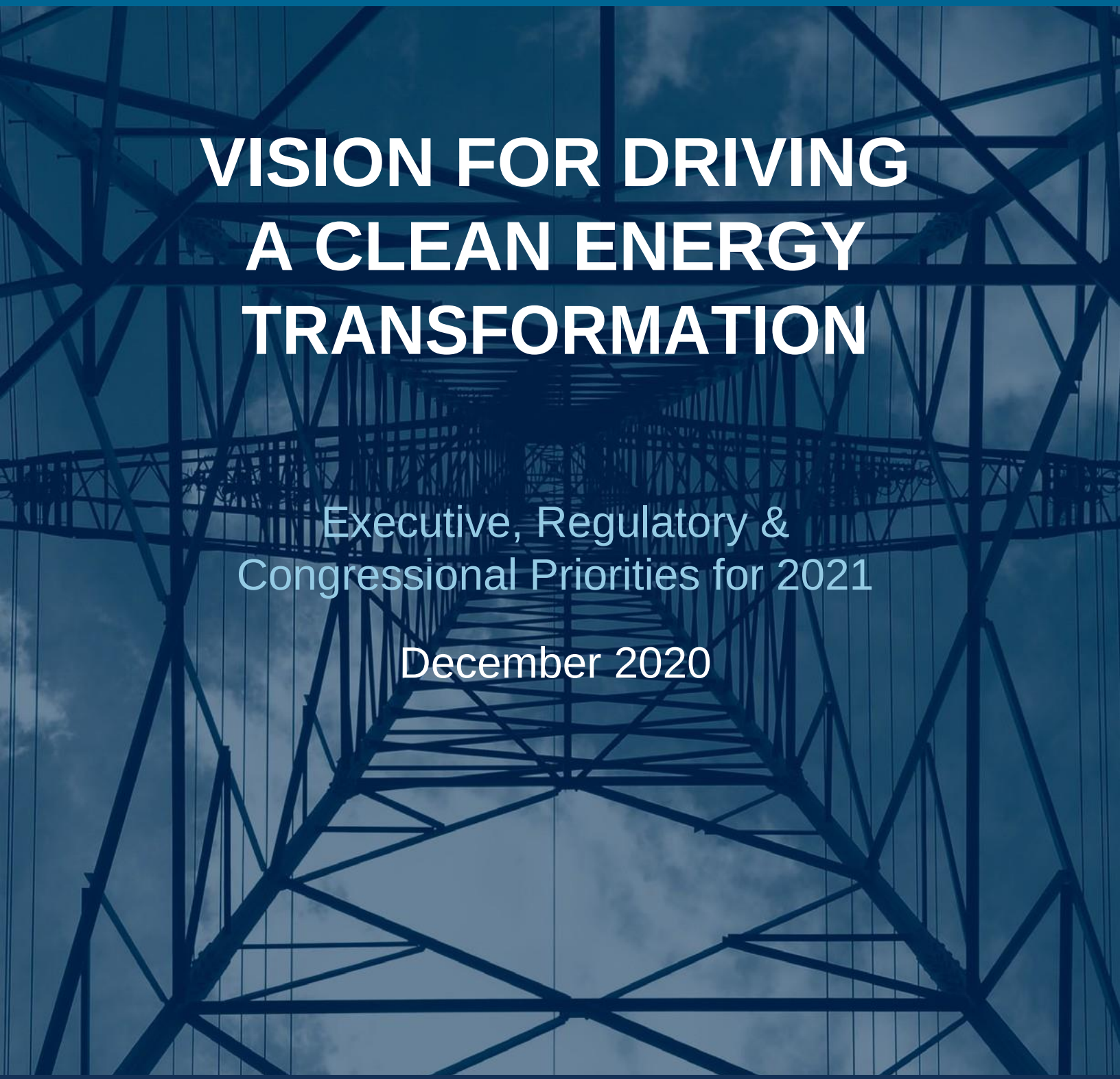
FULL REPORT



VISION FOR DRIVING A CLEAN ENERGY TRANSFORMATION

Executive, Regulatory & Congressional Priorities for 2021

December 2020

AWEA AMERICAN WIND ENERGY ASSOCIATION

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This document offers 2021 priorities for the White House, administrative agencies, and Congress to achieve rapid deployment of renewable energy to start the nation on the path toward meeting the goals in President-elect Biden's Plan for a Clean Energy Future of 100% clean electricity by 2035 and net-zero emissions economy-wide by 2050.[1]

Next year will bring increased opportunity to develop policies that support renewable energy and, in turn, address climate change, while creating hundreds of thousands of "green" jobs, providing enormous social and health benefits, ensuring energy security and resilience, and spurring a post-COVID economic recovery. In fact, the benefits from a transformation in the electric sector to clean energy are so great, they have been found to pay for themselves in health benefits alone.[2] While there are no tradeoffs in pursuing a clean, affordable electricity system, there is unfortunately no silver bullet for realizing these goals. Instead, the Federal government must pursue a suite of policies to form a comprehensive program that will set the nation on the course of a clean energy future.

To achieve this vision, AWEA offers recommended executive orders the incoming Biden administration could immediately take in its 1st 100 Days;[3] regulatory actions that Federal administrative agencies could undertake in the beginning of 2021 and complete by the end of that year; and areas that Congress could begin immediately pursuing.[4]

The 2021 priorities are laid out in the following four areas, which taken together form a comprehensive program – FOUR PILLARS – that the Federal government can take without delay to achieve long-term clean energy and carbon goals.


THE FOUR PILLARS


1 **CLEAN ENERGY TARGETS/CARBON POLICIES**
to drive renewable energy to meet climate and economic-expansion targets.

2 **EXPANDING INTERSTATE TRANSMISSION**
to deliver renewables to consumers at the least cost.

3 **EXPEDITING FEDERAL PERMITTING**
of renewables to ensure development can keep pace with clean energy goals.

4 **REMOVING COMPETITIVE BARRIERS**
for renewable energy to reduce the costs of decarbonization.

While the enactment of meaningful clean energy targets and carbon policies (the first PILLAR) are critically important for driving renewable energy deployment, the other three PILLARs are just as critical for enabling the build-out of renewable energy to meet the goal of decarbonization in the electric sector. To put a finer point on it (as discussed further in the background section, p. 8-10), the transformation to clean energy in the electric sector is not only dependent on increasing generation from renewable sources, it will also require a holistic approach to ensuring transmission, permitting, market, and other relevant policy reforms that support and enable getting renewable power to consumers. This will require, among other things, significant investments in our nation's grid and expediting permitting timelines for generation and transmission to ensure clean energy goals can be timely met.

Below is a brief summary of the recommendations in each of the FOUR PILLARS, which are expanded upon in the detailed recommendations section (p. 10-36). The priorities identified in this document are consistent with the spirit of President-elect Biden's plan for a clean energy future. Many of the priorities are also in line with bills introduced in the 116th Congress; if applicable, these bills are listed and AWEA's support is noted.

PILLAR 1: CLEAN ENERGY TARGETS/CARBON POLICIES (p. 8)

Carbon policies and clean energy goals to drive renewable energy to meet climate and economic-expansion targets.

EXECUTIVE ORDERS – 1st 100 Days

National Clean Energy Target: Set a national energy policy to achieve 100 percent clean energy by no later than 2035. (p. 8)

Federal Government Renewable Procurement Goal: Commit the federal government to purchase renewable energy for 35 percent of its electricity supply by 2025. (p. 8)

Federal Public Land/Waters Renewable Goal: Set a federal renewable permitting target for public lands/waters —BLM target of 30 gigawatts of renewable projects by 2030; BOEM goal of permitting a minimum of 12.5 GW of offshore wind by 2025 and a total of 30 GW by 2030. (p. 9)

REGULATORY – 2021 Priorities

Clean Air Act Authority to Regulate Carbon: Repeal Affordable Clean Energy Rule and issue replacement rule regulating carbon in the electric sector under Section 111 of the Clean Air to encourage Congress to adopt a meaningful federal carbon policy (Clean Power Plan 2.0). (p. 16)

LEGISLATIVE – 2021 Priorities

Federal Portfolio Standard: Enact a federal Clean Energy Standard (CES)/Renewable Electricity Standard (RES) that puts the country on the path to meeting the national clean energy target. (p. 9)

AWEA supports RES/CES legislation, such as HR 2597, the Clean Energy Standard Act of 2019 (Lujan), S 1974, the Renewable Electricity Standard Act (Udall) and S 1359, Clean Energy Standard Act of 2019 (Smith)

Federal Carbon Price: Enact a federal economy-wide fee or a cap-and-trade program; if a meaningful federal CES/RES is in place in the electric sector, the fee/cap could potentially apply only to other sectors. (p. 12)

An example of an effective carbon bill is Energy Innovation and Carbon Dividend Act of 2019, H.R. 763, 116th Cong. (2019) (Deutch).

Tech-Neutral Carbon-Based Tax Credit: Enact a technology neutral production/investment tax credit based on carbon emissions to provide a level playing field among energy generation sources. (p. 13)

An example of such legislation is the Clean Energy for America Act (Wyden)

PILLAR 2: EXPANDING INTERSTATE TRANSMISSION (p. 15)

Transmission reforms to deliver renewables to consumers at the least cost.

REGULATORY – 2021 Priorities

Authority to Designate Federal Transmission Corridors in the National Interest: Department of Energy (DOE) issue a delegation letter delegating to the Federal Energy Regulatory Commission (FERC) its authority to designate national interest electric transmission corridors.

Federal/Private Transmission Partnerships: DOE issue a directive to its Power Marketing Administrations to partner with transmission developers to construct and upgrade lines, as well as exercising eminent domain authority as a last resort to get such lines sited. (p. 15)

Transmission Reform at FERC:

- Engage in a rulemaking to revisit Order No. 1000 to: (1) strengthen the interregional transmission planning process to identify more efficient and cost-effective solutions; and (2) require robust consideration of federal/state public climate policies in transmission planning and cost allocation.
- Rulemaking to expand capacity on existing lines through a "shared savings" approach. (p. 17)

Transmission on Existing Rights-of-Way: DOE issue a study on recommendations for the co-location of electric transmission on existing rights-of-way. (p. 18)

LEGISLATIVE – 2021Priorities

FERC Backstop Siting Authority to Permit Lines: Clarify FERC's backstop siting authority allows it to approve an interstate project in a national interest electric transmission corridor if a state does not approve it within a year. (p. 19)

Improve Interregional Planning: Require FERC to reform the interregional transmission planning process so that it properly plans for and identifies projects across regions that provide economic, reliability, operational, and public policy benefits to consumers. (p. 19)

AWEA supports HR 4511/S 3109, the Interregional Transmission Improvement Act (Haaland, Heinrich), which would require FERC to reform the interregional transmission planning process.

ITC to Spur Transmission Development: Pass an Investment Tax Credit (ITC) for electric transmission to help drive long-term, private sector-led expansion and upgrade America's power grid, including a direct pay option for the credit to allow the broadest array of transmission stakeholders to develop projects. (p. 19)

An example of such legislation is S. 3107, the Electric Power Infrastructure Improvement Act (Heinrich)

PILLAR 3: EXPEDITING FEDERAL PERMITTING (p. 21)

Expediting federal permitting for renewables to ensure deployment can keep pace with clean energy goals.

REGULATORY – 2021 Priorities

Expediting Environmental Reviews:

- Council for Environmental Quality issue guidance proposing reasonable reforms to NEPA to improve permitting timelines for renewable energy and transmission.
- Bureau of Land Management (BLM) and the Bureau of Ocean Energy Management (BOEMM) expedite the siting of renewable projects on public lands.
- Fish and Wildlife Service (FWS) expedite general permits under the Bald and Golden Eagle Protection Act and the Endangered Species Act for projects; and if incidental take is deemed covered under the Migratory Bird Treaty Act (MBTA), issue enforcement assurances based on best practices or create a workable MBTA general permit program. (p. 21)

Increasing Offshore Renewable Energy:
BOEM hold five lease auctions by 2025; expeditiously issue Notices of Inquiry for the 10 offshore wind projects pending at BOEM; and immediately begin to process the 5 plus future offshore wind permit applications once they are submitted to BOEM over the next year. (p. 27-28)

Expanding options to reduce potential impacts to radars:
Federal Aviation Authority (FAA), Department of Defense (DOD), DOE, and National Oceanic Atmospheric Administration, in collaboration with industry, prioritize development, testing, and deployment of options (e.g., hardware, software) to reduce potential impacts from land-based and offshore wind turbines on different types of radars. (p. 28-29)

LEGISLATIVE – 2021 Priorities

Sufficient Resources for Review and Expediting Proposed Renewable Energy Projects:
Commit sufficient funding for FWS, BOEM, BLM, National Marine Fisheries, DOD, and FAA to increase the staff dedicated to reviewing proposed renewable projects in order to ensure timely processing. (p. 25)

AWEA supports HR 3794/S 2666, the Public Land Renewable Energy Development Act (Gosar, McSally), which would expedite renewable energy projects on public lands and use revenue from applications to process permits.

Ensure the Jones Act remains focused on transportation activities:
The Jones Act should not be extended to encompass "lifting operations" or it could cause an abrupt stop to offshore wind development as there are currently no U.S.-flagged heavy-lift vessels capable of constructing offshore wind projects. (p. 25)

Establish Offshore Wind Port Infrastructure:
Provide funds for the U.S. Department of Transportation to award discretionary grant funding to improve port facilities in states and territories, through the Maritime Administration's (MARAD) Port Infrastructure Development Program, that are critical links in developing offshore wind in the U.S. and ensuring it can compete in the global marketplace. (p. 26)

PILLAR 4: REMOVING COMPETITIVE BARRIERS (p. 27)

Removing competitive barriers to renewable energy to decrease costs of decarbonization

EXECUTIVE ORDERS – 1st 100 Days

Revisit EO on Bulk Power System: Revisit Executive Order directing DOE to develop regulations to provide for the evaluation and prohibition of critical infrastructure as it would result in unnecessary restrictions on transactions involving non-U.S. bulk-power system electric equipment; instead, leverage existing industry standards (e.g., NERC) to address cybersecurity threats to critical equipment, including using industry-driven standards and proven best practices. (p. 28)

REGULATORY – 2021 Priorities

Market Reforms at FERC:

- Reverse/modify prior orders interfering with state decisions on electricity supply mix and mitigating state-sponsored clean energy resources.
- Approve/encourage proposals that integrate a carbon price in organized markets.
- Encourage the expansion of organized markets through a policy statement.
- Ensure the Public Utility Regulatory Policies Act is reformed in a transparent and non-discriminatory manner. (p. 27)

Removing Trade Barriers for Renewable Energy:

- Remove trade barriers that are increasing costs in the renewable project supply chain.
- Department of Commerce revisit and lower duties on foreign wind towers.
- United States Trade Representative remove Section 301 tariffs for renewable components used in wind, solar, and storage, as well as considering revisiting Section 232 tariffs for steel used in renewable energy and allowing Section 201 tariffs related to solar to expire. (p. 28)

ARPA-C Program Focus on Technologies that Expand Renewable Energy: Focus the launch and work of the ARPA-C program on game-changing technologies that help integrate renewables. (p. 29)

Treasury/IRS start of construction guidance:

- Issue start of construction guidance that provides a 7-10 year continuity safe harbor for offshore wind projects given the reality that offshore wind permitting from lease award to final federal approval can take eight years or longer.
- Allow renewable energy projects to demonstrate continuity via continuous efforts regardless of what method the project used to qualify (physical work or 5% safe harbor), which would provide needed regulatory flexibility and certainty for projects that fall outside of the continuity safe harbor to prove continuity using a broader universe of project activities. (p. 34)

LEGISLATIVE – 2021 Priorities

Offshore Wind Investment Tax Credit: Enact a long-term investment tax credit for offshore wind energy that makes the industry more cost-competitive. (p. 29)

AWEA supports the Offshore Wind Incentives for New Development Act (s. 1102) (Markey/Whitehouse/Langevin), and the Incentivizing Offshore Wind Power Act (s. 1198) (Carper/Collins)

Stand-Alone Energy Storage Tax Credit: Enact an investment tax credit for stand-alone energy storage that enhance grid resilience. (p. 29)

AWEA supports HR 2360/S 1142, the Energy Storage Tax Incentive and Deployment Act of 2019 (Doyle, Heinrich, Gardner).

