

US EPA ARCHIVE DOCUMENT



On August 3, 2015, President Obama and EPA announced the Clean Power Plan – an historic and important step in reducing carbon pollution from power plants that takes real action on climate change. Shaped by years of unprecedented outreach and public engagement, the final Clean Power Plan is fair, flexible and designed to strengthen the fast-growing trend toward cleaner and lower-polluting American energy. With strong but achievable standards for power plants, and customized goals for states to cut the carbon pollution that is driving climate change, the Clean Power Plan provides national consistency, accountability and a level playing field while reflecting each state’s energy mix. It also shows the world that the United States is committed to leading global efforts to address climate change.

Key Topics and Issues

RELIABILITY

- The Clean Power Plan has several features that reflect EPA’s commitment to ensuring that compliance with the Plan does not interfere with the industry’s ability to maintain the reliability of the nation’s electricity supply:
 - A long compliance period starting in 2022 with sufficient time to maintain system reliability.
 - A basic design that allows states and affected electric generating units (EGUs) flexibility to include a large variety of approaches and measures to achieve the environmental goals in a way that is tailored to each state’s and utility’s energy resources and policies, including trading within and between states, and other multi-state approaches that support electric power system reliability.
 - A requirement that each state demonstrate in its final plan that it has considered reliability issues in developing its plan, including consultation with an appropriate reliability or planning agency.
 - A mechanism for a state to seek a revision to its plan in case unanticipated and significant reliability challenges arise.
 - A reliability safety valve to address situations where, due to an unanticipated event or other extraordinary circumstances, there is a conflict between the requirements imposed on an affected power plant and maintaining reliability.
- In addition to the measures outlined in the rule, the EPA, Department of Energy (DOE) and the Federal Energy Regulatory Commission (FERC) are coordinating efforts to monitor the implementation of the final rule to help preserve continued reliable electricity generation and transmission.

START DATE

- The final Clean Power Plan incentivizes planning, investment and reductions to begin now, giving states and utilities the flexibility they need to build on the transition to clean energy already under way in the power sector.
- Mandatory reductions in the final Clean Power Plan will begin in 2022 instead of 2020, which responds to concerns that the proposed 2020 start date was too soon and would raise concerns about electric system reliability, ratepayer bills, and stranded assets. Starting mandatory reductions in 2022 gives utilities time to get clean energy infrastructure in place.

- In addition, the performance rates are phased in over the 2022-2029 interim period, which leads to a glide path of reductions that “steps down” over time. The glide path is separated into three steps, 2022-2024, 2025-2027, and 2028-2029, and also achievable “on average” over the 8-year interim period. States can also decide to customize their glide path, as long as they meet their interim goals.
- In addition to enhancing reliability, these changes provide states and utilities with the latitude to consider a broader range of options to achieve the required reductions while addressing concerns about ratepayer impacts and stranded assets.

EARLY ACTION

- Stakeholders, especially states, asked that we recognize early investments and actions taken to reduce CO₂ emissions before the Clean Power Plan.
- The Clean Power Plan establishes emission performance rates for fossil fuel-fired electric steam generating units and natural gas-fired combined cycle generating units. States that have made early investments in zero-emitting generation to reduce CO₂ prior to the Clean Power Plan have relatively less to do under the Plan.
 - Affected EGUs that have already taken early action will be better positioned to meet their state’s goal because they will have less distance to cover to meet the performance rate.
 - Emissions reductions that occur from 2022 onwards from measures implemented after 2012 can be used for compliance with interim targets.
- In addition, eligible renewable energy (RE), demand-side energy efficiency (EE), and non-Best System of Emissions Reduction (BSER) measures that occur after 2012 can be included in state plans.
 - Under a mass-based plan, those impacts will be reflected in reduced CO₂ stack emissions from affected EGUs.
 - Under a rate-based plan, crediting verified MWh of electricity generation and EE savings that are achieved by those measures during the interim and final plan performance periods reduces the state’s rate.
- Finally, the Clean Power Plan’s Clean Energy Incentive Program (CEIP) offers an optional incentive for additional early investments in wind and solar generation, as well as demand-side EE programs implemented in low-income communities that deliver results during 2020 and/or 2021.
 - Through this program, EPA intends to make allowances or emission rate credits (ERCs) available to states that incentivize these investments. EPA is providing additional incentives to encourage EE investments in low-income communities.
 - There will be air quality co-benefits from getting the early reductions expected from the CEIP. The exact levels of those reductions will vary depending on the extent to which states choose to subscribe to the program as well as which power plants reduce emissions as a result of the incentives.

