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Re: Regulating Greenhouse Gases Under the Clean Air Act:
Responding to *Massachusetts v. EPA*
Docket ID: EPA-HQ-OAR-2008-0318

The U.S. Chamber of Commerce, the world's largest business federation representing more than three million businesses and organizations of every size, sector, and region, submits these comments in response to the Advance Notice of Proposed Rulemaking (ANPR) on Regulating Greenhouse Gases Under the Clean Air Act (CAA) issued by the Environmental Protection Agency (EPA) and published in the *Federal Register* on July 30, 2008. These comments respond specifically to EPA's requests for information in the ANPR regarding its response to *Massachusetts v. EPA*, 549 U.S. 497, 127 S. Ct. 1438; 167 L. Ed. 2d 248 (2007), and whether EPA should attempt to determine whether greenhouse gas emissions from any class or classes of new motor vehicles or new motor vehicle engines cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare under CAA Section 202(a)(1).

As these comments will show, EPA can make a reasonable statement as to why it cannot make a finding of endangerment under Section 202(a)(1) because a finding of endangerment would trigger a regulatory cascade that would in turn impose an inescapable and unreasonable economic burden on both U.S. citizens and the federal government. The compliance costs for four CAA programs triggered by a finding of endangerment—National Ambient Air Quality Standards (NAAQS), New Source Performance Standards (NSPS), Prevention of Significant Deterioration (PSD) and Title V—would be financially and administratively unreasonable for millions of new regulated entities. Congress would have to quadruple amounts appropriated to EPA

for state and local air quality grants just to administer the permit programs for CO_2. Construction in the U.S. could stop, millions of greenhouse gas-related citizen suits could arise, and strict offset requirements could mean a permanent scaling down of industry in the U.S. Businesses forced to limit their emissions in the U.S. will simply move to other nations which have much less substantial environmental standards than the United States, and will continue to emit. The leakage of these emissions will virtually ensure that domestic greenhouse gas concentrations will not improve, since the standards in the developing world are much less stringent than in the U.S. Regulation of greenhouse gases under the CAA could therefore result in economic chaos with little, if any, actual benefit to the environment.

EPA can continue to positively address the issue of global climate change, while satisfying its obligations under *Massachusetts*, by choosing not to undertake a finding of endangerment for motor vehicles. Under *Massachusetts*, EPA may refuse to undertake an endangerment finding if it provides a reasonable explanation as to why it cannot or will not do so. The regulatory cascade described in these comments was not considered by EPA, the Supreme Court or Congress until now. The widespread economic devastation in the private sector, not to mention the unprecedented strain on federal and state agency resources, caused by the CAA's regulatory cascade is more than reasonable enough an explanation for declining to find endangerment. Moreover, many of the efforts EPA would take to address motor vehicle emissions have been superseded by the Energy Independence and Security Act (P.L.110-140), a law enacted after the Court decided *Massachusetts*.

By choosing not to undertake a finding of endangerment on these grounds, EPA can meet its *Massachusetts* obligations while also protecting the fragile American economy. Policy decisions relating to climate change should be made by Congress, not by EPA through regulations issued under decades-old, incompatible CAA programs.

Table of Contents

I. *Massachusetts v. EPA* allows EPA to decline to regulate greenhouse gases on "reasonable" policy-based grounds.

Much has been written about the United States Supreme Court's holding in *Massachusetts*, both in the ANPR and in the press. However, the opinion bears revisiting. Contrary to popular belief, *Massachusetts* does not *per se* mandate a finding of endangerment. In fact, it does quite the opposite.

The case began in 1999, when the International Center for Technology Assessment (ICTA) and 19 other groups filed a petition with EPA seeking regulation of greenhouse gases from new motor vehicles under Section 202(a)(1) of the CAA. That provision reads, in pertinent part:

> The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant ***from any class or classes of new motor vehicles or new motor vehicle engines***, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.

42 U.S.C. § 7521(a)(1).

EPA denied the ICTA petition on August 8, 2003. EPA provided the following reasons for its denial:

1. Based on the legislative history of the CAA, as well as congressional action and Supreme Court precedent, EPA did not believe the CAA authorized regulation to address global climate change; and
2. Even if EPA does have statutory authority to regulate greenhouse gases, it would be unwise to do so because:
    a. CAA regulation of greenhouse gases emitted by light-duty vehicles would interfere with fuel economy standards issued by the Department of Transportation;
    b. There is significant scientific uncertainty over the cause, extent and effects of climate change; and
    c. Regulation would be inappropriate given the President's policies ongoing policies to address

> global climate change and would undermine international negotiations on the issue.

See generally Control of Emissions from New Highway Vehicles and Engines, 68 Fed. Reg. 52,922 (Sept. 8, 2003).

On appeal, the ICTA petitioners convinced the Court that the endangerment finding at issue would lead only to motor vehicle regulations under CAA Title II, and not to the trigger of other CAA programs (particularly those for stationary sources). For instance, the petitioners argued on brief in Massachusetts that the NAAQS program is an "entirely separate program from the mobile source program" contained in the CAA. Initial Brief: Appellant-Petitioner at 28, *Massachusetts v. EPA*, 549 U.S. 497 (2007) (No. 05-1120). As Section II of these comments makes clear, an endangerment finding under Title II will automatically trigger stationary source controls throughout the CAA. The petitioners in *Massachusetts* argue against this fact even today, despite unambiguous statutory language to the contrary.

The Court handed down *Massachusetts* on April 2, 2007. In a 5-4 decision, the Court held that (1) greenhouse gases fit well within the CAA's capacious definition of "air pollutant," and therefore EPA does have the statutory authority to regulate those emissions from new motor vehicles; and (2) because it has the authority to regulate, EPA must now confront the question of endangerment on remand.

It is at this point that the public perception of the *Massachusetts* opinion, including EPA's own interpretation, sharply diverges from the actual words found in the opinion itself. In addressing the issue of endangerment, the Court held that EPA must do one of three things:

1. Find, based on the science, that greenhouse gas emissions from new motor vehicles or new motor vehicle engines contribute to air pollution that may reasonably be anticipated to endanger public health or welfare;
2. Find, based on the science, that greenhouse gas emissions from new motor vehicles or new motor vehicle engines *do not* contribute to air pollution that may reasonably be anticipated to endanger public health or welfare; or
3. Provide "some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether" greenhouse gas emissions from new motor vehicles or new motor vehicle engines endanger public health or welfare.

Massachusetts, 127 S. Ct. at 1462. It is this third option—that EPA can exercise its discretion not to attempt to make a scientific finding of endangerment if it provides a reasonable explanation for doing so—that is consistently omitted from the discussion of EPA's obligations on remand from *Massachusetts*.

However, "Option 3" is very real, and EPA is entitled under *Massachusetts* to refuse to confront an endangerment decision if it has an explanation that is reasonable. This explanation can be policy-based: the Court explicitly stated that it did not rule on "whether policy concerns can inform EPA's actions in the event that it makes such a finding." *Id.* at 1463. The only bar the Court set in *Massachusetts* for Option 3 was that it must amount to a "reasoned justification for declining to form a scientific judgment." *Id.*

The authors of the ANPR appear to box EPA into an endangerment determination by implying that policy-based explanations under "Option 3" must relate specifically to the scientific question of whether new motor vehicle emissions contribute to climate change. That is simply not true.[1] In fact, when the Court examined EPA's policy-based reasons for denying the ICTA petition, it examined whether those reasons (a) had anything to do with whether greenhouse gas emissions contribute to climate change, or (b) whether they amounted to a reasoned justification for declining to form a scientific judgment. *See, e.g.*, *Massachusetts*, 127 S. Ct. at 1463. By dismissing EPA's reasons not to regulate, the Court simply found that EPA's explanations were not reasonable. It did not, however, foreclose the possibility that a reasonable explanation does exist.[2]

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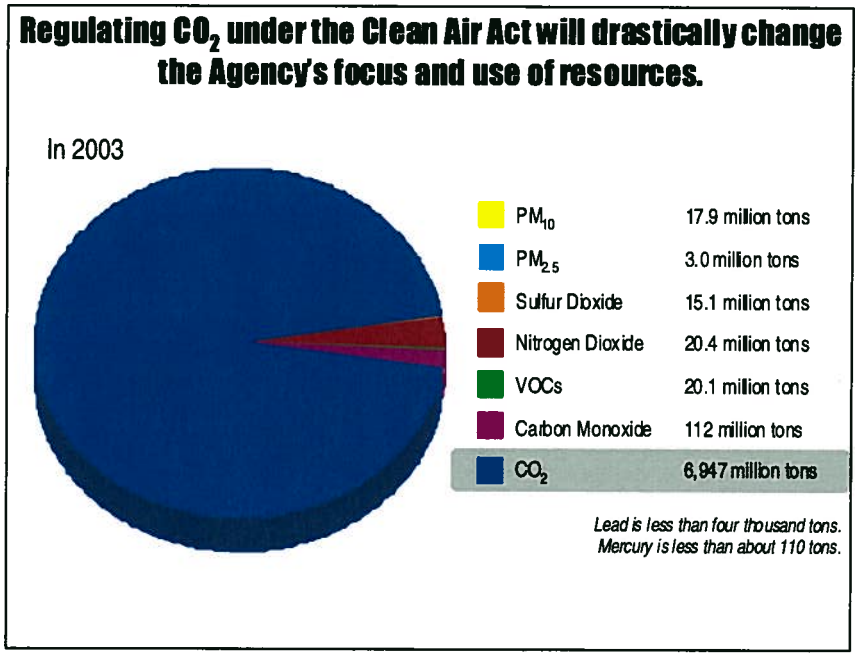
[1] Proponents of this view point to Justice Scalia's dissent in *Massachusetts*, in which he argues that the majority's disposal of the three policy-based arguments made by EPA in denying the ICTA petition effectively narrows the universe of potential reasonable bases to one based on science. Aside from the fact that a dissent is not controlling law in American jurisprudence, this interpretation is not correct. The majority explicitly defers ruling on whether policy concerns can inform EPA's actions in the case of an endangerment finding, leaving Option 3 available to a reasonable policy-based explanation. *Id.* at 1463.

[2] Nor should EPA in any way think that it cannot, on remand from *Massachusetts*, deny the ICTA petition on other grounds. In *SEC v. Chenery Corp.*, 332 U.S. 194, 67 S. Ct. 1575, 91 L. Ed. 1995 (1947), the Supreme Court held that an agency can take action on remand identical to the action reversed by the court if the agency can provide a different and legally permissible basis for the action. Again, if EPA can provide a reasonable explanation for declining to make an endangerment decision, it will not be overturned by the Supreme Court.

II. EPA must decline to make an endangerment finding because doing so will impose an inescapable and unreasonable economic burden on U.S. citizens and the federal government.

The regulatory cascade immediately triggered by a finding of endangerment for new motor vehicles under Section 202(a)(1) will, as a matter of law, result in the mandatory imposition of National Ambient Air Quality Standards (NAAQS), New Source Performance Standards (NSPS), and Title V permitting, as well as widespread exposure to the Prevention of Significant Deterioration (PSD) permit program. The practical effect of these programs is an inescapable and unreasonable economic burden on U.S. citizens charged with compliance and the federal and state governments tasked with implementation. The interlocking provisions of the CAA are not structured to deal with the unique qualities of greenhouse gases, and EPA lacks the power to stop the CAA regulatory cascade once it is unleashed.

The fundamental problem with using the CAA to control greenhouse gas emissions is that CO_2 has much different characteristics than any other emissions typically covered by the Act. For one thing, it is emitted in much greater quantities. As of 2003, there was roughly 19 times more CO_2 emitted than the six existing CAA criteria pollutants combined:



Because CO_2 is emitted in far greater quantities by a much wider range of sources, the thresholds for regulation built into various CAA sections (for instance, those dealing with PSD, Title V and Hazardous Air Pollutants) are so low that they will "catch" a much broader segment of the population than Congress could have intended when it wrote the CAA.[3]

CO_2 also differs from other CAA-covered gases in that it has a long atmospheric lifetime and is capable of long-range transport. CO_2 emissions from the U.S. transport to other nations, and CO_2 emissions from other nations (such as China and India) transport to the U.S.[4] Put another way, even if the U.S. were to eliminate all of its greenhouse gas emissions today, our CO_2 levels would not be zero, and CO_2 concentration in the atmosphere would still increase.[5] For this reason, any action to address greenhouse gas emissions must be international in scope. The programs in the ANPR would be domestic-only, and ultimately will do very little to curb global greenhouse gas concentrations.

As these comments will show, a decision by EPA not to undertake the process for finding endangerment, on the basis that such a finding will trigger a regulatory cascade and economic chaos, constitutes a "reasonable explanation" as required by *Massachusetts.*

A. <u>A finding of endangerment in Section 202(a)(1) would easily activate other sections of the CAA.</u>

The Section 202(a)(1) endangerment language must not be viewed in a bubble, because a finding of endangerment under that section will extend, with very little

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[3] For instance, facilities that emit greater than 250 tons per year of CO_2 (or, in the case of 28 industrial categories, 100 tons per year) will be subject to PSD permitting. The U.S. Chamber performed a study, discussed later in these comments, that estimates over one million buildings will be exposed to PSD. An even greater number will be forced to obtain Title V operating permits, which has a 100 ton per year threshold. The number of regulated facilities balloons even further if CO_2 is designated a Hazardous Air Pollutant (HAP); the threshold for HAP regulation is 10 tons per year of a single pollutant or 25 tons per year of a combination of pollutants. Many homes easily cross the 10 tons per year threshold.

[4] EPA acknowledges in the ANPR that long-range transport of greenhouse gases is a serious problem, and suggests using CAA Section 179(B) as a means to address the issue. Section 179B requires EPA to approve a state implementation plan if the submitting state establishes that it would have met the relevant NAAQS but for emissions emanating from outside the United States. However, Section 179B appears only to apply to NAAQS. Moreover, in a response to a petition for rulemaking the U.S. Chamber submitted in December 2006 requesting implementation of Section 179(B), EPA stated that it does not believe Section 179B provides material relief (i.e., place a state in attainment, mitigate certain nonattainment penalties) beyond the relief literally authorized by the statute.

