of integrating large volumes of renewable energy.

Administrative Actions

The President and Congress should establish as a national priority the development of a green interstate transmission highway system and regional grid operations.

There are many actions that FERC and DOE can take within existing authorities, but they need a cohesive national commitment in which to work. The President and Congress can create this national commitment.

FERC should promote transmission infrastructure expansion and regional grid operations.

FERC can promote sound investments in transmission infrastructure through a shift from reactive to proactive transmission planning, broad regional cost allocation, encouraging participation in RTOs, promoting regional transmission planning, extending the time horizons of transmission plans that access resources that are limitless and concentrated in certain known locations, planning that assumes non-zero carbon values, and planning that incorporates committed generation projects from interconnection queues.

FERC can promote regional grid operations by encouraging RTO participation, merging and enlarging balancing areas, implementing short-term spot energy markets, expanding the use of more efficient transmission services such as conditional firm service and dynamic line ratings, ensuring non-discriminatory ancillary services charges and interconnection standards, and eliminating "pancaked" transmission rates.

DOE should advance transmission infrastructure expansion and improve wind integration into power system operations.

DOE can advance infrastructure by designating National Interest Electric Transmission Corridors to wind-rich areas, and financially supporting Governors' regional transmission planning efforts. DOE can employ the Western Area Power Administration to develop renewable energy in its territory, integrate operations with neighboring markets, eliminate "pancaked" transmission rates, offer more efficient transmission products, and develop transmission infrastructure.

DOE can help with wind integration into power system operations by continuing to support the highly successful System Integration Program, which helps utilities with analysis and data to plan for increasing levels of variable generation integration.

4 National Climate Change Legislation

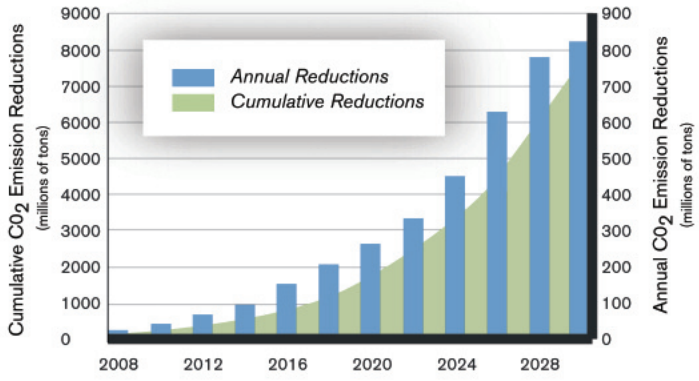
The wind industry supports a climate protection program that is consistent with the recommendations of leading scientists, such as the U.N. Intergovernmental Panel on Climate Change, regarding the level of emissions reductions needed to protect the planet's climate. As the most readily deployable form of carbon-free electricity generation, wind energy can make a significant contribution to the effort to combat climate change, especially in the critically important earlier years of a climate protection program when few other options are available for large-scale, cost-effective emissions reductions. Indeed, achievement of 20% wind power is comparable, from an emissions-reduction perspective, to removing 140 million vehicles from the roads.

Capping greenhouse gas emissions and putting a price on carbon will help make renewable energy more cost competitive. However, whether that step alone is sufficient to deploy renewable energy in the quantities necessary to begin to address the serious climate challenges facing the planet depends on many other factors, including:

- the stringency of the cap;
- the timing of its implementation;
- the details of cost containment provisions; and
- additional incentives, if any, that are provided for renewable energy and other technologies.

The various provisions in climate change legislation often interact with one another, meaning that one provision can make another more or less effective in promoting renewables, depending on the details.

CO_2 Emissions Reductions from 20% Wind Energy by 2030



Achieving the 20% wind vision would avoid the emissions of 7,600 million metric tons of carbon dioxide by 2030, equivalent to removing 140 million vehicles from the roads. Source: U.S. DOE, 20% Wind Energy by 2030 Report

Key Recommendations on Climate Change Legislation

Emissions Cap and Timetable

Climate change cap-and-trade legislation should include a cap sufficiently stringent to stabilize greenhouse emissions at the level recommended by the U.N. Intergovernmental Panel on Climate Change as sufficient to protect the planet.

Leading scientists support greenhouse gas emission reductions within the range of 60%-80% by 2050. Increasingly, however, the scientific community is observing and reporting impacts from climate change that are sooner and more dramatic than expected. From an economic perspective, a more stringent cap on emissions means a more robust price signal to invest in clean energy. Requiring a steady reduction over time is also an important part of this effort.