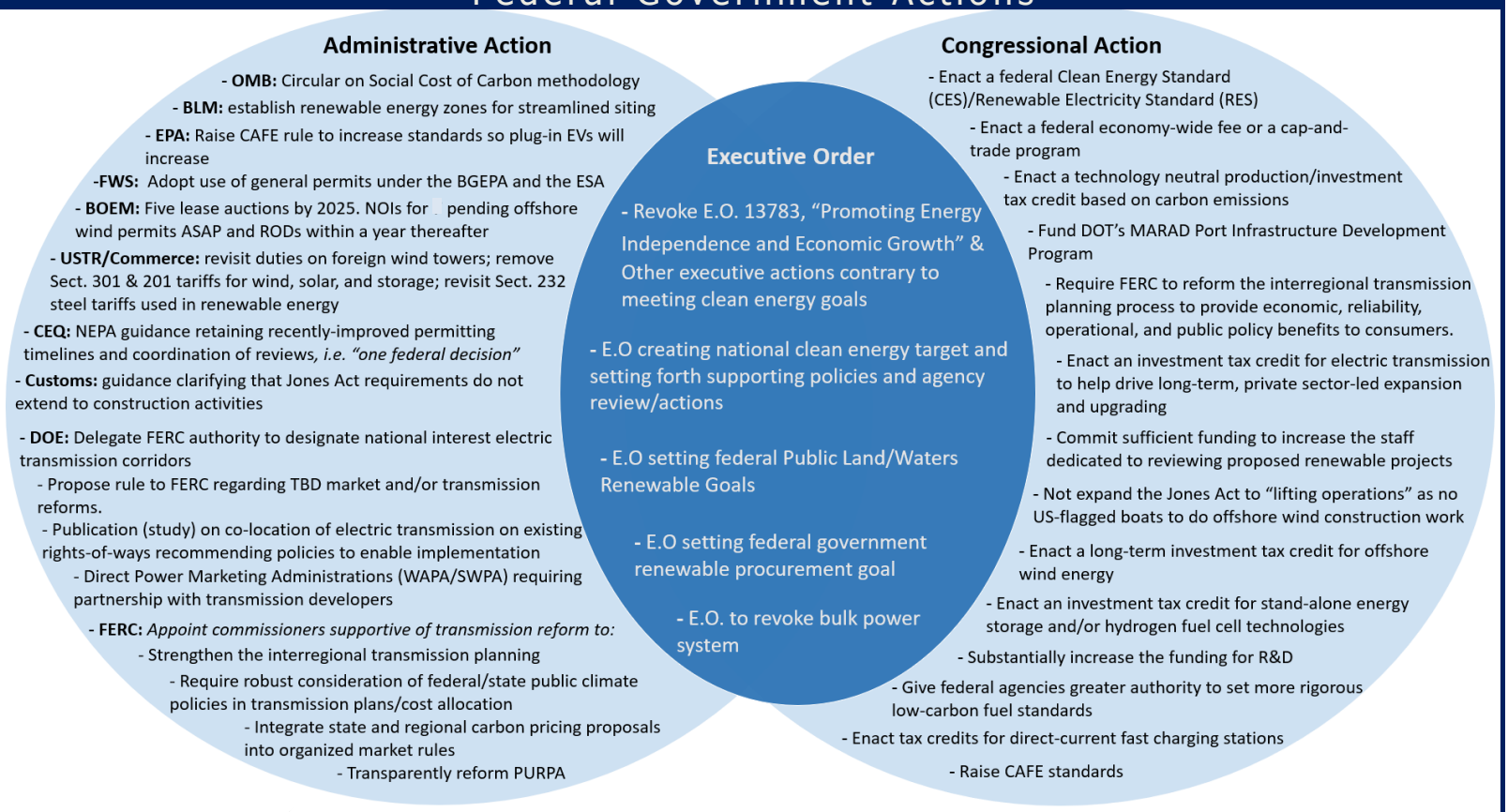
Funding for Research and Development to Maintain U.S. Innovation Renewable Energy Leadership: Submit to Congress a budget that substantially increases the funding for R&D for renewable energy and supporting technologies. (p. 31)

An example of such legislation is the "Wind Energy Research and Development Act of 2019" (HR 3609) (Smith/Collins)

Electrification of the Transportation, Manufacturing & Building Sectors:

- Give federal agencies greater authority to set more rigorous low-carbon fuel standards to increase the proportion of zero-emission vehicles.
- Provide authority to raise Corporate Average Fuel Economy (CAFE) standards so that plug-in electric vehicles will make up a growing proportion of vehicles designed and sold.
- Enact tax credits designed to provide a larger incentive for investments in a network of direct-current fast charging stations. (p. 31)

Diagram Summarizing Recommended Federal Government Actions



Key Enablers for Developing Renewable Energy: Transmission, Siting & Other Barriers

Any path to reducing greenhouse gas emissions (GHG) generated by economic activity in the United States to a net-zero target must inevitably focus on the electric sector. Electricity itself accounts for approximately one-third of U.S GHG emissions.[6] Emission reduction opportunities in the other sectors with major GHG footprints—transportation, buildings, and industrial production—all involve electrification, which can only contribute to the reduction of economy-wide emissions if it comes from clean energy resources, especially zero-emission renewable energy. In fact, meeting current and future demand while achieving climate targets and drastically decreasing emissions from the electric sector will require a large switch from GHG emitting resources to cost-effective renewables.[11]

Although renewable power is one of the cheapest sources of new electricity and among the most effective options for reducing carbon emissions, barriers to deployment still exist—preventing the U.S. from fully realizing the economic investment, job creation, low-cost power, customer savings, and environmental benefits of significant renewable power. Carbon policies, such as a direct price on carbon and/or clean/renewable portfolio standards, are fundamental to driving changes in the generation mix. However, it is crucial to recognize that these policies alone are not sufficient to achieve 100 percent clean energy by no later than 2035.

To meet these clean energy deployment goals and deliver reliable, affordable power, three critical policy steps must be taken: (1) the existing transmission system must be enhanced and expanded; (2) the permitting process must be expedited and made more certain; and (3) undue barriers that impede the competitiveness of renewable energy must be removed. First, the addition of significant levels of renewable energy will require a significant buildout of high-voltage, long-distance transmission projects that typically cross interstate boundaries and bridge existing transmission system interconnection areas and/or planning regions.[12] Indeed, expanding the high-voltage transmission grid will be essential for cost-effectively transforming the U.S. generation mix and meeting decarbonization goals.[13] It will also provide additional benefits: connecting areas of the country with low-cost, high renewable energy potential to consumers; relieving congestion and helping maintain grid stability and reliability; and addressing the volume of projects awaiting interconnection that exceed the current transmission system's capacity to absorb new generation. In sum, more transmission is vital both to facilitate the deployment of renewables and to maintain the cost-effectiveness and reliability of electricity services as the generation mix changes.

Even in light of the current need for new transmission, the reality is that the building of transmission infrastructure has declined from nearly 40,000 circuit miles over the past decade to less than 15,000 circuit miles planned over the next six years.[14] This is largely due to regulatory hurdles—inadequate transmission planning to meet energy policy goals, cost allocation that does not support expansion of the grid, and transmission permitting obstacles at the state level that limit interstate transmission development.

While a wind or solar project typically can be designed, built, and commissioned in one to three years, an electric transmission project must follow regulations and procedures that can take ten years before a line can be placed in service. Given the long lead-times in transmission planning and development, it is necessary to reform the transmission planning process now if we are to meet 21st century U.S. economy and clean energy deployment goals. The encouraging news is that transmission investment is waiting in the wings to support renewable resources, ultimately paying for itself in reduced consumer costs and increased reliability and economic benefits[15] (including supporting thousands of jobs).[16]

DOE has already conducted a coast-to-coast transmission "super-grid" study that shows such a transmission expansion would cost $80 billion but deliver economic gains of more than twice that amount—by moving surplus renewable energy to major urban centers. [17] The super-grid report should serve as a roadmap for prioritizing new interstate transmission capacity in several renewables-rich regions, which would

open up valuable opportunities to help achieve the 100 percent clean energy target in the electric sector by no later than 2035.

Another significant barrier to renewable deployment is the time that it takes to secure permits required to build and operate renewables. While wind and solar power have the lowest environmental impacts of any sources of electricity generation, they still face an unduly lengthy permitting process that can forestall the nation from realizing its benefits. For example, while America's public lands have extraordinary potential for wind energy,[18] currently, only about five percent of installed wind energy capacity in the U.S. is on federal public lands or waters.[19] This is largely because developing on federal lands and waters triggers federal permitting that imposes unnecessary complexity, expense, and time on the development. Even on private lands, obtaining federal permits, such as for wildlife, has often chilled renewable energy development due to unduly long timelines and excessive costs related to the permitting review process. These permitting delays can have ripple effects on onshore wind and solar and offshore wind and transmission development, by disrupting project planning, supply chain planning, and construction logistics. These disruptions can harm project economics and, at times, project viability. Reasonable procedural reforms to the permitting process should be adopted to ensure more vital renewable energy projects can move forward in a timely manner, while preserving a robust environmental review process.

In addition to transmission and permitting reform, the federal government should take several other measures to support the competitiveness of renewables. For instance, effective wholesale electricity markets are critical for rapid and affordable decarbonization as they can support efficient and rapid investment in new technologies. However, current wholesale electricity markets are caught between a rapidly decarbonizing resource mix spurred by falling clean energy prices and market structures designed around fossil fuels. These markets should be reformed to provide the best framework for reliable integration of clean resources and to send efficient price signals to accelerate decarbonization.

Efforts to scale up renewable energy also require generation costs to be as low as possible, especially with respect to new technologies. Tax credits for nascent industries, such as offshore wind and storage, can help reduce the cost of renewable power. Funding research and development for renewables and storage would likewise drive down their prices and, in turn, the costs of transition to a clean energy economy. In addition, while the promotion of domestic manufacturing of renewable equipment and the provision of services is important, recent U.S. trade barriers have unduly raised the cost of renewable generation products—harming deployment—and, in turn, the domestic industry; thus, undue current tariffs on foreign renewable equipment and components should be lifted. Finally, electrification is critical for decarbonization and driving clean energy. Electrification of end uses in transportation, manufacturing and buildings would allow greater potential GHG reductions due to the increasing share of renewable electricity generation that would be used to meet that demand.

Social & Economic Benefits of Renewable Energy

A clean energy transition can create new economic opportunities in every corner of the country. Renewable energy has already paved the way for well-paying jobs for thousands of Americans. Renewable energy jobs span numerous occupational groups and encompass various career tracks[20] and are booming across America, creating stable and high-wage employment for blue-collar workers, among others, in some of the country's most fossil fuel-heavy states.[21]

The renewable energy industry quite simply has become a major U.S. employer. There are nearly 3.3 million Americans working in clean energy – outnumbering fossil fuel workers by 3-to-1.[22] Clean energy accounted for more than 40 percent of America's entire energy workforce and over 2.25 percent of the nation's overall employment at the end of 2019.[23] The renewable energy industry employs 522,811 workers.[24]

Workers in renewable energy earn higher and more equitable wages compared to workers nationally.[25] In fact, mean hourly wages in the renewable energy sector exceed national averages by 8 to 19 percent, with workers at lower ends of the income spectrum still earning $5 to $10 more per hour than other jobs. [26] This is especially true within the renewable energy production sector: approximately 50 percent of workers attain no more than a high school diploma yet earn higher wages than similarly-educated peers in other industries.[27] These jobs are often high-quality union jobs.[28] America's veterans also play an important role in creating the highly skilled workforce of America's renewable energy industry – *e.g.*, the U.S. wind industry employs veterans at a rate 61 percent above the national average, providing opportunities for the men and women who serve our country when they leave active duty.[29]

Today over 120,000 U.S. workers now have wind-powered careers, and these jobs are spread across all 50 states.[30] Wind energy is also creating new opportunities in factory towns across America, with over 530 factories across 43 states building wind-related parts.[31] Wind power drives unmatched economic development in rural America;[32] in fact, about seventy percent of U.S. turbines are in low- income rural areas.[33] Among other benefits, wind projects, give family farmers and ranchers a new source of stable income, small-town school districts the opportunity to offer their students top-notch educations, and local taxes stay low. [34]

American renewable energy is not only fostering good paying, equitable jobs, but also creating the careers of the future. According to the U.S. Bureau of Labor Statistics, wind turbine technician and solar installer are America's two fastest-growing jobs.[35] These jobs have a projected growth rate (2018 to 2028) of 57 percent and 63 percent, respectively. The 2018 annual median pay of each was $54,370 and $42,680, respectively.

The relative accessibility of these good-paying positions has the potential to attract and employ workers from all backgrounds and help the nation construct a sustainable, advanced economy that works for all.[36] As such, the deployment of renewable energy offers a unique opportunity to advance environmental justice, while spurring the American economy. Renewable energy and the larger transition to a clean energy economy represents an opportunity to direct greater attention and action to addressing economic inclusion from the national to the local level.

In addition to the job-creation benefits of renewable energy, investment in renewable energy will lower climate change risks and impacts, such as natural disasters. As the disproportionate share of these environmental burdens fall upon low-income communities, renewable energy serves to equitably distribute environmental benefits to all communities.[37] Specifically, low-cost, emissions-free electricity from renewable energy serves environmental justice goals at a policy and community level by increasing energy affordability, expanding job creation, and diminishing the need for polluting/toxic conventional power facilities.

Air pollution from fossil-fired power plants disproportionately affects communities of color and low-income neighborhoods. For instance, conventional power plants have led to asthma rates among communities of color being twice as high as those among white children.[38] Minorities are exposed to 38 percent higher levels of nitrogen dioxide, a pollutant that comes from fossil plant smokestacks and is linked to respiratory illnesses.[39] Therefore, the transition from these power sources to renewable energy is a vital, necessary step to achieve far-reaching health benefits for society as a whole, as well as marginalized communities.

Renewable energy has the lowest environmental impacts of any source of electricity generation. Unlike conventional sources, renewable power significantly reduces carbon emissions,[40] saves billions of gallons of water a year,[41] and cuts pollution that creates smog and triggers asthma attacks[42] —thereby displacing pollution in urban communities where it is affecting public health and disproportionately harming vulnerable and marginalized communities.

In sum, if policies are put in place to drive and enable greater renewable energy deployment, the social and economic benefits that renewables provides to our society and underserved communities will exponentially grow.

PILLAR I: CLEAN ENERGY TARGETS/CARBON POLICIES

EXECUTIVE ACTION

Setting a National Goal for Renewable Energy Deployment and Removing Regulatory Barriers

A presidential administration should issue an Executive Order (EO)—a climate action plan—directing federal agencies to review and modify current orders, guidance documents, policies, and any other similar agency actions to ensure they incentivize, and do not unnecessarily impede, responsible renewable energy development that is necessary to reach net-zero carbon emissions. The EO should set the national energy policy to achieve 100 percent clean energy by no later than 2035.

The focus of the EO should be removing or modifying any actions that unreasonably obstruct, delay, curtail, or otherwise impose significant costs on the siting, permitting, production, utilization, transmission, or delivery of renewable energy resources. The EO should create a review process for administrative agencies to evaluate their actions, identify barriers to domestic renewable energy development, and reverse course on those regulations or guidance, with a specific focus on their ability to create sustained, proven job growth in the energy industry.

Federal agencies should aim to engage in regulatory reform over a specified timeline to remove identified harmful barriers to economic growth and job creation in the renewable energy sector. Revising the regulatory framework and setting business-friendly goals for renewable energy development will help put the nation on track to meet emission reduction goals, while fostering thousands of jobs and millions of dollars in investment in communities across the country. As part of the above EO, the executive branch should review existing EOs, as well as any associated guidance and memoranda, that potentially impede reducing carbon emissions and, in turn, renewable energy development.

Setting a Federal Government Procurement Goal for Renewable Power

Federal agencies are some of the largest electricity users in the country. The president and federal agencies have wide latitude in establishing goals and rules related to procurement of energy, including electricity.[43] As presidents of both parties have done in the past, a presidential administration should implement sustainability goals and practices for federal agencies that can provide expanded market opportunities for renewable energy. For instance, the Obama administration issued two EOs[44] that set a new goal for civilian agencies in the federal government to "procure and facilitate development" of large amounts of new renewable power by a given date.

Considering the lowered costs of renewables and their greater availability, a presidential administration should direct the U.S. federal government to pursue a higher goal than the one under the Obama administration. We recommend the EO commit the federal government to deriving 35 percent of its energy from renewable sources by 2025 and, to the maximum extent practicable, prioritize emissions-reducing measures through government actions and expenditures, such as renewable energy deployment.

The order should require federal agencies to achieve the renewable energy consumption target through any of the following means: installing agency-funded renewable energy on-site at federal facilities; retaining renewable energy certificates; contracting for energy that includes the installation of a renewable energy project on-site at a federal facility or off-site and the retention of renewable energy certificates for the term of the contract; purchasing electricity and corresponding renewable energy certificates; or purchasing renewable energy certificates. Depending on independent analysis for each agency, every federal agency should be given a specific target for purchasing a defined number of GWs of renewable energy at their facilities/bases to reach the renewable energy consumption target. To help achieve this goal, federal agencies should have the authority to adopt long-term power purchase agreements.