[5] *See, e.g.*, presentation entitled "CO_2 Stabilization in a Heterogeneous World," Leon Clarke, et al. (July 13, 2007), available at http://www.uschamber.com/issues/index/environment/climate_change.htm.

effort, to other sections of the CAA. Even EPA acknowledges that an endangerment finding cannot be limited to the mobile sector. The ANPR states:

> In developing a response to the *Massachusetts* decision, EPA conducted a thorough review of the CAA to identify and assess all of the Act's provisions that might be applied to GHG emissions. Although the *Massachusetts* decision addresses only CAA section 202(a)(1), which authorizes new motor vehicle emission standards, the Act contains a number of provisions that could conceivably be applied to GHG emissions. EPA's review of these provisions and their interconnections indicated that ***a decision to regulate GHGs under section 202(a) or another CAA provision could or would lead to regulation under other CAA provisions.***

73 Fed. Reg. at 44417 (emphasis added). EPA further acknowledges that, "[w]hile no two endangerment tests are precisely the same," 73 Fed. Reg. at 44419, they generally call for similar elements: whether the emissions cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. EPA notes that "similar" endangerment language is found in sections 108 (NAAQS), 111 (NSPS), 112 (HAP), 115 (international air pollution), 211 (fuels), 213 (nonroad engines), 231 (aircraft) and 615 (ozone protection). *Id.*

EPA is correct that the damage from an endangerment finding under Section 202 will not be limited only to Section 202. However, EPA failed to make this argument in its August 8, 2003 denial of the ICTA petition. As a result, the petitioners in *Massachusetts* were able to convince the Supreme Court that the endangerment finding at issue in the case would be limited to mobile sources.[6]

In the wake of the Court's decision in *Massachusetts*, EPA must now affirmatively confront the issue of the extension of the Section 202(a)(1) endangerment finding, and its impact on other provisions of the CAA. The resulting

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[6] Specifically, the Petitioners in *Massachusetts* wrote in their brief: "Clearly, the Act endorses incremental responses to air pollution problems, rather than necessarily requiring all-encompassing solutions. EPA is free to propose a comprehensive solution to the problem of climate change if it wishes to do so, but it is not free to reject the approach Congress explicitly set forth in section 202(a)(1)." Initial Brief: Appellant-Petitioner at 39, Massachusetts v. EPA, 549 U.S. 497 (2007) (No. 05-1120). Many of the groups aligned with the Petitioners in *Massachusetts* have made similar statements during the ANPR process; on September 23, 2008, David Bookbinder, Chief Climate Counsel for the Sierra Club, stated before the Senate Environment & Public Works Committee that (a) the endangerment finding can be limited to mobile sources, and (b) moreover, even if it were not, it is unlikely any potential plaintiffs would challenge PSD permits for the over 1 million buildings exposed to PSD for greenhouse gases.

regulatory cascade mandates Option 3 of *Massachusetts*, whereby EPA must decline to form a scientific judgment relative to endangerment.

B. Extension of the Section 202(a)(1) endangerment finding beyond Section 202(a)(1) will result in mandatory NAAQS, NSPS, PSD and Title V.

A finding of endangerment will, as a matter of law, mandate the full implementation of four CAA provisions that will, in turn, create economic havoc for U.S. citizens and federal and state governments: (1) NAAQS, (2) NSPS, (3) PSD, and (4) Title V.

1. National Ambient Air Quality Standards (NAAQS)

a. Mandatory Trigger

NAAQS are predicated on a finding of endangerment under Section 108. In fact, under existing law, endangerment is the *only* real barrier to setting a NAAQS. Once that finding is made, EPA has no choice but to begin the NAAQS process.

The process of establishing a NAAQS begins under Section 108 with EPA's publication of a "Criteria Document" describing the public health and welfare effects of the pollutant at issue. Section 108(a) obligates the EPA Administrator to issue such a document for pollutants (a) which may reasonably be anticipated to cause or contribute to air pollution that endangers public health or welfare; (b) which are emitted by "numerous or diverse mobile or stationary sources;" and (c) for which air quality criteria had not been issued prior to the date of enactment of the 1970 CAA, but for which EPA plans to issue air quality criteria. 42 U.S.C. § 7408.

Prong (b) of Section 108 is easily satisfied for CO_2, particularly considering endangerment will have already been found at that point for mobile sources. Prong (c) of Section 108 is also easily satisfied, as that prong is virtually meaningless with respect to newly-designated pollutants: in *NRDC v. Train*, 545 F.2d 320 (2d Cir. 1976), the U.S. Court of Appeals for the Second Circuit held that prong (c) of Section 108 applies only to pollutants included on the initial list of pollutants to be regulated under the NAAQS program, which EPA was required to promulgate within thirty days after December 31, 1970.[7]

[7] In *Train*, EPA conceded that lead endangers public health and welfare and is emitted by numerous or diverse sources, but EPA contended that it had discretion under prong (c) of Section 108 not to issue a Criteria Document. The Court rejected EPA's statutory interpretation, ruling that the third factor applied only to pollutants included on the initial list of pollutants to be regulated under the NAAQS program, which EPA was required to promulgate

The only activity standing in the way of a Criteria Document, then, is a finding of endangerment under Prong (a) of Section 108. This is a virtual certainty if EPA has already found endangerment for motor vehicles. If EPA has already made a finding under Section 202(a)(1) that greenhouse gas emissions from new motor vehicles endanger public health or welfare, all it will legitimately take is a petition for rulemaking to force EPA to make that same determination for Prong (a) of Section 108. Once all three prongs of Section 108 are satisfied, the publication of a Criteria Document is not optional; Section 108 states that EPA *shall* issue the document.

Once CO_2 is listed as a criteria pollutant under Section 108, NAAQS are inescapable. Section 109 states that EPA *shall* publish regulations prescribing NAAQS for every criteria pollutant, and Section 110 states that each state *shall* adopt and submit to EPA a plan for implementation, maintenance and enforcement of every NAAQS (called State Implementation Plans or SIPs).

b. Impact

EPA itself says that NAAQS for CO_2 will be extremely difficult. In the ANPR, EPA admits it would likely have to assess air quality assessment on a national scale, meaning the entire U.S. would either be designated attainment or nonattainment. Whether the entire U.S. is (literally) in nonattainment will depend where the Administrator sets the NAAQS.

Section 109(b) of the CAA requires that NAAQS be "requisite to protect the public health." Moreover, when determining the level at which NAAQS should be set, EPA is precluded from considering the costs of implementation of the NAAQS. *Whitman v. American Trucking Ass'n*, 531 U.S. 457 (2001). It is not only therefore likely that NAAQS would be set at a level placing the entire nation in nonattainment, but is also likely that a NAAQS set anywhere but a level that places the entire nation in non-attainment would be construed as an arbitrary or capricious action.[8]

Once the entire country is designated nonattainment, every state will have to develop and submit a SIP that includes: Reasonably Available Control Measures

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within thirty days after December 31, 1970. For more discussion of *Train*, *see* Peter Glaser, Responses to Questions of the Select Committee on Energy Independence and Global Warming, September 4, 2008, at 11.

[8] It has been suggested by various *Massachusetts* petitioners that NAAQS would be set at 450-550 ppm, a level higher than present domestic concentrations, and that the U.S. would therefore be in attainment. However, it is difficult to believe a court would not find as arbitrary and capricious a decision by EPA to set NAAQS at a level for which Americans can *increase* their net emissions of a listed criteria pollutant. Moreover, if EPA sets the NAAQS above existing CO_2 levels, it would in essence be finding that no endangerment exists. Therefore, if EPA makes an endangerment finding, then EPA must set the NAAQS below existing CO_2 levels (and place the entire U.S. in nonattainment) in order to pass legal muster

(RACT); areas for interim progress toward attainment; an emissions inventory; NSR/PSD permits; and contingency measures to be implemented if the area does not meet the NAAQS by the attainment deadline. In addition, the federal government may only provide financial assistance, issue a permit or approve an activity in a nonattainment area to the extent it conforms with an approved SIP, and all transportation plans, programs and projects must conform to an approved SIP.

The purpose of a SIP for CO_2 would be to reduce CO_2 and ensure that levels of the gas in the state's ambient air satisfy the NAAQS. If a state fails to submit or implement a SIP, or if it submits a SIP that is unacceptable to EPA, EPA has the power to impose sanctions or other penalties on that state. Typical sanctions include cutting off federal highway funds and setting more stringent pollution offsets for certain emitters. For CO_2, this means a state in nonattainment will be able to build as many bicycle paths as it wishes, but will have a difficult time financing and constructing highway improvements.

Perhaps the most significant impact to a nation in nonattainment is the imposition of "Nonattainment New Source Review," or Nonattainment NSR. Nonattainment NSR applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is not in attainment with the NAAQS.[9] "Major sources" are defined as either a source in one of 28 listed categories (mostly industrial manufacturers and energy producers) that emits at least 100 tons per year (tpy) of an air pollutant, or *any other source* with the potential to emit 250 tpy of an air pollutant. Although Nonattainment NSR requirements are customized for the nonattainment area, all Nonattainment NSR programs have to require (1) the installation of the lowest achievable emission rate (LAER), (2) emission offsets, and (3) opportunity for public involvement. According to EPA statistics, an average Nonattainment NSR permit will cost an industry applicant $62,640 and will carry a burden of 642 hours.[10]

Currently, only 519 buildings in the U.S. are forced to comply with Nonattainment NSR. However, in its study, "A Regulatory Burden: The Compliance Dimension of Regulating CO_2 as a Pollutant,"[11] the U.S. Chamber estimates that the number of qualifying "major sources" expands to over 1.2 million buildings when

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[9] Nonattainment NSR takes the place of Prevention of Significant Deterioration (PSD) for buildings located in nonattainment areas. Nonattainment NSR, essentially, is a more burdensome version of PSD. The calculation of "major source" is the same for both Nonattainment NSR and PSD.

[10] Information Collection Request for Prevention of Significant Deterioration and Nonattainment New Source Review (40 CFR Part 51 and 52), Carrie Wheeler, Operating Permits Group, Air Quality Policy Division. Available at Docket No. EPA-HQ-OAR-2004-0081.

[11] *Available at* http://www.uschamber.com/environment.

calculated for greenhouse gases. Because NAAQS for greenhouse gases would place the entire nation in nonattainment, these 1.2 million buildings would not only have to incur the costs and paperwork burden of Nonattainment NSR for all new construction and modifications, but would also have to implement the extreme LAER technology standards and provide offsets for all new emissions. In other words, the practical effect of Nonattainment NSR for an entire nation in nonattainment is a permanent scaling-down of industry. Emission offsets are typically conducted with a ratio greater than a 1-to-1 basis, meaning anytime a new source is built, emissions equal to more than 1 times the emissions of the new source must be removed as an offset. The longer nonattainment drags on, the more businesses would be shut down.

NAAQS for CO_2 could therefore easily result in a revolving door of punishment for state governments and their SIPs, for federal appropriators who cannot give money to states due to nonattainment constraints, for localities that have been redlined to new business, for state and local agencies forced to issue a limitless number of Nonattainment NSR permits, and for the millions of businesses forced to deal with those permits and other abnormally stringent control measures (such as LAER). Foreign emissions will continue to waft over to the United States from nations such as China and India, keeping the U.S. in nonattainment. Businesses could eventually choose to move to other, more environmentally-lenient nations which place less emphasis on environmental protection than U.S. businesses, thus harming our international competitiveness. To add insult to injury, the leakage of these emissions will only exacerbate domestic nonattainment problems: the sources of these emissions will simply move from the developing world to the U.S. and our global concentrations will remain the same or perhaps even rise. Because NAAQS compliance will be measured against average greenhouse gas concentrations, states in nonattainment will not be able to escape nonattainment, no matter what technologies they install and businesses they shut down. In short, NAAQS for CO_2 means a scaling-down of industry in the United States, possibly forever—with no real environmental benefit.

2. New Source Performance Standards (NSPS)

a. Mandatory Trigger

Much like NAAQS, NSPS are triggered by a finding of endangerment. Section 111 states that EPA *shall* include a category of sources in the NSPS list if it endangers public health or welfare. One year after the source category is listed, EPA *shall* publish regulations establishing federal standards of performance for new sources within such category. Current NSPS categories include boilers, landfills, petroleum

refineries and turbines; there are 70 categories and sub-categories in all. A "standard of performance" is defined in pertinent part as "a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction." This standard is better known as "best demonstrated technology."

Once EPA has established standards of performance, states are required to submit to the agency a procedure for implementing and enforcing such standards for new or modified sources located in the state. In addition, EPA must promulgate regulations setting forth procedures for state establishment of standards for *existing* sources. This process is similar to the SIP process for NAAQS.

b. Impact

EPA theorizes in the ANPR that it could use a cap-and-trade program in lieu of plant-by-plant standards of performance. However, the D.C. Circuit's decision vacating the Clean Air Interstate Rule (CAIR) had not been issued prior to drafting of the ANPR.[12] The CAIR decision calls into serious question, if not completely invalidates, EPA's authority to create a cap-and-trade program on its own.

Therefore, it seems inevitable that an endangerment finding will force EPA to issue plant-by-plant standards of performance for CO_2, and businesses will have to install best demonstrated technologies pursuant to NSPS. If greenhouse gases were regulated, the categories would be limitless.[13] The federal government and states may be forced to create a new NSPS "police force" to handle all the new categories.

