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Federal Agency Actions Following the Supreme Court's Climate Change Decision in *Massachusetts v. EPA*: A Chronology

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Summary

In 2007, the Supreme Court rendered one of its most important environmental decisions. In *Massachusetts v. EPA*, the Court held 5-4 that greenhouse gases (GHGs), widely viewed as contributing to climate change, constitute "air pollutants" as that phrase is used in the Clean Air Act (CAA). As a result, said the Court, the U.S. Environmental Protection Agency (EPA) had improperly denied a petition seeking CAA regulation of GHG emissions from new motor vehicles by citing, among other reasons, the agency's lack of authority over such emissions.

This report offers a chronology of major federal agency actions, mainly by EPA, that involve GHGs or climate change and that occurred after *Massachusetts v. EPA*. Most of the listed actions trace directly or indirectly back to the decision. Examples include EPA's "endangerment finding" for GHG emissions from new motor vehicles; the resulting EPA standards (issued on multiple occasions) for GHG emissions from new motor vehicles; EPA's proposal of performance standards (again on separate occasions) for CO_2 emissions from new, and modified or reconstructed, fossil fuel-fired power plants; and EPA's proposal of emission guidelines for CO_2 emissions from existing fossil fuel-fired power plants. Several listed EPA actions, taken on the agency's view that regulation of GHG emissions from new motor vehicles triggers new source review of GHG stationary sources, are now either void or will have to be limited slightly in scope, owing to the 2014 decision of the Supreme Court in *Utility Air Regulatory Group v. EPA*.

A few agency actions were included in the report solely because of their relevance to climate change and their post-*Massachusetts* occurrence—that is, they were not legally compelled by *Massachusetts v. EPA* or EPA actions tracing back to that decision. Examples include EPA's responses to California's request for a waiver of CAA preemption allowing that state to set its own limits for GHG emissions from new motor vehicles; OMB's "social cost of carbon" dollar amount to be used in agency cost-benefit analyses; the Council on Environmental Quality's draft guidance on how climate change is to be considered in environmental impact statements; and EPA's monitoring rule for GHG emissions.

More analytical treatment of the government actions in this report may be found in other CRS reports listed in footnote 16 herein.

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Introduction

In 2007, the Supreme Court rendered one of its most important environmental decisions. The case, *Massachusetts v. EPA*,[1] was a challenge to the denial by the Environmental Protection Agency (EPA) of a petition asking it to take two actions—(a) find under the Clean Air Act (CAA) that greenhouse gases (GHGs) emitted from new motor vehicles "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare,"[2] through their climate change effects, then (b) issue standards for those GHG emissions. EPA's petition denial was based in part on its claim that it lacked authority to regulate GHGs. To the contrary, said the Supreme Court by 5-4, GHGs constitute "air pollutants" under the CAA, hence EPA does indeed have the authority to regulate GHG emissions.[3] The Court gave EPA three options: (a) determine that GHG emissions from new motor vehicles "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare," then promulgate standards limiting those emissions; (b) determine that such GHG emissions do *not* cause or contribute to such endangerment; or (c) explain adequately why the agency cannot or will not make a determination under either (a) or (b).[4]

EPA chose option (a)—that is, to make a positive "endangerment finding" for GHG emissions from new motor vehicles. That finding was made in December 2009, and under CAA section 202 required EPA to promulgate standards for new motor vehicle emissions to address the endangerment.[5] That action, or rather actions, the agency also has taken, beginning in May 2010.

In EPA's view, the 2010 motor vehicle standards, in turn, triggered CAA duties for stationary sources (factories, power plants) of GHG emissions as well.[6] More specifically, the agency adopted regulations under which major new stationary sources and major modifications of existing stationary sources, when proposed for Prevention of Significant Deterioration (PSD) areas, must undergo "new source review" based on their expected CO_2 emissions.[7] If subject to PSD new source review, the CAA required those sources to install "best available control technology" (BACT) to control GHG emissions.[8] Reading the CAA literally, EPA believed, new source review and BACT would be required for any major new source or modification that emitted or increased CO_2 emissions by the same low threshold amount applied by the CAA to non-GHG emissions. And the BACT requirement, EPA argued further, triggered CAA Title V operating permitting requirements—again, on a literal reading of the CAA, with the same low

[1] 549 U.S. 497 (2007).

[2] CAA § 202(a); 42 U.S.C. § 7521(a).

[3] This *Massachusetts* holding was affirmed in *American Electric Power v. Connecticut*, 131 S. Ct. 2527 (2011), with respect to GHG coverage by CAA section 111, which applies to *new* stationary sources of air pollution. 42 U.S.C. § 7411. The Court held that the CAA displaces any federal common law under which federal judges might compel reductions in CO_2 emissions from fossil fuel-fired power plants separate from EPA's regulatory program. The holding was explicitly based on the Court's position that CAA section 111 authorizes EPA to reduce GHG emissions from new fossil fuel-fired power plants. 131 S. Ct. at 2537-2538.

[4] 549 U.S. at 533.