By expanding the existing rules related to federal agency

procurement of renewable electricity, the EO would create roughly 315 MWs of additional demand for wind energy per year by 2025, 550 MWs for solar, and 130 MWs of biomass. This additional build out of wind energy alone would avoid approximately 6.8 million tons of carbon by 2025—the equivalent of taking 1.2 million cars off the road.

The EO should also seek voluntary pledges from major federal contractors to reduce their emissions through use of renewable energy, as well as creating a scorecard to compare federal contractors on their GHG reduction initiatives and use of renewables. Furthermore, the EO should require each federal agency to measure, report, and reduce its carbon footprint, setting a cap for maximum carbon emissions for the agency. Finally, it should direct EPA to create uniform, practical standards for measuring these footprints that could be applied on a government- and economy-wide basis.

Setting a Federal Renewable Permitting Target for on Public Lands and Waters

Our nation's public lands and waters provide a valuable opportunity to put thousands of Americans back to work by building the 21st century renewable energy sector. There is a significant opportunity for wind energy development on public lands in the United States. Indeed, BLM has estimated that 20.6 million acres of public lands in 11 western states have significant wind energy potential. [45] The federal government has sought to promote the development of wind energy on federal lands. For example, in EPAct 2005, Congress set a goal of approving at least 10,000 megawatts of renewable energy projects on public lands by 2015.[46] To expand on this, BLM should approve 30 GW of renewable energy projects on public lands by 2030.[47]

The U.S. also has a vast offshore wind energy resource with a technical potential of more than 2,000 GWs, or nearly double the nation's current electricity use. If tapped, this resource will create billions in revenue for federal, state, and local governments and help create tens of thousands of jobs. As of 2020, the U.S. has a total of just 42 MW of offshore wind capacity installed, compared to Europe's 21.9 GW and Asia's 7.2 GW as of the end of 2019. In order to spur the U.S. offshore wind industry, BOEM should facilitate greater offshore wind development on both the east and west coast.

There are currently 26,000 MW of offshore wind potential in federal lease areas auctioned to date, but they are limited to New England and the mid-Atlantic coastline. The EO should set a goal for BOEM of leasing a minimum of 12.5 GW of offshore wind energy capacity by 2025 and a total of 30 GW by 2030. The 2025 target is equivalent to the GWs of wind BOEM will need to permit in order to get projects constructed in time to meet existing state targets, and the 2030 target covers the balance of the state targets through that time period. These targets will drive more offshore wind projects to move forward, spurring investment in projects, supply chain, port improvements and expansions, and spreading those investment dollars further to coastal communities, American businesses, and local, state, and federal governments.

CONGRESSIONAL ACTION

Enacting a Federal Clean Energy Standard or Renewable Electricity Standard

A presidential administration should call on Congress to adopt one of the major types of federal portfolio standards—Renewable Energy Standards (RES) and Clean Energy Standards (CES)—as they are ideal programs to ensure clean energy goals are met in the power sector. A high-penetration federal RES or CES is a direct way to drive the deployment of carbon-free electricity and provide market certainty for a low-carbon resource mix. Both policies would require electricity suppliers to procure an increasing proportion of their power from low- or zero-emissions sources.[48]

Federal RES and CES legislation has been approved, on separate occasions, and introduced many times more, in both the U.S. House of Representatives and the U.S. Senate over the course of the past two decades.[49] For any future such legislation, AWEA recommends a meaningful target (e.g., 100 percent clean/renewable energy by no later than 2035). As a market-based policy that drives adoption of least-cost, least-emissions generation, a national portfolio standard can effectively accelerate decarbonization of the power sector and support broader decarbonization throughout the economy. A RES or CES can also achieve environmental benefits while offering substantial compliance flexibility, thus minimizing any impacts on electricity consumers. They can also build upon the success of existing electricity portfolio standards that most states have implemented.

AWEA recently supported congressional bills related to an RES (the Renewable Electricity Standard Act of 2019) (S.1974), introduced by Sen. Udall (D-NM)(Udall

Bill),[50] and a CES (the Clean Energy Standard Act of 2019)(S.1359), introduced by Sen. Smith (D-MN) and Rep. Lujan (D-NM) (Smith Bill).[51] In addition, Rep. DeGette (D-CO) recently released a detailed plan for a federal clean energy standard designed to cut carbon emissions from the country's electricity- producing utilities in half by 2030 and to net-zero by 2050.[52] The Energy and Commerce Committee's Chairman Frank Pallone, Jr. (D-NJ), Environment and Climate Change Subcommittee Chairman Paul Tonko (D-NY) and Energy Subcommittee Chairman Bobby L. Rush (D-IL) released a legislative framework of the draft Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act, which proposes a CES similar to DeGette bill and proposes a climate plan to ensure the United States achieves net-zero greenhouse gas pollution no later than 2050.[53]

A CES or RES can be a strong complement to an economy-wide carbon pricing policy. These policies together can help ensure that significant emissions reductions occur in the electric sector, as well as across the economy, where cost-effective rapid decarbonization is feasible in the near- to medium- term and can ensure switching to more sustainable generation sources. According to an NREL report, a portfolio standard can work with national carbon reduction policy: "A carbon [price] and RPS can be complementary policies that can achieve similar ends, although one policy is designed to reduce carbon emissions and the other is designed to increase renewable generation."[54] The same report notes that a carbon price accompanied by a portfolio standard would drive significantly more renewable energy than a price on its own, without significantly increasing electricity prices and reducing carbon allowance prices.[55] Additionally, use of a CES or RES as a driver of electricity-sector compliance with carbon pricing can produce smaller, and more economically efficient, rate effects on customers than solely remitting the proceeds from a carbon price.[56] While modeling shows that combining a CES or RES with a cap-and-trade program produces a significant impact on carbon emissions,[57] a CES or RES with a carbon tax is the most effective complementary policy, yielding more than 700 million metric tons of additional cumulative carbon reductions each year under some models.[58]

A properly designed federal portfolio standard would incentivize distinct (but related) policy aims from a carbon price and would also be cost-effective at driving larger emissions reductions than in-state programs alone. In other words, electric sectoral policies and a nationwide carbon price can be designed to be mutually consistent and can lead to deeper, more rapid emissions reductions than either electric policies or a carbon price in isolation. However, to avoid overlapping or patchwork regulation of the electric sector, to the extent such policies are both implemented, they should be harmonized to avoid undue burdens being placed on retail electric suppliers and other regulated entities, the creation of conflicting compliance obligations for those entities, and/or double counting.

Any national electricity portfolio standard that Congress enacts should ideally meet the following criteria: (a) broad applicability and tradable credits; (b) aggressive baseline and increasing stringency; (c) consistency with state or regional programs; (d) recognition of existing resources; and (e) preserve voluntary commitments.

A. Broad Applicability and Tradable Credits

The most important effect of a national portfolio standard is to drive investment in clean energy through a credit program that requires increases in low- or zero-emissions energy generation. A CES or RES should apply to all electricity suppliers in the United States, including investor-owned utilities, cooperatives, municipal utilities, competitive electric suppliers, and any other entities that provide electricity to consumers (retail electricity suppliers), or on a statewide basis. This ensures that every retail electricity supplier in every region must appropriately plan to transition an increasing proportion of its generation to low- or zero-emissions resources.

A federal portfolio standard should also issue credits to each qualifying generator based upon its carbon intensity; these credits should be as fully tradable as possible to ensure least-cost compliance. Regulated entities that exceed their federal requirement should be able to sell their excess credits to regulated entities with a shortfall, and entities with a shortfall should be subject to an alternative compliance payment (ACP) if they fail to retire sufficient credits at the end of a compliance period. Market participants should also have the ability to buy credits to offset energy sold that is not covered under the portfolio standard, or to sell credits that exceed their retail use.

Any banking should be limited (e.g., a maximum of two years, or to the duration of a compliance period). Borrowing from future years should not be permitted, as borrowing future credits creates a surplus in the current year and, therefore, frustrates the purpose of the program. Trading should be available on an unrestricted national basis or, in the alternative, on an interconnection-wide basis (meaning that any generator capable of physically delivering electricity to a retail supplier is able to transfer its credits thereto, even if the electricity itself is unbundled from the credit).

The total federal credits should also account for innovation. For instance, an "innovation multiplier" could be used to spur the use of novel technologies, including offshore wind, and would provide additional credits in the early years of deployment (reducing either over time or as more MW of the same or comparable technology are deployed).[59]

B. Aggressive Baseline and Increasing Stringency

Any federal electricity portfolio standard should include a schedule that sets ambitious clean energy targets, including regular increases in stringency, because the electricity standard Congress adopts will lay the foundation to achieve 100 percent clean energy by no later than 2035. The baseline should be as uniform as possible, while still taking stock of existing commitments. For instance, states or utilities that have already begun to transition their electricity generation to cleaner sources should have this factored into both their baseline and the annual increases in stringency.

The Smith Bill (S. 1359) and Udall Bill (S.1974) feature comparable annual increase requirements, with a range of 1.5 to 2.5 percent growth in the share of renewable electricity for the Udall Bill[60] and a range of 1.75 to 2.75 percent growth in the share of clean electricity for the Smith Bill.[61] A CES or RES should also use an aggregate emissions measure (total tons of GHG from the electric sector)[62] or an emissions intensity measure (on a tons of GHG per MW basis) and link subsequent increases in stringency in clean energy procurement to the desired pace of reductions in absolute emissions or emissions intensity.

With respect to changing the generation portfolio, the national RES outlined in Senator Udall's bill requires retail electricity providers with retail sales of 1 million MWh or more to increase annual renewable generation by 1.5 percent of total retail sales in 2020, 2 percent in 2021–2029, and 2.5 percent beginning in 2030.[63] Electricity from renewable generation in the United States is currently estimated at 18 percent.[64] By rapidly increasing the proportion of renewable resources, the RES would reach a 46 percent reduction in power sector carbon emissions by 2035.[65] By 2050, the electric sector would reach 84.8 percent renewable generation. Paired with enough carbon offsets, the program could meet a net-zero GHG emissions goal. The RES would also spur $374 billion in cumulative new capital investments, primarily in wind, solar, and other renewable projects, $5.6 billion in property tax payments to local governments, and $1.4 billion in wind power land lease payments to rural landowners from 2020 to 2035.[66]

The CES in the Smith Bill is projected, by 2035, to increase wind generation by 16 percent, solar generation by 9 percent, and nuclear generation by 8 percent, while decreasing coal and natural gas generation by 10 percent and 24 percent, respectively.[67] This reduction results in 80 percent lower emissions from coal (45 percent of the total reduction) and 52 percent lower emissions from natural gas (55 percent of the total reduction). Cumulatively, from 2020 to 2035, emissions decrease by 9.9 billion metric tons, or 38 percent.[68]

C. Consistency with State or Regional Programs

A high-penetration federal RES or CES should respect effective state measures and should be structured to require states to develop and implement their own approaches to address state and regional resource and market differences. More than half of the states have adopted some form of a portfolio standard.[69] Any federal RES or CES program should be compatible with, and should not preempt, these state programs.

In general, federal credits should be separately tradable instruments from state credits (which may have more limited usage). Additionally, states should be free to require higher levels of low- and zero-emission electricity than the federal standard. States should also be free to require "bundling" of state and federal credits to ensure that a portion of resources complying with the state standard are developed locally and to help achieve the federal compliance requirement.

Any federal electricity portfolio standard should also include a schedule that sets ambitious clean energy targets for each state and the utilities therein, including regular increases in stringency, because the electricity standard Congress adopts will lay the foundation for reaching 100 percent clean energy by no later than 2035. In states with lower existing deployment or fewer renewable resources, targets could be set flexibly consistent with needed emissions reductions to achieve climate objectives.

Similarly, if states wish to enter into compacts or other mechanisms to facilitate achievement of the targets, the federal statute should allow for this type of flexibility, provided that the states can show they will meet or exceed the applicable compliance requirements. In states where vertically integrated utilities have been fully or partially restructured (meaning that generation ownership and retail service are separated), states should have the flexibility to acquire credits on behalf of retail providers through auctions, power purchase agreements, or other means.

D. Recognition of Existing Resources

While annual increases in stringency will catalyze development of new renewable resources under a RES or CES, any comprehensive federal policy needs to acknowledge the significant contribution of existing renewable resources and should seek to retain those zero-emitting resources. Many renewable projects are starting to roll-off contracts (partly related to Production Tax Credit windows) and will have merchant "tails" for the duration of their operational lives. If a federal RES or CES only allows new renewable projects to be eligible, there is significant concern that existing renewables may not be able to enter contracts.

Retail suppliers might find it more advantageous to enter contracts with new renewables that are eligible for credits under the federal RES or CES. If this forces premature retirements, carbon emissions would likely significantly increase as operating zero-emission assets are reduced. In addition, disqualification of these existing resources would arguably increase the cost of RES or CES compliance by altering the supply-demand balance, making it harder to reach 50 percent renewable energy by 2030. Furthermore, even if they do not retire, the value of the existing resources will be diminished relative to new sources that are eligible. In attempting to decarbonize the electric sector at least cost, while it may be advantageous for some areas to develop new renewable resources, it might cost less for others to contract for electricity supply from existing resources.

In sum, existing renewable resources should: (1) fully qualify as eligible for a CES or RES if they meet the applicable emissions requirements and/or technology types; and (2) should receive identical treatment in terms of federal credits as new resources, including their transferability.

E. Respect Voluntary Commitments

Any federal RES or CES baseline should account for existing commitments from actors such as corporate buyers, universities, and municipalities. Where a customer voluntarily procures renewable electricity, this amount should not be credited to the utility or state compliance responsibility. Instead, clean energy commitments from customers could be subtracted from the baseline, so that the utility or state cannot count these voluntary commitments as part of their compliance with the portfolio standard.

National Price on Carbon

A presidential administration should call on Congress to enact an economy-wide price or cap (fee or a cap-and-trade regime) on GHG emissions, which has long been recommended as a cost-effective climate solution for reaching a clean energy economy by 2050.[70] A national carbon price would place a cost on carbon emissions regardless of the source (which is appropriate because each metric ton of carbon emitted has the same environmental impact regardless of the source) and, in turn, help minimize the overall costs of emissions reductions (through trading across sectors).

Carbon emissions pricing should be meaningful enough to drive deployment of renewable energy and rapidly drive down emissions.[71] If the price is set with those ends in mind, the electric sector would be particularly responsive, deploying existing and new renewable technologies to help put the country on the path to reach net-zero emissions economy-wide. For instance, even a moderate carbon price—with regular annual increases in stringency—will deploy renewable energy and allow for a swift, but well-planned, transition to zero-emitting resources.[72]

By way of example, EIA's Annual Energy Outlook for 2018 found that a carbon price of $25 per ton would cut electricity sector emissions 32 percent by 2030 relative to a reference case.[73] Similarly, the Brookings Institution found that a $25 price on carbon, established in 2020 and rising 1 percent per year, will reduce carbon emissions by as much as 38 percent by 2030—and a $50 price will reduce carbon emissions by as much as 47 percent by 2030.[74] Even a price of just $15 per ton is expected to cut coal-fired power plant generation by two-thirds from 2020 to 2030.[75]

Approximately eight bills have been introduced in the 116th Congress that would institute a carbon price. One of the more effective is the Energy Innovation and Carbon Dividend Act of 2019, introduced by Congressman Ted Deutch (Deutch Bill).[76] That bill covers 80 percent of economy-wide carbon emissions and would reduce carbon emissions by 90 percent by 2050.[77] Under the Deutch Bill, a carbon price is initially set comparatively low at $15 per ton of carbon dioxide equivalent.[78] However, the price increases steeply at $10 per year.[79] In addition, another effective bill, the Climate Action Rebate Act of 2019, introduced by Senators Coons and Feinstein (Coons Bill), attacks GHGs by starting with a carbon price of $15.[80] That price increases $15 every calendar year, applies to all carbon equivalent emissions from fossil fuels,[81] and is projected to achieve the underlying goal of a clean energy economy by 2050.[82]

Technology Neutral Production Tax Credit/Investment

The U.S. tax code has been a de facto source of energy policy for the last century, but the numerous energy-related incentives in the tax code have made the energy tax landscape unnecessarily complex.[83] While the Tax Cut and Jobs Act of 2018 simplified the tax code, different energy technologies still receive varying levels of support across divergent time periods without a unifying public policy rationale. A presidential administration should call on Congress to simplify energy tax policy and create a level playing field by providing a widely applicable, transferable technology- neutral PTC and/or ITC based on carbon emissions to build our economy and lower prices for consumers.

The tax credits should have a direct pay option, under which credits would be reflected as an overpayment of taxes due, enabling a refund to the taxpayer in that taxable year. This framework would provide equal opportunity among energy generation technologies. Further, the clear goal of GHG reductions forming the basis of the credit would provide a stable incentive that increases business certainty. If enacted into law, a carbon-based technology-neutral PTC and/or ITC is estimated to foster 40 to 60 GW of incremental wind power capacity additions over a 10-year period.[84]

A technology-neutral tax credit based on carbon emissions could complement a high-penetration federal RES or CES or a national carbon price by attracting increased capital investment, accelerating renewable energy deployment, and lowering the delivered price of clean energy to consumers. While renewable energy is a competitive source of power generation across the country, a technology-neutral tax credit has the ability to bring down consumer costs of deployment.