3. Prevention of Significant Deterioration (PSD)

a. Mandatory Trigger

PSD is triggered the moment CO_2 becomes a "regulated pollutant" under the CAA. It happens instantaneously—sooner, even, than a NAAQS or NSPS.[14] Under the CAA, should CO_2 be deemed regulated under the Act—even if the regulation is for vehicles or fuels and is specifically not directed at stationary sources—no new or existing "major" stationary source of CO_2 can be built or modified (if the

[12] *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008).
[13] EPA does not specify in the ANPR just how many new categories it would create NSPS for, but does describe the creation of various "super-categories" covering major groupings of stationary sources. It is not clear whether such super-categories would withstand judicial review.
[14] The U.S. Chamber does not believe an endangerment finding alone would trigger PSD. However, because so many provisions in the CAA are tied to endangerment, the moment regulation occurs through one of those programs, PSD applies.

modification increases net emissions) without first obtaining a PSD permit. Like Nonattainment NSR, "major sources" are defined as either a source in one of 28 listed categories (mostly industrial manufacturers and energy producers) that emits at least 100 tons per year (tpy) of an air pollutant, or *any other source* with the potential to emit 250 tpy of an air pollutant.

b. Impact

PSD for greenhouse gases would result in a complete moratorium on construction in the United States. According to a report released by the U.S. Chamber entitled "A Regulatory Burden: The Compliance Dimension of Regulating CO_2 as a Pollutant,"[15] which has been already added to the record for the ANPR and is attached to these comments, more than one million buildings in the United States will be exposed to PSD for CO_2. Many of these are previously-unregulated establishments, such as:

a. 260,000 office buildings;
b. 150,000 warehouses;
c. 92,000 health care facilities;
d. 71,000 hotels and motels;
e. 51,000 food service facilities;
f. 37,000 churches and other places of worship; and
g. 17,000 farms.

These 1.2 million newly-regulated establishments would now be forced to devote a significant amount of their resources to navigating the PSD maze before commencing construction projects. According to documents released by EPA less than one month following issuance of the ANPR, an average PSD permit costs $125,120 and imposes a burden of 866 hours on the applicant.[16] If only 40,000 of the 1.2 million buildings exposed to PSD for greenhouse gases opt for new construction or modifications in a given year, PSD compliance alone would cost over $5 billion and would require the devotion of 17,320 full-time employees![17] The PSD application requires a determination of best available control technologies (BACT), performed on a case-by-case basis and with considerable cost and burden placed on the applicant.

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[15] *Available at* http://www.uschamber.com/environment.

[16] Information Collection Request for Prevention of Significant Deterioration and Nonattainment New Source Review (40 CFR Part 51 and 52), Carrie Wheeler, Operating Permits Group, Air Quality Policy Division. Available at Docket No. EPA-HQ-OAR-2004-0081. The U.S. Chamber is disappointed that EPA chose not to include this highly-pertinent PSD cost and burden information in the ANPR itself. EPA staff gives the impression to the casual ANPR reader that PSD is a simple process. In reality, it is one of the most burdensome regulatory requirements many of the 1.2 million covered sources would have to encounter in their day-to-day operations.

[17] *Id.*

The existing BACT determination process under the CAA for covered pollutants typically involves a lengthy five-step process, with a great deal of the legwork handled by the regulated source.[18]

In all, PSD could cost these newly-regulated office buildings, warehouses, farms, churches, restaurants and other buildings a small fortune—and that is before factoring in the cost of installing BACT equipment. EPA estimates the cost and burden for the applicant to be distributed as follows:

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[18] The existing BACT determination process under the CAA for covered pollutants typically involves a lengthy five-step process, with a great deal of the legwork handled by the regulated source:

i. *Identification of available pollution control options.* Applicants must determine all "air pollution technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation." The search for available pollution control options is essentially limitless, and can extend to: technology vendors; federal, state, and local NSR permits; technology or emissions control practices required under other CAA programs; environmental consultants; technical journals and reports; and air pollution control seminars.

ii. *Elimination of technically infeasible options.* To determine whether a control technology is technically feasible, an evaluation must be made of its availability and applicability. A technology is "available" when it has been licensed and can be obtained through ordinary commercial channels, as opposed to a concept or experimental technology. A technology is "applicable" if its emissions control qualities or characteristics are physically or chemically compatible with the emissions stream being evaluated, taking into consideration the chemical and physical characteristics of the emissions stream.

iii. *Ranking of remaining control technologies by control effectiveness.* Technologies not eliminated by Step 2 above are ranked, from best to worst, according to their emissions reduction potential. Manufacturing data, engineering estimates, and determinations for other permits should be considered in determining achievable emissions control. Data to be considered includes, but is not limited to: expected emission rate (e.g., tons per year); emissions performance level (e.g., pollutant removal efficiency); emissions per unit product (e.g., parts per million, lbs/mmBtu); expected emissions reduction (e.g., tons per year); economic impacts of technology (e.g., total annualized costs, cost-effectiveness, incremental costs); environmental impacts resulting from application of technology (e.g., impacts on other media such as soil or water); and energy impacts (e.g., significant energy use or conservation).

iv. *Evaluation of the most effective controls (considering energy, environmental, and economic impacts) and documentation of the results.* The energy impact analysis is essentially a determination of the amount of energy that must be expended to obtain incremental emissions reductions. The economic analysis compares the costs of control options as an element of their efficiencies to various technologies. The environmental impact analysis includes consideration of secondary or collateral impacts from use of the technology (e.g., production of other pollutants; waste products or by-products that affect water or groundwater).

v. *Making of the BACT selection.* The regulated source submits proposed BACT selections to the state permitting agency, which makes the final selection.

EPA NEW SOURCE REVIEW WORKSHOP MANUAL (draft), at B.6 (1990). Even more troubling is the fact that BACT is determined at the state level (and will thus vary from state to state), and BACT for CO_2 will be subject to a great deal of interpretation. Some states may decide that BACT requires energy efficiency measures, while others could conceivably decide that BACT for a coal-fired power plant requires replacement with a wind farm.

Activity	Hours	Cost
Determination of Compliance Requirements	170	$16,592
Obtain Guidance on Data Needs	120	$11,712
Preparation of BACT Analysis	102	$9,957
Air Quality Modeling	200	$19,521
Determination of Impact on Air Quality Related Values	100	$9,762
Post-Construction Air Quality Monitoring	50	$4,879
Preparation and Submittal of Permit Application	60	$5,858
Public Hearings	24	$2,343
Revisions to Permit	40	$3,904
Other Related Costs		$40,000
TOTAL	**866**	**$125,120**

Information Collection Request for Prevention of Significant Deterioration and Nonattainment New Source Review (40 CFR Part 51 and 52), Carrie Wheeler, Operating Permits Group, Air Quality Policy Division; *available at* Docket No. EPA-HQ-OAR-2004-0081.

The entire PSD process takes, on average, six to twelve months. In some instances, it can take years. Businesses forced to comply with PSD will be barred from construction for potentially long periods of time, immediately placing economic growth across the U.S. at risk. If the PSD burden is too great, many businesses will simply not undertake new construction projects or modifications.

Moreover, once a source is classified as a major source for one pollutant, it is considered a major source for all other regulated pollutants under the CAA. As a result, the tens of thousands of actual PSD sufferers may now have to install BACT not only for CO_2, but also potentially for nitrous oxide, particulate matter, lead, mercury, sulfur dioxide, and other pollutants prior to any new construction. Regulating these pollutants, likely in amounts far below the typical regulatory threshold would provide no environmental benefit. However, the regulatory burden is so enormous, and the number of required PSD permits so staggering, that construction in cities throughout the nation will literally stop the minute CO_2 is regulated under the CAA.

The increased number of PSD permits triggered by regulation of greenhouse gases will also cripple the state agencies forced to issue them. EPA estimates that state or local agencies tasked with processing PSD permit applications will spend 301 hours and $23,280 processing each permit. Overall, state agencies spent $6.5 million to process the 282 PSD permits currently issued. If this number were to balloon to

even 40,000 permits—a completely reasonable number, given that 1.2 million entities will be exposed—the PSD program will cost state and local agencies $931.2 million, and would require 6,020 full-time employees to implement.

The almost $1 billion in administrative costs required to process 40,000 PSD permits would, by itself, throw EPA resources for the air program wildly out of kilter. In 2008, Congress appropriated *less than one-quarter of that*—only $227.5 million—for state, local and tribal assistance grants for air quality management. In fact, EPA spent only $971.7 million ***total*** on clean air and global climate programs in 2008. Issuance of 40,000 PSD permits for greenhouse gases would, in and of itself, match or exceed EPA's budget for its entire clean air program!

4. Title V

a. Mandatory Trigger

Title V (operating permits) poses a similar problem to PSD, although the paperwork involved in the Title V permit process is not nearly as onerous as PSD. However, Title V reaches an even broader segment of the economy and society, because it applies to all sources that emit over 100 tons per year of an air pollutant, regardless of source categories. And Title V includes a citizen suit provision that, if exploited, could have severe consequences because each permit application could be challenged by any citizen.

EPA estimates there are currently 15,000 to 16,000 Title V sources in the U.S. When a source becomes subject to Title V, it must apply for a permit within one year of the date it became subject. The permitting authority then uses this information to issue the source a permit to operate, as appropriate. The Title V permitting authority must take final action on permit applications within 18 months of receipt. EPA has 45 days from receipt of a proposed permit to object to its issuance, and *citizens have 60 days to petition EPA to object.* A Title V source generally may not operate without a permit.

Title V contains a self-funding mechanism requiring that permitting authorities collect permit fees adequate to support the costs of running a Title V program. Section 502 requires that these fees equate to no less than $25 per ton, with a maximum of 4000 tons used as the basis for the calculation. 42 U.S.C. § 7661a(b)(3)(B).

b. Impact

Because the threshold for Title V is 100 tpy across the board, the number of regulated Title V sources would balloon from 15,000-16,000 to well over 1.2 million. The U.S. Chamber estimates in its PSD study that 1.2 million new buildings will be exposed to PSD, but the threshold for that program is 100 tpy for 28 specific industries and 250 tpy for all other sources. Because the threshold for Title V is 100 tpy *across the board* and regardless of source category, the number of Title V permittees will be at least 1.2 million, and will very likely be much greater. EPA estimates in the ANPR that 550,000 new permits will be required under Title V, but gives no support whatsoever for this calculation. However, even at this lower number, EPA admits that "[t]he sheer volume of new permits would heavily strain the resources of state and local Title V programs."

Farms are not immune from Title V headaches. As the U.S. Department of Agriculture (USDA) states in its letter to Administrator Johnson that is part of the ANPR:

> If GHG emissions from agricultural sources are regulated under the CAA, numerous farming operations that currently are not subject to the costly and time-consuming Title V permitting process would, for the first time, become covered entities. Even very small agricultural operations would meet a 100-tons-per-year emissions threshold. For example, dairy facilities with over 25 cows, beef cattle operations of over 50 cattle, swine operations with over 200 hogs, and farms with over 500 acres of corn may need to get a Title V permit. It is neither efficient nor practical to require permitting and reporting of GHG emissions from farms of this size.

73 Fed. Reg. at 44,377. As USDA makes abundantly clear in the ANPR, farms differ from commercial and industrial emissions sources because agricultural emissions of greenhouse gases are diffuse and most often distributed across large open areas. As a result, these emissions are not easily calculated or controlled. Many of the emissions are the result of natural biological processes. Imposing the strict technology-forcing controls of the CAA on these farms and farmers could have disastrous results, particularly because, as USDA states: "technology does not currently exist to prevent the methane produced by enteric fermentation associated with the digestive processes in cows and the cultivation of rice crops; the nitrous oxide produced from the tillage of soils used to grow crops; and the carbon dioxide

produced by soil and animal agricultural respiratory processes. The only means of controlling such emissions would be through limiting production, which would result in decreased food supply and radical changes in human diets." *Id.*

The self-funding mechanism in Title V also amounts to a *de facto* carbon tax on the 1.2 million or more entities subject to regulation. Even if permit fees are set at the minimum $25 per ton, this means entities that emit 100 tons per year of CO_2 will pay a $2500 annual carbon tax, while entities emitting over 4000 tons per year of CO_2 will pay a $100,000 annual carbon tax.

Finally, every Title V permit is subject to a 60-day window prior to issuance during which any U.S. citizen may challenge the permit via citizen suit. It is therefore conceivable—likely, even—that activist groups could challenge every single Title V permit and bring nationwide operations to a screeching halt. Activist groups sue EPA, the Department of Energy and the Department of Interior over 500 times annually on environmental matters. Certainly, the imposition of Title V for greenhouse gases will give NIMBY (Not In My Back Yard) plaintiffs one more piece of ammunition to prevent a business from operating and expanding.

C. U.S. businesses and federal and state governments, will face almost immeasurable new constraints on their operations.

The impact of NAAQS, NSPS, PSD and Title V on businesses and federal and state governments, which are triggered by a finding of endangerment for new motor vehicles under Section 202(a)(1), will arguably more significant than any other set of regulations ever put into place by EPA.

The average American business emitting 250 tons per year of CO_2—an office building, or a large restaurant, or even a farm—would be subject, at a minimum, to Title V. It would have to file a Title V permit application, pay an application fee/carbon tax of at least $6250, and defend against any potential citizen suits arising from its emissions of CO_2. If it chooses to undertake new construction or make a modification to its building, it would be required to obtain a PSD permit, which EPA estimates would cost $125,120, take 866 hours to complete, and require installation of BACT at considerable expense. Construction could not commence until the PSD permit is received.

At a maximum, this business emitting 250 tons per year of CO_2 would not only have to comply with Title V and PSD, but could also be required to install best available technologies to any new or existing equipment *regardless* of whether it

undertakes new construction, pursuant to NSPS. It could also be subject to technology constraints pursuant to NAAQS nonattainment penalties on its state, and could be forced to install LAER and offset new emissions at a rate greater than 1-to-1 by closing down existing operations.

EPA, and state governments tasked with implementing NAAQS, NSPS, PSD and Title V, would likely see their budgets balloon to unprecedented levels as millions of new businesses become regulated under the CAA and the entire country grapples with NAAQS nonattainment.[19] As explained earlier in these comments, if just 40,000 of the 1.2 million buildings exposed to PSD undertake new construction or modifications, state agencies would have to spend almost $1 billion and hire 6,020 more full-time employees to handle those PSD applications. This alone equals EPA's entire clean air and climate change budget. For states to handle these applications, they would require either a 400 % increase in state and local air quality management grants from the federal government or (if the grants do not occur) a substantial new tax to pay for the program and the new hires.