[5] CAA § 202(a); 42 U.S.C. § 7521(a).

[6] *See, e.g.*, Advance Notice of Proposed Rulemaking, 73 Fed. Reg. 44420, 44498, and 44511 (2008). The Notice is listed in this report under "July 30, 2008."

[7] *See, e.g.,* 75 Fed. Reg. 31514. This is the "tailoring rule," listed in this report under "June 3, 2010."

[8] CAA § 165(a)(4); 42 U.S.C. § 7475(a)(4).

threshold as for non-GHG emissions.[9] Given the huge amount of CO_2 emitted by even some small stationary sources, this literal reading of the CAA brought a correspondingly huge number of sources under the act's new source review, BACT, and Title V permitting requirements. In an effort to shrink this large number to administratively practical levels, EPA construed the act to allow a phase-in of the statutory thresholds through a so-called "tailoring rule."[10]

In 2014, the Supreme Court in *Utility Air Regulatory Group v. EPA*[11] rejected EPA's argument that regulation of motor vehicle GHG emissions necessarily triggers PSD new source review of the same emissions from stationary sources. As the Court saw it, PSD new source review and BACT cannot be triggered *solely* by a source's GHG emissions.[12] On the other hand, EPA's application of CO_2 BACT to "anyway" sources—sources subject to new source review based on their *non-GHG* emissions—was seen by the Court as a reasonable reading of the CAA.[13] In a related holding, *Utility Air Regulatory Group* voided EPA's tailoring rule as an impermissible rewriting of the CAA's emission thresholds.[14]

This report is a chronology of the major climate change-related actions taken by federal agencies, principally EPA, in the wake of *Massachusetts v. EPA*. It does not include executive orders and presidential proclamations.[15] Most of the listed actions trace directly or indirectly back to the *Massachusetts* decision. In contrast, a few were included solely because of their relevance to climate change and their occurrence post-*Massachusetts*. That is, they were not legally compelled by *Massachusetts v. EPA* or EPA actions in compliance therewith. More analytical treatment of the listed agency actions may be found in other CRS reports.[16]

Please note—

- *Dates used are those of* Federal Register *publication wherever a* Federal Register *citation is given. In most instances, however, the agency action was signed and publicly announced weeks (or more) earlier.*
- *Once an agency promulgates a final rule, the report's entry for the proposed rule has been deleted. A rule is* not *deleted for any other reason, such as subsequent*

[9] CAA §§ 501-507; 42 U.S.C. §§ 7661-7661f.

[10] *See* note 7 *supra*.

[11] 134 S. Ct. 2427 (2014).

[12] *Id*. at 2439-2446.

[13] *Id*. at 2447-2449.

[14] *Id.* at 2444-2446.

[15] *See, e.g.,* Exec. Order 13677, 59 Fed. Reg. 58231 (September 23, 2014) ("Climate-Resilient International Development") and Exec. Order 13653, 78 Fed. Reg. 66819 (November 1, 2013) ("Preparing the United States for the Impacts of Climate Change").

[16] *See* CRS Report R42613, *Climate Change and Existing Law: A Survey of Legal Issues Past, Present, and Future*, by (name redacted); CRS Report RS22665, *The Supreme Court's First Climate Change Decision:* Massachusetts v. EPA, by (name redacted); CRS Report R43127, *EPA Standards for Greenhouse Gas Emissions from New Power Plants*, by (name redacted); CRS Report R40506, *Cars, Trucks, and Climate: EPA Regulation of Greenhouse Gases from Mobile Sources*, by (name redacted) and (name redacted); CRS Report R42721, *Automobile and Truck Fuel Economy (CAFE) and Greenhouse Gas Standards*, by (name redacted), (name redacted), and (name redacted); CRS Report R43572, *EPA's Proposed Greenhouse Gas Regulations for Existing Power Plants: Frequently Asked Questions*, by (name redacted) et al.; CRS Report R43652, *State CO2 Emission Rate Goals in EPA's Proposed Rule for Existing Power Plants*, by (name redacted); and CRS Report R41212, *EPA Regulation of Greenhouse Gases: Congressional Responses and Options*, by (name redacted).

invalidation by the courts or withdrawal by the proposing agency—developments noted in footnotes that usually follow the boldface heading.

2008

March 6: EPA denies California's request for waiver of CAA preemption. 73 Fed. Reg. 12156. The CAA preempts state controls on new motor vehicle emissions,[17] but offers California, and California alone, the opportunity to request a waiver of CAA preemption.[18] EPA must grant the preemption waiver if certain conditions are met.[19] The importance of this "California waiver" is magnified by the fact that once EPA grants the waiver, states that adopt motor vehicle emission standards identical to California's also partake of the preemption waiver for the same vehicles.[20] In the present case, California sought a waiver of CAA preemption for its GHG emissions limits for 2009 and later model year motor vehicles. EPA denied the waiver on finding that the state did not need those emission limits to meet "compelling and extraordinary conditions," as required by the CAA.[21] (See "July 8, 2009" for EPA's reversal of this denial.)