NUCLEAR

- After consideration of numerous comments, EPA is not including power generated by “under construction” nuclear power plants in setting the Clean Power Plan goals. However, if new nuclear reactors come on-line, or if existing facilities expand their capacity (uprates), that incremental generation is eligible to be counted toward compliance. This includes nuclear facilities currently under construction.
- In other words, the electricity generated by nuclear power plants currently under construction does not factor into the setting of the state goal, but additional, new nuclear generation can count in meeting that goal.
- EPA recognizes the important role nuclear capacity plays in providing reliable, zero-carbon base load power, and that additional nuclear capacity is under construction in several states.
- New nuclear plants will be valued assets in states with both mass-based and rate-based plans.
 - Generation from new nuclear plants can help achieve mass-based standards of performance through reduced utilization of affected EGUs leading to reduced CO₂ emissions from affected EGUs. That means

that nuclear power competes well under a mass-based plan, as increased nuclear generation can mean that fossil fuel units are operating less and emitting fewer tons of CO₂.

- Nuclear, like RE and EE, can also play an important role in complying with rate-based emissions guidelines through the creation of ERCs from new nuclear generation. If a state chooses to meet a rate-based goal and allows the use of ERCs, then new nuclear generation may be eligible to receive ERCs based on zero-emitting MWh of generation.

RENEWABLES, INCLUDING HYDROPOWER AND BIOMASS

How is RE accounted for in goal setting?

- The Clean Power Plan builds on current investments in renewable technologies. The final BSER analysis includes more use of new RE than at proposal based on up-to-date information clearly demonstrating the lower cost and greater availability of clean generation than was evident at proposal. It takes into account recent reductions in the cost of clean energy technology, as well as projections of continuing cost reductions.
- The final rule includes new utility-scale RE as the basis for the calculation of RE in building block 3; accordingly, it does not include roof-top solar in goal setting (although it can be used for compliance).
- EPA used a technical and economic basis to reflect new RE deployment as part of BSER, while factoring in feasibility considerations. EPA took into account current costs of clean technology when evaluating the role of RE in reducing carbon pollution from existing power plants.
- Existing RE is not counted in setting state goals. Rather, when establishing BSER, EPA examined the potential for utility-scale RE in each of the three interconnect regions (Eastern, Western, and Electricity Reliability Council of Texas) that is both feasible and cost-effective.
 - Onshore wind, utility-scale solar photovoltaic, concentrated solar power, geothermal and hydropower are the RE technologies included as part of the BSER.
 - Because of the interstate nature of RE and the power system, RE is quantified for each of the three interconnect regions. State RPS requirements are not a factor in quantifying the amount of cost-effective RE that is part of the goal setting in the final rule.
- There is no difference in BSER for setting the rate-based and mass-based goals; they are equivalent.

How is RE accounted for in compliance?

- The Clean Power Plan provides more time for the cleanest technologies to be developed and deployed as cost-effective options.
- The Clean Power Plan includes many options for states to more easily account for the purchase and sale of electricity generated from RE, and states have broad discretion to use RE in compliance.
- All RE that is developed and properly accounted for is available for affected EGUs to use in meeting the requirements of the Clean Power Plan.

Interstate and international trading of renewable energy generation (including Canadian hydro)

- For states that choose to meet a **mass-based goal**, increased RE generation in that state, or generation outside the state that is used to meet in-state electricity demand, can mean that fossil fuel units are operating less and emitting fewer tons of CO₂.
- For states that choose to meet a **rate-based goal** and allow the use of ERCs, the RE generator is eligible to receive ERCs based on MWh of generation from any state with a rate-based goal. Once a generator receives an ERC, it may then transfer or sell the ERC to an affected EGU in any state with a linked rate-based emission trading program, which may use the ERC to demonstrate compliance with its rate-based emission standard.