The PSD program on its own would impose a major strain on federal resources. When implemented in combination with NAAQS, NSPS and Title V, the costs to government become unmanageable. The Petitioners in *Massachusetts* concede in their brief that the economic chaos resulting from a finding of endangerment for motor vehicles qualifies as a reasonable explanation for declining to make such a finding. Specifically, the Petitioners wrote: "Nowhere did EPA assert that it was

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[19] Worse yet, states will be forced to divert funds from other important programs and initiatives in order to meet the new federal mandates. The cost to states will reach billions of dollars, and the cost to the private sector could be in the trillions of dollars. As such, before proceeding with a proposed rule, EPA must prepare an analysis of the projected costs of these unfunded mandates.

The Unfunded Mandates Reform Act of 1995 (UMRA) is designed to promote informed decision-making by focusing congressional and administrative deliberations on the costs incurred by non-federal government entities and the private sector in order to comply with federal legislation and regulation. UMRA's stated purpose is "to end the imposition...of Federal mandates on State, local, and tribal governments without adequate Federal funding." (Sec. 2(2), Public Law 104-4; March 22, 1995.)

Specifically, UMRA requires each federal agency to assess the economic impacts of federal regulatory actions on State, local, and tribal governments and the private sector. As part of that requirement, federal agencies must prepare written statements before promulgating a rulemaking that includes any federal mandate that may result in sub-national expenditures exceeding $100 million in any one year. Further, before an agency promulgates a rule for which a written UMRA analysis is required, it *must* select the least costly, most cost-effective, or least burdensome regulatory alternative for achieving the rule's objectives – or explain why it is not. (UMRA, Sec. 205.)

The failure of an agency to conduct an unfunded mandates analysis or prepare a written statement to accompany the proposed rule is subject to judicial review. (UMRA, Sec. 401.) Consequently, if EPA fails to assess the economic impacts of its proposed rule, prepare a written statement, or select the least costly regulatory alternative (or explain why its not), then the rule can be challenged in court.

declining to regulate due to resource constraints, competing priorities, or an inability to determine whether the statutory standard of endangerment was met -- factors that might counsel chariness in judicial review." Reply Brief: Appellant-Petitioner at 19, *Massachusetts v. EPA*, 549 U.S. 497 (2007) (No. 05-1120).

III. EPA must set forth its reasonable basis for not finding endangerment now, because once the cascade starts, EPA cannot regulate its way out.

EPA (in the ANPR) and environmental groups (in legal briefs, sworn testimony and other statements) repeatedly attempt to justify a finding of endangerment under Section 202 by insisting that the CAA can be applied "piecemeal" and not through the mandatory regulatory cascade described in these comments. This conclusion is not correct. Once an endangerment finding is made, the regulatory cascade is immediately triggered, and NAAQS, NSPS, PSD and Title V are inevitable. EPA cannot simply let the cascade occur and then regulate its way out of the problem.

As a starting point, EPA should look no further than *Massachusetts* and this summer's decision vacating the Clean Air Interstate Rule (CAIR), *North Carolina v. EPA*. The overarching message in each of those cases is that EPA may not interpret the CAA to require anything more than what is written in the statute.

The Petitioners in *Massachusetts* argued in that case that the NAAQS program is an "entirely separate program from the mobile source program" contained in the CAA.[20] Initial Brief: Appellant-Petitioner at 28, *Massachusetts v. EPA*, 549 U.S. 497 (2007) (No. 05-1120). They have repeatedly attempted to convince judges and lawmakers that NAAQS can be avoided if the Administrator does not plan to issue a criteria document pursuant to CAA Section 108. However, as the *Train* case and Section II(B)(1) of these comments make clear, this argument is incorrect as a matter of law. Nothing short of legislative intervention can stop the NAAQS process once a finding of endangerment is made for motor vehicles under Section 202.

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[20] Indeed, one of the main problems with *Massachusetts* and the resulting remand is that the Petitioners successfully convinced the Court that the endangerment finding and resulting regulation was confined to CAA regulation of motor vehicles under Section 202. As a result, the Court's opinion does not take into account the regulatory cascade described in these comments. For example, the Court distinguished *Massachusetts* from the Respondent's case in chief, *FDA v. Brown & Williamson Tobacco Corp*, 529 U.S. 120 (2000), on the ground that Section 202 "would lead to no such extreme measures. EPA would only *regulate* emissions, and even then, it would have to delay any action 'to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance,' § 7521(a)(2)." *Massachusetts*, 127 S. Ct. at 1461 (emphasis in original). While this is true for motor vehicle programs under Section 202—for which regulations can be delayed or limited to account for technological development—the same is not true for NAAQS, NSPS, or PSD.

The same is true for NSPS. EPA, in the ANPR, argues it can modify its obligations to comply with NSPS by creating a cap-and-trade system. However, *North Carolina v. EPA* implies that EPA may not be authorized to create a cap-and-trade system by regulation at all.

EPA argues it can circumvent the PSD program through several regulatory options, such as: subjective interpretation of potential to emit; general permits; streamlined BACT; phase-in of applicability of PSD; and raising the threshold for exposure to the PSD program. Environmental groups play along, too: on September 23, 2008, David Bookbinder, Chief Climate Counsel for the Sierra Club (and a Petitioner in *Massachusetts*) told the Senate Environment and Public Works Committee that even if PSD were triggered, he did not expect that his organization or others would seek to enforce PSD program requirements on anything but the largest emitters. However, EPA has never, under any circumstances, attempted to use any of the aforementioned methods to limit applicability of PSD. Although convenient, it is hard to imagine that the judges who wrote *Massachusetts* and *North Carolina* would tolerate EPA's attempts to re-interpret the text of the CAA. At that point, the only thing standing in the way of widespread application of PSD is the word of Mr. Bookbinder that PSD would not exploited—a statement that should be viewed with informed skepticism, given that Sierra Club, NRDC and others are arguing in several pieces of active litigation, as well as a challenge to Delaware's SIP, that greenhouse gases are already regulated under the CAA and PSD already applies.

In the past year alone, environmental groups have actively pursued the trigger and enforcement of PSD for greenhouse gases in the following cases: *In re: Deseret Power* (before EPA's Environmental Appeals Board ("EAB"), PSD Appeal No. 07-03); *In re: Sevier Power Company Power Plant* (case before the Utah Air Quality Board, No. DAQE-AN 2529001-04, decided January 9, 2008); *In re: ConocoPhillips* (case before the EAB, PSD Appeal No. 07-02); *Desert Rock Energy and Diné Power Authority v. EPA* (case filed in S.D. Tex, No. 08-0872); *Environmental Defense Fund v. North Carolina Dept. of Env. & Nat. Res.* (case before the NC Office of Administrative Hearings, No. ____, filed March 27, 2008); and *In re: Christian County Generation, LLC* (case before the EAB, PSD Appeal No. 07-01, decided January 28, 2008). On November 14, 2008—the day after the EAB remanded the *Deseret Power* case back to EPA Region 8 for a determination of whether PSD has been triggered and CO_2 BACT is required—Mr. Bookbinder's organization, the Sierra Club, ran a front-page story on its website championing the decision, with a statement that "all new and proposed coal plants nationwide must go back and address their carbon dioxide emissions."[21]

[21] *Available at* http://action.sierraclub.org/site/MessageViewer?em_id=78902.0.

IV. EPA can adequately address tailpipe greenhouse gas emissions without a finding of endangerment.

One of the most overlooked facts in the climate debate is that the federal government spends $37 billion annually to address climate change. More specific to the ICTA petition and *Massachusetts*, Congress and the administration enacted a law 11 months ago that dealt specifically with reducing motor vehicle greenhouse gas emissions. EPA therefore has a strong case that climate change has been adequately addressed through Congressional action, making an endangerment finding unnecessary.

When the Supreme Court decided *Massachusetts*, several climate-focused laws had not yet been enacted, and several climate-related regulations and programs had not been fully implemented. Chief among these is the Energy Independence and Security Act of 2007 (P.L. 110-140) (EISA). One of the main purposes of the EISA was to address greenhouse gas emissions from vehicles. The EISA accomplished this in two ways: (1) downward revisions to corporate average fuel economy (CAFE) standards for cars and light trucks; and (2) a fivefold increase in the federal renewable fuels mandate, from 7.5 billion gallons to 36 billion gallons. These are the same two programs EPA reportedly set out to establish in the wake of *Massachusetts*, as a way of satisfying its obligations on remand.

In addition, the EISA contained dozens of low-emissions technology development provisions, continuing the trend created by the Energy Policy Act of 2005 (EPAct). Taken together, the EISA and EPAct contain more than 100 provisions to develop low- and zero-emissions energy sources and energy technologies, ranging from $25 billion in loans for advanced technology vehicles to wind, solar, hydrogen and algal biomass incentives. The U.S. Chamber has compiled a comprehensive list of these technology provisions; a copy is attached to the U.S. Chamber's comments.

The EISA and EPAct are just one part of the federal government's robust climate strategy. According to the Council for Environmental Quality (CEQ), the federal government has a budget of $37 billion to address climate change. This includes the following:

Partnerships

- Nuclear Power 2010
- Improved NRC Process for Nuclear Power

- Climate Vision (15 Industry Sectors)
- Climate Leaders (100+ Company Leaders
- Smartway Transportation Partnerships
- Energy Star and Natural Gas Star
- Federal Energy Management Programs

Mandates

- Federal Fuel Economy (CAFE)
  ⇒ 35 miles per gallon fleet average by model year 2020
- Federal Renewable Fuels (RFS)
  ⇒ 36 Billion Gallons by 2022
- Federal Appliance Efficiency
  ⇒ 40 standards (15 from EPAct 2005)
- State Renewable Power (RPS)
  ⇒ 24 states; 80% of generation
- Building Codes – Federal Facilities and States
  ⇒ DOE model code 30% improvement

Incentives

- About $10 billion – EPAct 2005
- Clean Coal Investment Tax Credit ($1.6 billion + leveraging over $10 billion in private capital)
- Loan Guarantees (power and fuels)
- Up to $3400 Tax Credit for Efficient Vehicles
- Up to $4000 in Home Solar Incentives
- Biological Sequestration part of $40+ billion 2002 Farm Bill Conservation Programs

Technology

- Renewable Power: Advanced Solar and Wind
- Nuclear Power: Generation IV and Fusion
- Coal: Low Carbon Research; FutureGen; Regional Carbon Capture & Storage
- Fuels: Cellulosic Ethanol, Biodiesel, Hydrogen
- Vehicles: Plug-in Hybrids, Hydrogen Fuel Cell
- Zero Energy Home Research

See "Energy and Climate Policy," Hon. James L. Connaughton, Dec. 2007, *available at* http://www.huntonfiles.com/files/webupload/CCS_Energy_and_Climate_Policy_Connaughton.pdf.

All of these policies add up to a substantial climate program that costs the federal government a significant amount of money. More importantly, passage of the EISA itself partly satisfies the Court's remand of *Massachusetts*, and only adds to EPA's reasonable explanation not to undertake an endangerment finding under the *Massachusetts* Court's pending remand.

The CAA itself contemplates that other laws will be sufficient to address air pollution. Section 102(b) requires cooperation between EPA and all other federal departments and agencies. Section 102(b) states:

> **(b) Federal cooperation**
> The Administrator shall cooperate with and encourage cooperative activities by all Federal departments and agencies having functions relating to the prevention and control of air pollution, so as to assure the utilization in the Federal air pollution control program of all appropriate and available facilities and resources within the federal government.

42 U.S.C. § 7402(b).

Section 102(b) quite clearly contemplates that programs other than the CAA can and should be used to address air pollution. In the present case, both have occurred. The EISA creates several new laws, but it also amends the CAA: the increased renewable fuels mandate was accomplished through amendment of CAA Section 211(o), 42 U.S.C. § 7545(o).[22] In addition, the federal government has moved forward with the technology provisions contained in EPAct and the dozens of other programs listed above.

As explained in footnote 20 above, the *Massachusetts* Petitioners were successful in convincing the Court that the endangerment finding was limited only to motor vehicles. As a result, the Court's opinion does not take into account the regulatory cascade described in the U.S. Chamber's comments. The Court's holding is based in part on the fact that "EPA ha[d] not identified any congressional action that conflicts in any way with the regulation of greenhouse gases from new motor vehicles."

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[22] To avoid the PSD consequences detailed in these comments, the drafters of the EISA's renewable fuels mandate included a provision stating that nothing in the EISA shall be construed as regulation of an air pollutant pursuant to the CAA.

Massachusetts, 127 S. Ct. at 1461. However, the EISA, and the programs contained therein, *does* conflict with CAA regulation of greenhouse gases from new motor vehicles. In many ways, it takes the place of CAA regulation. EPA can therefore have its cake and eat it too: it can deny the ICTA petition on the economic grounds set forth in these comments (and avoid the economic chaos wrought by an endangerment finding) while also sufficiently addressing the issue of global climate change.

V. Conclusion

EPA can and should make a reasonable explanation not to undertake a finding of endangerment under Section 202(a)(1) because a finding of endangerment would trigger a regulatory cascade that would impose an inescapable and unreasonable economic burden on both U.S. citizens and the federal government. The compliance costs for four CAA programs triggered by a finding of endangerment—National Ambient Air Quality Standards (NAAQS), New Source Performance Standards (NSPS), Prevention of Significant Deterioration (PSD) and Title V—would be unbearable for millions of new regulated entities. Federal appropriators would have to double, or perhaps even triple, both EPA's budget and the amounts of state and local air quality grants. Construction in the U.S. could stop, millions of greenhouse gas-related citizen suits could arise, and strict offset requirements could mean a permanent scaling down of industry in the U.S. Businesses forced to limit their emissions in the U.S. will simply move to other, environmentally-lenient nations and will continue to emit. The leakage of these emissions would virtually ensure that domestic greenhouse gas concentrations will not improve, only exacerbating our own CAA nonattainment problems. Regulation of greenhouse gases under the CAA could therefore result in economic chaos with little actual benefit to the environment.