July 30: EPA issues advance notice of proposed rulemaking regarding GHG emissions from new motor vehicles. 73 Fed. Reg. 44354. This document sets out EPA's view of the legal implications were EPA to make a positive endangerment finding for GHGs from new motor vehicles—as discussed in the introduction of this report, "option (a)" offered by the Supreme Court.[22] It is purely an informational document, prepared after the George W. Bush Administration decided in late 2007 not to issue an endangerment finding for new motor vehicle GHG emissions, but rather to leave that decision to the next Administration.

December 31: EPA Administrator publishes interpretive memorandum ("Johnson memorandum"). 73 Fed. Reg. 80300. EPA Administrator Stephen Johnson issued this memorandum, titled "EPA's Interpretation of Regulations that Determine Pollutants Covered by Federal Prevention of Significant Deterioration (PSD) Permit Program." The memorandum narrowly interprets the CAA phrase "pollutant subject to regulation under this act"[23] to include only pollutants regulated by *actual, not potential future*, emission limits under the CAA or its regulations.

At the time, much hung on this distinction between actual, and potential future, emission limits. In PSD areas of the country, the CAA requires only pollutants "subject to regulation under [the CAA]" to be controlled by potentially expensive BACT—when emitted by new major emitting facilities or major modifications of existing facilities. Since there were no "actual" GHG regulations under the CAA when the Johnson memorandum was issued, this meant that for the

[17] CAA § 209(a); 42 U.S.C. § 7543(a).

[18] CAA § 209(b); 42 U.S.C. § 7543(b).

[19] *Id*.

[20] CAA § 177; 42 U.S.C. § 7507.

[21] CAA § 209(b)(1)(B); 42 U.S.C. § 7543 (b)(1)(B).

[22] Some of EPA's discussion of these legal implications was rejected by the Supreme Court in *Utility Air Regulatory Group v. EPA*, noted in the introduction of this report.

[23] CAA § 165(a)(4); 42 U.S.C. § 7475(a)(4).

near term at least, new major emitting facilities and major modifications of existing facilities proposed for PSD areas did not have to install BACT for GHG emissions.[24]

2009

July 8: EPA grants California's request for waiver of CAA preemption. 74 Fed. Reg. 32744. This rule reversed EPA's prior denial of California's request for a preemption waiver (see "March 6, 2008"). As noted, its effect is to allow California's GHG emissions limits for 2009 and later model year motor vehicles to go into effect, and to allow the identical emission standards for the same vehicles promulgated by other states to do likewise. Such "other states" now number 13, plus the District of Columbia.

October 30: EPA finalizes mandatory GHG monitoring rule. 74 Fed. Reg. 56260. This rule, known as the Greenhouse Gas Reporting Rule, was required by the FY2008 Consolidated Appropriations Act,[25] which instructed EPA to develop a rule "to require mandatory reporting of GHG emissions above appropriate thresholds in all sectors of the economy"—using EPA's existing CAA authority. The rule was to take effect January 1, 2010, with the first monitoring reports due in 2011.

> *This report does not list EPA's many amendments and expansions of the Greenhouse Gas Reporting Rule. See, for example, recent amendments including an alternative verification approach plus final confidentiality determinations for the newly added data elements, at 79 Fed. Reg. 63750 (October 24, 2014). To stay abreast, the reader is referred to* http://www.epa.gov/ghgreporting/reporters/notices/index.html.

December 15: EPA finalizes endangerment finding for GHG emissions from new motor vehicles. 74 Fed. Reg. 66496. This endangerment finding, under CAA section 202(a),[26] was option (a) offered EPA by *Massachusetts v. EPA*, as noted in the report's introduction. Parsing the language of section 202(a), EPA actually concluded that two component endangerment findings were required. Based on the "air pollution that may reasonably be anticipated to endanger ... ," phrase, the first finding was that six GHGs otherwise present in the atmosphere are reasonably likely to endanger both public health and welfare through their climate change impacts. Based on the "cause, or contribute to" phrase, the second finding was that the four GHGs emitted by new motor vehicles in the United States contribute to the endangering air pollution otherwise present in the atmosphere. The compound endangerment finding has no effect on outside parties *in itself*; its importance is that it triggers a duty under section 202(a) for EPA to promulgate emission standards for new motor vehicles. (See "May 7, 2010" and later dates for those standards.)

[24] Even under EPA's interpretation of "pollution subject to regulation under this act" as referring to actual regulations in effect, the date when PSD/BACT coverage was triggered for GHG stationary sources was January 2, 2011. Thus, the interpretational debate in the Johnson memorandum is now moot, at least as to GHGs. Moreover, as discussed in the report's introduction, the Supreme Court decision in *Utility Air Regulatory Group v. EPA* limited the extent to which PSD new source review and BACT are required for new and modified sources of GHGs.

[25] P.L. 110-161, Div. F, tit. II; 121 Stat. 1844, 2128.

[26] 42 U.S.C. § 7521(a).