- While the ultimate holder of the ERC gets the zero-emission MWh credit, increased use of RE in a state can mean that fossil fuel-fired units are being used less often and fewer tons of CO₂ are being emitted. Generally, states with new RE projects get a benefit toward their plan.
- For **international** RE, the EPA will work with states using the rate-based approach that are interested in allowing the use of RE from outside the U.S. to adjust CO₂ emission rates. In these cases, the RE resources must be incremental and installed after 2012, and all Evaluation, Measurement and Verification (EM&V) standards must be met.
 - The country generating the ERCs must be connected to the U.S. grid, and there must be a power purchase agreement or other contract for delivery of the power with an entity in the U.S.
 - RE generation capacity outside the U.S. that existed prior to 2012 but was not exported to the U.S. is not considered new or incremental generation and, therefore, is not eligible for adjusting CO₂ emission rates under this rule.
 - Canada currently provides states such as Minnesota and Wisconsin with RE through existing grid connections and new projects are in various stages of development to increase generating capacity.
- In addition, states have opportunities, including through the Clean Energy Incentive Program, to promote and incentivize RE generation under the Clean Power Plan.

Hydropower

- Existing hydropower is not included in the goal-setting calculation. Consistent with other types of RE, new hydropower generating capacity installed after 2012 is eligible to states to help meet their goal. Existing hydropower that makes an uprate can also be used for compliance.
- For a handful of states where hydropower plays a unique role, EPA made some adjustments to the 2012 data to better reflect fossil generation in an average year. EPA made these adjustments for six states affected by the final Clean Power Plan¹ (Idaho, Maine, Montana, Oregon, South Dakota, and Washington) because hydropower:
 1. is a significant portion of their generation portfolio,
 2. varies on an annual basis, and was significantly above its historical average for the state in 2012

More information:

- The CO₂ Emission Performance Rate and Goal Computation TSD for Clean Power Plan Final Rule provides analysis and explains the adjustment that the EPA made to the state-level 2012 data for these states.
- EPA notes that these conditions are not present in other weather-based RE technologies like solar or wind. Therefore, no similar adjustment was needed to account for weather patterns with these technologies.
- Unlike market conditions (e.g., changes in natural gas prices) that may produce different generation profiles year-to-year but that do not change the overall generating potential of the state's power fleet, variation in the hydrologic cycle does fundamentally change the generating potential of the state's power fleet in hydro-intensive states as they no longer have the same generating potential in an average year as they had in a "high hydro" year. The EPA agrees with commenters that using a 2010-2012 baseline would not address the concern as 2011 was also an outlier year relative to historical snow-pack and hydro generation.

Biomass

- The use of biomass is explicitly addressed in the Clean Power Plan, and states may use qualified biomass resources as a component of their state plans (i.e., a biomass feedstock that is demonstrated as a method to control increases of CO₂ levels in the atmosphere).
- The use of some kinds of biomass has the potential to offer a wide range of environmental benefits, including carbon benefits. However, these benefits can typically only be realized if biomass feedstocks are sourced responsibly and attributes of the carbon cycle related to the biomass feedstock are taken into account.

¹ The EPA is not finalizing goals for Alaska (originally included in the group of states receiving these hydropower adjustments) at this time.

- A state may propose in its plan the types of biomass that are being proposed for use, how those proposed feedstocks or feedstock categories should be considered as qualified biomass, and explain the proposed valuation of biogenic CO₂ emissions.
- The EPA generally acknowledges the CO₂ and climate policy benefits of waste-derived biogenic feedstocks and certain forest- and agriculture-derived industrial byproduct feedstocks. The proposed use of these feedstocks would likely be approvable as qualified biomass in a state plan when proposed with adequate monitoring, reporting and verification requirements. Given the importance of sustainable land management in achieving the carbon goals of the President's Climate Action Plan, the use of sustainably-derived agricultural and forest biomass feedstocks may also be acceptable as qualified biomass in state plans, if plans adequately demonstrate that the proposed feedstocks appropriately control increases of CO₂ levels in the atmosphere and provide sufficient measures to monitor and verify feedstock sources and related sustainability practices.
- Information in EPA's revised Framework for Assessing Biogenic Carbon Dioxide for Stationary Sources, the SAB peer review process of that report, and state and third party programs concerning waste-derived as well as sustainable forestry and agriculture feedstocks (examples of such programs are highlighted in the emissions guidelines preamble) can assist states when considering the role of qualified biomass in state plan submittals.