One example of tax legislation designed to grow clean energy in the 21st Century is S 1288, the Clean Energy for America Act (Wyden).

FEDERAL AGENCY ACTION

Utilize EPA's Authority Over Electric Sector Emissions

EPA, under Section 111 of the Clean Air Act (CAA), should enact a Clean Power Plan (CPP)-like policy that can withstand legal scrutiny. As the CPP laid out, there is a simple solution under the CAA, already in widespread use, for reducing emissions from the power sector: run heavily polluting resources less and less-polluting resources more. When electric utilities need to reduce emissions at the lowest cost, that is what they do—shift generation. As higher-polluting resources ramp down, cleaner resources ramp up or expand to meet regional energy needs. The CPP identified this simple, proven system as the "best system of emission reduction" under Section 111 of the CAA to reduce carbon pollution from existing power plants. Building on existing industry practices and market trends, the CPP was designed to achieve significant emission reductions at the lowest possible cost to American consumers.

Nothing in the CAA's text precludes consideration of generation-shifting as part of the "best system." Instead of straining to read the CAA so as to narrow its options, the EPA, under a presidential administration, should focus on the criteria that Section 111 directs it to consider when identifying the "best system": emission reductions, costs, environmental and health impacts, and energy requirements. Applying those criteria leads to the inevitable conclusion that the "best" system must reflect the fact that power plants, unlike factories and other emitters, produce identical, fungible services and are readily (and routinely) substituted for one another.

A generation-shifting approach substantially reduces pollution and at reasonable cost. In 2015, EPA projected (using conservative assumptions) 2030 compliance costs between $5.1 and $8.4 billion—comparable to, or less than, past CAA regulations.[85] Since 2015, generation-shifting driven by market forces has achieved nearly an equivalent reduction in emissions—and falling costs have enabled much greater reductions. This is largely because wind and solar generation are currently the cheapest new sources of electricity in all counties in the lower 48 states.[86] In 2018, the Energy Information Administration (EIA) showed that a 68 percent reduction below 2005 power sector emission levels—more than twice the reduction anticipated under the CPP—is

achievable at reasonable cost through generation shifting. [87] EIA's 2020 Annual Report now shows that an 80 percent reduction below 2005 levels is achievable at moderate cost through such a mechanism.

In light of the fact that a CPP-like approach is consistent with the CAA and could be critical in helping to achieve 100 percent clean energy by no later than 2050, as well as spurring congressional action on carbon pricing, EPA should adopt a policy that is similar to the framework of the CPP but make it legally durable and more ambitious with respect to reduction levels.

PILLAR 2: EXPANDING INTERSTATE TRANSMISSION

EXECUTIVE ACTION

Removing Barriers to Transmission Infrastructure Development to Bring Renewable Energy to Market

A. Using Existing Tools: Section 1221—Designating National Electric Transmission Corridors and Federal Backstop Siting; and Section 368—Designating Corridor on Federal Lands

New, long-distance, high-voltage transmission lines are crucial if the nation is to integrate enough renewable generation to decarbonize the electric system. Expanding electric transmission infrastructure is also critical to the economy and the well-being of the United States. In fact, increased infrastructure investment would ensure that our nation's grid has long-term strength and adequately protects national security and public safety, while also stimulating our nation's energy potential, reducing costs to consumers, contributing to job growth, and enhancing competition in energy markets.

Even though there is sufficient private capital waiting in the wings to develop our nation's grid, an inefficient siting process at the federal and state levels has proven to be a key barrier to unlocking this investment, preventing developers from building projects that are in the national interest.[88] While state siting is efficient at siting projects built by a single state utility to serve its customers, federal siting authorities have proven largely ineffective when it comes to permitting interstate projects. Specifically, interstate transmission lines must obtain approval from each state and/or each county they cross. Navigating these substantial permitting hurdles across multiple jurisdictional boundaries can significantly delay development timelines, and potentially undermine project viability altogether.

In recognition of this issue and the need for a federal role in the permitting of certain interstate transmission deemed in the national interest, Congress, in Section 1221 of the Energy Policy Act of 2005 (EPAct 2005), gave DOE authority to study where electric transmission is needed and then designate areas as national interest electric transmission corridors (NIETCs)—a geographic area facing adverse electric transmission capacity constraints or congestion. FERC was also given authority, in limited circumstances, to issue permits for transmission projects within an NIETC as a backstop measure if a state failed to permit the project within a reasonable time period (one year).[89] This authority has been codified in Section 216 of the Federal Power Act (FPA).

To date, not a single construction permit for a project in an NIETC has ever been issued and only two transmission corridors were ever established (more than a decade ago). In addition, DOE has not designated a single new transmission corridor over the past nine years. Since FERC can only issue a permit in an NIETC, without any such corridors, it has not had the ability to exercise its authority over that period as well. Clearly, the federal role established by Congress for transmission permitting has not lived up to its promise to streamline the process for permitting projects in the national interest.

This is largely due to the bifurcated nature of the corridor designation and backstop authority between DOE and FERC, respectively—requiring redundant and sequential NEPA review by the two agencies.[90] In contrast, in the more efficient pipeline permitting process, FERC has the sole authority to make such decisions.[91] Natural gas pipeline developers benefit greatly from the consolidated federal approval process that has resulted. FERC coordinates the permitting process as a whole and has seldom rejected a pipeline proposal. Due to these different permitting regimes, it should come as no surprise that the U.S. has added gas pipeline capacity nearly 10 times faster than electricity transmission capacity, even though the demand for each is equal. However, a buildout of the interstate electric transmission system — and the renewable resource development such a system would enable — is certainly just as critical to the national interest as gas pipelines.

DOE can easily remove this unnecessary regulatory burden—not by expanding federal authority, which is established and limited by Section 216 of the FPA, but rather by consolidating in a single agency—FERC—the authority for all the federal siting decisions for transmission mandated by Congress. By removing a substantial regulatory burden for the permitting of major transmission infrastructure, DOE can leverage (without the need for congressional action or the commitment of any public dollars) substantial private sector investment ready to transform this nation's aging power grid and

increase the delivery of renewables.

To this end, DOE should delegate to FERC its NIETC designation role for major transmission infrastructure projects (authority to conduct congestion studies and designate NIETCs), thereby consolidating and streamlining the relevant federal transmission siting decisions within one agency.[92]
After getting corridor authority delegated to it, FERC should be encouraged to expeditiously issue a new report containing proposed NIETC designations. FERC should declare that the designation of corridors is part of the national energy policy to attain renewable energy goals and focus its designations on connecting areas of geographically constrained renewable energy to load.[93] The additional factors that Congress enumerated in Section 1221 for making corridor designations suggest that the lack of available transmission connecting high-renewable-potential areas with load centers would warrant designation. There is already sufficient evidence in the record for supporting the determination that insufficient interstate transmission connecting high-potential areas for renewable energy development with load is leading to congestion and other constraints that are adversely affecting consumers.[94] In addition, bringing additional renewable energy to load will help diversify energy supply and will be critical to achieving national energy policy.

While Section 216 of the FPA requires DOE to issue a report after each triennial congestion study and allows that report to designate transmission corridors, it also does not prohibit DOE, as it has recognized,[95] from issuing additional reports making transmission corridor designations at any time. Specifically, Section 216(a) permits DOE to make project-specific corridor designations, and FERC should make use of such authority to help ensure corridors match areas where transmission developers have already identified a need to relieve congestion. In addition, FERC should coordinate the corridor designation process and FERC's permitting process. For instance, FERC should align the timing of the permit application and permitting decision with its decision on a project-specific corridor designation. FERC should also remove a delay to initiating the federal siting process by allowing applicants to begin the pre-filing process immediately upon application and not waiting until after a state has had one year to consider the project under its own siting regulations.

Finally, DOE should use its authority under Section 368 of EPAct[96] to establish "West-wide" corridors on federal lands. Section 368 directed several agencies, including BLM and Forest Service (FS), to designate corridors on federal lands for energy projects and to conduct environmental reviews in anticipation of their use, even if no specific project were proposed. A final Programmatic Environmental Impact Statement has already been developed for roughly 6000 miles of energy corridors on federal lands, and BLM and FS have amended their land use and resource management plans accordingly.

Establishing a coordinated network of federal energy corridors on federal lands throughout the western U.S. would improve energy delivery and enhance the electric transmission grid. The agency-selected siting locations and corridors will provide industry and the public with greater certainty in infrastructure planning and will also speed development of future energy infrastructure on federal land with the least impact. To be clear, because this authority affects only federal lands, it does not solve the state siting obstacles above but could be helpful in maximizing opportunities for siting transmission facilities on existing federal rights of way.

B. Section 1222—Partnering with Third Parties and Eminent Domain

In conjunction with the backstop siting authority described above, Congress enacted Section 1222 of EPAct 2005,[97] which authorizes federal-private partnerships to develop transmission and can provide a basis for the exercise of federal eminent domain authority. Specifically, Section 1222 empowers DOE, acting through either Western Area Power Administration (WAPA) or the Southwestern Power Administration (SWPA),[98] to accept contributed funds and, in certain circumstances, to partner with third-parties in owning, constructing, and developing new or upgraded transmission lines.[99] The only geographic limitation in Section 1222 is that new projects be located within a state in which WAPA or SWPA operate — an area that covers much of the continental states west of the Mississippi River (other than the three states served by the Bonneville Power Administration). Section 1222 also enables the possibility of exercising of federal eminent domain authority in light of the federal governments participation in a project.[100] In addition, Section 402 of the American Recovery and Reinvestment Act of 2009 (Borrowing Authority Statute) gave WAPA authority to borrow up to $3.25 billion from the Treasury on a revolving basis for the purposes of constructing and financing new or upgraded transmission facilities under Section 1222.[101] In order to make better use of this authority, DOE should study WAPA and SWPA's transmission systems and existing rights of way with the goal of identifying upgrades and

system additions that could cost-effectively enable increased integration of renewable energy. DOE should also encourage WAPA and SWPA, along with private parties, to consider how they can develop new interstate or interregional projects to enable increased penetration of renewable energy. DOE should issue an RFP that declares the agency's willingness to evaluate new projects and, under appropriate circumstances, commit itself to partnering with projects. DOE should also direct WAPA and SWPA to explore whether private funding through Section 1222 can be used to upgrade their existing transmission facilities in ways that enable increased capacity to interconnect renewable generation.

DOE should make the Section 1222 review process automatic to avoid delay, which can be accomplished by adopting a pro forma advance funding agreement and declaring that any proposal that meets certain basic criteria may begin the NEPA review process, funded by the developer (at its risk) in accordance with the agreement. Finally, DOE should consider using existing appropriated funds (or new appropriated funds) to support such projects.

Encouraging Needed Transmission Reforms at the Federal Energy Regulatory Commission to Enable Renewable Energy

In 2011, FERC issued Order No. 1000, which required numerous changes to transmission planning. However, that order has fallen short in two key planning areas: interregional transmission and consideration of public policy transmission needs.

First, the interregional transmission planning process is not achieving Order No. 1000's stated goal: identifying more efficient or cost-effective solutions to the individual needs in respective local and regional transmission planning processes. Specifically, current interregional transmission planning processes are not properly planning for or recognizing projects across regions that provide economic, reliability, operational, and public policy benefits to consumers. This is largely because, although Order No. 1000 requires neighboring transmission planning regions to coordinate planning, it does not require a formal joint process or evaluation of interregional solutions and their benefits.

Second, Order No. 1000 siloed transmission projects into economic, reliability, and public policy categories, even though all should be considered together to effectively plan transmission (e.g., a public policy project today becomes an economic or reliability one tomorrow). Public policy projects were intended to help achieve federal goals and respond to state energy goals (such as carbon reduction goals); but these projects are rarely being considered in the planning process, and thus, in turn, are rarely being developed. FERC should revise its transmission planning authority to ensure that regional and interregional transmission needs are fully considered in the transmission planning process, and transmission planning specifically supports attainment of federal and state public policies regarding GHG reduction goals and clean energy standards. Additionally, FERC can and should evaluate its transmission cost allocation provisions to ensure that public policy transmission projects are evaluated for the full range of benefits (including economic and reliability), and that costs are equitably shared among all beneficiaries. These reforms should be equally applicable to transmission development for onshore generators and offshore wind resources.

To address these needed reforms, FERC should reform Order No. 1000 in these two critical areas for realizing clean energy goals. Specifically, FERC should undertake an advanced rulemaking proposal regarding the aforementioned transmission planning reforms and the consideration of public policy projects in that process.

Expanding Capacity on Existing Transmission Lines

While upgrading the existing transmission system cannot take place of the need to expand the system to reach location-constrained renewable resources, it can serve as a partial and/or temporary measure and complement to building new transmission facilities for delivering renewable energy to load. For instance, dynamic and adaptive line rating (DLR) can be employed to significantly increase carrying capacity on existing transmission assets. Several studies have found that

DLR use reduces wind curtailment by up to 15 percent,[103] in part because wind both cools the transmission line (allowing rated capability to safely increase) and generates low- cost electricity. Similarly, power flow controllers (PFCs) can be used to reroute power along existing transmission facilities to help reduce congestion and curtailment.[104] And topology control software can perform tasks comparable to those done by DLR and PFCs by optimizing the operation of existing system hardware so power flows can make the best use of existing capacity constraints.[105]

These technologies, which are inexpensive, have a small physical footprint, and can rapidly be deployed, can be used to bridge the gap until large new lines can be constructed. For instance, they can help support the integration of new renewables onto a system by helping to ensure the existing system is not overwhelmed by the additional power on it from these new resources, and increase the deliverability of clean, low-cost energy to customers. In addition to serving as a partial or temporary substitute for transmission system expansion, these technologies can also complement the operation of large new lines by increasing system capacity and, in turn, enabling more cost-effective absorption of large volumes of renewable resources.

To expand the use of these technologies, FERC should finalize (or revisit upon rehearing, if necessary) its 2020 proposed rule [106] on transmission incentives to create a more meaningful transmission technologies incentive under Section 219 of the Federal Power Act.[107] Specifically, FERC should implement non-ROE incentives, including a "shared savings" approach that allows customers and project sponsors to share in the savings resulting from transmission technology deployment.[108]

Encouraging Co-Location of Electric Transmission on Existing Rights-of-Way

Existing rights-of-way — highways, railways, or existing linear energy projects — can be utilized by transmission development in order to minimize permitting risk. It can reduce or eliminate the need to exercise eminent domain over private land, and, as a result, limit political opposition, permitting time, and litigation. A 2008 Government Accountability Office report found that co-locating transmission with existing highway and rail rights-of-way provides a number of economic, environmental, and visual advantages.[109] There is currently one such project that has adopted this model—the SOO Green Renewable Rail project; that project proposes to build a 349-mile, 2.1 GW HVDC line, largely along existing rail rights-of- way between Iowa wind projects and Chicago.

This is not a panacea for transmission development, and many rail and other federal rights-of-way still may not be located or sized in ways that can fully address transmission needs for cost-effectively bringing renewable generation to load. And even if some of a project may be co-located on existing paths, state siting may still prove a critical obstacle. Nevertheless, making use of existing infrastructure rights-of-way may provide opportunities to accelerate transmission siting in some circumstances. To explore this issue further, DOE should conduct a new co- location analysis to examine how electric transmission can be co-located consistent with national energy policy goals and suggest recommendations on how to achieve that end. For instance, the Federal Highway Administration could restart its Future Uses of Highway Rights of Way initiative, last updated in 2012, to identify potential opportunities for co-locating electric transmission in highway rights-of-way.[110]

CONGRESSIONAL ACTION

Accelerating the Siting of Interstate Electric Transmission Facilities

Reinvigorating FERC's Backstop Siting Authority over Electric Transmission

As discussed above, effective federal siting for interstate electric transmission facilities that are in the national interest is needed because the U.S. requires a more robust grid to meet the needs of the 21st Century. EPAct 2005 gave FERC authority to issue permits within NIETCs for the construction of electric transmission facilities as a "backstop" to state siting activities under certain circumstances (known as backstop siting) — when a state commission "withheld" approval for more than one year. FERC properly interpreted "withheld" to encompass both state silence and refusal of applications, as that was supported by the legislative history and ultimate purpose of the act. However, a federal court unfortunately determined that the term "withheld" excluded state denial of an application. Notably, the Solicitor General argued in the case that the court misinterpreted the statute and interfered with the congressional intent in EPAct—but FERC has treated that decision as limiting its authority nationwide.