Climate change cap-and-trade legislation should include strong near-term emissions caps requiring a 15%-20% reduction by 2020, with year-by-year targets prior to 2020, to provide a robust, stable price signal.

Climate change legislation needs both near-term and long-term emissions caps in order to provide a stable incentive to deploy renewable energy. Given wind energy's availability as a near-term, abundant, affordable option, there is no need to wait to begin reducing emissions. Emissions reductions should not be delayed into the future or conditioned on commercial availability of carbon capture and sequestration technology or other nascent technologies.

Allowance Allocation

Climate change legislation should ensure that the emission reduction contributions from renewable energy are directly recognized financially through allowance allocation, providing a strong, front-loaded incentive to deploy renewable energy. There are multiple ways to do this:

- **Output-based allocation:** Under this approach, allowances would be provided to electricity producers based simply on megawatt-hours generated. This

method rewards pollution-free electricity production and provides an incentive for investment in renewable energy, since each generator would know precisely how many allowances they would receive for their electricity production.

- **Renewable energy set-aside:** An alternative would be to provide a specific percentage of the overall allowance pool for renewable energy generators. For maximum impact, the set-aside should be distributed based on a set formula that is calculated from megawatt-hours of production. Advance certainty regarding eligibility and the amount of the incentive is critically important to project financing. The industry supports a distribution formula of at least one allowance for every two megawatt-hours generated by a qualified renewable energy project.

- **Hybrid allocation:** Depending on the details, a hybrid allocation scheme in which allowances are provided to existing generators based on emissions, while allowances are provided to new generators based on output, might be an acceptable way to reward new clean energy projects while minimizing disruption for current fossil fuel generators.

  The wind industry opposes providing allowances based on historic emissions (emissions-based allocation). This approach rewards the biggest polluters and fails to recognize the value of clean domestic energy in helping the nation meet greenhouse gas reduction targets.

100% Auction of Allowances

If climate change cap-and-trade legislation provides for 100% auction of allowances, a portion of the revenue generated must be used to address key issues confronting the renewable energy industry, including:

- **Long-Term Production Incentive:** This is the highest priority use for auction revenue. To effectively promote investor financing of new wind power projects, the incentive needs to be long-term, stable, predictable and guaranteed on the basis of new wind power megawatts brought onto the grid.

  One approach is for auction revenue to be used to finance a long-term extension of the existing production tax credit (PTC). This approach would be workable given the familiarity of the industry and financial markets with the PTC, and given its proven track record at getting projects in the ground. Most climate bills have sufficient funding to finance a ten-year extension. However, questions have been raised about whether there is sufficient tax appetite to allow the wind power industry to fully utilize a ten-year PTC in the current structure, or whether a non-tax-based production payment would be better.

  A production payment that is not tax-based would be acceptable as long as the value is equivalent to the existing PTC and it has the same certainty and predictability in terms of eligibility and duration.

- **Transmission:** The biggest barrier to upgrading America's transmission infrastructure, consistent with construction of the new green interstate transmission highway system, is determining how to pay for the investment. In today's syetem, every utility has an incentive to take advantage of new transmission without contributing to funding the effort, and there is no common regulator with jurisdiction to develop and enforce a cost-allocation arrangement. Federal financial support for a new green interstate transmission highway system designed to maximize deployment of renewables can reduce the strain on the cost-allocation problem.

- **Worker Training:** Expanding and maintaining the quality of the renewable energy sector workforce is critical to the continuing growth of the industry. Assistance should be provided directly to workers for investments in training programs as well as to colleges that seek to expand their educational programs for this audience.

  A variety of proposals have been offered for using auction revenue to finance worker training for clean energy jobs via tax credits for individual workers, non-tax-based financial assistance for individuals to participate in training programs, and assistance to expand the programs themselves.

- **Incentives for Domestic Manufacturing:** Incentives for investments in domestic manufacturing could be provided either through a grant-like program for manufacturers for up to 30% of the cost of establishing, equipping or expanding a facility that is part of the renewable energy industry supply chain or through creation of a new investment tax credit.

- **Research & Development:** A portion of the auction revenue could also be used to support expanded renewable energy R&D. However, R&D should not be the only assistance provided to renewable energy through auction revenue, as it does not directly encourage renewable energy deployment.