At a time when our fragile economy cannot take much more of a hit, regulation of greenhouse gases under the CAA will result in a mandatory scaling-down of society. EPA can only prevent this economic and regulatory chaos by denying the ICTA petition under "Option 3" of *Massachusetts*. Avoidance of an endangerment finding on the basis of this regulatory cascade is explicitly permitted under *Massachusetts*. The regulatory cascade described in these comments was not considered by EPA, the Supreme Court or Congress until now. The widespread economic devastation in the private sector, not to mention the unprecedented strain on federal and state agency resources, caused by the CAA's regulatory cascade is more than reasonable enough an explanation for declining to find endangerment. By choosing this course of action, EPA can meet its *Massachusetts* obligations while also protecting the fragile American economy.

Policy decisions relating to climate change should be made by Congress, not through regulations issued by EPA under decades-old, incompatible Clean Air Act programs. The U.S. Chamber strongly urges EPA to decline to regulate greenhouse gases under the Clean Air Act by virtue of the authority granted to it by the Supreme Court in *Massachusetts*.

Sincerely,

William L. Kovacs

Attachments:

1. "A Regulatory Burden: The Compliance Dimension of Regulating CO_2 as a Pollutant"
2. List of Technologies Contained in the EISA and EPAct

ATTACHMENT 1

"A Regulatory Burden: The Compliance Dimension of Regulating CO_2 as a Pollutant"

A Regulatory Burden:

The Compliance Dimension of Regulating CO_2 as a Pollutant

For the U.S. Chamber of Commerce

Principal Researcher: Portia M. E. Mills
Strategic Advisor/Analyst: Mark P. Mills

September 2008

Executive Summary

Estimates of the costs of restricting carbon dioxide (CO_2) emissions have generally focused on the penalties arising from the associated direct or indirect increases in the cost of energy. Since hydrocarbons provide 85 percent of all U.S. energy, such fuel-cost penalties could be substantial and widespread. But generally missing from economic analyses to date is inclusion of the regulatory and bureaucratic costs from complying with and enforcing federal pollution laws should the U.S. Environmental Protection Agency regulate CO_2 and other greenhouse gases under the Clean Air Act (CAA).

Classifying CO_2 as a pollutant and regulating it under the CAA, or similar, domains would bring to force all the necessary related tracking, reporting and enforcement authorities. Many large enterprises (notably electric utilities, chemical plants, etc.) already accommodate the costs, and risks, of federal regulatory compliance. However, establishing operations and procedures to comply with federal Clean Air Act regulations would be a new experience for most small and mid-sized businesses, especially those that do not have infrastructure for such regulatory regimes, the staff time, consulting support and legal services. There is as well an associated potential risk for penalties arising from errors in compliance, recording, documenting or reporting. For many to-be-regulated businesses, it is possible that compliance costs could exceed the direct fuel price increase anticipated in a CO_2-constrained world.

Under proposed modifications to the CAA, a business would become a regulated "stationary source" if it emits over 250 tons per year (TPY) of CO_2.[1] On average, this emissions threshold is reached when a business uses about $70,000[2] of oil or natural gas per year in "stationary" equipment (i.e., not cars, trucks and similar). How many commercial businesses, manufacturers and farms exceed this threshold?

By analyzing U.S. Census and Energy Information Administration data for energy consumption in manufacturing, commercial buildings, and farming, this report finds that **at 250 TPY for CO_2, a total of over one million businesses[3] involved in manufacturing, operating buildings and services, and farming could become subject to new EPA regulations, monitoring, controls and enforcement.**

- At least **one million mid-sized to large commercial buildings** emit enough CO_2 per year to become EPA regulated stationary sources. The threshold would be reached, for example, by one-fifth of all food service businesses, one-third of those in health care, half of those in the lodging industry, even 10 percent of buildings used for religious worship.

- Nearly **200,000 manufacturing operations** would become regulated CO_2 sources. For the majority of industries, the average sized operation is big enough (in terms of emissions) to trigger the 250 TPY emissions threshold. At the top of the list are chemicals, metal fabrication, food processing, minerals, plastics, paper, and electrical equipment.

- About **20,000 large farms** emit enough CO_2 per year to become regulated stationary emissions sources. At the top of the list are greenhouses and nurseries, poultry and egg production, vegetable and melon farms, pig and dairy farms. (Limitations in primary data do not permit a complete analysis, and the number is likely an underestimate.)

1 Note that a small number of specifically designated industrial enterprises (e.g. oil refineries) would trigger this provision at a 100 ton-per-year level. This analysis incorporates those exceptions as indicated in relevant tables in this document.

2 Calculating 250 TPY in terms of dollars: assume $10 per 1000 cubic feet natural gas, or $3 per gallon oil yields ~ 7 lbs CO2/$

3 These estimates likely underestimate the impact because of limitations in the primary data.

Executive Summary Tables

The number and types of businesses potentially subject to proposed CO_2 regulation

Table 1: Industrial Sector Summary

Business type	Estimated # establishments regulated @ 250 TPY	Total Site CO_2 emissions subject to reg
		million tons
Fabricated Metal Products	26,000	9
Food	15,000	50
Machinery	12,000	3
Nonmetallic Mineral Products	11,000	60
Printing and Related Support	9,300	1
Plastics and Rubber Products	9,200	7
Chemicals	8,900	200
Wood Products	8,400	3
Transportation Equipment	7,300	10
Computer and Electronic Products	7,200	3
Miscellaneous	5,100	1
Paper	4,200	60
Primary Metals	4,200	100
Furniture and Related Products	3,600	0
Apparel	3,600	1
Electrical Equip., Appliances	3,500	3
Textile Product Mills	2,900	1
Textile Mills	2,200	7
Petroleum and Coal Products	1,900	50
Beverage and Tobacco Products	1,600	5
Iron and Steel Mills*	770	100
Semiconductors, Related Devices	550	1
Leather and Allied Products	360	0
Petroleum Refineries*	210	50
Cements*	190	30
Lime*	65	7
Primary Aluminum*	41	1
Pulp Mills*	34	2
Total**	190,000	600
Total CO_2 including kWh		1,000

** Calculated for 100 TPY* *** Total different from column due to rounding*

Executive Summary Tables

The number and types of businesses potentially subject to proposed CO_2 regulation

Table 2: Commercial Sector Summary

Business type	Estimated # establishments regulated @ 250 TPY	Total Site CO_2 emissions subject to reg
		million tons
Office	260,000	30
Warehouse and Storage	150,000	10
Mercantile	140,000	30
Education	100,000	30
Health Care	92,000	30
Lodging	71,000	20
Service	67,000	3
Food Service	58,000	10
Religious Worship	37,000	1
Public Assembly	26,000	8
Food Sales	23,000	4
Other	7,900	5
Public Order and Safety	7,100	2
Total*	1,000,000	200

** Total different from column due to rounding*

Table 3: Agricultural Sector Summary

Business type	Estimated # establishments regulated @ 250 TPY	Total Site CO_2 emissions subject to reg
		million tons
Oil seed, grain	3,400	9
Other Crop Farming Total	2,600	5
Poultry and egg	1,100	2
Vegetable, melon	1,500	2
Greenhouse, nursery, floriculture	1,400	2
Beef cattle ranching	920	5
Dairy cattle, milk production	910	2
Fruit and tree nut	880	1
Cattle feedlots	630	1
Hog and pig	560	1
Animal aquaculture, other	420	1
Sheep and goat	50	0
Total	17,000	40

Methodology

This study is intended to provide a reasonable estimate of the universe of stationary sources potentially exposed to Prevention of Significant Deterioration (PSD) permitting requirements should greenhouse gases become regulated pollutants under the Clean Air Act. Under the CAA, should CO_2 be deemed "regulated" in any way, no new or existing "major" stationary source of CO_2 can be built or modified (if the modification increases net emissions) without first obtaining a PSD permit. Major sources are defined as either a source in one of 28 listed categories (mostly industrial manufacturers and energy producers) with the potential to emit at least 100 tons per year of an air pollutant, or any other source with the potential to emit 250 tons per year (TPY) of an air pollutant. EPA defines "potential to emit" (PTE) as "the maximum capacity of a stationary source to emit a pollutant under its physical and operational design, including certain legal limitations, for example, on emissions or hours of operation."

The results in this report emerge from an analysis of macro-economic and energy data, by sector, from the Energy Information Administration (EIA), U.S. Census and similar. The (calculated) CO_2 emissions are based on reported total on-site fuel consumption by relevant sector categories (types of buildings, factories, or farms). While aggregate energy data are deemed to be reasonably accurate, EIA and Census data become weaker (leading to under-reporting) the more finely the data are disaggregated and more specific the source. Nonetheless, the actual aggregate energy use (and thus actual CO_2 emissions) provide a reasonable starting point to estimate the number of buildings, factories, or farms that appear to emit enough CO_2 to cross the 250 TPY threshold (or 100 TPY threshold). The results of the analysis provide an estimate of the total universe of buildings likely exposed to potential PSD permitting should new construction or modifications be undertaken.

EPA has conducted its own analysis of the potential number of permits required by PSD.[4] However, rather than using reported sector energy data, EPA instead chose to calculate and estimate emissions from the 'bottom' up. In doing so, EPA employed a "capacity factor" based on what EPA assumes to be the level of operations of reported energy-using equipment. For instance, EPA assumes the restaurant and food service sector only uses its equipment to ten percent of capacity, so it applies a ten percent capacity factor to that sector. Capacity factors are notoriously difficult to know, or obtain. (Capacity factors applicable to industrial boilers range from 25 to 66 percent.) By reducing the number of PTE-exposed sectors by anywhere from 40 to 90 percent, EPA's analysis results in a sample size much smaller than the one used here. EPA also lists a series of "uncertainties" that differ from this study, including: no estimates for the agricultural sector (Note: EPA incorrectly asserts that there are no on-site CO_2 emissions from combustion in agriculture); no estimates of PSD permits required for modifications; and no consideration of existing major sources for other pollutants that will be exposed to PSD for CO_2. However, the basic methodology EPA used to determine the number of buildings exposed to PSD—setting aside EPA's "capacity factor" de-rating, stated uncertainties, variables—is similar to that used here, and EPA's initial estimates of sources meeting PTE thresholds for CO_2 are in the same order-of-magnitude as that found in this analysis.

4 "Estimates of Facilities that Emit CO_2 in Excess of 100 and 250 tpy thresholds," prepared by EPA staff, May 2008.

Industrial-Manufacturing Sector

The majority of establishments in the industrial-manufacturing sector emit over 250 TPY. For some of these businesses, an operation as small as 1,000 square feet is sufficient to emit 250 TPY – e.g. chemicals and metals where the average sized operation is over 100,000 square feet.[5] On-site emissions intensity in industrial operations varies widely, from several thousand pounds CO_2 per square foot in heavy material and mineral industries, to 10 to 30 lbs per square foot for furniture, printing, computer and semiconductor industries. (See Table 5.)

Even dominantly electricity-intensive businesses, like semiconductor and related tech industries, are large enough users of hydrocarbons to become regulated entities. A semiconductor manufacturer larger than 20,000 square feet, and computer maker larger than 45,000 square feet, would exceed the 250 TPY regulated threshold. The *average* semiconductor operation is over 175,000 square feet, and computer makers average almost 100,000 square feet. Thus nearly every semiconductor business, and about half the computer and electronics industry would be subject to CO_2 regulatory compliance. At the other end of the tech spectrum are food processing businesses, where the average facility is over 100,000 square feet. Food processors hit the 250 TPY threshold with only 3,500 square feet of operations.

For many industries, the more CO_2 is emitted indirectly from their use of electricity, and thus the associated utility emissions, than from site combustion; e.g.; textiles, computers, wood products. Using the computer and semiconductor industry examples again, where on-site fuel use leads to 12 and 26 pounds of CO_2 per square foot respectively – their electricity use equals 75 and 176 pounds, respectively, of CO_2 per square foot because of average utility fuel use to make the kilowatt-hours. (See Table 6.) Consequently, of the approximately 600 millions TPY of total industrial CO_2 emissions subject to on-site regulation identified in this report, at least as much again is emitted by electric utilities to serve those industries.[6]

Many businesses may find it desirable to increase electric intensity (use more electric, instead of fuel-burning technologies – a long-standing trend) to attempt to drop below the regulatory threshold, and shift the CO_2 regulatory burden to electric utilities. The industrial sector, overall, is the least electrified part of the stationary energy economy, with less than 25 percent of total energy needs supplied from electric utilities. Many new and emerging electric technologies have inherent productivity benefits over combustion-based equipment (e.g., faster, more uniform drying times for electric infrared heaters vs gas heaters). A CO_2 regulatory regime could have the effect of accelerating turn-over in, or biasing new purchases towards, electric-based capital equipment. This would create the unintended consequence of increasing growth in electric demand – a "dash to electricity" – and increase CO_2 emissions from utilities.

A "dash to electricity" by facilities trying to avoid triggering CO_2 permit requirements would not only further strain the electric supply system, but would likely exacerbate the emerging problem associated with the utility industry's "dash to gas" as the primary means to generate electricity. A recent

5 EPA proposes a small number of specifically designated industrial enterprises would trigger this provision at a 100 ton-per-year level This analysis incorporates those exceptions as indicated by an *.

6 Total CO_2 emissions calculated from the available data yields ~ 600 million TPY, which is significantly lower than the > 1,000 tons of total aggregate CO_2 emissions identified by DOE/EIA for the overall industrial sector. This difference results from the limitations of the primary data as disaggregated by sector: many companies do not report (for proprietary or competitive reasons) specific uses of fuels. Thus the data available under-counts total industrial fuel use – and thus CO_2 emissions for specific industrial sectors.