To reinvigorate FERC's backstop authority, a presidential administration should call on Congress to clarify the intent of EPAct 2005 regarding backstop siting authority. Specifically, Congress should make clear that FERC has authority to approve an interstate project when a state does not approve (by action or inaction) a project within one year after an application is filed. This clarification would help put in place a viable federal

regulatory structure for ensuring the timely permitting approvals for interstate transmission projects that are in the national and regional interests to meet clean energy goals.

Improving Interregional Transmission Planning

Expanding long-haul electric transmission infrastructure is widely seen as critical for ensuring that our nation's power system supports long-term resilience and reliability, develops our nation's energy potential, reduces costs to consumers, contributes to job growth, and enhances competition. To unlock the private capital that is ready to build transmission that would provide this range of national benefits, Congress should take the following actions to address one of the key hurdles for getting backbone transmission built—planning.

The interregional transmission planning process is simply not achieving FERC Order No. 1000's stated goal: identifying more efficient and cost-effective solutions to the individual needs identified in respective local and regional transmission planning processes. Specifically, current interregional transmission planning processes are not properly planning for and/or identifying projects across regions that provide economic, reliability, operational, and public policy benefits to consumers. This is largely because, although Order No. 1000 requires neighboring transmission planning regions to coordinate planning, it does not require a joint process or evaluation of interregional solutions and their benefits. To fix this problem, Congress should direct FERC to undertake a rulemaking to reform the interregional transmission planning process.

AWEA supports HR 4511/S 3109, the Interregional Transmission Improvement Act (Haaland, Heinrich), which would require FERC to reform the interregional transmission planning process.

Establishing an ITC for Transmission Development to Spur Build-out

The Investment Tax Credit (ITC) is foundational to the modern renewable energy economy, continuing to spur major buildouts long after its enactment. A similar incentive for electric transmission would help drive the necessary, long-term, private sector-led expansion and upgrading of America's power grid. Enactment of a transmission ITC would provide developers with the long-term investment certainty they need through a predictable, multi-year investment structure, all while saving ratepayers money and lowering the upfront construction costs of infrastructure that is too often undervalued relative to its benefits. In December 2019, Sen. Martin Heinrich (D-NM) introduced S. 3107, the Electric Power Infrastructure Improvement Act. The bill promotes construction of significant projects by providing a tax credit for investment in qualifying electric transmission line properties, which are defined as any overhead, submarine, or underground transmission facilities with a voltage of at least 345 kV and a transmission capacity of at least 1,000 MW. The tax credit is 15 percent for overhead and 25 percent for underground or submarine lines, and applies to any property placed in service before December 31, 2029. This legislation could be built upon with a transmission ITC that includes a direct pay option for the credit to allow the broadest array of transmission stakeholders to develop projects

EXECUTIVE ACTION

Improving the Efficiency of the NEPA Review Process through Reasonable Reforms

The National Environmental Policy Act (NEPA) is one of our nation's foundational environmental protection statutes, and it is crucial to consider the potential environmental impacts of major federal actions and to continue to support the intent underlying NEPA. However, undue delays and complexities in the NEPA environmental review process have, in some instances, deterred the deployment of renewable energy. For example, the average timeline for federal agencies to complete an environmental impact statement for a wind project is far greater than two years, and environmental assessments also often take that long.

The Council on Environmental Quality (CEQ) should provide guidance to federal agencies on reasonable NEPA reforms. Specifically, the EO should consider several updates to NEPA to improve permitting timelines and clarify the roles of lead and cooperating agencies for projects needed to meet clean energy goals. These reasonable procedural reforms would help move vital renewable energy projects and related transmission forward in a timely manner without harming the robust environmental review and public participation at the heart of NEPA.

Currently, only one percent of installed wind energy capacity in the U.S. is on federal public lands. This is due largely to the complexity and longer timelines of the NEPA review process triggered by developing on federal lands (which in turn generate added costs for projects). Offshore wind development in federal waters has been slowed by delays from NEPA review as well. Still further, the long timelines and excessive costs can chill projects pursuing voluntary take permits. Such delays can have ripple effects onshore wind, offshore wind, and transmission by disrupting project planning and supply chain and construction logistics, which can harm project economics and even project viability. This is true as well for infrastructure, such as transmission, that enable renewables to be delivered to market.

Introducing presumptive time limits for EISs and EAs for such projects with clearly defined starting points or otherwise expediting time frames for NEPA reviews, without interfering healthy environmental review and public participation, is prudent and advisable. On a case-by-case basis an agency or applicant should be able to seek more time if needed to support a stronger record.

Authorizing and requiring cooperation between federal agencies and state, tribal, and local governments would reduce duplication and further improve the process. The objective would be to create as few NEPA documents and decision points as possible, thereby expediting the process, expending fewer resources, and still facilitating robust environmental reviews. This would allow environmentally, socially, and economically beneficial renewable energy projects to move forward in a more efficient, well-coordinated, and timely manner.

If an agency has the authority to mitigate GHG emissions from proposed infrastructure projects contribute to climate change, the environmental analysis should include a discussion of the significance of these impacts related to the authorization and the effects that would occur as a result of the agency's decision.[113] Similarly, federal agencies should recognize reasonably foreseeable climate change mitigation benefits from federal actions, whether resulting from a federal action or as an identified alternative. For instance, if a project can be reasonably foreseen to reduce GHG emissions, the environmental analysis should consider the ability of the project to mitigate those impacts. In addition, if a proposed federal action is a carbon-intensive activity, federal agencies should evaluate projects as alternatives if they can accomplish the same purpose and need and have less impacts to climate change and are technically and economically feasible.

Expediting the Siting of Renewable Projects on Public Lands

BLM should expedite responsible renewable development on public lands and waters under their jurisdiction. Currently, only one percent of installed wind energy capacity in the U.S. is on federal public lands and waters.[114] This is largely due to the fact that developing on federal lands and waters triggers unduly lengthy permit reviews, and the time, complexity, and expense of going through that process makes development on these lands less competitive than on private lands. The EO could help solve the lengthy delays in renewable permitting on public lands and waters by expediting projects that are in areas of high

potential for development and have low impacts, such as through promoting more interagency coordination for permitting projects in those areas.

BLM should identify renewable energy areas in advance, through a programmatic environmental review, and therefore expedite siting for any projects therein. If implemented, this would be a substantial improvement over the status quo, encouraging efficient and responsible permitting of renewable development on public lands and waters in future years. An expedited permitting process for renewables on federal public lands—allowing for accelerated environmental reviews—is projected to more than double existing renewable generating capacity on those lands in the near term.[115] To this end, AWEA supports HR 3794/S 2666, the Public Land Renewable Energy Development Act (Gosar, McSally), which require that PEIS be performed for renewable energy and would expedite renewable projects in zones that have been pre-determined to have minimal impacts.

Advancing Renewable Wildlife Permit Timelines through General Permit Programs for Low Impact Projects

Unnecessary delays from permitting for renewables not only occur when projects are being developed on public lands or waters, but also whenever they need to get a federal wildlife permit on private lands. If a renewable project can qualify for a general permit (poses minimal adverse effects), a full environmental review unnecessarily burdens the Fish and Wildlife Service's (FWS) limited resources as well as developers that experience needless delays in their development timelines.

A. General Permitting Program for Eagles

This is especially true in the context of permits under the Bald and Golden Eagle Protection Act (BGEPA). There are approximately 820 wind projects that could seek voluntary permits under BGEPA right now. In the next 10 years, to reach even 20 percent renewable energy by 2030, there could be another 500 wind projects that might seek permits. If renewables experience greater growth, the FWS could likely be faced with issuing over 1,300 permits for wind energy in the next 10 years.

Without creating different review tracks for projects that pose minimal adverse effects (general permits) and those that do not (individual permits), it seems implausible that FWS will be able to administratively process all the potential permit applications in a timely manner to meet clean energy goals.

AWEA, the Natural Resources Defense Council, and the Wilderness Society have jointly urged FWS to establish a general permit program through a rulemaking process.[116] While FWS has noted that it sees utility in creating a general eagle permit program in the past, it has not yet done so. FWS should no longer postpone this rulemaking, as it is fundamental to an effective and efficient eagle permitting program. In order to advance that process, FWS should conduct a rulemaking process to create a general permit for the eagle permitting rule and, in turn, expedite the permitting process for projects that fall into that category. If an appropriately functioning general permit were created for wind projects, AWEA estimates that it could help accommodate the timely processing of the number of wind energy permits that are needed to meet the presidential plan's clean energy goals.

B. General Permitting Program for Endangered Species

In addition to eagles, the permitting process under the Endangered Species Act (ESA), Section 10, can also impose unreasonable timelines for renewable permittees with projects that will have low impacts on protected species. Presently, for a potential permittee to qualify for a low-risk permit under the ESA, an entity must also qualify for a categorical exclusion under NEPA, which is a difficult standard for most projects to meet — even if they pose only a minimal risk to a covered species. FWS should develop a more effective low risk permitting program should be developed by FWS to cut down on the current processing time for a typical renewable project permit, which is about four years for a wind energy project.

c. General Permitting Program for Migratory Bird Species

If the administration finds that incidental take is covered under the Migratory Bird Treaty Act (MBTA), enforcement assurances based on adherence to voluntary best practices (such as the Wind Energy Guidelines) is our preferred path. While we appreciate the value securing immunity to the MBTA "take" prohibition from MBTA permitting program can offer regarding legal certainty to renewable projects under a law fraught with ambiguity, we have concerns with the Fish and Wildlife Service's (FWS) ability to fashion a permit process that is sufficiently streamlined to avoid

burdening renewable projects with unacceptable delays and costs. Indeed, if the permitting program is not structured correctly, the result could substantially delay the development of critical infrastructure generally, not only wind energy development and operations.
As we are confident in the conservation benefits provided by the state-of-the-art Final Land-Based Wind Energy Guidelines2 (WEGs) issued by the Service and also skeptical that a reasonable permitting program can be established, AWEA recommends that FWS continue the status quo (voluntary adherence to the WEGs) to responsibly guide this industry's development vis-à-vis MBTA compliance. Such a voluntary program should be pursued for solar as well.

In the alternative, if the FWS seeks to develop a mandatory permitting program and can develop a general permit structure that is both simple and streamlined for the purposes of administrative feasibility and costs (both from the perspective of industry as well as the Service), the renewable energy industry would support our inclusion therein.

Increasing Offshore Renewable Energy

A. Issuing leases and processing permits for offshore wind

Reducing delays in the development and siting of existing offshore wind capacity is also a critical step in delivering offshore wind energy to load. To that end, BOEM should provide clearer direction, and transparency with respect to the leasing program, as well as opening more areas to leasing. Specifically, BOEM should strive for greater transparency, predictability and consistency when setting timelines for future Wind Energy Area (WEA) designations, lease area determinations, and auctions. This would allow developers to make investment decisions, manufacturers to make supply chain commitments or commitments to locate manufacturing facilities in the U.S., and workforce development to meet the needs of the industry.

A timeline (and sticking to what is announced) for more regular WEA designations and lease sales is also essential to meeting growing state demand for offshore wind, providing opportunities to meet corporate demand for renewable energy, attracting investment, and building out a supply chain and domestic manufacturing.

BOEM should also expand offshore wind energy capacity by opening additional lease areas for development. To do so, BOEM should establish more detailed near- and mid-term plans for WEA designations, lease identifications, and lease auctions each year over the next three years, with the goal of holding five lease auctions by 2025. An August 2020 study released by AWEA, the National Ocean Industries Association and the Special Initiative on Offshore Wind found additional leasing off the coasts of New York, the Carolinas, Gulf of Maine and California could result in 28 GW of additional

wind energy, $1.7 billion in investment into the U.S. economy, and would support 80,000 jobs annual from 2025-2035.

As early as possible, BOEM should also publish a planned multi-year schedule of WEA designations and planned lease auctions and then stick to those timelines as closely as possible. This would send an important signal to the offshore wind market and supply chain about the seriousness of the commitment to an ongoing and expanding market. For an industry where companies are competing in a global offshore wind energy market for capital, the U.S. risks falling further behind many countries in Europe, as well as China, without such longer-term visibility and commitments.

In particular, BOEM should: hold five lease auctions by 2025; immediately process the 10 offshore wind permits pending at BOEM; and act expeditiously to process the 5 plus additional offshore wind permit applications that are expected to be submitted to BOEM over the next year.

BOEM should also move forward expeditiously with a notice of proposed rulemaking that, according to the Spring 2020 Unified Agenda, was supposed to be published in July 2020 to reform, streamline and clarify the renewable energy permitting regulations. Among the expected reforms are "more flexible geophysical and geotechnical survey submission requirements; streamlined approval of meteorological buoys; revised project verification procedures; and greater clarity regarding safety requirements."

Expanding Options to Reduce Potential Impacts to Radars

The wind industry and federal agencies responsible for operating and maintaining our nation's air defense, air traffic control, and weather radar systems have understood for more than a dozen years that wind turbines can potentially impact radar performance if not properly sited. As large objects that spin and rotate, wind turbines (both land-based and offshore) can contribute to clutter on and interference with radar returns.

The wind industry has been collaborating with multiple federal agencies, including the Department of Defense, Federal Aviation Administration, Department of Homeland Security, National Oceanic and Atmospheric Administration, and the Department of Energy on technical mitigation options that can reduce or eliminate the potential impacts on radar performance from wind turbines.

For example, in 2012-2013, these agencies conducted an Interagency Field Test and Evaluation (IFT&E) program that examined eight different off-the-shelf options to reduce potential impacts to radar at wind farms in three different states, in collaboration with the wind farm operators. The mitigation options tested included software and processing upgrades, infill radars (i.e. adding a radar and fusing the data with an existing radar to provide coverage in areas that might otherwise be degraded by wind turbine clutter) and a new, more sophisticated radar. Several of the options, including infill radars, provided promising results.

Subsequent to the IFT&E, these agencies formalized their relationship through the establishment of a Wind Turbine Radar Interference Mitigation (WTRIM) Working Group to continue making progress on these issues. In 2016, the WTRIM published a strategy document, which included a plan to further investigate the potential of infill radars, including a pilot mitigation program (PMP) for a radar at Travis Air Force Base in California. This research has been conducted and a final report is expected soon.

More recently, NOAA and BOEM have identified a mitigation pathway for potential impacts from offshore wind on coastal high frequency radars. And, the North American Aerospace Defense Command (NORAD) is deploying a software-based mitigation in several common air route surveillance radars (CARSR) that are impacted by wind turbines.

However, there is more work to be done, including revising the mitigation in the CARSR for potential deployment in additional radar models, certification of infill radars for use in the national airspace system, testing of integration of infill radars into the NORAD system, and testing of mitigation options related to weather radar impacts.

FAA, DOD, DOE, NOAA, NWS, in collaboration with industry, need additional resources (dollars, staff and/or consultants) to prioritize development, testing and deployment of options (hardware, software) to reduce potential impacts from land-based and offshore wind turbines on different types of radars. The wind industry stands ready to assist with data, site access, cost sharing, and mitigation ideas.

CONGRESSIONAL ACTION

Dedicate Sufficient Resources for Review of Proposed Wind Energy Projects

Onshore and offshore renewable energy projects typically require permits from a host of agencies depending on where they are located and potential impacts. For instance, onshore wind and solar, if located on federal lands or water, will need a permit from the Bureau of Land Managements or the Bureau of Office Energy Management, as well as perhaps some type of incidental take permit from the Fish and Wildlife Service or the National Marine Fisheries Service. Processing of these permits can take years and is largely due to the fact that there are insufficient staff and resources to expedite them. Congress should increase funding for the processing of these permits to ensure renewables can be deployed at a level to meet clean energy targets.

The Department of Defense Military Aviation and Installation Assurance Siting Clearinghouse (Clearinghouse) facilitates review by individual military services, major commands, and installations of proposed energy projects to ensure military compatibility. The office has functioned effectively since its creation under the Obama Administration in 2011. However, the budget for the Clearinghouse (approximately $2.1 million) has been flat or declined while the workload has significantly increased. In total, the Clearinghouse facilitated the review of 5,600 wind projects in 2018. This was up from 4,200 in 2017 and 3,700 in 2016. Of the wind projects reviewed, the Air Force was involved in 70 percent, the Navy 15 percent, and the Army 1-2 percent. The next administration should significantly increase funding for the Clearinghouse and military services/installations involved in energy project reviews to ensure the timely processing of proposed wind projects needed to meet clean energy goals.

Similarly, the Federal Aviation Administration (FAA) evaluates proposed structures 200 feet and above (including wind turbines) for compatibility with air navigation and safety. The FAA has only a small team of staff in its Obstruction Evaluation Group who review proposed wind turbines on a project-by-project basis and facilitate the process, along with limited staff in the FAA Technical Operations Group who perform the radar impact analysis. This has led to significant delays in the review for wind energy projects, due to the need to coordinate with other agencies who review proposed projects via the FAA review process, and, in turn, has impeded their deployment to meet clean energy goals. The FAA should also increase the number of staff dedicated to reviewing proposed wind turbines in order to expedite these federal reviews.