Cost Containment

While the cost of climate legislation is an important concern, efforts to contain costs should first rely on the immediate deployment of currently available, cost-effective options, such as renewable energy technology, as well as market-based mechanisms like banking (carrying unused credits into the future), borrowing (using credits from future years but within limits), and offsets (emission reductions from outside the regulated sectors).

To the extent that additional cost-containment options are under consideration, the details should be carefully developed so as not to unduly limit the incentive to invest in non-emitting energy technologies. If any type of limit on carbon price (i.e., a safety valve) is included in cap-and-trade legislation, separate and complementary provisions should be included to ensure that incentives to encourage deployment of carbon-free renewable energy are not undermined.

Voluntary Market Considerations

Climate change legislation should accommodate existing voluntary markets for renewable energy certificates.

This can most easily be accomplished through direct allocation of allowances to renewable sources. However, under an auction regime, where allowances are not distributed, alternative mechanisms must be included to ensure the integrity of the market for surplus renewable energy and accompany the resulting reductions in greenhouse gas emissions so that consumers willing to pay more for additional reductions can continue to do so. The voluntary market for renewable energy and emission reductions is a successful and growing market today. This market allows consumers to reduce their carbon footprint by purchasing RECs or other carbon reduction products which reflect a reduction in carbon emissions below business as usual. If a cap-and-trade program is implemented, and a hard cap on emissions is set, with equivalent allowances going to regulated entities, it becomes technically impossible to make surplus emission reductions (above and beyond the cap level) through voluntary purchases of additional renewable energy.

This impact occurred under the *Clean Air Act's* SO_2 cap-and-trade program, where additional renewable energy generation could not claim reductions in SO_2 emissions because allowances equivalent to the cap level were distributed and controlled by emitting entities. Efforts to increase clean generation could not claim an impact on emission reductions. Under a cap-and-trade program, the only way to enable surplus emission reductions is to take allowances out of circulation which would effectively lower the cap level.

A cap-and-trade program should be structured to allow and maintain the integrity of this voluntary market (for customers who choose to pay a premium and create additional reductions). This can most easily be done by allocating allowances to renewable generators. Renewable generators can choose to participate in the voluntary market, to retire those allowances, or to simply sell them back into the carbon market for purchase by regulated entities.

Promotion of Small Wind Systems in Climate Legislation

Climate legislation should also include incentives for small wind systems (with capacities of 100 kilowatts and less).

Options include using auction revenue to fund rebates for consumers who purchase and install small wind systems, incentives for states and utilities to support such systems, or incentives for manufacturers to install such on-site renewable generation.

5 Wind Power Project Siting Policies

Resolving wind power project siting issues is an important part of expanding wind energy development. Policies and procedures not properly coordinated between the wind industry and the government can cause, and, in fact, have caused, unnecessary delays for wind projects.

The federal government controls millions of acres of surface land and seabed across the U.S. The Bureau of Land Management (BLM) controls 258 million acres, the U.S. Forest Service (USFS) controls 193 million acres, and the Minerals Management Service (MMS) controls the Outer Continental Shelf, which extends to international waters. A significant amount of this land and ocean area may be feasible for wind energy development.

Federal agencies are recognizing how the growth of the wind industry is related to the resources and policies for which they are responsible. Some of these agencies are writing policies on wind development. For example, wildlife issues remain a focal point not only for the U.S. Fish & Wildlife Service (USFWS), but for the BLM, USFS and other agencies as they consider policies for lands that they manage. Multiple agencies are having difficulty accommodating wind industry growth within their existing review processes. Unless proactively addressed, these issues will multiply as wind energy growth continues.

To achieve 20% wind power in the U.S., the principles applied to wind energy siting issues must promote efficient, fair, and open permitting processes at the federal, state and local levels. Also, project siting guidelines must address wildlife and habitat issues, military and non-military infrastructure, and community concerns.

Key Recommendations on Wind Power Project Siting Policies

Prioritization of Renewable Energy Development

The next President should issue an Executive Order to prioritize responsibly-sited renewable energy development on federal lands.

Several federal agencies manage land that might be appropriate for wind energy project development, including the BLM, the USFS, and the MMS. Wind power and other renewable energy project development should be a priority on federal lands, especially in light of other energy resource development that is already underway on those lands.

