

US EPA ARCHIVE DOCUMENT

## EPA FACT SHEET: Carbon Pollution Standards

# FINAL LIMITS ON CARBON POLLUTION FROM NEW, MODIFIED AND RECONSTRUCTED POWER PLANTS

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Power plants are the largest stationary source of carbon pollution in the United States -- about one-third of all greenhouse gas pollution comes from the generation of electricity by power plants.

- On August 3, 2015, EPA set standards to limit carbon dioxide (CO<sub>2</sub>) emissions from new, modified, and reconstructed power plants.
- Section 111 of the Clean Air Act (CAA) provides authority to address emissions from new, modified, and reconstructed, and existing power plants, recognizing different approaches that are available at different stages of construction.
- This is one of three separate but related actions to address carbon pollution from power plants. They are:
  - The final Carbon Pollution Standards for new, modified and reconstructed power plants, set under the authority of Clean Air Act section 111(b);
  - The final Clean Power Plan to cut carbon pollution from existing power plants, set under the authority of section 111(d); and
  - A proposed federal plan associated with the final Clean Power Plan.
- These final Carbon Pollution Standards apply to newly constructed power plants or to an existing unit that meets certain, specific conditions described in the Clean Air Act and implementing regulations for being "modified" or "reconstructed."
  - A **new source** is any newly constructed fossil fuel-fired power plant that commenced construction after January 8, 2014.
  - A **modification** is any physical or operational change to an existing source that increases the source's maximum achievable hourly rate of air pollutant emissions. This standard would apply to units that modify after June 18, 2014.
  - A **reconstructed source** is a unit that replaces components to such an extent that the capital cost of the new components exceeds 50 percent of the capital cost of an entirely new comparable facility. This standard would apply to units that reconstruct after June 18, 2014.
- In this final action EPA is establishing separate standards for two types of fossil-fuel fired sources:
  - stationary combustion turbines, generally firing natural gas; and
  - electric utility steam generating units, generally firing coal
- These final standards reflect specific concerns and technical input from the comments received on both the proposed Carbon Pollution Standards for New Sources and the

proposed Carbon Pollution Standards for Modified and Reconstructed Sources.

- The standards reflect the degree of emission limitation achievable through the application of the best system of emission reduction (BSER) that EPA has determined has been adequately demonstrated for each type of unit.
- Because these standards are in line with current industry investment patterns, these standards are not expected to have notable costs and are not projected to impact electricity prices or reliability.
- These limits provide the starting point for new fossil-fueled fired power plants, which must obtain permits under the Clean Air Act's New Source Review program. That program requires the use of Best Available Control Technology. EPA will revise its BACT Guidance to reflect these requirements and explain further requirements for applicants to evaluate advancing technology.

## **STATIONARY COMBUSTION TURBINES, GENERALLY NATURAL GAS**

### New and Reconstructed Natural Gas

- EPA determined that the BSER for new and reconstructed stationary combustion turbines is natural gas combined cycle (NGCC) technology.
- The final standard for base load combustion turbines is identical for new and reconstructed units. It is an emission limit of 1,000 pounds of CO<sub>2</sub> per megawatt-hour on a gross-output basis (lb CO<sub>2</sub>/MWh-gross). This standard applies to all sizes of base load units.
- Non-base load units need to meet a clean fuels input-based standard.
- Whether a unit is base load or non-base load is determined by a "sliding scale" approach that considers both design efficiency and sales. This means that the dividing line between base load and non-base load will change depending on a unit's nameplate design efficiency.

### Modified Natural Gas

- As a result of what we learned from the public comments and because we need additional information, EPA is not setting a standard for modified stationary combustion turbines at this time and is withdrawing the proposal.

## **ELECTRIC UTILITY STEAM GENERATING UNITS, GENERALLY COAL**

- The final standards for steam units vary depending on whether the unit is new, modified or reconstructed. Each is based on the performance of available and demonstrated technology.
- The final emission limits for new sources are based on the performance of highly efficient new coal units implementing a basic version of CCS – one that would require partial capturing of the CO<sub>2</sub> produced in the facility. For example, a new coal-fired power plant

could meet the final standard by capturing about 20 percent of its carbon pollution.

- The final emission limits for modified and reconstructed sources do not require implementation of carbon capture and storage (CCS) technology, nor are they based on that technology.