Ensure the Jones Act is Not Expanded to Construction Activities

The Jones Act prohibits the transportation of merchandise between U.S. points on a vessel that isn't U.S. flagged and coastwise qualified (i.e., owned, operated, and controlled by U.S. citizens). Of particular significance to offshore wind, legislative activity has recently called into question the extent to which foreign flagged heavy lift vessels will be authorized to conduct installation operations in U.S. waters. This issue is critical to the industry because there are currently no U.S. flagged heavy lift vessels capable of performing certain aspects of offshore wind projects. This fact, in addition to the long lead time required to secure the use of these vessels, means that any uncertainty regarding whether use of a U.S. coastwise qualified vessel is or will be required in the future has the potential to present significant complications for project owners.

Ever since the development of offshore energy resources "lifting operations" have not been subject to the Jones Act because it is not "transportation." Customs and Border Protection (CBP) also recently confirmed the long-standing policy that the years that lifting operations are not transportation subject to the Jones Act but also made clear that all components and equipment must be transported on U.S. flagged vessels.

Accordingly, no work is taken away from American vessels as a result of CBP's action. To the contrary, more offshore wind work has correctly been given to American vessels under the new vessel component and equipment interpretations. Congress had urged CBP to take action to fix this Congress should commend CBP for taking this balanced action and for bringing certainty back to the offshore industry.

Indeed, expanding the Jones Act now to encompass "lifting operations," cannot, and will not create jobs—it will only add more government regulation and uncertainty about heavy lifts to an already heavily regulated industry. In addition, it could cause an abrupt stop to offshore wind development.

Establish Offshore Wind Infrastructure

Congress should appropriate funds for the U.S. Department of Transportation to award discretionary grant funding to improve port facilities in states and territories through the Maritime Administration's (MARAD) Port Infrastructure Development Program. This would improve America's ports with nearly half the projects are located in Opportunity Zones, which were established to revitalize economically distressed communities. U.S. maritime ports are critical links in developing offshore wind in the U.S. and ensuring it can compete in the global marketplace.

Specifically, the development program should to support efforts by ports and industry stakeholders to improve facility and freight infrastructure to ensure the nation's offshore wind energy needs, present and future, are met. The program would provide planning, operational and capital financing, and project management assistance to improve their capacity and efficiency.

PILLAR 4: REMOVING COMPETITIVE BARRIERS

EXECUTIVE ACTION

Encouraging Needed Market Reforms to Enable Renewable Energy

A presidential administration should nominate FERC commissioners that are committed to reevaluating FERC's stance toward state environmental policies, supporting carbon pricing in organized markets, and encouraging the expansion of organized markets.

A. Cease Mitigation of State-Supported Renewable Resources

In recent years, FERC has increasingly adopted a combative stance toward state clean energy goals and has sought to negate those policies by mitigating "subsidized" resources. In some cases, this includes clean energy resources that are selected in state procurement processes or that receive state- enacted renewable energy credits. Consistent with past practice, FERC should cease efforts to mitigate state-sponsored resources. FERC should instead respect states' authority to determine their own clean generation mix and expressly accommodate those policies in markets. Specifically, FERC should revoke and/or modify prior orders interfering with state decisions on electricity supply mix and mitigating state-sponsored clean energy resources.

B. Carbon Pricing in Organized Markets

Implementing carbon pricing directly into wholesale electricity markets would be a highly effective way to drive emissions reductions through a market mechanism and help states and the federal government achieve clean energy and climate goals. Under the FPA, FERC can approve implementation of a carbon pricing regime in electricity markets, even absent Congressional action on a national carbon policy. FERC should formally signal in a guidance document (finalize the proposed policy statement) that it will authorize carbon pricing proposals (assuming it meets statutory requirements) from an organized market that integrates state carbon policies into wholesale markets if and when such a market seeks FERC approval to do so. In addition, FERC should provide guidance to regions/states on how such proposals can be incorporated into FERC-jurisdictional tariffs and meet Federal Power Act requirements, while ensuring that it does not preempt or interfere with meeting state clean energy programs.

C. Increased Market Participation

Many parts of the country operate as part of regional, multi-state wholesale electric markets — called independent system operators (ISOs) or regional transmission organizations (RTOs). These grid operators dispatch energy and plan transmission across entire states or regions, and the broader electricity markets and transmission networks RTOs/ISOs provide significant benefits for renewable energy. While most states are at least partially within at least one RTO, some states, particularly in the Southeast and Mountain West, are not. FERC should encourage transmission-owning entities to place their transmission facilities under the control of RTOs/ISOs. An expansion of these markets could substantially improve the efficiency and competitiveness of electric markets, as well as renewable energy development and deliverability therein.

FERC should also ensure that existing and future RTOs and ISOs have independent governing boards to ensure decisions do not unduly favor one interest over another. To the extent a market is a non- jurisdictional transmission operator (e.g., publicly owned transmission), FERC should require them to have "safe harbor" tariffs. Requiring publicly owned transmission operators to play by the same rules as other transmission owners and operators would facilitate cooperation and seamless use of the grid.

d. PURPA Transparency & Non-Discriminatory

FERC has recently changed the rules for a federal law that allows independent energy projects to secure utility contracts for their power. While FERC's changes are unlikely to affect states with aggressive renewable standards, they introduce more uncertainty and risk for smaller developers that, in totality, may chill adoptions in states that lack aggressive clean energy mandates. FERC's new rule fails to reform key problems in how PURPA has been implemented on a state-by-state basis over the past decade, and in particular, the changes could undermine PURPA's goal of creating a level playing field for independent energy developers in certain regions. For instance,

the rule would allow states to use calculations derived from "liquid market hubs" or "a formula based on natural gas price indices and heat rates" to set "as-available" rates that could change from hour to hour at different locations on utilities' power grids. But these methods lack the transparency provided by wholesale markets to allow independent energy producers to assess whether or not their projects will be competitive against utility-owned alternatives. This violates PURPA's directive that "utilities can't treat QFs differently than they treat their own facilities," which can earn guaranteed rates of return for their capital costs." FERC should investigate whether it needs to reform PURPA in both a transparent and non-discriminatory manner.

Removing Current Trade Barriers that Impede Development of Renewable Power

A presidential administration should consider removing trade barriers that obstruct the development of renewable energy.

Recent tariffs have negatively impacted the domestic market for the renewable energy industry by substantially increasing costs on the supply chain, resulting in decreased energy affordability, and hampering job growth.

Currently, four lists of tariffs on products imported from China (Section 301 of the Trade Act of 1974)[117] and separate tariffs on steel and aluminum (under Section 232 of the Trade Expansion Act of 1962)[118] have been finalized by the U.S. Trade Representative (USTR) and are in effect. These high and broad tariffs on products and component parts utilized in renewable energy present significant hindrances to the development of these technologies and, for example, pose a risk to 21,000 wind-industry alone in jobs nationwide.

Granting exclusions to Section 301 and/or 232 tariffs for key renewable products and components would, therefore, vastly outweigh any downsides. Indeed, it would increase domestic manufacturing for renewable energy by removing a key barrier and, in turn, providing substantial domestic job creation benefits (including in the manufacturing sector) from increased wind deployment.

As a result of Section 201 tariffs, U.S. solar panel prices are now among the highest in the world. Tariffs on the high-voltage panels that utility-scale solar farms use have throttled back the number of projects being built—estimated to be $19 billion in lost investment. As a result, more than 10.5 GW of solar installations will not be deployed due to tariffs. In essence, the utility-scale segment cannot rely on domestic panel-makers that do not exist. The USTR should let the 201 solar tariffs expire on their current trajectory and maintain the bi-facial exclusion.

In August 2020, the International Trade Commission (ITC) made an affirmative determination in its final phase of the antidumping and countervailing duty investigations concerning utility scale wind towers from Canada, Indonesia, South Korea and Vietnam and did not remove offshore towers from the scope of the investigation. As a result of the ITC's affirmative determinations, the U.S. Department of Commerce (DOC) issued antidumping duty orders on tower imports from those countries. The duties will be effective for five years, unless a sunset review is initiated before that time is up. Prior to that period, DOC should seek to lower the current AD/CVD tariff rates on renewable energy components and limit new AD/CVD tariff rates on clean energy imports.

Revisit Executive Order on Securing the United States Bulk-Power System

In May 2020, an Executive Order (EO) on Securing the United States Bulk-Power System was issued, recommending restrictions on transactions involving non-U.S. bulk-power system electric equipment. The EO and a subsequent Request for Information (RFI) formally set in motion a regulatory process for the issuance of regulations that will likely include "blacklisted" and "pre-qualified" foreign equipment suppliers, and criteria for the U.S. government to evaluate and approve or block individual commercial transactions.

The comments submitted to the RFI show deep concern on a number of issues about how the DOE will implement the controversial EO. In particular, there are pervasive industry fears that contracts deep into development or construction or operations are no longer economic, and this has created uncertainty over whether to proceed with current supply orders with equipment that might be impacted for new projects.

The ambiguity arising from the EO has caused a great amount of uncertainty for developers of renewable energy, their investors, and their potential off-takers. This additional risk increases the financial burdens on each project, as developers reconsider their parts suppliers and the financiers require the developer to shoulder the risk of parts needing to be replaced. Owners and operators of existing renewable plants, like many others in the electric sector, are concerned that existing equipment may require replacement—a completely unanticipated cost—and this is hampering investment today.

While it is a laudable goal to assess risks to the U.S. power system supply chain, the EO should be revisited as it would create an unnecessary regulatory construct that would chill procurement, essential maintenance, service, and operations, as well as resulting in an enormous increased costs for manufacturers of equipment used in the U.S. bulk power system. And, it could cause the needless reengineering of existing products, longer product lead times, adverse impacts to existing project schedules, and increased costs to customers and consumers, without a commensurate security benefit.

In revisiting the EO, the President should urge DOE to reference and leverage existing industry standards in its development to mitigate major threats that affect equipment used in substations, control rooms, or power generating stations that are owned and operated by public and private sector entities. This should include industry-driven security standards and proven best practices over a new regulatory regime, because standards and best practices allow manufacturers and equipment users to reach a common understanding of how products are securely manufactured and developed, and how they should be securely installed and used.

Ensure Advanced Research Projects Agency for Energy for Climate (ARPA)-C Program Focuses on Technologies that Expand Renewable Energy

Focus the launch of the ARPA-C program on game-changing technologies that help integrate renewables. Of the eight areas listed in the Biden proposal, "grid-scale battery storage at one-tenth the cost of lithium-ion batteries" and "carbon-free hydrogen produced by renewables at the same cost as that from shale gas" seem the most prudent to pursue. This area would improve storage technologies that are currently in various stages of development by lowering cost, driving efficiency, and reducing emissions.

Treasury/IRS Start of Construction Guidance

The offshore wind industry is at an inflection point where billions of dollars of capital is standing by to make investments and create jobs in supply chain development, manufacturing facilities, port improvements, workforce development, and other areas even before projects begin construction in the water in the early-to-mid 2020s. However, investors need more certainty that planned tax credits for which projects have qualified will remain available.

Impacts from the COVID-19 pandemic exacerbate the significant uncertainty already built into the lengthy federal permitting process for offshore wind development in the U.S. With respect to these impacts, governors' stay at home orders in the Northeast have led to delays in offshore survey work. Given the compressed survey timeframes (due to endangered species presence, weather conditions, etc.) missing one window can result in delays of several months or longer. Use of port facilities by states for staging COVID response efforts has also limited access by offshore wind companies to those ports. In addition, stay at home orders and social distancing measures have also contributed to delays in public meetings, state solicitations, and outreach required by state regulators for offshore wind projects.

Further, these delays can setback development of a construction and operations plan (COP), a requirement for federal permitting, given the need for data (wildlife, soil conditions, etc.) to inform the COP. Delays in filing a COP with BOEM (the lead federal agency responsible for permitting) result in compounding delays in initiating NEPA review of the COP. BOEM and cooperating agencies like NOAA are already resource constrained in reviewing the ten COPs that have been filed. BOEM expects up to five additional COPs to be filed over the next year. Delays in filing can lead to a backlog in processing by BOEM given limited resources.

COVID-19 impacts exacerbate the already frustratingly long and uncertain federal permitting process. As BOEM itself acknowledges, from lease award to final federal approval can take up to 8 years. Leaseholders have had to take steps to qualify projects for federal tax credits well in advance of a final federal decision. Individual bids into state procurement auctions by developers have reflected planned tax credit eligibility. It is a very significant problem, to say the least, to have that eligibility called into question due to project delays.

BOEM and DOI have also contributed to significant delays and uncertainty in launching the U.S. industry when, in August 2019, they delayed final consideration of the Vineyard Wind project to initiate a supplemental environmental impact statement. Under the revised schedule announced earlier this year, a final decision is not expected until the end of 2020, around 18 months later than the original schedule. BOEM and DOI have indicated no other offshore wind projects will move through to a final decision until they complete the review of Vineyard Wind and, indeed, BOEM has not even taken the first step (a notice of intent) in initiating environmental review of any other pending project to date despite having ten projects with COPs pending.

To provide additional regulatory certainty, Treasury and

the IRS should issue start of construction guidance that provides at least a 7 year, but preferably a 10 year, continuity safe harbor specific to offshore wind projects given the reality that offshore wind permitting from lease award to final federal approval can take eight years or longer. In addition, the guidance should be revised to allow renewable energy projects (land-based or offshore) to demonstrate continuity via continuous efforts regardless of what method the project used to qualify (physical work or 5% safe harbor), which would provide needed regulatory flexibility and certainty for projects that fall outside of the continuity safe harbor to prove continuity using a broader universe of project activities.

CONGRESSIONAL ACTION

Enacting an Offshore Wind Investment Tax Credit

As our nation continues to develop our potential for offshore wind energy, we will also see new jobs and investments in manufacturing and port infrastructure. To help drive that nascent homegrown resource, a presidential administration should call on Congress to enact a long-term investment tax credit (ITC) specifically for the offshore wind energy industry. A long-term credit for offshore wind is necessary given the industry is only now ramping up as the prior PTC/ITC extensions are ramping down. Additionally, offshore wind projects have a significantly longer development, permitting, and construction timeline than land-based wind projects.

Specifically, Congress should enact a 30 percent ITC for offshore wind energy production that will make it more cost-competitive and save money for consumers. The tax credit should extend the continuity safe harbor in existing guidance to 7 years for offshore wind facilities that start construction in 2016 or subsequent years. In addition, it should allow projects to demonstrate continuity using continuous efforts regardless of which method (physical work or five percent safe harbor) a project used to start construction.

AWEA supports two bills that would achieve tax policy parity for offshore wind: The Offshore Wind Incentives for New Development Act introduced by Senators Markey (D-MA), Whitehouse (D-RI), and Congressman Jim Langevin (RI-02), and the Incentivizing Offshore Wind Power Act introduced by Senators Carper (D-DE) and Collins (R-ME). Both would extend the ITC at 30 percent of the project's total value for six and eight years, respectively. The biggest difference between the bills relates to how they are positioned in the tax code.

Enacting a Stand-alone Energy Storage Tax Credit

Energy storage makes wind and solar more competitive and, therefore, more attractive to investors. A more aggressive timeline for energy storage development would consequently give wind and solar development a push, too.

A presidential administration should call on Congress to promote technologies that enhance grid resilience and adopt an ITC for stand-alone energy storage systems. Energy storage technologies will help to integrate higher shares of renewable power and enable the electric grid to adapt to the increased demand. A tax credit will help to offset the high cost of stand-alone storage systems. Currently, only storage systems integrated with energy projects under a narrow set of conditions are eligible for a 30 percent ITC.[119]

For wind energy, a stand-alone storage ITC is estimated to support an additional two to four GW of incremental wind power capacity additions through 2027, assuming the tax credit is enacted by 2021. Resolving the uncertainty facing companies who seek to utilize the ITC for energy storage will not only spur greater investment and create jobs among a diversity of industries, it will also accelerate the U.S. transition to zero-carbon electric supply. The storage ITC could include a normalization opt-out option for utilities.

AWEA has expressed support for HR 2360/S 1142, the Energy Storage Tax Incentive and Deployment Act of 2019 (Doyle, Heinrich, Gardner). The act, introduced by Representative Mike Doyle as H.R. 2096 and by Senator Martin Heinrich as S. 1142, would have extended the 30 percent energy investment tax credit to energy storage technologies, "equipment which receives, stores, and delivers energy."

Increasing Funding for Wind Energy Research and Development to Maintain U.S. Innovation Leadership

The research and development (R&D) undertaken by the DOE Wind Energy Technologies Office (Wind Program) has advanced wind turbine technology and overcome market barriers that would otherwise constrain wind energy deployment. Over the last several years, the DOE Wind Program has provided support to projects with ties to every U.S. state, helping grow the economic benefits of wind energy across the country.