Industrial-Manufacturing Sector continued

Department of Energy report highlights the challenges with the U.S. natural gas system meeting *current* needs, and the attendant expected rapid growth in the need for LNG imports from many of the same regions where the U.S. is currently dependent on oil imports.[7]

Table 4: Summary of Typical Industrial-Manufacturing Categories

- Food and Kindred Products
- Meat Packing Plants
- Canned Fruit and Vegetables
- Frozen Fruits and Vegetables
- Wet Corn Milling
- Bread, Cake, and Related Products
- Cane Sugar Refining
- Beet Sugar
- Soybean Oil Mills
- Malt Beverages
- Textile Mill Products
- Apparel and Other Textile Products
- Lumber and Wood Products
- Furniture and Fixtures
- Wood Furniture, Except Upholstered
- Paper and Allied Products
- Paper Mills
- Paperboard Mills
- Printing and Publishing
- Chemicals and Allied Products
- Alkalis and Chlorine
- Industrial Glass
- Inorganic Pigments
- Industrial Inorganic Chemicals
- Plastic Materials and Resins
- Synthetic Rubber
- Cellulosic Manmade Fibers
- Organic Fibers, Noncellulosic
- Gum and Wood Chemicals
- Cyclic Crudes and Intermediates
- Industrial Organic Chemicals
- Nitrogenous Fertilizers
- Phosphatic Fertilizers
- Petroleum and Coal Products
- Petroleum Refining
- Rubber and Miscellaneous Plastic Products
- Tires and Inner Tubes
- Miscellaneous Plastics Products
- Stone, Clay, and Glass Products
- Fret Glass
- Glass Containers
- Pressed and Blown Glass
- Cement, Hydraulic
- Lime
- Mineral Wool
- Primary Metal Industries
- Blast Furnace and Basic Steel Products
- Blast Furnaces and Steel Mills
- Electrometallurgical Products
- Gray and Ductile Iron Foundries
- Primary Copper
- Primary Aluminum
- Primary Nonferrous Metals
- Aluminum Sheet, Plate, and Foil
- Fabricated Metal Products
- Industrial Machinery and Equipment
- Computer and Office Equipment
- Electronic and Other Electric Equipment
- Transportation Equipment
- Motor Vehicles and Car Bodies
- Motor Vehicle Parts and Accessories
- Instruments and Related Products
- Surgical and Medical Instruments

7 *Natural Gas and Electricity Impacts on Industry: White Paper on Expected Near Term Cost Increases*, DOE National Energy Technologies Laboratory, April 28, 2008, DoE/NETL-2008/1320: "The decline in EIA's AEO2008 forecast for natural gas supply from the AEO2001 forecast for year 2020 alone, excluding LNG, is roughly 13Tcf, or nearly equivalent to the expected annual supply from ten Alaskan pipelines. Domestic production is projected to decline steadily, falling below 20 Tcf by 2030. Disappointing U.S. production, declining Canadian imports, minimal LNG imports to date, and the continued rise in the price of oil have caused natural gas prices to more than triple between 2002 and today." "In the event of climate change legislation, running existing natural gas combined cycle units at higher capacity factors can displace 20- 35% of current coal kilowatt-hours. Such substitution requires another 5.4 TCF per year. Clearly, the existing natural gas fleet cannot meet the growth in peak demand expected before 2016 and also substitute for coal to meet carbon caps."

Industrial-Manufacturing Sector continued

Table 5: Summary of Industrial-Manufacturing Sector CO_2 Emissions: Ranked by Minimum Size of Establishment to Reach 250 TPY CO_2

Business type	Size to emit 250 TPY	Average floor space per establishment	Site CO_2 emissions	Estimated # establishments regulated @ 250 TPY	Total # establishments
	sq ft	**sq ft**	**lbs/sq ft**		
Lime*	14	31,000	15,000	65	65
Cements*	41	110,000	4,900	190	200
Petroleum Refineries*	80	590,000	2,500	210	220
Iron and Steel Mills*	160	330,000	1,200	770	770
Pulp Mills*	330	490,000	610	34	34
Petroleum and Coal Products	360	58,000	1,400	1,900	1,900
Chemicals	940	110,000	530	8,900	8,900
Primary Metals	1,100	170,000	440	4,200	4,200
Nonmetallic Mineral Products	2,100	75,000	240	11,000	12,000
Paper	2,300	180,000	220	4,200	4,300
Primary Aluminum*	2,500	900,000	80	41	41
Food	3,400	100,000	150	15,000	15,000
Textile Mills	8,800	200,000	60	2,200	2,200
Beverage and Tobacco Products	9,000	160,000	60	1,600	1,600
Semiconductors, Related Devices	19,000	180,000	30	550	580
Transportation Equipment	22,000	220,000	20	7,300	7,700
Plastics and Rubber Products	24,000	94,000	20	9,200	11,000
Electrical Equip., Appliances	25,000	120,000	20	3,500	3,900
Fabricated Metal Products	25,000	48,000	20	26,000	35,000
Wood Products	26,000	65,000	20	8,400	10,000
Apparel	29,000	43,000	20	3,600	5,500
Textile Product Mills	33,000	100,000	10	2,900	3,500
Leather and Allied Products	35,000	38,000	10	360	690
Printing and Related Support	40,000	37,000	10	9,300	20,000
Machinery	43,000	72,000	10	12,000	17,000
Computer and Electronic Products	43,000	96,000	10	7,200	9,200
Miscellaneous	54,000	40,000	9	5,100	16,000
Furniture and Related Products	82,000	61,000	6	3,600	11,000
Total**				190,000	

** Calculations are for 100 TPY*

***Total different from column due to rounding*

Industrial-Manufacturing Sector continued

Table 6:
Summary of Industrial-Manufacturing Sector CO_2 Emissions Arising from Electricity Use (Emissions from Electric Utilities Allocated by Industrial Site Use)

Business type	Electricity CO_2 emissions allocated to site	Site CO_2 emissions	Electricity as Share Total Energy	Floor space to reach 250 TPY from electric use	Average floor space per establishment
	lbs/sq ft	**lbs/sq ft**	**%**	**sq ft**	**sq ft**
Lime*	1,800	15,000	10	280	31,000
Cements*	1,500	4,900	20	340	110,000
Petroleum Refineries*	1,200	2,500	5	430	590,000
Petroleum and Coal Products	620	1,400	5	810	58,000
Iron and Steel Mills*	440	1,200	20	1,100	330,000
Pulp Mills*	340	610	6	1,500	490,000
Primary Metals	340	440	30	1,500	170,000
Chemicals	300	530	20	1,700	110,000
Semiconductors	180	30	50	2,800	180,000
Paper	150	220	20	3,400	180,000
Textile Mills	130	60	40	3,900	200,000
Food	120	150	30	4,300	100,000
Nonmetallic Mineral Products	110	240	20	4,700	75,000
Plastics and Rubber Products	90	20	40	5,500	94,000
Computer and Electronic Products	75	10	50	6,700	96,000
Wood Products	60	20	30	8,200	65,000
Transportation Equipment	60	20	40	8,500	220,000
Electrical Equip., Appliances	60	20	30	8,500	120,000
Beverage and Tobacco Products	50	60	30	9,100	160,000
Fabricated Metal Products	50	20	40	10,000	48,000
Printing and Related Support	40	10	40	11,000	37,000
Apparel	40	20	40	12,000	43,000
Machinery	40	10	40	13,000	72,000
Miscellaneous	30	9	40	15,000	40,000
Textile Product Mills	30	10	30	18,000	100,000
Leather and Allied Products	30	10	40	18,000	38,000
Furniture and Related Products	20	6	40	26,000	61,000
Primary Aluminum*	N/A	80	N/A	N/A	900,000

** Calculations are for 100 TPY*

Commercial Sector

Like the industrial sector, the commercial sector uses lots of fuel. Unlike the industrial sector, fuel purchases are heavily weighted towards electricity; 80 percent of total commercial energy is supplied by electric utilities. Thus, given the importance of coal for the electric supply system (>50 percent of national generation), the effect of directly, or indirectly, taxing carbon will have an inordinately large effect on the commercial sector's cost of energy.

Nonetheless, many of the commercial sector's buildings use enough carbon-based fuels to face the same kinds of regulatory costs, controls, and enforcement from EPA that the industrial sector would in a regulated CO_2 regime.

Energy use varies by building type – but within a far narrower range than industrial operations. Commercial buildings emit from a few pounds of CO_2 per square foot (e.g., office buildings) to 10 to 15 pounds CO_2 per square foot in health care and food services. On average, a building with over 40,000 square feet uses enough hydrocarbons to become a regulated source.

Using data for each type of commercial building, energy use and size, we estimate that a total of over 1,000,000 commercial buildings would become classified as new regulated stationary emissions sources. This would include over one-fourth of all school buildings, over two-thirds of health care facilities, one-third of office buildings, half of those in lodging, and one-fifth of food services. (See Table 8.) Hotels and resorts emit a relatively low 6 pounds CO_2 per square foot, but need only be over 80,000 square feet in size to hit the regulatory threshold (80,000 square feet is only two to three times the size of many hotel ballrooms alone). Food services (restaurants, etc.) are heavily electrified and emit on average only 14 pounds of CO_2 per square foot, but that's enough to be subject to regulation with a 30,000 square foot operation.

For every class of commercial building, emissions per square foot associated with electricity (not on site, but at the utility) exceed the on-site emissions from combustion. Office buildings emit 23, hotels about 18, and food services about 50 pounds of CO_2 per square foot associated with their electricity use – each respectively eight times, three times and almost four times more than on-site emissions. Still, because many commercial buildings are large enough fuel users to trigger the CO_2 regulatory threshold, here as with the industrial sector, many building owners may seek increased use of electric technologies as a means to fall below thresholds for CO_2 regulations. (See Table 9.)

Commercial Sector continued

Table 7: Examples of Commercial Sector Categories

- Accessory Stores
- Amusement, Theme Parks
- Amusement Parks
- Art Dealers
- Art Drama and Music Schools
- Auto and Home Supply Stores
- Automotive Repair Shops
- Baked Goods Stores
- Bakeries
- Botanical and Zoological Gardens
- Cafeterias
- Carpet and Upholstery Cleaning
- Casino Hotels
- Catalog and Mail-Order Houses
- Caterers
- Children's Hospitals
- Colleges Universities and Professional Schools
- Continuing Care Retirement Communities
- Department Stores
- Diaper Service
- Dinner Theaters
- Dry-Cleaning Plants
- Eating and Drinking Places
- Family Planning Centers
- Fish and Seafood Markets
- Fitness and Recreational Sports Centers (pt)
- Full Service Restaurants
- General Medical and Surgical Hospitals
- Golf Clubs
- Grocery Stores
- Historical Sites
- HMO Medical Centers
- Hotels and Motels (except Casino Hotels)
- Industrial Launderers
- Libraries
- Linen Supply
- Medical Supply
- Medical Laboratories
- Men's Accessory Stores
- Men's Clothing Stores
- Mental Health Facilities
- Museums
- Offices of Lawyers
- Offices of Physicians
- Operators of Apartment Buildings
- Personal Appliance Stores
- Pet and Pet Supply Stores
- Psychiatric Hospitals
- Recreation Clubs and Facilities
- Stadium Operators
- Supermarket and Grocery Stores
- Warehouse Clubs and General Merchandise Stores
- Zoos and Botanical Gardens

Table 8: Summary of Commercial Sector CO_2 Emissions: Ranked by Minimum Size of Establishment to Reach 250 TPY CO_2

Business type	Size to emit 250 TPY	Mean building size	Site CO_2 emissions	Estimated # buildings regulated @ 250 TPY	Total # buildings
	sq ft	**sq ft**	**lbs/sq ft**		
Food Service	34,000	5,600	15	58,000	297,000
Health Care	51,000	25,000	10	92,000	129,000
Lodging	81,000	36,000	6	71,000	142,000
Other	83,000	22,000	6	7,900	79,000
Public Order and Safety	110,000	16,000	4	7,100	71,000
Public Assembly	120,000	14,000	4	26,000	277,000
Service	120,000	6,500	4	67,000	622,000
Education	120,000	26,000	4	100,000	386,000
Food Sales	130,000	5,600	4	23,000	226,000
Religious Worship	150,000	10,000	3	37,000	370,000
Mercantile	160,000	17,000	3	140,000	657,000
Office	170,000	15,000	3	260,000	824,000
Warehouse and Storage	290,000	17,000	2	150,000	597,000
Total				1,000,000	4,859,000

Commercial Sector continued

Table 9:
Summary of Commercial Sector CO_2 Emissions Arising from Electricity Use (Emissions from Electric Utilities Allocated by Commercial Site Use)

Business type	Electricity CO_2 emissions allocated to site	Site CO_2 emissions	Electricity as Share Total Energy	Floor space to reach 250 TPY from electric use	Mean floor space per establishment
	lbs/sq ft	**lbs/sq ft**	**%**	**sq ft**	**sq ft**
Food Sales	70	4	90	7,700	5,600
Food Service	50	15	80	9,700	5,600
Health Care	30	10	70	16,000	25,000
Other	30	6	80	17,000	22,000
Mercantile	30	3	90	19,000	17,000
Office	20	3	90	22,000	15,000
Public Order and Safety	20	4	80	24,000	16,000
Lodging	20	6	70	28,000	36,000
Public Assembly	20	4	80	30,000	14,000
Education	10	4	80	34,000	26,000
Service	10	4	80	35,000	6,500
Warehouse and Storage	10	2	80	53,000	17,000
Religious Worship	6	3	70	77,000	10,000

** Calculations are for 100 TPY*

Agricultural Sector

Farmers don't get off the hook. The agricultural sector's dependence on low-cost energy is widely recognized. In addition to the obvious economic penalty associated with increased fuel costs for wheeled farm machinery, there are significant additional costs increases in fertilizer and chemical supplies directly tied to fuel prices in the agricultural sector.[8]

Just as in the commercial and industrial sectors, however, significant cost for many farming businesses may arise not just from fuel price increases but also from all of the activities associated with becoming a regulated stationary source of emissions of CO_2 as a new pollutant.