In 2001, President Bush signed Executive Order 13212, directing all federal agencies to advance energy-related projects (both conventional and renewable) by expediting reviews of permits or taking other actions to accelerate the completion of energy projects. However, little has improved with respect to renewable energy. The next Administration should take more forceful action in relation to advancing renewable energy development on federal lands.

Federal Agency Staffing and Operations

The new Administration or Congress should require annual programmatic reviews at each federal agency to assess requirements associated with accommodating the 20% wind vision.

These reviews should address inter-agency coordination for assessing constraints on or support for future wind development resulting from their respective policies and actions. This could be accomplished through an Executive Order or established by Congress. The resulting annual reports should be made public and, as appropriate, submitted to Congress.

The Department of Energy's (DOE) 20% report identifies delays and limits associated with government review as a potential barrier to increased wind development. Some agencies do not have sufficient resources to handle expansion of wind development. Other agencies are likely to be unaware of the impacts that an annual wind power installation rate of 16 gigawatts, as needed to secure 20% wind power, will have on their operations.

A larger issue is the cumulative effect of overlapping land use restrictions put in place by different agencies. For example, overlaying wildlife setback areas and military airspace restrictions with macro wind resource data, may leave very little land available for wind development. Agencies should consider their collective actions within the context of the overall national goal of expanded wind energy development to achieve environmental, economic and energy security objectives.

To help deal with staffing constraints at the BLM, the Administration should support legislation to dedicate rental revenue from wind and solar projects on BLM lands expressly for the purpose of increasing staff to process additional wind and solar applications.

Wind and solar energy development are the only major activities on BLM lands for which there is neither revenue nor staff dedicated solely to ensuring the timely processing of permit applications. For other activities, including oil and gas, geothermal, film production, and communications towers, a portion of rental and/or royalty payments is recycled back into the BLM to fund staff specifically to process additional applications. Legislation is needed to dedicate rental revenue from wind and solar development on BLM lands back to the agency for the purpose of processing additional renewable energy applications.

As of January 2008, there were more than 150 applications pending for site testing and wind farm construction on BLM land. Due to limited staffing, site testing permits for wind energy, which ordinarily would take only 30-90 days to process, are taking a year or longer. These delays make it difficult if not impossible to develop and construct projects that are sorely needed to address climate change.

New BLM appointees in the next Administration should offer clear directives to field offices about the importance of accurate and consistent implementation of the wind development policy, additional staff training for field staff, and hiring of staff dedicated to processing wind energy permits.

In 2003, BLM initiated a Programmatic Environmental Impact Statement (PEIS) to address and plan for the impacts of future wind energy development on public lands. This effort was driven by the *Energy Policy Act*, which expressed the "Sense of Congress" that 10,000 megawatts (MW) of non-hydropower renewable energy resources should be located on public lands by 2015. The PEIS evaluated the development of wind energy on a large scale, established best management practices, and outlined a reasonable way to develop the nation's wind resources.

The wind industry supports the BLM's Wind Energy Development Policy, but the agency needs to administer it more effectively. Some of the problems are due to staffing constraints. However, some wind developers are encountering other problems at BLM field offices, an indication that additional training is needed.

The next Administration and Congress should increase staffing at the Federal Aviation Administration (FAA), USFWS, the National Weather Service and the Long Range Radar Joint Program Office (JPO) to allow for timely review and response to wind industry applications.

Wind energy projects are not subject to any comprehensive federal review, unless there is a federal nexus which triggers the *National Environmental Policy Act*, such as placing a project on federal land or connecting into a federal transmission system such as the Western Area Power Administration. However, even with that limited federal nexus, several agencies with evaluation requirements are overwhelmed by the sheer number of wind energy projects proposed. To date, the agencies most affected by hiring limitations are the FAA, the BLM, the USFWS, the National Weather Service and the Long Range Radar JPO of the Department of Defense (DOD) and the Department of Homeland Security (DHS). Additional government agencies and offices may be affected in the future. The Administration should ensure adequate funding and staffing to process renewable energy applications in a timely manner.