The research has increased wind output, improved reliability, and reduced costs. DOE investments in wind research have already driven wind technology forward in the United States, including funding technologies to mitigate wind turbine impacts on radar and to more accurately measure and model wind flow at project sites. DOE field tests validated several ways of ensuring that wind farms can coexist with radar at airports and military bases, working in collaboration with the Federal Aviation Administration, the Department of Defense, and the Department of Homeland Security.[120] Previous funding also spurred innovative wind turbine blade designs, which led to a 12 percent increase in the energy they capture.[121] Importantly, DOE has also invested in research on wildlife detection and deterrent devices to improve wind/wildlife compatibility. DOE has also been developing pathways for wind energy to be competitive in all 50 states, including with taller towers and longer blades to make wind energy a reality in the southeastern U.S.

Continued progress through the DOE Wind Program will be critical for the U.S. to attain global leadership in wind energy and maximize benefits for the U.S. economy and electricity consumers. To ensure robust funding for this program, a presidential administration should call on Congress to triple the current funding (FY20 is $104 million). In addition, we encourage Congress to increase funding that supports cross-sector research and development that supports renewable integration, such as for battery/storage technology, advanced transmission for national grid, etc.

Supporting the Electrification of the Transportation Sector

Over the next few decades, the transportation sector will likely be one of the most important economic areas that can be integrated with renewable energy to bring about rapid decarbonization. According to the EPA, the transportation sector made up about 14 percent of GHG

emissions worldwide in 2016,[122] and about 28.5 percent of GHG emissions from the U.S. economy in 2016.[123] Complementary laws, regulations, and policies linking the transportation and energy sectors can promote both the use of renewable energy and transmission technology to meet that demand. To the extent that the electric sector serves to offset emissions in the transportation sector, it should get equitable attribution for those emission reductions.

Historically speaking, vehicle performance standards have been a powerful tool for significantly reducing fuel consumption and lowering emissions from vehicles. While previous vehicle performance standards have been focused on promoting fossil fuel efficiency, with only a tangential focus on reducing emissions, it is becoming increasingly clear that standards focused on vehicle electrification will have a much greater impact on the transportation market due to a nexus with zero- emission resources.

Transportation electrification can help incentivize renewable energy procurement and affordability by

further balancing power system supply and demand and providing short-term energy storage. Wind generation aligns well with demand for transportation electrification—wind generation tends to peak at night and electric vehicle (EV) drivers tend to charge their vehicles at that time as well. Thus, Americans could see positive economic and environmental benefits in the form of increased reliability, stable prices, and reduced carbon pollution from EV expansion coupled with renewable capacity additions and transmission investments.

A presidential administration should call on Congress to enact greater authority for federal agencies to set more rigorous low-carbon fuel standards, such as giving the National Highway Traffic Safety Administration (NHTSA) authority to regulate vehicle emissions in order to require an increasing proportion of zero-emission vehicles. In addition, Congress should provide authority to raise NHTSA's Corporate Average Fuel Economy (CAFE) standards so that zero-emission vehicles will make up a growing proportion of vehicles designed and sold. A performance standard alone is not enough to address the challenges of transforming transportation into a carbon-neutral sector. Any federal legislation should recognize the sizeable challenges to the existing patchwork of power systems that provide the charging capabilities to EVs. Specifically, the current electric grid will need to be upgraded to handle new demand created by EVs.

EPAct 2005 authorized tax credits to alternative fuel refueling stations, including EV charging stations. The tax credit helped close the gap between the cost of charging stations and the financial incentives available — including state incentives and Electrify America incentives that reduce the level of investment needed by 2025 by half. Any future congressional legislation should recognize the remaining sizeable challenges to the existing patchwork of power systems that provide the charging capabilities to EVs and adopt similar, but expanded, incentives.

To encourage greater EV use, tax credits or rebates should be designed to provide a larger incentive for investments in a network of direct-current fast- charger infrastructure and other charging stations. Further, to spur renewable deployment and utilization, home charging stations should be prioritized. Because onshore wind blows more consistently at night, at- home charging stations will pull directly from this resource, buoying demand for wind energy. Congress should, therefore, reinstate the EPAct 2005 tax incentive for individual charging stations — 30 percent of the cost of the unit and installation up to $1,000.

The U.S. Department of Transportation's Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant program can also be used for supporting charging infrastructure. The BUILD program was created in 2009 and has distributed $7.9[124] billion in grants with an additional $1 billion available for 2020 applicants.[125] Legislation could further fund the BUILD program to expand the reach and availability of funds to municipalities across the country. Most EVs allow only Level 1 and 2 charging. Of the charging options available, only a handful allow for Level 3 fast-charging stations. Congress should allocate funds to encourage research and development into faster and cheaper charging options to encourage demand for EVs.

In addition, Congress should consider requiring: 30 percent of all federal fleets be electric by 2030, like many states and cities have already required; Federal Transit Administration funding for municipalities be contingent on a percentage of bus and other fleets being electric; and additional/preferential funding for municipalities and states be based on achieving targets for zero-emission infrastructure for fleets.

ENDNOTES

[1] While the views expressed in this document largely represent the consensus position of AWEA's members, certain views are not necessarily shared by all our members.

[2] This document recommends various executive orders (EO), but they could also be done in the form of presidential guidance, memoranda, or any other similar directive to federal agencies. The recommended EOs are intended to be
policies that could be issued immediately, through presidential authority, and take effect right away to begin putting these PILLARs in place.

[3] The proposed regulatory actions should be directed by a president as soon as possible but will take longer to implement, and the requests to Congress are envisioned as policies that could be sought immediately by a president but would, in all likelihood, be enacted over a longer time frame.

[4] The recommendations in the document represent a menu of options that could be taken. However, to avoid overlapping or patchwork regulation of the electric sector, they should be harmonized to avoid undue burdens being placed on retail electric suppliers and other regulated entities, the creation of conflicting compliance obligations for those entities, and/or double counting.

[5] If Congress were to pass a meaningful federal CES, RES or carbon price, it could potentially be the sole framework for power sector carbon regulation.

[6] U.S. Energy Info. Admin., Frequently Asked Questions: How Much of U.S. Carbon Dioxide Emissions Are Associated with Electricity Generation, available at https://www.eia.gov/tools/ faqs/faq.php?id=77&t=e.

[7] See Richard Bowers, Wind has Surpassed Hydro as Most-used Renewable Electricity Generation Source in U.S., U.S. Energy Information Administration, Feb. 26, 2020, available at https://www.eia.gov/todayinenergy/detail.php?id=42955; see also 2019 Clean Jobs America Analysis (finding that wind and solar account for nearly 2 out of every 5 construction jobs in the electric generation sector) available at https://e2.org/ reports/clean-jobs-america-2019/.

[8] Id

[9] Id

[10] In 2019 alone, wind cut over 42 million cars' worth of carbon emissions. See Amer. Wind Energy Ass'n, Carbon Policy, available at https://www.awea.org/policy-and-issues/ electricity-policy/carbon-policy.

[11] Id. According to the Department of Energy, wind energy produces 99.8 percent of the carbon emissions savings expected of a zero-emissions resource even when accounting for increased cycling of fossil generation to help integrate variable resources like wind. See D. Lew, The Western Wind and Solar Integration Study Phase 2, NREL (Sept. 2013), available at https://www.nrel.gov/docs/fy13osti/55588.pdf.

[12] These types of projects typically employ high-voltage direct current (HVDC) technology.

[13] See, e.g., Paul L. Joskow, Transmission Capacity Expansion Is Needed to Decarbonize the Electricity Sector Efficiently, 4 JOULE 1, 1–2 (Nov. 22, 2019).

[14] See N. Amer. Elec. Reliability Corp., 2019 Long-Term Reliability Assessment, https://www.nerc.com/pa/RAPA/ ra/Reliability percent20Assessments percent20DL/NERC_ LTRA_2019.pdf.

[15] Brattle Economists: Additional Transmission Investment Needed to Cost-Effectively Support Growth of Electrification in North America (Mar. 8, 2019), available at https://www. brattle.com/news-and-knowledge/news/brattle-economists-additional-transmission-investment-needed-to-cost-effectively-support-growth-of-electrification-in-north-america.

[16] Construction firms employed nearly 499,000 Americans in transmission, distribution, and storage projects, representing a 4 percent increase since 2018. NASEO, 2020 U.S. Energy & Employment Report, available at https://www.usenergyjobs. org/s/USEER-2020-0517.pdf.

[17] Aaron Bloom, Interconnections Seams Study, Presentation to TransGrid-X 2030 Symposium, NREL (2018), https:// iastate.app.box.com/s/vfgn9nikl1rz7r8x0vaoauzpm2210t35. The report used computer models to investigate future scenarios for the U.S. grid out to 2038, considering scenarios for moving renewable power across the four U.S. time zones to take advantage of peak output, and how this transmission expansion can contribute to reliability and resilience in the future grid.

[18] Key Economic Benefits of Renewable Energy on Public Lands, CBEY, available at https://www.wilderness.org/sites/ default/files/media/file/CBEY_WILDERNESS_Renewable percent20Energy percent20Report_0.pdf.

[19] Bureau of Land Mgmt., Wind Energy, available at https:// www.blm.gov/programs/energy-and-minerals/renewable-energy/wind-energy.

[20] Mark Muro et al. Advancing Inclusion Through Clean Energy Jobs, 29 (Apr. 18, 2019), https://www.brookings.edu/ research/advancing-inclusion-through-clean-energy-jobs/.

[21] For example, Pennsylvania's clean energy sector saw some of the state's highest job growth over the past few years. A recent Clean Energy Employment Report found jobs in the Pennsylvania clean energy sector grew by 8.7 percent, or almost 7,800 jobs, between 2017 and 2019. The statewide average job growth was just 1.9 percent during the same time period. Meanwhile, a companion report shows that coal, natural gas, and nuclear industries saw job losses of 3.3, 7.4,
and 4.5 percent. Clean Energy Jobs Among Fastest Growing In Pa. From 2017-2019, https://whyy.org/articles/report-clean- energy-jobs-among-fastest-growing-in-pa-from-2017-2019/.

[22] Clean Jobs America 2020, https://e2.org/reports/clean-jobs-america-2020/.

[23] Id

[24] Id.

[25] Mark Muro et al., supra note 20, at 5.

[26] While the earnings floor is significantly higher for clean energy economy jobs, their competitive pay also extends to those workers earning higher wages. Clean energy economy workers earn more at the median compared to all workers nationally, and the 75th percentile of clean energy economy workers earn more as well. Id. at 16.

[27] Id. at 5.

[28] See Renewable Energy, Laborers' Int'l Union of N. Am. (LIUNA),https://www.liuna.org/renewable-energy(explaining that California's new renewable energy standard provided "LIUNA members an opportunity to increase their work on renewable energy projects – putting more than 1,300 members to work to date" with "an additional 1,000 jobs . . . projected to be added"). See also UWUA Applauds Introduction of The Offshore Wind Jobs and Opportunity Act, Util. Workers Union of Am., AFL-CIO (UWUA),vhttps://uwua.net/news/uwua-endorses-offshore-wind-jobs-opportunity-act/ (quoting Mike Langford, UWUA Nat'l President) ("By equally supporting a wide variety of workforce development strategies targeted at this growing energy sector, including union training and apprenticeship programs, this bill [the Offshore Wind Jobs and Opportunity Act] points the way to a future of high-quality, middle-class jobs in off-shore wind.").

[29] Winds Powers Job Growth, Am. Wind Energy Ass'n, https://www.awea.org/wind-101/benefits-of-wind/powering-job-growth.

[30] Id.

[31] Id.

[32] See Cole Epley, Turning to turbines: As commodity prices remain low, wind energy leases offer a welcome source of income for farmers, Omaha World-Herald, Nov. 9, 2016 (Updated Oct. 16, 2019), https://omaha.com/money/turning-to-turbines-as-commodity-prices-remain-low-wind-energy/article_2814e2cf-83a3-547d-a09e-f039e935f399.html ("Wind energy, the fastest-growing source of electricity in the U.S., is transforming low-income rural areas in ways not seen since the federal government gave land to homesteaders 150 years ago."). See also Evan Vaughan, American farmers are harvesting the wind, Into the Wind: AWEA Blog (Oct. 12, 2016), http://www.aweablog.org/american-farmers-harvesting-wind/ ("Wind power is rapidly growing in America's heartland, supplying enough electricity for 20 million homes, and that's helping keep farms in the family and families on the farm.").

[33] Jennifer Oldham, Wind Is the New Corn for Struggling Farmers, Bloomberg Businessweek (Oct. 6, 2016), https://www.bloomberg.com/news/articles/2016-10-06/wind-is-the-new-corn-for-struggling-farmers.

[34] See id. ("[W]ind has become the newest cash crop, saving family farms across a wide swath of the heartland."); Greg Alvarez, #WindPoweredSchools: A wind farm opens doors for upstate New York students, Into the Wind: AWEA Blog (Sept. 27, 2016), http://www.aweablog.org/14767-2/; Greg Alvarez, Wind power creates a town with no taxes, Into the Wind: AWEA Blog (Sept. 17, 2016), http://www.aweablog.org/wind-power-creates-town-no-taxes/. See also Economic Development, Am. Wind Energy Ass'n, https://www.awea.org/wind-101/benefits-of-wind/economic-development

[35] ("Every year, wind projects pay over $1.6 billion in state and local taxes and landowner lease payments.").

[36] Fastest Growing Occupations, U.S. Bureau of Labor Statistics (Sept. 4, 2019), https://www.bls.gov/ooh/fastest-growing.htm.

[37] Id. at 30

[38] Uma Outka, Environmental Justice in the Renewable Energy Transition, 19 J. Envtl. & Sustainability L. 60 (2012), https://scholarship.law.missouri.edu/cgi/viewcontent.cgi?article=1420&context=jesl.

[39] Green Causes Are Not Always Colorblind: Racial Disparity in Energy Issues, Chester Energy and Policy (Mar. 5, 2018), https://chesterenergyandpolicy.com/2018/03/05/green-causes-are-not-always-colorblind-racial-disparity-in-energy-issues/.

[40] Lara P. Clark, Dylan B. Millet, Julian D. Marshall, National Patterns in Environmental Injustice and Inequality: Outdoor NO2 Air Pollution in the United States, PLOS One (Apr. 15, 2014), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0094431.

[41] In 2019, the electricity generated from wind turbines avoided an estimated 42 million cars' worth of CO2 emissions. When a wind turbine generates electricity, it produces zero carbon emissions; furthermore, a typical wind project repays its carbon footprint in six months or less, providing decades of zero-emission energy. Wind's Environmental Record, Am. Wind Energy Ass'n, https://www.awea.org/wind-101/benefits-of-wind/environmental-benefits.

[42] In 2019, wind energy generation reduced water consumption at existing power plants by approximately 103 billion gallons—the equivalent of 723 billion bottles of water. Id.

[43] Wind helps cut significant amounts of sulfur dioxide (SO2) and nitrogen oxides (NOx), air pollutants known for creating smog and triggering asthma attacks. Reductions in air pollution created $9.4 billion in public health savings in 2018 alone. Id.

[44] For example, Executive Order 13423 was signed by President George W. Bush on January 24, 2007. Among other things, this EO required a reduction in energy intensity of federal agencies by 30 percent by 2015, a reduction in greenhouse gas emissions from federal agencies by 30 percent by 2015, and a requirement that at least 50 percent of renewable energy purchases come from new renewable energy sources. Another example is EO 13514, which was signed by President Barack Obama on October 5, 2009. This

EO required agencies to establish a 2020 greenhouse gas reduction goal (which includes reductions associated with increasing use of renewable energy), required a 30 percent reduction in vehicle fleet petroleum use, and increased water use efficiency by 26 percent.

[45] Federal Leadership in Environmental, Energy, and Economic Performance," Exec. Order No. 13514, 74 Fed. Reg. 52,117 (Oct. 8, 2009); "Planning for Federal Sustainability in the Next Decade," Exec. Order No. 13693, 80 Fed. Reg. 15,871 (Mar. 25, 2015).

[46] U.S. Dept. of Int. Bureau of Land Mmgt, https://web.archive.org/web/20160312105236/http://www.blm.gov/wo/st/en/prog/energy/wind_energy.html (archive of Mar. 2016).

[47] Pub. L. 109–58, 119 Stat. 6609, § 211.

[48] Currently, BLM has approved 11,000 megawatts of renewable wind, solar, and geothermal projects.

[49] As discussed further, AWEA believes that a RES or CES, which are effective at indirectly reducing GHG emissions by transitioning to cleaner resources, could also be effectively paired with economy-wide carbon policies, such as a carbon tax or cap-and-trade program.