#### New Coal-Fired Power Plants

- EPA finds that the BSER for new steam units is a new highly efficient supercritical pulverized coal (SCPC) unit with partial carbon capture and storage (CCS).
- The final standard is an emission limit of 1,400 lb CO<sub>2</sub>/MWh-gross, which is the performance achievable by an SCPC unit capturing about 20 percent of its carbon pollution.
  - This is less stringent than the proposed standard of 1,100 CO<sub>2</sub>/MWh-gross, reflecting information and comments regarding the cost to implement CCS on a new unit.
- The final standard is achievable by new fossil fuel-fired steam generating units for all fuel types, under a wide range of conditions, and throughout the United States.
- The standard relies on rules that EPA already has in place to ensure that CO<sub>2</sub> is safely and securely stored.
- CCS has been demonstrated to be technically feasible and is in use or under construction in various industrial sectors, including the power sector. Partial CCS designed to meet the final emission standard will continue to promote implementation and the further development of CCS technologies.

#### Modified Coal-Fired Power Plants

- EPA determined that the BSER for modified units is based on each affected unit's own best potential performance.
- EPA is issuing final standards for those units that make larger modifications – those resulting in an increase of hourly CO<sub>2</sub> emission of more than 10 percent relative to the emissions of the most recent five years from that unit.
  - As a result of what we learned from the public comments and because we need additional information, EPA is not setting a standard for units that make smaller modifications at this time and is withdrawing the proposal. Smaller modifications are those resulting in an increase of hourly CO<sub>2</sub> emission of less than or equal to 10 percent.
- A source implementing larger modifications will be required to meet a standard consistent with its best historical annual performance during the years from 2002 to the time of modification. The standard will be in the form of an emission limit in pounds of CO<sub>2</sub> per megawatt-hour on a gross-output basis.

- EPA determined that this standard can be met through a combination of best operating practices and equipment upgrades.
- In addition, modified facilities will not have to meet an emission standard more stringent than the corresponding standard for reconstructed steam units.

#### Reconstructed Coal-Fired Power Plants

- EPA finds that the best system of emission reduction for reconstructed units is the performance of the most efficient generating technology for these types of units (i.e., reconstructing the boiler if necessary to use steam with higher temperature and pressure, even if the boiler was not originally designed to do so.)
- The final emission standards are:
  - Sources with heat input greater than 2,000 MMBtu/h would be required to meet an emission limit of 1,800 lb CO<sub>2</sub>/MWh-gross and
  - Sources with a heat input of less than or equal to 2,000 MMBtu/h would be required to meet an emission limit of 2,000 lb CO<sub>2</sub>/MWh-gross.

#### **BACKGROUND**

- On April 2, 2007, in a landmark decision in *Massachusetts v. EPA*, the Supreme Court determined that greenhouse gases, including carbon dioxide, are air pollutants under the Clean Air Act and EPA must determine if they threaten public health and welfare.
- On December 15, 2009, the EPA Administrator found that the current and projected concentrations of greenhouse gases endanger the public health and welfare of current and future generations.
- In early 2011, EPA held several listening sessions to gain important information and feedback from key stakeholders and the public before initiating the rulemaking process for the Carbon Pollution Standard for New Power Plants. Each listening session included a round table discussion and public comments. EPA also solicited written comments. EPA considered these comments when drafting the 2012 proposal and the current proposal.
- EPA received and reviewed more than 2.5 million public comments on the April 2012 proposed Carbon Pollution Standard. That original proposal was withdrawn on June 2, 2014.
- In June 2013, President Obama directed EPA to reduce carbon pollution from power plants as part of a Climate Action Plan. This plan reinforced EPA's commitment to cutting harmful pollution, protecting the U.S. from the impacts of climate change, and leading an international effort to address a changing climate.

- On September 20, 2013, EPA announced proposed standards to limit carbon pollution from new power plants – the agency’s first step under the President’s Climate Action Plan to reduce GHGs from the power sector.
- On February 26, 2014, EPA issued a technical support document and a notice of data availability that provided analysis and information related to the Energy Policy Act of 2005.
- On June 2, 2014, EPA announced proposed standards to limit carbon pollution from modified and reconstructed power plants. Based on public comments received on the January 2014 proposal for newly constructed units, the EPA solicited additional comment on the standards and applicability criteria for new, modified and reconstructed stationary combustion turbines.
- These actions are associated with Dockets EPA-HQ-OAR-2013-0495 (for new sources) and EPA-HQ-OAR-2013-0603 (for modified and reconstructed sources).

**FOR MORE INFORMATION:** <http://www.epa.gov/cleanpowerplan>

*Updated Sept 14, 2015*