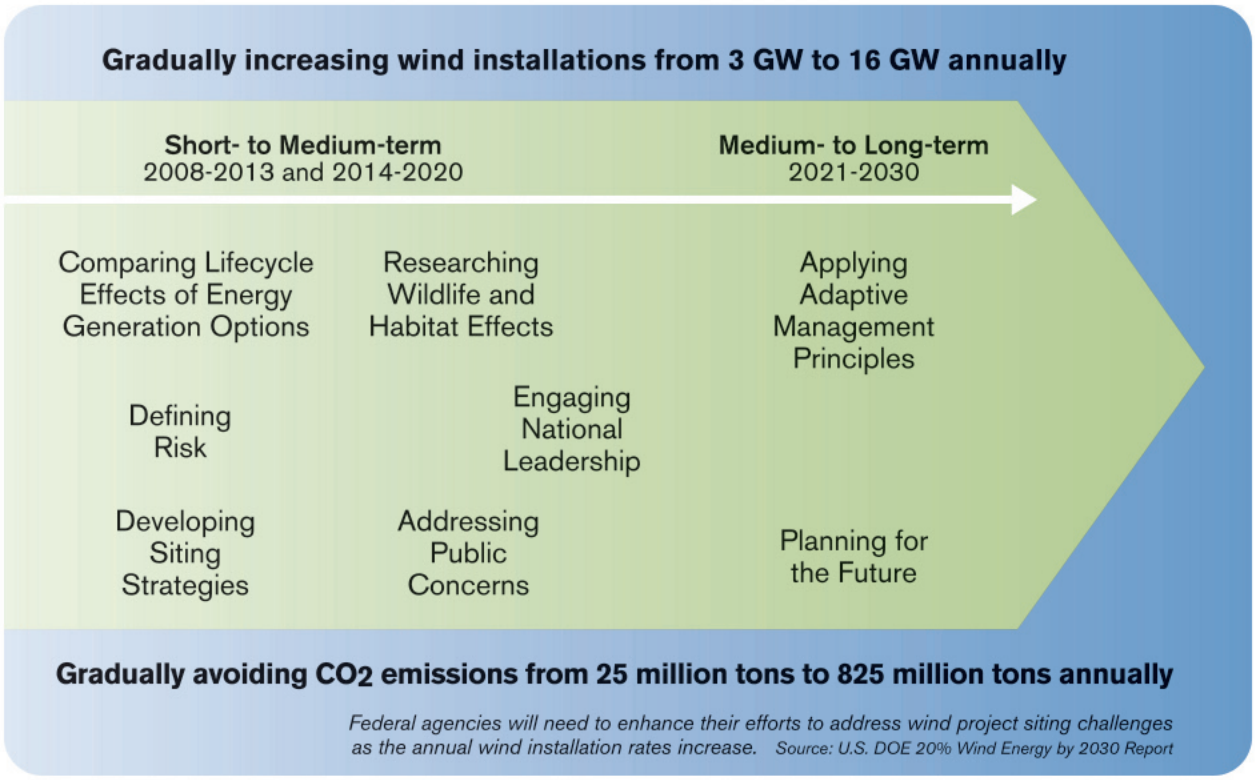
Siting Guidelines and Regulations

The next Administration should direct agencies to proactively engage with the wind energy industry and the DOE, consistent with existing federal law, when drafting policies that impact the siting, construction, or operation of wind energy facilities, to ensure that the resulting policies are workable and will not unnecessarily limit wind energy deployment.

When federal land management agencies develop siting policies for projects on their land, they often become models for state and local jurisdictions that develop their own rules. Therefore, policies must be developed with sufficient wind industry and public input to ensure they are workable. Adding the DOE to discussions would further inform other agencies about the unique aspects of wind energy development. Once reasonable, predictable, transparent, and timely siting policies are established, efficient and consistent implementation will be essential.

The new Administration should encourage the USFS to release an "interim final" draft of siting guidelines so the industry can try to help the USFS create a workable final document.

Actions to Support 20% Wind Energy by 2030



Federal agencies will need to enhance their efforts to address wind project siting challenges as the annual wind installation rates increase. *Source: U.S. DOE 20% Wind Energy by 2030 Report*

Currently there are a handful of wind power projects proposed for USFS land. The agency is considering them on an ad hoc basis. In September 2007, the USFS released draft directives to guide wind energy development on National Forest Service land. Before the release of this document, the wind industry repeatedly attempted to engage the staff drafting the directives and supply information about the wind project development process and constraints. USFS staff repeatedly stated that they were unable to have a more substantive discussion without violating the *Administrative Procedures Act*. The draft directives released in September 2007 included suggestions that are unworkable for the industry, such as allowing turbines to be relocated if unacceptable impacts were found, implying that two years of pre-construction wildlife studies might be required for temporary meteorological towers, and assigning one-size-fits-all wildlife monitoring guidelines, despite the variation among sites.