Distributed Renewable Energy Generation

- RE sited at homes and businesses, such as rooftop solar, is increasingly popular and cost-competitive for some electricity consumers.
- These customer-sited RE systems are eligible to produce MWh for affected EGUs to use in meeting the requirements of the Clean Power Plan when properly accounted for and verified.
- With respect to accounting and verification requirements, many existing state RE registries have provisions for monitoring the MWh of generation, which could meet Clean Power Plan requirements, such as requirements to use a revenue quality meter.

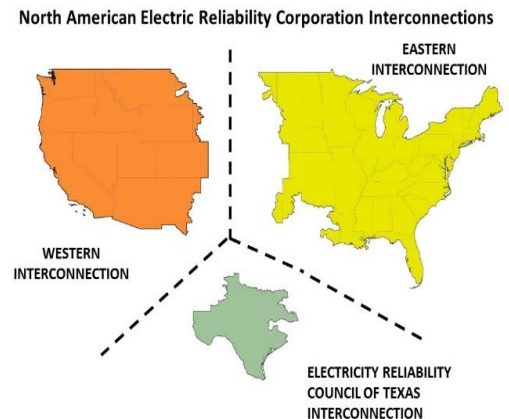
2012 BASELINE

- The final Clean Power Plan baseline still uses generation data from 2012 as the starting point to determine the state goals, but the EPA has made various adjustments to reflect some key concerns and corrections expressed by commenters. Adjustments include:
 - Updated unit-level data.
 - Updated affected fossil baseline generation (adjusted upwards) in states with large hydro generation portfolios.
 - Updated state-level generation (adjusted upwards) in cases where a unit outage was determined to have a potential significant impact on the state generation total.
 - Updated state-level generation (adjusted upwards) to reflect under-construction fossil steam and NGCC capacity operating at expected technology-class levels.
 - EPA did not remove announced retirements from its baseline.
- EPA chose to use an adjusted 2012 baseline because it reflects the best historical data available at the time of analysis and addresses the concerns identified by commenters with limited adjustments.
- Pre-2012 data, either on its own, or as part of a multi-year baseline, is not as representative of the current power fleet as the 2012 data, which better reflect significant changes in power sector infrastructure.
- The 2012 Inventory does not constitute a final applicability determination.

HOW EPA DETERMINED EMISSION PERFORMANCE RATES

- Under section 111(d) of the Clean Air Act, EPA determines the best system of emission reduction (BSER) that has been demonstrated for a particular pollutant and a particular group of sources by examining technologies and measures already being used.

- Consistent with previous BSER determinations in 111(d) rulemakings, the agency considered the types of strategies, technologies and measures that states and utilities are already using to reduce CO₂ from fossil fuel-fired power plants.
 - In the final Clean Power Plan, EPA determined that BSER is comprised of three building blocks:
 - Building Block 1 – reducing the carbon intensity of electricity generation by increasing the operational efficiency of existing coal-fired power plants.
 - Building Block 2 – reducing the carbon intensity of electricity generation by shifting electricity generation from higher emitting fossil fuel-fired steam power plants (generally coal-fired) to lower emitting natural gas-fired power plants.
 - Building Block 3 – reducing the carbon intensity of electricity generation by increasing electricity generation from renewable sources of energy like wind and solar.
- In determining the BSER, EPA considered the ranges of reductions that can be achieved at coal, oil and gas plants at reasonable cost by application of each building block, taking account how quickly and to what extent the measures encompassed by the building blocks could be used to reduce emissions.
- In assessing the BSER, EPA recognized that the power plants operate through broad interconnected regional interconnected grids that determine the generation and distribution of power, and thus we based our analysis on the three established regional electricity interconnects: the Western interconnection, the Eastern interconnection and the Electricity Reliability Council of Texas interconnection.
- EPA applied the building blocks to all of the coal plants and all of the natural gas power plants in each region to produce regional emission performance rates for each category.
- From the three resulting regional coal plant rates, and the three regional natural gas power plant rates, EPA chose the most readily achievable rate for each category to arrive at equitable CO₂ emission performance rates for the country that represent the best system of emission reductions.
- The same CO₂ emission performance rates were then applied to all affected sources in each state to arrive at individual statewide rate-based and mass-based goals. Each state has a different goal based upon its own particular mix of affected sources.
- The agency is setting emission performance standards for tribes with affected EGUs—Navajo, Fort Mojave, and Ute (Uintah & Ouray). At this time, EPA is not setting CO₂ emission performance goals for Alaska, Hawaii, Guam or Puerto Rico so that the agency can continue to collect data that can form the basis of standards for power plants in these locations in the future.