In counting only non-vehicular use of fossil fuels – oil, liquid petroleum gas and natural gas – nearly 20,000 farms would become regulated stationary emissions sources. (See Table 10.)

The highest impacted sectors in farming, based on the use of fossil fuels for purposes other than tractors and similar farm machinery, include poultry, grains, general crops, horticulture, vegetables and melons, fruits and livestock.

Note that Census data are very limited with regard to specific assignment of farm energy uses by either type (oil, gas, etc.), or use (stationary, or vehicles). Census farm energy use data are provided in dollars and aggregated for all purposes -- which would include vehicles, not subject to stationary source regulations analyzed here. Table 14 was used in this analysis to develop an estimated approximate average pounds of CO_2 emitted per dollar of farm energy expenditures associated only with stationary equipment.

8 See for example: American Farm Bureau Federation Commends Doane Advisory Services' Analysis of Lieberman-Warner Bill, The Fertilizer Institute, June 2, 2008: "Due to increasing energy prices, operating costs for corn are forecast to rise by an additional $60.14 per acre by 2020. Potential climate change legislation will add up to $78.80 in operating costs per acre of corn, resulting in a total increase of well over $100 per acre by 2020."

Agricultural Sector continued

Table 10: Summary of Agricultural Sector CO_2 Emissions: Ranked by Minimum Size of Farm to Reach 250 TPY CO_2

Farm type	Size to emit 250 TPY	Average farm size	Site CO_2 emissions	Estimated # farms regulated @ 250 TPY	Total # Farms
	Acres	**Acres**	**lbs/acre**		
Greenhouse, nursery, floriculture	640	75	780	1,400	64,000
Poultry and egg	780	140	640	1,100	44,000
Vegetable, melon	1,600	320	310	1,500	35,000
Fruit and tree nut	2,000	120	250	880	96,000
Hog and pig	2,000	250	250	560	34,000
Dairy cattle, milk production	2,900	380	170	910	73,000
Cattle feedlots	5,800	470	90	630	55,000
Other Crop Farming Total	6,300	270	80	2,600	440,000
Oil seed, grain	6,400	690	80	3,400	350,000
Animal aquaculture, other	8,700	200	60	420	230,000
Beef cattle ranching	21,000	630	20	920	660,000
Sheep and goat	23,000	410	20	50	44,000
Total				17,000	2,100,000

Appendices

Data sources, detailed data tables, summary/calculation overview

Industrial-Manufacturing Sector Data:

- Subsector Energy Expenditures: Energy Information Administration
  - 2002 Energy Consumption by Manufacturers--Data Tables
  - Link: **http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html**
  - Pertinent Tables 1.1, 9.1
- Emissions Factors: Energy Information Administration
  - Voluntary Reporting of Greenhouse Gases Program
  - link: **http://www.eia.doe.gov/oiaf/1605/coefficients.html**

Commercial Sector Data:

- Subsector Energy Expenditures: Energy Information Administration
  - 2003 CBECS Detailed Tables
  - **http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html#consumexpen03**
  - Pertinent Tables: A1, C1A, A6
- EIA Commercial Data Contacts:
  - Joelle Michaels, CBECS Manager
    - Phone: (202) 586-8952
  - Alan Swenson
    - Phone: (202) 586-1129

Agricultural Sector Data:

- **Summary by North American Industry Classification System 2002: USDA**
  - 2002 Census Publications, U.S. National Level Data
  - **http://www.agcensus.usda.gov/Publications/2002/Volume_1,_Chapter_1_US/index.asp**
  - Pertinent Tables: 59 - Summary by North American Industry Classification System: 2002
- Contacts:
  - 202 694 5059 - ERS: Donnell Royster
  - 18007279540 - NASS
  - 2024010523 - Jim Duffield
- Agriculture Energy Information
  - "On-Farm Energy Use Characterizations," Brown, Elliott, American Council for an Energy-Efficient Economy, March 2005

General Energy Information

- **gasoline**: (dec) - **http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/weekly_petroleum_status_report/historical/2003/2003_08_27/txt/table17.txt**
- **diesel**: (dec) - **http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/weekly_petroleum_status_report/historical/2003/2003_08_27/txt/table17.txt**
- **natural gas**: (commercial) - **http://tonto.eia.doe.gov/dnav/ng/ng_sum_lsum_dcu_nus_a.htm**
- **electricity:** (commercial) - **http://www.eia.doe.gov/cneaf/electricity/epa/epat7p4.html**
- **petroleum: http://usasearch.gov**

Appendices continued

Table 11: Industrial-Manufacturing Sector Data

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Business type	Total # establishments	Average floorspace per establishment	Approximate Enclosed Floorspace of all buildings onsite	Net Electricity	Natural Gas	Total Oil	Total coal	Total site CO_2 emissions in sector	Site CO_2 emissions	Size to emit 250 TPY	250 TPY Reg Hurdle hit compared to avg size estab	Estimated # establishments regulated @ 250TPY	Total Site CO_2 emissions subject to reg	CO_2 Emissions from kWh @1.3lb/kWh	Electricity CO_2 emissions allocated to site	Floorspace to reach 250 TPY from electric use
	counts	sq ft	million sq ft	million KWh	billion cu ft	million bbl	million short tons	Million tons	lbs/ sq ft	sq ft	%	Count	million tons	million tons	lbs/sq ft	sq ft
Food	15,089	102,589	751	67521	567	5	8	55	146	3425	3.3	14837	54	44	117	4278
Beverage, Tobacco	1,595	163,082	181	7639	45	0	1	5	55	9032	5.5	1551	5	5	55	9113
Textile Mills	2,247	201,870	253	25271	73	1	1	7	57	8841	4.4	2198	7	16	130	3851
Textile Product Mills	3,457	100,663	225	4875	28	0	0	2	15	33482	33.3	2882	1	3	28	17751
Apparel	5,500	42,905	111	3588	16	0	0	1	17	28906	67.4	3647	1	2	42	11899
Leather and Allied Products	685	37,749	34	716	4	0	0	0	14	35417	93.8	364	0	0	27	18264
Wood Products	10,486	64,501	445	20985	56	2	0	4	19	25944	40.2	8377	3	14	61	8156
Paper	4,257	179,562	580	65503	490	18	11	63	218	2296	1.3	4230	63	43	147	3406
Pulp Mills*	34	490,005	6	1579	23	1	0	2	615	325	0.2	34	2	1	342	1461
Printing and Related	20,220	36,999	433	14714	45	0	0	3	12	40093	108.4	9265	1	10	44	11318
Petroleum, Coal products	1,916	58,241	78	37186	854	7	0	54	1397	358	0.6	1910	54	24	620	807
Petroleum Refineries*	215	592,841	40	35478	799	4	0	50	2490	80	0.0	215	50	23	1153	434
Chemicals	8,909	111,909	672	153104	2,246	16	16	179	533	938	0.8	8872	178	100	296	1688
Plastics, Rubber Products	10,538	94,074	767	53181	125	1	0	8	21	24077	25.6	9189	7	35	90	5547
Nonmetallic Mineral	11,593	75,319	501	41393	411	6	14	60	239	2095	2.8	11432	59	27	107	4655
Cements*	195	114,618	11	12471	21	1	11	27	4933	41	0.1	195	27	8	1474	339
Lime*	65	31,060	1	1353	7	0	3	7	14700	14	0.1	65	7	1	1759	284
Primary Metals	4,166	174,794	550	144502	686	3	34	121	440	1136	0.6	4152	121	94	342	1464
Iron and Steel Mills*	771	325,341	159	53915	406	2	32	99	1248	160	0.1	771	99	35	441	1134
Primary Aluminum*	41	901,645	28	0	19	0	0	1	81	2456	0.7	41	1	0	0	N/A
Fabricated Metal	35,349	48,426	1,277	47123	204	1	0	13	20	25130	51.9	26177	9	31	48	10423
Machinery	17,381	72,187	825	24563	80	0	0	5	12	42969	59.5	12208	3	16	39	12918
Computer, Electronic	9,238	96,297	665	38352	64	0	0	4	12	43294	45.0	7161	3	25	75	6669
Semiconductors	578	176,153	96	13001	21	0	0	1	26	19048	10.8	547	1	8	176	2840
Electrical, Appliances	3,886	122,535	309	13901	52	0	0	3	20	24760	20.2	3493	3	9	58	8549
Transportation Equipment	7,653	223,706	1,111	50508	198	2	0	13	23	21686	9.7	7282	12	33	59	8460
Furniture and Related Products	10,941	60,782	473	7062	24	0	0	1	6	82118	135.1	3550	0	5	19	25761
Miscellaneous	15,605	39,779	400	10374	31	0	0	2	9	53763	135.2	5059	1	7	34	14830
Total**	200,710	80,268	10,643	832061	6,298	67	100	640	120	4158	5.2	190314	627	541		

** Calculations are for 100 TPY*

Appendices continued

Industrial-Manufacturing Sector Data: Explanation of data/calculations for Table 11

Columns 1 – 8: primary data from **http://www.eia.doe.gov/emeu/mecs/mecs2002/data02/shelltables.html**

Columns 9 – 17: calculated values/estimates as follows.

9. CO_2 emissions from combustion of natural gas (6), oil (7), coal (8) are a added to yield total tons CO_2 for sector business.

10. Total emissions (9) divided by that sector's total square footage of all business in that sector (4) yields avg CO_2 lbs/sq ft

11. Divide 250 tons (500,000 lbs) by emissions per square foot (10) to yield size of operation that triggers 250 TPY

12. Divide the average 250 TPY trigger size (11) by the average size of facilities in that sector (3).

13. Rough estimate of number of establishments above 250 TPY by assuming: a) if size to trigger 250 TPY (11) is less than average size of establishment in that sector (3), then start with 50% of all establishments get regulated, then b) calculate how many more than 50% (i.e., "average") get regulated by using the ratio of trigger/overage (12) as the % additional that are smaller than average that are regulated. Thus if the 250 TPY trigger occurs at 30% of the average size of an operation, and assume for this example the sector has 15,000 establishments, then a) 7,500 establishments are regulated (the 50%, or "average), plus b) 70% (100 – 30%) of the remaining 7,500 establishments would be subject to regulation since only 30% of the average size is required to reach 250 TPY. (This calculation is done in reverse if the 250 TPY trigger is larger than the average size.) While this method is crude, at the broad statistical abstraction level, it yields a reasonable ballpark. There is no other means to estimate the distribution since the primary Census data does not provide granular information on energy use, but just overall totals, and overall averages. This method could both over, or under estimate. But it is notable regarding any potential overestimate of regulated establishments – such is likely, on average, to be more than offset by the entire data set's general underestimate of regulated establishments because the Census data is incomplete (i.e., undercounts by roughly 50%) total industrial energy use – Census/DOE does not have complete data for all companies which do not report all disaggregated data (for competitive reasons, or because of Census collection issues).

14. Total sector CO_2 emissions (10) are multiplied by ratio of number of regulated establishments (13) compared to total establishments (2).

15. Electric utility emissions of CO_2 associated with sector electric use (5) based on national average fuel use (and thus CO_2 emissions) for utility sector.

16. Sector electric-related emissions (15) divided by total square footage of that sector (4) to yield indirect CO_2 emissions per square foot from kWh use.

17. kWh-related CO_2 emissions (16) divided in to 250 TPY to yield number of square feet of operations that lead to 250 TPY trigger occurring at utilities for that specific industrial sector's average.

Table 12: Commercial Sector Data

#	Item	Units	Education	Food Sales	Food Service	Health Care	Lodging	Mercantile	Office	Public Assembly	Public Order and Safety	Religious Worship	Service	Warehouse, Storage	Other	Vacant	Total	Total from calculations
27	Electricity as share total energy	%	78	94	76	75	74	89	88	79	82	65	76	84	82	62	82	
26	Floorspace to reach 250 TPY from electric use	1000 sq ft	34	8	10	16	28	19	22	30	24	77	35	53	17	218	26	
25	Electricity CO_2 emissions allocated to site	lbs/sq ft	15	65	52	31	18	26	23	17	21	6	14	10	30	2	20	
24	Electric CO_2	millon tons	73	41	43	49	46	144	141	33	11	12	29	48	26	3	699	
23	Total CO_2 emitted (incl from kWh)	million tons	113	46	67	80	78	179	176	50	16	25	46	65	37	6	987	
22	Total Site CO_2 emissions subject to reg	million tons	29	4	10	25	23	25	26	8	2	1	3	11	5	0	181	173
21	Estimated # buildings regulated @ 250 TPY	1000	102	23	58	92	71	139	260	26	7	37	67	151	8	0	1374	1040
20	# sq ft regulated (*Notes)	millions	2606	126	323	2246	2562	2367	3858	365	109	375	433	2552	174	0	20263	
19	Size to emit 250 TPY	(1000 sq ft)	124	134	34	51	81	160	174	117	114	148	121	292	83	382	124	
18	Site CO_2 emissions	lbs/sq ft	4	4	15	10	6	3	3	4	4	3	4	2	6	1	4	
17	Avg oil used	1000 Btu/sq ft	5	0	0	3	7	2	1	7	7	5	0	1	0	0	3	
16	Avg gas used	1000 Btu/sq ft	27	31	123	77	42	24	22	26	27	22	34	13	50	11	29	
15	total annual fuel oil consumption	trillion Btu	47	0	0	11	35	21	18	29	8	18	0	9	0	0	228	
14	total annual gas consumption	trillion Btu	268	39	203	243	215	264	269	102	29	82	139	132	87	28	2.100	
13	total annual electricity consumption	trillion Btu	1,121	629	654	748	709	2,214	2,170	506	172	188	451	738	401	46	10.746	
12	Floor space	million sq ft	9,874	1,255	1,654	3,163	5,096	11,192	12,208	3,939	1,090	3,754	4,050	10,078	1,738	2,567	71.658	
11	Over 500.000 sq ft	Total floor space -- millions sq ft	Q	N	N	973	Q	1,905	2,365	Q	Q	N	Q	Q	Q	Q	7.660	
10	200.001 to 500.000 sq ft	Total floor space -- millions sq ft	1,420	N	Q	514	1,185	462	1,493	Q	Q	Q	Q	Q	Q	Q	7.494	
9	100.001 to 200.000 sq ft	Total floor space -- millions sq ft	2,167	Q	N	395	930	1,677	1,428	868	Q	Q	Q	1,162	Q	Q	10.217	
8	50.001 to 100.000 sq ft	Total floor space -- millions sq ft	2,690	Q	Q	364	841	1,505	1,209	474	Q	Q	Q	1,494	Q	Q	10.291	
7	25.001 to 50.000 sq ft	Total floor space -- millions sq ft	1,756	Q	Q	157	803	1,291	1,506	301	Q	930	560	1,043	Q	471	9.382	
6	10.000 to 25.000 sq ft	Total floor space -- millions sq ft	931	Q	345	313	631	2,409	1,887	1,077	Q	1,235	1,021	2,064	Q	Q	12.659	
5	5.001 to 10.000 sq ft	Total floor space -- millions sq ft	399	356	442	280	160	1,173	938	518	Q	744	722	868	Q	Q	7.033	
4	1.001 to 5. 000 sq ft	Total floor space -- millions sq ft	409	409	544	165	99	771	1,382	336	122	416	1,034	895	Q	239	6.922	
3	Mean floor space per building	x1000	26	6	6	25	36	17	15	14	16	10	7	17	22	14	15	
2	Total # bldgs	x1000	386	226	297	129	142	657	824	277	71	370	622	597	79	182	4.859	
1	Business type		Education	Food Sales	Food Service	Health Care	Lodging	Mercantile	Office	Public Assembly	Public Order and Safety	Religious Worship	Service	Warehouse, Storage	Other	Vacant	Total	

Appendices continued

Commercial Sector Data: Explanation of data/calculations for Table 12

Columns 1 – 15: primary data from
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html#consumexpen03

Columns 16 – 27: calculated values/estimates as follows.