Given the significant flaws in the first draft, the wind power industry has serious reservations as to whether the necessary changes will be made in the next iteration to make the directive workable. In order to give the wind industry another opportunity to comment on and improve the proposal before it becomes final, the Administration should release the next draft as an "interim final" document.

If they are not completed as promised by the end of 2008, the new Administration should direct MMS to complete offshore wind regulations in a timely manner and to address any remaining concerns by amending the regulations after adoption rather than delaying them further.

The *Energy Policy Act of 2005* provided MMS with lead agency status to permit offshore alternative energy projects, including wind energy, on the Outer Continental Shelf. Congress directed MMS to complete regulations within one year. Completing the necessary review process and drafting the regulations has taken considerably longer–more than three years and counting. MMS published the draft rule on July 9, 2008, and AWEA's Offshore Wind Working Group filed comments on September 8, 2008.

Wind companies pursuing offshore projects in federal waters are concerned about the length of the regulatory process so far, and believe that further delay would be troublesome. MMS repeatedly asserts its intention to complete the regulations and publish a final rule by the end of 2008. If the rules are not published by then, the new Administration should ensure that the MMS publishes the final rules early in 2009 – in fact, as soon as possible.

Radar and Military Issues

The Administration should establish a process within existing law through which developers can engage the DOD. This process should be timely, transparent and predictable, and include an opportunity to appeal negative decisions and discuss mitigation options.

Wind turbines can impact radar systems. DOD is primarily concerned about impacts to Long Range Radars used to monitor the U.S. Some of the Long Range Radars deployed are older systems. The FAA was in the process of phasing out these facilities, but after the September 11, 2001, attacks, the DOD wanted to track activity in the interior U.S. and so assumed ownership of the Long Range Radars. The DOD pays the FAA to maintain the systems today.

In 2006, the FAA essentially placed a moratorium on wind development in the upper Midwest, tying up more than 1,000 MW of wind development. This action brought the issue of radar impacts to the fore. The U.S. Congress has directed the DOD to conduct a comprehensive study on wind turbine impacts to military readiness, primarily with regard to radar facilities. This prompted a joint office of the DOD, the DHS and the Long Range Radar JPO, to issue a letter saying it would object to any wind turbines within a long range radar line of sight. While the policy was later clarified to state that a site-by-site review of each individual turbine and project was appropriate, it is clear that the FAA/DOD coordinated radar impact review process is not working.

A developer must submit Form 7460-1 to the FAA for each wind turbine over 200 feet above ground level. This triggers a review by the U.S. Air Force. If the project is within line-of-sight of a long range radar, there is a more formal DOD review. It is unclear how this process works, as it is not transparent. If the FAA issues a Notice of Proposed Hazard for a project, there is little recourse for a predictable appeal. Projects issued a Notice of Proposed Hazard for a potential conflict with a radar system or military airspace have followed different paths to success, but many have not made it through, tying up millions of dollars and thousands of megawatts of renewable energy potential. The new Administration should direct the FAA and DOD/DHS to adhere to a transparent, timely and predictable review and appeal process for wind turbine obstruction evaluations.

The new Administration should direct DOD and FAA to create an early feasibility review that allows project proponents an opportunity to understand potential DOD concerns and points of contact.

FAA posted the Long Range Radar tool on the Obstruction Evaluation website that allows for a quick line-of-sight review. However, this does not provide a detailed technical review, nor does it identify any facility operator to contact to understand whether there are real impacts to that specific facility or to identify potential mitigation options. A more comprehensive early feasibility study that can be implemented before submitting Form 7460-1 is needed.

Congress and/or the President should direct the DOD, in coordination with FAA, to identify high priority Long Range Radar facilities that can be upgraded to enable wind energy development. Congress and/or the President will also need to appropriate funds to see these upgrades through.

Given that there are likely to be a limited number of facilities impacted by wind turbines, DOD, in coordination with FAA, should be able to identify some high-priority radar systems targeted for upgrades. Some Congressional offices have expressed interest in helping the wind industry identify sites and securing appropriations to upgrade some facilities to enable wind energy development.

The new Administration and Congress should provide $10 million annually for a radar mitigation R&D program at DOE in collaboration with DOD/DHS and the wind industry.