2010

February 8: Securities and Exchange Commission issues guidance regarding corporate disclosure related to climate change. 75 Fed. Reg. 6290. This interpretive release provides guidance to public companies as to how existing Commission disclosure requirements apply to climate change matters.

February 18: Council on Environmental Quality issues draft guidance under National Environmental Policy Act (NEPA).[27] This guidance memorandum from the Council is titled "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions." It sets out ways in which federal agencies can improve their consideration of GHG effects in their evaluation of proposals for federal actions under NEPA, including in environmental impact statements.

April 2: EPA finalizes its reconsideration of Johnson memorandum. 75 Fed. Reg. 17004. After taking comments on how to interpret "subject to regulation" in the CAA, EPA decided to continue with the interpretation in the Johnson memorandum (see "December 31, 2008"). In a refinement, however, EPA stated that "subject to regulation" does not apply to a newly regulated pollutant (like GHGs) until a regulatory requirement to control emissions of that pollutant not only is promulgated, but also *takes effect*. For GHGs, that "regulatory requirement" is the new GHG emission standards for light-duty motor vehicles, noted immediately below. Since these standards did not take effect until January 2, 2011, PSD and Title V permitting requirements also did not go into effect until then—or later under EPA's tailoring rule finalized June 3, 2010.[28]

May 7: EPA and NHTSA jointly finalize rules setting GHG emission standards and fuel economy standards for 2012-2016 model year light-duty vehicles. 75 Fed. Reg. 25323. The EPA emission standards were mandated under the CAA once the agency finalized its "endangerment finding" for new motor vehicles (see "December 15, 2009"). Regarding NHTSA, the Energy Policy and Conservation Act, as amended in 2007, requires that agency to prescribe separate fuel economy standards for passenger and non-passenger automobiles beginning with model year 2011, to achieve a combined fuel economy average for model year 2020 of at least 35 miles per gallon.[29] EPA and NHTSA acted jointly because motor vehicle GHG emissions are directly linked to fuel consumption. In order to provide a consistent set of standards for auto manufacturers to meet, the White House brokered an agreement under which EPA would develop GHG emissions standards under the CAA that would be compatible with fuel economy standards developed by NHTSA.

The EPA and NHTSA standards apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016, and purport to represent a harmonized and consistent national program. (California has announced its commitment to support the national program: on April 1, 2010, it revised its GHG standards for model years 2012-2016 such that compliance with the federal GHG standards will be deemed compliant with

[27] The guidance is available at http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-consideration-effects-ghg-draft-guidance.pdf. NEPA is codified at 42 U.S.C. § 4321 et seq.

[28] *But see* note 24 *supra*.

[29] 49 U.S.C. § 32902(b)(2)(A).

California's GHG standards.)[30] Both EPA and NHTSA standards become more stringent each year, culminating in an EPA fuel economy equivalent of 35.5 miles per gallon (mpg) and an NHTSA fuel economy (CAFE) standard of 34.1 mpg, in model year 2016—each standard an industry fleetwide average. Various factors explain the 35.5/34.1 difference.

June 3: EPA finalizes "tailoring rule."[31] 75 Fed. Reg. 31514. This rule was to relieve the overwhelming permitting burdens EPA asserted would, in the absence of the rule, fall on PSD and Title V permitting authorities on January 2, 2011, when EPA's light-duty vehicle rule for GHGs (see immediately above) takes effect. The tailoring rule began, on January 2, 2011, with GHG emissions thresholds for PSD new source review and Title V that are much higher than those in the CAA (EPA hoped to phase in the statute's low statutory thresholds after many years). Indeed, the thresholds in the final tailoring rule are higher than those in the proposed rule. For example, beginning January 2, 2011, PSD requirements will apply to projects that increase net GHG emissions by at least 75,000 tons per year CO_2 equivalent, but only if the project also significantly increases emissions of at least one non-GHG pollutant. And no source emitting less than 50,000 tons per year CO_2 equivalent will be subject to PSD new source review or Title V permitting before April 30, 2016.

August 13: EPA denies petitions to reconsider its endangerment finding for GHGs from new motor vehicles. 75 Fed. Reg. 49556. After reviewing the 10 petitions, the agency concluded that its December 15, 2009, endangerment finding (above) remains well-supported. Several petitions argued that emails disclosed in late 2009, many from the Climate Research Center at the University of East Anglia in England, suggested bias among climate-change scientists, warranting a new look at the evidence for climate change and its causes.

November 10: EPA issues "PSD and Title V Permitting Guidance for Greenhouse Gases."[32] Full text at http://epa.gov/regulations/guidance/byoffice-oar.html. EPA issued this guidance to assist permit writers and permit applicants in addressing the Clean Air Act's PSD and Title V permitting requirements for GHGs, which took effect on January 2, 2011, for certain new major stationary sources and major modifications of stationary sources. Particularly important is the guidance's discussion of the process EPA recommends for determining BACT for GHGs from such sources.