[50] See H.R. 4, Energy Policy Act of 2002, 107th Cong. (as amended and passed by Senate, April 25, 2002); H.R. 6, Energy Policy Act of 2005, 109th Cong. (as amended and passed by Senate, June 28, 2005); H.R. 2454, American Clean Energy and Security Act of 2009, 111th Cong. (as passed by House, June 26, 2009).

[51] Renewable Electricity Standard Act of 2019 (S.1974), introduced by Sen. Udall (D-NM). The Udall bill ensures that every state is doing its fair share to address the climate crisis and set the nation on a course for 100 percent clean electricity by 2050. Utilities in every state would be required to grow at or above the federal floor-setting standard by 1.5 to 2.5 percent per year, so no state is at a disadvantage because of where it started.

[52] Clean Energy Standard Act of 2019 (S.1359), introduced by Sen. Smith (D-MN) and Rep. Lujan (D-NM). S.1359 would establish a federal CES to put our nation on course to achieve net-zero emissions from the electric sector by midcentury to fight climate change and reduce GHG emissions from electrical generators by nearly 80 percent by 2035 (compared to 2005levels).

[53] Clean Energy Innovation and Deployment Act, https://degette.house.gov/media-center/press-releases/degette-introduces-legislation-to-cut-carbon-emissions-from-us.

[54] Comm. on Energy & Commerce, The CLEAN Future Act, https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/CLEAN percent20Future percent20Act percent20Memo.pdf

[55] Lori Bird et al., Evaluating Renewable Portfolio Standards and Carbon Cap Scenarios in the U.S. Electric Sector 7 (May 2010), https://www.nrel.gov/docs/fy10osti/48258.pdf.

[56] Id.

[57] Hearing on Building a 100 Percent Clean Economy: Solutions for the Power Sector, Res. for the Future (Oct. 30, 2019), https://www.rff.org/publications/testimony-and-public-comments/hearing-building-100-percent-clean-economy-solutions-power-sector/.

[58] Karen Palmer, Richard Sweeney, and Maura Allaire, Modeling Policies to Promote Renewable and Low-Carbon Sources of Electricity 53 (2010), https://media.rff.org/ documents/RFF-BCK-Palmeretal20-LowCarbonElectricity- REV.pdf.

[59] Id. at 39.

[60] Clean Energy Standard Act of 2019, S. 1359, 116th Cong. § 610(f)(10) (2019).

[61] Renewable Electricity Standard Act, S. 1974, 116th Cong. § 610(c)(1) (2019).

[62] S. 1359.

[63] Id.

[64] Steve Clemmer, Sandra Sattler, Jeremy Richardson & Rob Cowin, Analysis of a 50 Percent by 2035 National Renewable Electricity Standard, Union of Concerned Scientists (June 26, 2019), https://www.ucsusa.org/sites/default/files/attach/2019/06/UCS-National-RES-Analysis-6-26-f.pdf.

[65] U.S. Energy Information Administration, Frequently Asked Questions, https://www.eia.gov/tools/faqs/faq.php?id=92&t=4.

[66] Renewable Electricity Standard, Union of Concerned Scientists (June 26, 2019), https://www.ucsusa.org/sites/default/files/ attach/2019/06/UCS-National-RES-Analysis-6-26-f.pdf.

[67] Id.

[68] Paul Picciano, Kevin Renner & Daniel Shawhan, Projected Effects of the Clean Energy Standard Act of 2019 at 2 (May 2019), https://media.rff.org/documents/RFF-IB-19-03_CES_4.pdf.

[69] Id. at 2, 4.

[70] Am. Wind Energy Ass'n, RPS (2019), https://www.awea.org/policy-and-issues/electricity-policy/rps.

[71] Such a policy could be paired with a portfolio standard in the electric sector or work in tandem ith such a policy in the other sectors. This could prevent against emissions leakage caused in a sector-specific initiative, as well as supplying necessary certainty and attainment of the proposal's overall goal of reaching a clean energy economy by 2050.

[72] Last estimated by the federal government at $42/ton in 2020, using a 3 percent discount rate. The Social Cost of Carbon: Estimating the Benefits of Reducing Greenhouse Gas Emissions, U.S. Envtl. Prot. Agency (Jan. 19, 2017), https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html.

[73] Any comprehensive carbon pricing program should ensure that if national emissions goals are not met in a given year or compliance period, subsequent annual increases will adjust upwards or measures outside a carbon price will be used.

[74] Noah Kaufman, A Carbon Price Will Reduce Emissions More than Computer Models Predict, World Res. Inst. (Jan. 13, 2016), https://www.wri.org/blog/2016/01/carbon-price-will- reduce-emissions-more-computer-models-predict.

[75] Policy Insights from Comparing Carbon Pricing Modeling Scenarios, Brookings Inst. 4 (May 7, 2019), https://www.brookings.edu/wp-content/uploads/2019/05/ES_20190507_Morris_CarbonPricing.pdf.

[76] John Podesta et al., A 100 Percent Clean Future, Ctr. for Am. Progress (Oct. 10, 2019), https://www.americanprogress.org/issues/green/reports/2019/10/10/475605/100-percent-clean-future/.

[77] Energy Innovation and Carbon Dividend Act of 2019, H.R. 763, 116th Cong. (2019).

[78] Noah Kaufman et al., An Assessment of the Energy Innovation and Carbon Dividend Act, Ctr. Global Energy Policy 2 (Oct. 2019), https://energypolicy.columbia.edu/sites/default/files/file-uploads/EICDA_CGEP-Report.pdf; Jason Ye, Carbon Pricing Proposals in the 116th Congress, Ctr. for Climate & Energy Sols. (Sept. 2019), https://www.c2es.org/ site/assets/uploads/2019/09/carbon-pricing-proposals-in- the-116th-congress.pdf.

[79] Energy Innovation and Carbon Dividend Act of 2019, H.R. 763, 116th Cong. § 3(a) (2019).

[80] Id.

[81] Climate Action Rebate Act of 2019, S. 2284, 116th Cong. § 3(a) (2019).

[82] Id.

[83] Jason Ye, Carbon Pricing Proposals in the 116th Congress, Ctr. for Climate & Energy Sols. 2–3 (Sept. 2019), https:// www.c2es.org/site/assets/uploads/2019/09/carbon-pricing- proposals-in-the-116th-congress.pdf.

[84] Solving the Climate Crisis: Ramping Up Renewables: Hearing Before the H. Select Committee on Climate Crisis, 116th Cong. 1 (2019) (statement of Tom Kiernan, President and CEO of Amer. Wind Energy Ass'n), https://www.govinfo.gov/content/pkg/CHRG-116hhrg37432/pdf/CHRG-116hhrg37432.pdf

[85] Am. Wind Energy Ass'n, Wind Energy Industry Tax Priorities (2019), https://www.awea.org/Awea/media/Resources/Fact percent20Sheets/AWEA_Tax-Policy.pdf; See Molly F. Sherlock, Cong. Research Serv., IF10479, The Energy Credit: An Investment Tax Credit for Renewable Energy (2018), https:// fas.org/sgp/crs/misc/IF10479.pdf.

[86] Clean Power Plan Regulatory Impact Analysis at 3-22; see also 80 Fed. Reg. 64,662, 64,749–50 (Oct. 23, 2015).

[87] See Univ. of Tex. Energy Inst., Levelized Cost of Electricity (2016).

[88] See EIA, Annual Energy Outlook (2018).

[89] See Staff of the Fed. Energy Reg. Comm'n, Report on Barriers and Opportunities for High Voltage Transmission 21-22 (2020), https://cleanenergygrid.org/wp-content/uploads/2020/08/Report-to-Congress-on-High-Voltage-Transmission_17June2020-002.pdf (identifying the requirement that interstate transmission projects obtain state siting permits as an important barrier to high voltage transmission development).

[90] Under section 216(b) of the FPA, FERC may issue "permits for the construction and modification of electric transmission facilities." A federal permit grants the holder authority to acquire rights-of-way using eminent domain. As a result, transmission lines that receive a federal permit can sidestep requirements that they receive separate permitting approval from each state through which the line would pass.

[91] In light of the fact two adverse rulings in the federal courts of appeals impacted DOE's transmission corridor designation process and narrowed the conditions under which FERC could issue federal siting permits, many have reached the conclusion that Congress's attempt to create federal authority over the siting of critical transmission lines had been gutted. However, in reality, in California Wilderness Coalition v. DOE, the decision merely requires sufficient consultation with affected states when developing the mandated congestion study
used to develop transmission corridor designations and an adequate environmental analysis of its designation decision, as required by NEPA. 631 F.3d 1072 (9th Cir. 2011). And in Piedmont Envtl. Council v. FERC, the decision only applies to the Fourth Circuit, and FERC is able to interpret the phrase "withheld approval" as including rejection by a state outside of that circuit. 558 F.3d 304 (4th Cir. 2009

[92] DOE has legal authority to delegate its transmission corridor designation responsibilities to FERC. While Section 216(a) directs the Secretary of Energy to conduct congestion studies and designate transmission corridors, nothing in
that section or any other provision expressly prohibits any delegation of that authority. .

[93] Corridors may be designated in any "area experiencing electric energy transmission capacity constraints or congestion that adversely affects consumers." Recognizing that "there is no generally accepted understanding of what constitutes . . . 'constraints or congestion,'" in its 2007 report, DOE interpreted Section 216(a) to allow it to find "constraints" based on expectations of future congestion and based on the absence of a transmission line that "is demonstrably hindering the development of desirable
generation." 72 Fed. Reg. 56,992 at 57,000. Geographic areas with high renewable penetration but little access to customers due to a lack of transmission meet this standard. Similarly, areas facing overloaded generator interconnection queues as a result of insufficient transmission face a constraint that adversely affects consumers by driving up the cost of obtaining clean energy for customers such as large corporate energy users.

[94] See, e.g., American Wind Energy Association, Comments on Procedures for Conducting Electric Transmission Congestion

Studies, App. A (2018), https://www.energy.gov/sites/prod/files/2018/11/f57/AWEA percent20Comments percent20on percent20DOE percent20Congestion percent20Study.pdf/.

[95] In requesting comments on its 2019 congestion study, DOE clearly contemplated the possibility of a project-specific transmission corridor designations. Procedures for Conducting Electric Transmission Congestion Studies, 83 Fed. Reg. 42,647, 42,648 (Aug. 23, 2018).

[96] Section 368 of EPAct 2005 directs the Secretaries of Agriculture, Commerce, Defense, Energy, and Interior to designate, under their respective authorities, corridors for electricity transmission and distribution facilities on Federal lands in the 11 contiguous Western States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming), to perform any required environmental reviews, and to incorporate the designated corridors into relevant agency land use and resource management plans or equivalent plans. Section 368 also directs the agencies to take into account the need for upgraded and new infrastructure and to take actions to improve reliability, relieve congestion, and enhance the capability of the national grid to deliver energy.

[97] 16 U.S.C. § 16421 (2012).

[98] DOE operates four power marketing administrations (PMAs) created to market and deliver hydropower generated at federal dams. Of those, WAPA owns and operates roughly the same amount of high-voltage transmission facilities as Bonneville (17,000 miles) but is spread over a vast 15-state area. SWPA is the smallest of the three, operating 1,400 miles of high voltage transmission lines.

99 WAPA and SWPA may use contributed funds for two types of projects: (1) upgrades to existing transmission facilities owned by SWPA or WAPA; or (2) new electric power transmission facilities located within any state in which SWPA or WAPAoperates.

[100] Under the Condemnation Act, when federal agencies have authority to acquire land for a public use, they also have authority to acquire that land by eminent domain. Therefore, WAPA and SWPA can generally exercise eminent domain authority for any transmission line that it partnered with within their footprints as a last resort to get lines built.

[101] The transmission facilities that may be constructed under the provision must have at least one terminus within the area served by WAPA and must be for the purpose of delivering or facilitating the delivery of energy from renewable energy resources constructed after the date of the Recovery Act. WAPA's Borrowing Authority Statute gives it authority to develop and own projects in its own name.

[102] Section 403 of the Department of Energy Organization Act allows the Secretary of Energy to propose rules, regulations and statements of policy of general applicability with respect to any function under FERC's jurisdiction. FERC must consider and take final action on any proposal made by the Secretary
of Energy in an expeditious manner in accordance with such reasonable time limits as may be set by the Secretary of Energy. 42 U.S.C. §§ 7173(a) and (b) (2012).

[103] See, e.g., T. Bruce Tsuchida & Rob Gramlich, Grid Strategies and the Brattle Grp., Improving Transmission Operation with Advanced Technologies: A Review of Deployment Experience and Analysis Of Incentives 15–16 (2019), https://brattlefiles.blob.core.windows.net/files/16634_improving_transmission_operating_with_advanced_technologies.pdf.

[104] See, e.g., Transmission Flow Control Gets Smarter, Modern Power Systems (Feb 25., 2020)(power flow controls expected to increase boundary capabilities by 1.5 GW), https://www.modernpowersystems.com/features/featuretransmission-flow-control-gets-smarter-7790194/.

[105] See Tsuchida & Gramlich 2019, supra note 105, at 19-20.

[106] See Electric Transmission Incentives Policy Under Section 219 of the Federal Power Act, 85 Fed. Reg. 18,784 (Apr. 2, 2020).

[107] The statute directs FERC to "encourage deployment of transmission technologies and other measures to increase the capacity and efficiency of existing transmission facilities and improve the operation of the facilities," 16 U.S.C. § 824s(b)(3), separately from its instruction to "provide a return on equity that attracts new investment in transmission facilities (including related transmission technologies)," 16 U.SC. § 824s(b)(2).

[108] See e.g. Comments of the American Wind Energy Association, Docket No. RM20-10 at 17-20, 23-27 (Jul. 1, 2020), https://elibrary.ferc.gov/eLibrary/filelist?document_id=14874173&optimized=false

[109] U.S. Gov't Accountability Office, Gao-08-374r, Transmission Lines: Issues Associated with High-Voltage Direct-Current Transmission Lines Along Transportation Rights of Way 27 (2008), https://www.gao.gov/ assets/100/95342.pdf.

[110] Alternative Uses of Highway Right-of-Way: Accommodating Renewable Energy Technologies and Alternative Fuel Facilities, U.S. Dep't of Transportation (Jan. 2012) https://rosap.ntl.bts.gov/view/dot/9607.

[111] Piedmont Envtl. Council v. FERC, 558 F.3d 304 (4th Cir. 2009).

[112] Brief for FERC in Opposition at 14–15, Edison Elec. Inst. v. Piedmont Envtl. Council, 130 S. Ct. 1138 (2010) (No. 09-343), 2009 WL 4862143.

[113] Sierra Club v. FERC, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (citations omitted).

[114] U.S. Wind Industry Annual Market Report Year Ending 2018, American Wind Energy Association.

[115] The proposal, if enacted, is estimated to create nearly 9,000 operations and maintenance jobs, and more than 60,000 construction jobs by 2025.

[116] Joint Limited Comments of the American Wind Energy Association, Natural Resources Defense Council and The Wilderness Society on the Definition of "Low Risk" in Eagle Permits; Notice of Intent to Prepare an Environmental

Assessment or an Environmental Impact Statement Fish and Wildlife Service (July 5, 2016), https://www.regulations.gov/contentStreamer?documentId=FWS-R9-MB-2011-0094-1812&attachmentNumber=1&contentType=pdf.

[117] Section 301 tariffs on Chinese imports significantly raise the price of renewable industry components, including gearboxes, generator frames, blades, lithium ion batteries and cases used in battery storage. The third list of the tariffs is the most harmful to the wind industry as the wind components on this list make up to 73 percent of a complete wind turbine.

[118] Section 232 steel and aluminum tariffs have increased the cost of materials purchased by domestic wind tower manufacturers.

[119] See Molly F. Sherlock, Cong. Research Serv., IF10479, The Energy Credit: An Investment Tax Credit for Renewable Energy (2018), https://fas.org/sgp/crs/misc/IF10479.pdf.

[120] See, e.g., The Effect of Windmill Farms on Military Readiness, U.S. Dep't of Def. (2006), https://archive.defense.gov/pubs/pdfs/WindFarmReport.pdf.

[121] See Sandia Nat'l Labs., Sweep Twist Adaptive Rotor Blade: Final Project Report at XI, 11 (Jan. 2010), https://windpower.sandia.gov/other/098037.pdf.

[122] U.S. Envtl. Protection Agency, Global Greenhouse Gas Emissions Data, https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data#Sector.

[123] U.S. Envtl. Protection Agency, Fast Facts on Transportation Greenhouse Gas Emissions, https://www.epa.gov/ greenvehicles/fast-facts-transportation-greenhouse-gas- emissions.

[124] U.S. Dep't of Transp., About BUILD Grants, https://www.transportation.gov/BUILDgrants/about (last updated Apr. 15, 2020).

[125] U.S. Dep't of Transp., BUILD Discretionary Grants, https://www.transportation.gov/BUILDgrants (last updated Jan. 2, 2020).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