Mitigation measures to reduce radar impacts related to wind turbines must be pursued. Concepts such as stealth blades show some promise. Modifications to turbines or modifications to the radars themselves are likely to be necessary in some instances, depending on the type of interference, the type of radar, and the layout of the project. Both the U.S. government and the wind energy industry are likely to pursue research on mitigation methods. These efforts should be coordinated to the maximum extent possible.

New political appointees at the DOD should clarify that red/yellow/green maps are not decision making tools; they

are information-only tools designed to help determine the appropriate level of scrutiny a given project should receive.

Red/yellow/green maps related to military airspace use in some California counties, as well as a red/yellow/green screening tool related to Long Range Military radar facilities, are available. It is relatively easy for overwhelmed agency staff or for those opposed to development in a particular area to state that red or yellow areas are off-limits, based only on the map. The information reflected on a map is often far too coarse to use for site-specific decision making. For example, the Long Range Radar map is a simple line-of-sight assessment assuming 750-foot turbines (meanwhile, on-shore turbines in the U.S. today actually don't exceed 500 feet), so any areas indicated as red on the map should not automatically be off-limits. The visual nature of maps makes them powerful tools, but potentially misleading, so it is critical that their use be characterized as informational only.

Federal Coordination with Industry

The new Administration should maintain and improve existing government/industry collaborative efforts and consider supporting new initiatives.

The Department of the Interior established the Wind Turbine Guidelines Advisory Committee in October 2007. The 22-person federal advisory committee has been charged with making recommendations to the Secretary of the Interior to minimize impacts to wildlife from wind project development. The Committee has a two-year charter through October 2009, although the plan is to complete its recommendations by May 2009. The membership is divided among the wind energy industry, federal agencies, state agencies, and environmental organizations.

The USFWS intends to use the Committee's recommendations to inform a rewrite of the 2003 interim guidance document, criticized by the wind industry and others as not including wind/wildlife expertise. As it stands, the 2003 interim guidance is still the official policy of the USFWS with regard to siting wind energy projects in a manner which protects wildlife.

In the context of achieving 20% wind energy in the U.S., wildlife issues will continue to be a concern among permitting officials and policymakers. The work of this Committee is necessary to allow for industry expansion without overly restrictive mandatory regulations. It will be critical for the final recommendations to protect wildlife while not overly constraining wind energy development. Committee deliberations are progressing in a positive direction, albeit slowly. The new Administration should continue this work and incorporate its final recommendations into a new voluntary federal guidance document.

The new Administration should support the National Academy of Sciences' (NAS) comparative study on the health, environmental, and wildlife impacts of various energy sources.

The U.S. lacks a comprehensive assessment of the costs and benefits of all energy sources' environmental impacts. Without an apples-to-apples comparison it is difficult to make energy policy decisions in an increasingly carbon-constrained market. It is also difficult for wind energy to capture any of the external benefits inherent in a clean, emissions-free technology, especially in the context of siting decisions and wildlife impacts, without such an assessment.

The *Energy Policy Act of 2005* directed the NAS to conduct a study of the costs and benefits of all energy sources, but funds were not appropriated until 2008, when $1.5 million was set aside. NAS staff indicated that $2.5 million would be required, so additional funds may be needed to complete this critical report. The comparative study was begun in 2008 and is entitled "Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption." The study will include a quantitative comparison of wildlife impacts of various energy sources. The prepublication version of the report is due in August 2009.

The new Administration should continue to fund federal agency participation in collaborative efforts and support the American Wind Wildlife Institute (AWWI).

The federal government, through the DOE, USFWS and other agencies, collaborates with the wind energy industry on a variety of wind/wildlife issues and other research efforts and dialogue forums including the National Wind Coordinating Collaborative (including the Grasslands Shrub Steppe Species Collaborative) and the Bats and Wind Energy Cooperative.

The newly formed AWWI, a joint effort of the wind energy industry and environmental organizations, is seeking financial support from the federal government to identify and fund additional wildlife research.

6

Federal Research & Development and Wind Program Funding

Funding for the Department of Energy's (DOE) Federal Wind Program has provided essential help to the wind industry over the years by supporting technology development and assisting in market acceptance of wind. The job is not done, however. Wind power is still constrained by difficulties in market acceptance and needed improvements in cost, performance, and reliability. To reach the 20% wind vision by 2030, capital costs must be reduced by about 10% and capacity factors must increase by about 15%.