December 13: EPA finalizes PSD new source review "SIP call."[33] 75 Fed. Reg. 77698. This final rule asserted a finding that the EPA-approved SIPs of 13 states were substantially inadequate to meet CAA requirements because they did not apply PSD requirements in their SIPs to GHG-emitting sources. Owing to this finding, the rule issued a SIP call for each of the 13 states to revise its SIP as necessary to correct such inadequacies,[34] with deadlines ranging from December 22, 2010, to December 1, 2011. Note: if the state fails to correct its SIP by the deadline, the CAA requires EPA to promulgate a federal implementation plan for the state.

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[30] *See* http://www.arb.ca.gov/regact/2010/ghgpv10/ghgpv10.htm.

[31] In *Utility Air Regulatory Group v. EPA*, discussed in the report's introduction, the Supreme Court invalidated EPA's "tailoring rule" as in conflict with the numerical emission thresholds in the PSD provisions of the CAA. 134 S. Ct. at 2444-2446. In any event, *Utility Air Regulatory Group*, as discussed earlier, held that the PSD program may apply to GHG emissions only from "anyway" stationary sources, of which there are relatively few. Thus, that holding eliminated the very need for a tailoring rule.

[32] Note 31 *supra* applies here.

[33] Note 31 *supra* applies here.

[34] As required by CAA § 110(k)(5), 42 U.S.C. § 7410(k)(5).

December 21: EPA enters into settlements agreeing to issue new source performance standards for GHG emissions from "electric generating units" (power plants) and petroleum refineries. Available at http://www.epa.gov/airquality/pdfs/boilerghgsettlement.pdf (power plants) and http://www.epa.gov/airquality/pdfs/refineryghgsettlement.pdf (petroleum refineries). The two settled lawsuits were petitions for review of EPA amendments to its existing new source performance standards (NSPSs) for, respectively, electric generating units[35] and petroleum refineries.[36] On each occasion, petitioners objected, EPA had declined to introduce NSPSs for GHG emissions. In the settlements, EPA agreed to (a) propose by July 26, 2011, NSPSs for GHG emissions from new/modified electric generating units and guidelines for existing electric generating units, then promulgate final NSPSs and guidelines by May 26, 2012, and (b) propose by December 10, 2011, NSPSs for GHG emissions from new/modified petroleum refineries and guidelines for existing petroleum refineries, then promulgate final NSPSs and guidelines by November 10, 2012. As to electric generating units, see "January 8, 2014" for proposal of GHG NSPSs, "June 18, 2014" for proposal of emission guidelines for existing sources, and "June 18, 2014" for proposal of performance standards for modified and reconstructed sources. EPA has made no proposal as yet for petroleum refineries.

December 30: EPA finalizes rule to narrow previous approval of state Title V permitting programs that apply to GHG-emitting stationary sources.[37] 75 Fed. Reg. 82254. This rule is a companion to that immediately below. It narrowed EPA's previous approval of state Title V operating permit programs so that only stationary sources that exceed the GHG thresholds established in the "tailoring rule" (see "June 3, 2010") are covered as major sources by the federally approved Title V programs in the affected states. By thus raising the GHG emissions thresholds that apply Title V permitting to major sources in the affected states, this rule aimed to reduce the number of stationary sources that will be required to have Title V permits, and thereby reduce Title V permitting burdens for state permitting agencies and sources in the affected states.

December 30: EPA finalizes rule to narrow previous approval of SIP PSD programs that apply to GHG-emitting stationary sources.[38] 75 Fed. Reg. 82536. This rule is a companion to that immediately above. It narrowed EPA's previous approval of SIP PSD programs that apply to GHG-emitting stationary sources, by withdrawing approval of those programs to the extent they apply PSD to GHG-emitting sources below the thresholds in the "tailoring rule" (see "June 3, 2010"). By thus raising the thresholds in 24 states above the statutory threshold, this rule aimed to reduce the number of new stationary sources, or major modifications of existing sources, that will be required to have PSD permits, and thereby reduce PSD permitting burdens for state permitting agencies and sources in the affected states.

[35] 71 Fed. Reg. 9866 (2006).

[36] 73 Fed. Reg. 35838 (2008).

[37] Note 31 *supra* applies here.

[38] Note 31 *supra* applies here.

2011

July 20: EPA finalizes rule deferring application of PSD and Title V permitting requirements to CO_2 emissions from bioenergy and other biogenic stationary sources.[39] 76 Fed. Reg. 43490. Such CO_2 emissions are generated by combustion or decomposition of biologically based material—as at solid waste landfills, manure management operations, and electric utilities burning biomass fuels. The deferral, to allow EPA more time to examine how to account for such emissions, was for three years. During this period, biogenic emissions were not required to be counted for determining whether a source is subject to PSD and Title V permitting. The deferral applied only to CO_2 emissions and did not affect non-GHG pollutants or other GHGs emitted from the combustion of biomass fuel.