BENEFITS TO RATEPAYERS

- Faced with unchecked climate change, the U.S. is expected to incur significant costs to prepare for and respond to these impacts. The risks of unmitigated climate change to human health, the environment and the U.S. economy are real and will be widespread.
- U.S. leadership on climate change, a global problem, is key to our efforts to secure global action and commitments by other countries.
- By giving states more time to plan and utilities more time to meet the reduction requirements, the Clean Power Plan is responsive to states’ and stakeholders’ concerns about the proposal not giving them the latitude they need to meet the demands of grid reliability and to minimize costs to ratepayers.
- EPA estimates that consumers will see their monthly utility bills go down because of the Clean Power Plan over the long run. By 2030, the average American family will save about \$7 on their monthly electric bill (more than \$80/year).

- EPA is creating a Clean Energy Incentive Program to reward early investments in wind and solar generation, as well as demand-side EE programs implemented in low-income communities, that deliver results during 2020 and/or 2021. Through this program, EPA intends to make allowances or ERCs available to states that incentivize these investments. EPA is providing additional incentives to encourage EE investments in low-income communities.

HOW THE FINAL RULE INTERACTS WITH EXISTING MULTI-STATE AGREEMENTS

- The final Clean Power Plan is designed to accommodate existing multi-state agreements and contemplates future agreements between states. The rule can accommodate budget trading programs that include:
 - International sources
 - Design flexibilities such as cost-containment mechanisms and offset provisions
 - Sources and sectors other than power plants
 - Power plants that are not covered under the Clean Power Plan
 - Existing rate-based programs
 - Existing mass-based programs
- We look forward to working with stakeholders to determine how their existing carbon-reduction programs can be used toward meeting the requirements of the Clean Power Plan. RGGI and California’s trading program have goals that are consistent with, or more stringent than, the participating states’ Clean Power Plan goals in 2030, making these states potentially better positioned to meet their goals.
- States not entering into multi-state agreements can still interact with other states by developing “trading ready” state plans, or adopting the EPA model rule, which will allow seamless interaction by EGUs no matter where they are across the country.

USE OF ENERGY EFFICIENCY FOR COMPLIANCE

- Demand-side EE is an important, cost-effective, proven strategy that states are already widely using and which can substantially and cost-effectively lower CO₂ emissions from the power sector.
- EPA received extensive comments on proposed building block 4. While many commenters emphasized the cost-effectiveness of demand-side EE measures, others expressed concerns regarding the legality and scope of EPA’s authority to include EE in BSER. Upon consideration of the comments and based upon EPA’s own analysis, the final Clean Power Plan does not include demand-side EE as part of BSER.
- While EE was not included in the goal-setting calculations, it remains widely available for compliance.
- The Clean Power Plan’s flexible compliance pathways provide a wide array of options for states to fully deploy EE to meet their state goals.
- Under a **mass-based plan**, states that anticipate continuing or expanding investments in EE have unlimited flexibility to leverage those investments to meet their Clean Power Plan targets.
 - EE programs and projects do not need to be approved as part of a mass-based state plan, and Evaluation, Measurement and Verification (EM&V) will not be required, because compliance is demonstrated by measuring CO₂ emissions at the power plant.
 - States can incent EE through allocation provisions in a mass-based trading program (auction and reinvestment of proceeds to fund EE; allocation set-asides for EE programs/ projects).
- Under a **rate-based plan**, states have the option to incorporate EE as part of a rate-based emission trading program.
 - EE programs and projects can be issued ERCs for quantified and verified electricity savings.
 - Note that an approach that doesn’t involve ERCs could only be used under a mass-based state measures plan.
 - An EM&V plan is required for each EE program or project, specifying how MWh savings will be quantified and verified. EM&V plans must meet requirements in emission guidelines.
- The Clean Power Plan anticipates that states with pre-existing, effective oversight of EE programs, particularly through Public Utility Commissions, will be able to rely on them for Clean Power Plan compliance.

- Any type of EE that meets eligibility requirements, including EE programs and projects from energy service companies, industrial organizations and commercial buildings, are creditable under the Clean Power Plan so long as the electricity savings are properly quantified and verified.
- The key determinants of whether the EE savings are creditable include the rigor of the EM&V and the type of plan the state chooses, not who conducts the efficiency project or program.