To meet these goals, funding must be provided for, but not limited to, the following:

- Larger, more advanced rotors;
- Taller, transportable, affordable towers;
- Lower cost, more reliable drive trains;
- Improving reliability through public/private partnerships to build blade and dynamometer test facilities and greater funding to examine the causes of premature failure of major turbine components;
- Proper grid integration/transmission planning and regional wind integration studies;
- Fundamental science in areas such as aerodynamics, wind flow, wake characterization, materials, and atmospheric characterization;
- Eliminating siting constraints;
- Improving small wind systems; and
- Development of offshore wind projects.

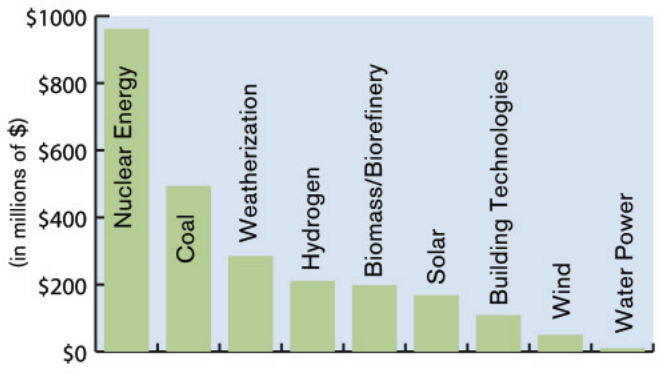
Key Recommendation on Federal Research & Development and Wind Program Funding

The new Administration should seek, and Congress should appropriate, an increase in annual federal funding for wind energy R&D and other programs to a level of $217 million, to be phased in over the next three to five years.

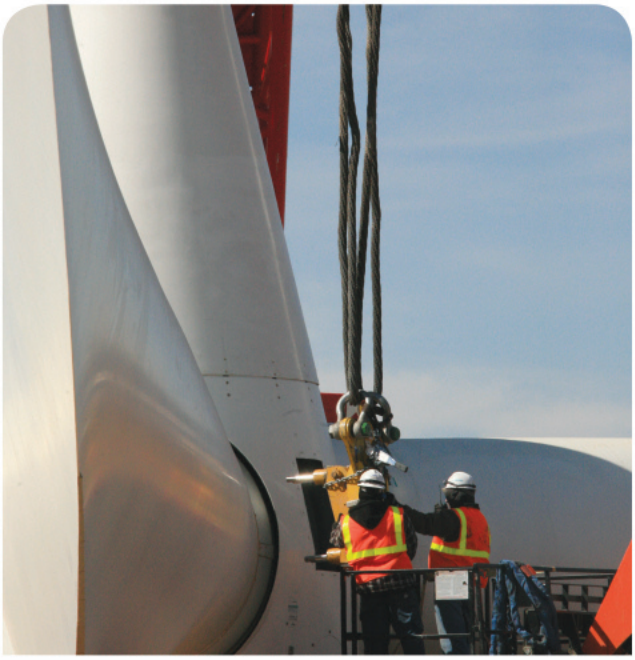
The DOE wind program currently receives about $50 million annually, a level that is well below its all-time high of $63 million appropriated in Fiscal Year (FY) 1980. In comparison, the R&D budget for nuclear energy is over $960 million, while coal receives nearly $500 million, solar receives over $160 million, and biomass receives roughly $200 million. The overall program budget for the Office of Energy Efficiency and Renewable Energy for FY 2008 was over $1.7 billion.

A team of over 80 AWEA members and advisors from industry, government and academic institutions have identified $217 million as the funding level that will be necessary to support the research and development and related programs needed to provide at least 20% of America's electricity from wind by 2030. Most of this funding should be provided to the Department of Energy's Office of Energy Efficiency and Renewable Energy wind program.

U.S. Department of Energy
R&D Energy Program Funding, FY 2008



The DOE wind program currently receives about $50 million annually, a level that is inadequate compared with funding levels for other fuels and energy sources. Source: DOE Congressional Budget Request for 2009



NOTES

Background: 20% Wind Energy by 2030:

[1] 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).

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

Executive Summary:

[1] U.S. Department of Energy. *20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply.* May 2008.

[2] 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:

[1] 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.

[2] 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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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.

More information on wind energy is available at the AWEA Web site:
www.awea.org

November 2008