September 15: EPA and NHTSA jointly finalize rules setting GHG emission standards and fuel economy standards for 2014 and later model year medium- and heavy-duty vehicles. 76 Fed. Reg. 57106. These rules, weighing in at 958 pages (including preamble), respond to a presidential memorandum of May 21, 2010,[40] as well as the CAA. EPA's emission standards and NHTSA's fuel economy standards apply to three categories of heavy-duty vehicles: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. The rules include separate standards for the engines that power combination tractors and vocational vehicles. Certain rules are exclusive to EPA, such as EPA's hydrofluorocarbon standards to control leakage from air conditioning systems in combination tractors, and pickup trucks and vans. EPA's emission standards began with model year 2014. NHTSA's fuel economy standards are voluntary in model years 2014 and 2015, becoming mandatory for most vehicle categories in model year 2016.

2012

April 13: EPA proposes performance standards for CO_2 emissions from new fossil fuel-fired electric generating units.[41] 77 Fed. Reg. 22392. The proposed rule, pursuant to CAA section 111(b), would require new fossil fuel-fired electric generating units (power plants) of greater than 25 megawatt capacity to meet an output-based standard of 1,000 pounds of CO_2 per megawatt-hour—a standard based, according to EPA, on the performance of widely used natural gas combined cycle technology. EPA had committed to issuing this proposed rule by July 26, 2011, in a litigation settlement, noted under "December 21, 2010."

October 15: EPA finalizes rule setting GHG emission standards for 2017-2025 model year light-duty vehicles; NHTSA finalizes rule setting fuel economy standards for 2017-2021 model year light-duty vehicles and offers "best estimate" of fuel economy standards for 2022-2025 model year light-duty vehicles. 77 Fed. Reg. 62624 (minor correction on October 18, 2012, at 77 Fed. Reg. 64051). These rules respond to a presidential memorandum of May 21,

[39] This rule was vacated by *Center for Biological Diversity v. EPA*, 722 F.3d 401 (D.C. Cir. 2013), though by the time this decision came down the three-year deferral period had only one more year to run.

[40] Administration of Barack H. Obama, Memorandum on Improving Energy Security, American Competitiveness and Job Creation, and Environmental Protection Through a Transformation of Our Nation's Fleet of Cars and Trucks (May 21, 2010), available at http://www.gpo.gov/fdsys/pkg/DCPD-201000409/pdf/DCPD-201000409.pdf.

[41] EPA has replaced this proposal with a new one, noted under "January 8, 2014."

2010,[42] as well as to the CAA. The standards apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles and build on the model year 2012-2016 light-duty vehicle standards (see "May 7, 2010"). EPA's emission standards will be more stringent each year from 2017 to 2025, achieving, as an industry fleetwide average, the equivalent of 54.5 miles per gallon (mpg) in model year 2025—if the emission reductions are achieved solely through improvements in fuel efficiency. The first phase of NHTSA's CAFE standards, for model years 2017-2021, is projected to require, on an average industry fleetwide basis, a range from 40.3 to 41.0 mpg in model year 2021. The second-phase standards, for model years 2022-2025, are not final, due to a statutory requirement that NHTSA set CAFE standards not more than five model years at a time. NHTSA projects that these standards could require, on an average industry fleetwide basis, from 48.7-49.7 mpg in model year 2025.

See entry under May 7, 2010, for statutory and historical background.

2013

May 30: Office of Management and Budget issues Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order No. 12866.[43] The "social cost of carbon" estimates in this interagency "technical support document" are to facilitate federal agency incorporation of the social benefits of reducing CO_2 emissions into cost-benefit analyses of proposed regulatory actions. Under Executive Order 12866,[44] federal agencies are required to assess the costs and benefits of proposed regulations. The social cost of carbon estimates in this current version of the technical support document are based on updated versions of the assessment models and are higher than those used in the 2010 technical support document.[45]

June 25: President Obama issues Power Sector Carbon Pollution Standards memorandum setting deadlines for EPA issuance of standards. 78 Fed. Reg. 39535 (July 1, 2013). The memorandum directs EPA to issue a revised version of its 2012 proposed new source performance standards for GHG emissions from fossil fuel-fired power plants. The revised proposed rule was due by September 20, 2013, to be followed by issuance of a final rule "in a timely fashion." (The proposed rule was indeed *announced* by the deadline; see below under "January 8, 2014.") The memorandum also directs EPA to issue standards, regulations, or guidelines, as appropriate, for carbon emissions from existing power plants: a proposed rule by June 1, 2014, a final rule by June 1, 2015, and a requirement that states submit implementation plans by June 30, 2016.[46]

[42] *Id.*

[43] Available at https://www.federalregister.gov/articles/2013/11/26/2013-28242/technical-support-document-technical-update-of-the-social-cost-of-carbon-for-regulatory-impact.

[44] 58 Fed. Reg. 51735 (1993).

[45] Minor corrections were made in the May 30, 2013, document in November 2013.

[46] *See* CAA § 111(d); 42 U.S.C. § 7411(d).