COMMUNITIES

- The Clean Power Plan and related actions will provide broad benefits to communities across the country, particularly low-income communities, minority communities and tribal communities.
- Electricity will remain affordable and reliable; increased EE under the Clean Power Plan is projected to reduce average electricity bills by about \$7 per month by 2030.
- EPA will continue to engage with communities and the public during the rule's implementation.
 - To ensure opportunities for communities to continue to participate in decision making, EPA is requiring that states demonstrate how they are actively engaging with communities as part of their public participation process in the formulation of state plans developed for the Clean Power Plan.
 - This requirement will provide an avenue for all communities to learn what strategies their state is considering to reduce carbon pollution, and it will give communities the opportunity to let their state know how those strategies may impact communities.
 - EPA will provide information to facilitate engagement between communities and states.
- To ensure that communities share in the benefits of a clean energy economy, EPA is creating the Clean Energy Incentive Program to reward early investments in RE projects in low income communities during 2020 and/or 2021.
- EPA also will provide communities and states information on how to access existing financial and technical assistance programs that can help communities increase use of EE and RE programs. These include federal programs and resources, such as: the National Community Solar Partnership, which the White House announced last month, to increase access to solar for all Americans, particularly low- and moderate-income communities; and the Clean Energy Impact Investment Center, which the Department of Energy will launch to make information about energy and climate programs at DOE and other government agencies accessible and more understandable to the public. In addition, the Administration's POWER+ Plan will invest in workers and jobs, address important legacy costs in coal country and drive the development of coal technology as our country moves to a clean energy economy.

SELECTED STATES, TRIBES, and TERRITORIES

Vermont and Washington, DC

- Because Vermont and the District of Columbia (DC) do not have affected EGUs, they will not be required to submit a state plan.
- RE and EE projects located in Vermont and DC may participate in the trading provisions of the final rule and can provide ERCs to states to help them meet their goals, as long as they meet requirements for eligibility.

Alaska, Hawaii, Guam and Puerto Rico

- EPA is not setting CO₂ emission performance goals for Alaska, Hawaii, Guam and Puerto Rico in the final rule at this time.
- Because the EPA lacks appropriate information and analytic tools to quantify the BSER for these states and territories with otherwise affected EGUs, the rule does not apply to these states and territories at this time, and Alaska, Hawaii, Guam and Puerto Rico will not be required to submit state plans.
- The agency intends to continue to consider these issues and determine what the appropriate BSER is for these areas. As part of that effort, the agency will investigate appropriate sources of information and types of analysis.

- Because we recognize that these areas face some of the most urgent climate change challenges and some of the highest electricity rates in the U.S., we are committed to obtaining the right information to quantify the emission reductions that are achievable in these states and territories and putting goals in place soon.

Tribes

- The EPA is setting emission standards for affected EGUs on three Indian reservations—Navajo, Fort Mojave, and Ute (Uintah and Ouray).
- Tribes generally have the opportunity, but not the obligation, to submit a plan for their respective areas of Indian country. If a tribe chooses to establish its own plan, it must seek and be approved by EPA for “treatment in the same manner as a state” (TAS) status.
 - In the proposed federal plan, the EPA is proposing to find that it is necessary or appropriate to implement a federal plan for the affected EGUs located in Indian country. The federal plan does not preclude any tribe from seeking TAS and, if approved by EPA for such status, submitting a tribal plan to implement the Clean Power Plan for their affected EGUs.
- Tribes that do not have any affected EGUs in their areas, but where RE or EE projects will be developed, may participate in the trading provisions of the final rule and can provide emission rate credits (ERCs) to states to help them meet their goals, as long as they are connected to the continental U.S. grid and meet other requirements for eligibility.

INTERNATIONAL

- The Clean Power Plan demonstrates U.S. leadership and is key to our effort to secure an ambitious and lasting climate agreement in Paris, providing strong momentum heading into the international climate talks.
 - Countries accounting for 70 percent of global carbon pollution from the energy sector have already submitted plans or made major leader-level commitments to reduce post-2020 emissions.
- The Clean Power Plan establishes the U.S. as an international leader on climate change and puts us on track to meet our U.S. 2020 and 2025 emissions targets.
- The Clean Power Plan is changing the international dynamic, and leveraging international action because when the U.S. leads, other nations follow.
 - U.S. action has helped spur announcements from China, Brazil, and Mexico to limit their emissions or increase RE deployment.