2014

January 8: EPA withdraws April 13, 2012, proposed performance standards for CO_2 emissions from new fossil fuel-fired electric generating units and proposes revised standards. 79 Fed. Reg. 1352 (withdrawal of 2012 proposal); 79 Fed. Reg. 1430 (proposed revised standards). This withdrawal and reproposal, under CAA section 111(b), was announced on September 20, 2013, the deadline in the President's June 25, 2013, memorandum (above), but took 3½ months to appear in the *Federal Register*. The revised proposal establishes separate new source standards of performance for fossil fuel-fired electric steam generating units (EGUs) and integrated gasification combined cycle (IGCC) units on the one hand, and for natural gas-fired stationary combustion engines on the other—reflecting EPA's separate determinations of the "best system of emission reduction ... adequately demonstrated," the emissions standard mandated by the CAA.[47] For EGUs and IGCC units, the standards are based on partial use of carbon capture and storage as the best system of emission reduction; for natural gas-fired stationary combustion engines, they are based on natural gas combined cycle technology.

June 18: EPA proposes emission guidelines for CO_2 emissions from existing fossil fuel-fired electric generating units.[48] 79 Fed. Reg. 34830. This proposed rule, under CAA section 111(d), would complement the above CO_2 controls on new fossil fuel-fired power plants. While few new plants are anticipated in the foreseeable future, the June 18 proposal would apply to the far larger universe of existing fossil fuel-fired power plants. The program would have two elements. First, EPA proposes different CO_2 emission reduction goals for each state, calculated by EPA based on four "building blocks" (efficiency improvements at power plants, greater energy efficiency in other sectors, and enhancing the use of low-emitting and renewable power sources) and weighing each in light of the state's fuel mix, electricity market, and other factors.[49] The second element requires states to develop state plans to reach EPA's goals.[50] In these plans, states can impose whatever mix of the foregoing building blocks (or other measures) they choose, as long as the EPA goal for the state is reached by 2030. Full responsibility for CO_2 reductions need not rest with fossil fuel-fired power plants; as noted, state plans can include "outside the fenceline" measures such as energy efficiency programs and renewable portfolio standards.[51]

June 18: EPA proposes performance standards for CO_2 emissions from modified and reconstructed fossil fuel-fired electric generating units. 79 Fed. Reg. 34960. This proposal was issued under CAA section 111(b), which mandates performance standards for "new" sources in an EPA-listed source category. Section 111(b) applies because it defines "new" sources to include

[47] CAA § 111(a)(1); 42 U.S.C. § 7411(a)(1).

[48] Several subsequent EPA actions flesh out this June 18 proposal. EPA issued a Notice of Data Availability, providing additional information on certain topics raised by commenters on the June 18 proposal—in particular, emission reduction compliance trajectories created by the interim CO_2 reduction goal for 2020 to 2029, aspects of EPA's "building blocks" method, and how state-specific CO_2 reduction goals are calculated. 79 Fed. Reg. 64543 (October 30, 2014). EPA proposed emission guidelines for CO_2 from existing fossil fuel-fired electric generating units located in Indian country and U.S. territories. 79 Fed. Reg. 65481 (November 4, 2014). And EPA issued a "Notice: additional information regarding the translation of emission rate-based CO_2 goals to mass-based equivalents." 79 Fed. Reg. 67406 (November 13, 2014).

[49] 79 Fed. Reg. 34830, 34833 (June 18, 2014).

[50] *Id*.

[51] *Id*.

"modified" sources,"[52] while EPA regulations extend performance standards for new sources to "reconstructed" sources.[53] The proposal provides for the covered sources EPA's determination of the "best system of emission reduction ... adequately demonstrated"—the operative phrase in the section 111(b) definition of a performance standard.[54] For example, EPA proposes that the "best system of emission reduction ..." for modified fossil fuel-fired boilers and IGCC units is "each unit's own best potential performance based on a combination of best operating practices and equipment upgrades"—that is, a unit-specific emission standard.[55] EPA proposes generally that modified and reconstructed sources subject to a section 111(d) plan (see previous entry for June 18, 2014) at the time of modification or reconstruction will remain subject to the 111(d) plan.[56]

July 17: EPA proposes revised performance standards for emissions from new municipal solid waste landfills and an advance notice of proposed rulemaking regarding emissions from existing municipal solid waste landfills. 79 Fed. Reg. 41796 (proposed revised standard); 79 Fed. Reg. 41772 (advance notice). Landfill emissions are typically composed of 50% methane, whose potency as a contributor to climate change is 25 times greater than CO_2, with the remainder almost entirely CO_2.[57] The actions here aim at reducing methane emissions directly or indirectly.

August 7: Council on Environmental Quality denies petition requesting it to amend its NEPA regulations and issue guidance.[58] A 2008 petition requested CEQ to amend its NEPA regulations to require explicitly that climate change be addressed in NEPA documents, and issue guidance clarifying how federal agencies could best integrate climate analyses into their NEPA processes.[59] As reasons for denying the petition, CEQ said that revising the regulations is unnecessary "because they already encompass consideration of climate effects" and that it is currently considering how to proceed in light of comments received on its draft guidance (see "February 18, 2010").[60]

November 4: EPA proposes emission guidelines for CO_2 emissions from existing fossil fuel-fired electric generating units in Indian country and U.S. territories. 79 Fed. Reg. 65482. This proposed rulemaking supplements the agency's June 18, 2014 proposed guidelines. EPA also requests comment on authorizing jurisdictions (including states, territories, and areas of Indian country) without existing fossil fuel-fired EGUs subject to the June 18-proposed emission guidelines to partner with jurisdictions having such EGUs.

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[52] CAA § 111(a)(2); 42 U.S.C. § 7411(a)(2). A "modified" source constitutes a "new" source, and thus falls under section 111 new source performance standards, only if the modification was commenced after EPA's proposal of a new source performance standard for the source category of the modified source. *Id*.

[53] Reading together 40 C.F.R. § 60.15(a) and the definition of "affected facility" in 40 C.F.R. § 60.2.

[54] 79 Fed. Reg. 34960, 34962 (June 18, 2014) (Table 1).

[55] *Id*.

[56] *Id.* at 34963.

[57] 79 Fed. Reg. 41772, 41774 (July 17, 2014).

[58] Letter from Michael J. Boots, Acting Chair, White House Council on Environmental Quality, to International Center for Technology Assessment et al. (August 7, 2014). Not posted on CEQ website; copy on file with author.

[59] International Center for Technology Assessment, *Petition Requesting that the Council on Environmental Quality Amend its Regulations to Clarify that Climate Change Analyses be Included in Environmental Review Documents* (February 28, 2008). Not posted on CEQ website, but a copy is on file with that agency.

[60] Letter from Michael J. Boots, *supra* note 58, at 2.

November 13: EPA issues notice providing additional information on translating emission-rate-based state CO_2 reduction goals to mass-based equivalents. 79 Fed. Reg. 67406. This notice supplements EPA-proposed guidelines on June 18, 2014 and November 4, 2014.

December 24: Council on Environmental Quality issues revised draft guidance. 79 Fed. Reg. 77802. See "August 7, 2014" for background. As asserted in the revised draft guidance, its purpose is "to provide Federal agencies direction on when and how to consider the effects of greenhouse gas (GHG) emissions and climate change in their evaluation of all proposed Federal actions in accordance with [NEPA and CEQ regulations]." Such consideration should include both the effects of the proposed action on climate change, and the effects of climate change on the environmental effects of the proposed action. The projected quantity of GHG emissions from the proposed project need not be disclosed if less than 25,000 tons of CO_2 equivalent annually, unless quantification below that level is easily accomplished.

2015

March 31: Department of State submits to the Secretariat of the United Nations Framework Convention on Climate Change the United States' intended contribution to achieving the Convention's objective.[61] Article II of the Convention[62] calls for stabilizing GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with world climate. Toward this end, the United States asserts in this submission that it intends to reduce aggregate GHG emissions by 26%-28% below its 2005 level achieve by 2025, and to make best efforts to reduce its emissions by 28%.

[61] Available at http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx.

[62] 1771 U.N.T.S. 107 (May 9, 1992).

Appendix. Table of Acronyms

Acronym	
BACT	Best available control technology. This is the pollution control standard for new "major emitting facilities" and "major modifications" of existing facilities in PSD areas. BACT is defined in Clean Air Act section 169(3).
CAA	Clean Air Act. Codified at 42 U.S.C. §§ 7401-7671q.
CAFE	Corporate average fuel economy. This report uses "CAFE standards" and "fuel economy standards" synonymously.
CEQ	Council on Environmental Quality, the agency charged with monitoring executive branch implementation of the National Environmental Policy Act. 42 U.S.C. §§ 4342, 4344.
EGU	Electric generating unit
EPA	Environmental Protection Agency
GHG	Greenhouse gas
IGCC	Integrated gasification combined cycle
NEPA	National Environmental Policy Act. 42 U.S.C. § 4321 et seq. NEPA requires federal agencies to prepare environmental impact statements for proposed "major federal actions significantly affecting the quality of the human environment." *Id.* at § 4332(2)(C).
NHTSA	National Highway Traffic Safety Administration
NSPS	New source performance standards. These apply to any stationary source of emissions the construction or modification of which is begun after the NSPS is proposed. Defined in Clean Air Act section 111(a)(1).
PSD	Prevention of significant deterioration. Under the Clean Air Act, PSD areas are regions where the ambient concentration of a pollutant is below (cleaner than) the National Ambient Air Quality Standard for that pollutant, triggering the act's program for "preventing significant deterioration" of that air quality. The PSD program also covers areas designated as unclassifiable on the basis of available information as to whether the primary or secondary National Ambient Air Quality Standards for the pollutant are met. See 42 U.S.C. §§ 7470-7492.
SEC	Securities and Exchange Commission
SIP	State implementation plan. Clean Air Act section 110(a)(1) requires each state to submit a SIP to EPA to achieve each National Ambient Air Quality Standard within that state. The state has discretion in imposing emission limits on stationary sources within the state as long as the National Ambient Air Quality Standard is achieved.

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