16. Divide total sector gas use (13) by total square footage (12) to yield avg gas used per sq ft

17. Ditto re oil

18. Calculate site CO_2 emissions by adding avg emissions per sq foot from gas, and oil – by first converting gas or oil use to CO_2 emissions.

19. Divide 250 tons (as pounds) by avg pounds emitted per square foot (18) to yield avg size space that hits 250 TPY

20. To estimate how many square feet are subject to regulation, add up the number of square feet less than the trigger (19) from the disaggregated data in columns (4) – (11). Pro-rate the number of square feet in the relevant column where the average (19) falls in the relevant range in columns (4) – (11).

21. Estimate, roughly, number of buildings regulated by assuming share of total square footage regulated is approx the same as share of total buildings in that sector regulated. Share of square footage calcu lated by dividing (20) by (12) – multiply this ratio by total buildings in the sector (2).

22. Multiply same ratio in (21) by total sector emissions – latter calculated by multiplying emissions per sq ft (18) by total square footage in sector (12).

23. Multiply sector total electric use (13) by national average utility CO_2 emissions per kWh – add to total site CO_2 emissions (18).

24. As above without site CO_2 emissions.

25. Calculate utility emissions associated with kWh by dividing sector kWh CO_2 (24) by total square footage (12)

26. Calculate same way as (19).

27. Divide primary energy to make electricity (13) by total sector energy use.

Appendices continued

Table 13: Agricultural Sector Data

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Farm type	Total # Farms	Land in farms	Average farm size	Average size of farm	total annual purchases - gasoline, fuels, oils	Farms with gas, fuel, oil expenses of				64% Share All Energy purchases not for vehicles	TOTAL Site CO_2 emissions subject to reg	Site CO_2 emissions	Size to emit 250 TPY	Estimated # farms regulated @ 250 TPY	Total CO_2 emission incl on-site vehicles
	count	acres	Acres	$US	1000 $US	$1 - 4,999	$5,000 - $24,999	$25,000 - $49,999	$50,000+	$million	million tons	lbs/ acre	Acres	count	lbs/ sq ft
TOTAL	2,128,982	938,279,056	441	97,320	6,675,419	1,738,679	242,029	29,049	14,382	4,272	32	68	7,321	14,382	50
Oil seed, grain	349,023	242,218,224	694	115,964	1,962,572	231,615	95,273	9,816	3,447	1,256	9	78	6,428	3,447	15
Vegetable, melon	34,624	11,215,546	324	382,581	358,743	24,765	4,711	1,467	1,499	230	2	307	1,628	1,499	3
Fruit and tree nut	95,680	11,525,130	120	141,680	301,769	83,938	8,016	1,264	882	193	1	251	1,989	882	2
Greenhouse, nursery, floriculture	64,366	4,819,149	75	234,219	393,875	50,194	7,502	1,472	1,433	252	2	785	637	1,433	3
Other Crop Farming Total	442,932	118,327,994	267	36,372	977,535	377,832	27,038	4,971	2,576	626	5	79	6,305	2,576	7
Beef cattle ranching	664,431	419,821,930	632	30,902	1,028,713	606,388	39,440	2,470	920	658	5	24	21,255	920	8
Cattle feedlots	55,472	25,984,434	468	415,480	231,441	44,677	6,735	970	633	148	1	86	5,848	633	2
Dairy cattle, milk production	72,537	27,351,777	377	323,182	488,176	44,487	23,524	2,129	909	312	2	171	2,918	909	4
Hog and pig	33,655	8,317,127	247	369,531	214,618	22,437	7,727	1,112	555	137	1	248	2,018	555	2
Poultry and egg	44,219	6,153,409	139	552,989	411,022	25,184	14,015	2,478	1,062	263	2	641	780	1,062	3
Sheep and goat	43,891	17,910,791	408	10,815	39,759	40,363	978	72	50	25	0	21	23,463	50	0
Animal aquaculture, other	228,152	44,633,545	196	19,034	267,197	186,763	7,070	828	416	171	1	57	8,700	416	2
TOTAL from calculations											37			16,958	57

Appendices continued

Agricultural Data: Explanation of data/calculations for Table 13

Columns 1 – 10: primary data from
http://www.agcensus.usda.gov/Publications/2002/Volume_1,_Chapter_1_US/index.asp

Columns 11 – 16: calculated values/estimates as follows.

11. Share of total energy purchases used for stationary equipment (non-vehicle) derived from Table 14. Data set in Table 13 and 14 both for year 2002 – permitting consistent transfer of derived value.

12. Conversion factor (16 lbs CO_2/$) for average CO_2 emissions per energy $ spent derived from Table 14. Multiply (16) by 16 lbs/$ and convert to tons.

13. Divide (12) by total acres per category (3)

14. Divide 250 TPY by (13)

15. 250 TPY in 2002 ~ $50,000 of fuel expenditures – thus only farms in (10) subject to regulation.

16. Multiply total fuel spending for all purposes (6) by average emissions per $ (16 lbs per Table 14).

Agricultural Data: Explanation of data/calculations for Table 14

Columns 1 – 7: data from "On-Farm Energy Use Characterizations," American Council for an Energy-Efficient Economy, March 2005.

Columns 11 – 16: calculated values/estimates as follows.

8. Convert BTU data from (2) to (7) to relevant units (gallons oil, cubic feet n gas, kWh electricity).

9. Fuel units

10. Cost per unit of relevant fuel in 2002 (DOE/EIA national average data)

11. Expenditures for each fuel type: total at bottom of column – all non-electric spending of $8,415 million.

12. Calculate CO_2 emissions; multiply BTU in (7) by CO2/BTU for each fuel type

13. Divide (12) by (11) to yield lbs CO_2/$ spent on each fuel type: bottom of column derive straight statistical avg of 16 lbs CO_2/$ of fuel purchases.

14. Estimate share of each fuel type associated with stationary source equipment (non-vehicle) from statistical avg of (18) through (22)

15. Multiply (14) by (11) for total spending on non-vehicle energy: total column $5,348 million – divide by total for all non-electric energy spending (11) to yield 64% share of energy spending for stationary uses.

16. Multiply (15) by 16 lbs/$ for total CO_2 emissions from non-vehicle

17. Same categories as (1)

18 – 22. Estimate share of fuel used for non-vehicle purposes based on category of use (e.g., 0% of "onsite transportation" energy is for stationary; but estimate 75% of all "machinery" is stationary.

Appendices continued

Table 13: Agricultural Energy End-Uses

1	2 total motors	3 total lighting	4 onsite transport	5 machinery	6 other not categorized	7 total	8 Energy Units (b)	9	10 Cost/Unit (c)	11 Total Expenditures	12 Total CO_2	13 CO_2	14 Estimated share stationary sources (d)	15 Total Expenditures for non-mobile energy use	16 Total Emissions CO_2 non-mobile	17 ESTIMATED SHARE STATIONARY	18 total motors	19 total lighting	20 onsite transport	21 machinery	22 other not categorized
									US (cents)	mil-lion $	million tons	lbs/$	%	mil-lion $	mil-lion tons		%	%	%	%	%
total - all farm-types							million									total - all farm-types					
gasoline	134	-	2	1	5	142	1,235	gallons	142	1753	11	13	51	886	6	gasoline	50	-	0	75	70
diesel	7	-	28	77	249	361	2,777	gallons	142	3943	29	15	73	2868	21	diesel	80	-	0	75	80
natural gas	2	-	-	-	94	98	98,000	cubic feet	600	588	6	20	90	529	5	natural gas	100	-	-	-	90
other (a)	15	2	-	2	169	195	1,500	gallons	142	2130	16	15	50	1065	8	other (a)	75	0	-	75	80
electricity	9	3	-	-	136	153	44,842	kWh	8	3538	29	16	0	0	29	*(kWh not counted in total below)*					
total petroleum	158	2	30	80	517	796			73.7/gallon												
total energy	167	5	30	80	653	949				11953	62	**16**	***Avg lbs***	5348	69						
										8415	*excludes kWh*										
ACEE pg. 7																					
(a) treated as diesel											*Note: compare "Total Purchases" of energy (excluding kWh) result here with Table 59 Census total of ~$*										

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ATTACHMENT 2

List of Technologies Contained in the EISA and EPAct

EPAct05+3

Energy Policy Act of 2005 and Energy Independence and Security Act

An overview of selected technologies and proposed funding

EXECUTIVE SUMMARY

On August 8, 2005, President Bush signed the Energy Policy Act of 2005 (EPAct05) into law. The most comprehensive rewrite of the nation's energy policy in more than 70 years, it covered almost every aspect of energy policy, from incentives for the development of energy resources and infrastructure to energy efficiency. One of EPAct05's most ambitious goals was to focus on the development of many new and emerging energy technologies.

A second energy bill, the Energy Independence Act (EISA), became law on December 19, 2007. EISA was an omnibus energy policy law designed to increase energy efficiency and the availability of renewable energy. EISA represented a major step forward in expanding the production of renewable fuels, reducing our dependence on oil, and confronting global climate change. Its goal is to increase our energy security, expand the production of renewable fuels, and make America stronger, safer and cleaner for future generations.

EPAct05 and EISA combined contain over 130 provisions that require federal agencies to undertake research, development and demonstration of new technologies, to engage in public/private partnerships, or to make available financial incentives to the private sector for the development of these new energy technologies, which range from hydrogen and fuel cells to biofuels to clean coal.

It has been the consistent position of the U.S. Chamber that this nation must actively work to develop new technologies to either capture carbon emissions or produce energy without carbon emissions if it is to seriously address climate change and develop new sources of energy. The broad nature of the technology provisions of EPAct05 and EISA provided long-term, solid paths forward that could lead to major breakthroughs in new energy technologies. Therefore, the U.S. Chamber supported, and continues to support, full implementation of these programs. The U.S. Chamber's Emerging Technologies Committee was created in response to the passing of EPAct05 and to monitor implementation efforts.

As part of the U.S. Chamber's monitoring activities, EPAct05: Enactment +1 and +2 were created to identify various technologies and track their implementation. The overall purpose of EPAct05: Enactment +3 and EISA is to enumerate the authorizations granted in both bills and the appropriations allotted to fund them. One aspect of implementation is clear: a significant number of the 70+ new energy technology and efficiency directives listed in EPAct05 are unfunded, under-funded, or simply not implemented at all. The additional 60+ initiatives in EISA may face a similar fate.

The U.S. Chamber, the world's largest business federation representing more than three million businesses and organizations of every size, sector and region, strongly supports implementation of the EPAct05 and EISA.

William L. Kovacs
Vice President
Environment, Technology & Regulatory Affairs
U.S. Chamber of Commerce

Table of Contents: **Page:**

Energy Policy Act of 2005
Selected Technologies

Energy Efficiency Provisions
101: Energy & Water Savings Measures in Congressional Buildings
104: Procurement of Energy Efficient Products
106: Voluntary Commitments to Reduce Industrial Energy Intensity
109: Federal Building Performance Standards
123: State Energy Programs
134: Energy Efficiency Public Information Initiative
137: Energy Labeling
138: Intermittent Escalator Study
139: Energy Efficient Electric & Natural Gas Utilities Study
154: Energy Strategy for Housing and Urban Development
1223: Advanced Transmission Technologies
1332: Credit for Construction of New Energy Efficient Homes
1333: Credit for Certain Non-business Energy Property
1353: Recycling Study
1802: Study of Energy Efficiency Standards
1829: Energy & Water Savings Measures in Congressional Buildings

Renewable & Alternative Energy
201: Assessment of Renewable Resources
203: Federal Purchase Requirement
204: Use of Photovoltaic Energy in Public Buildings; Commercialization/Evaluation Program
208: Sugar Cane Ethanol Program
210: Grants to Improve the Commercial Value of Forest Biomass
804: Plan – Hydrogen & Fuel Cell Program
811: Reports – Hydrogen & Fuel Cell Program
812: Solar and Wind Technologies
1303: Clean Renewable Energy Bonds
1510: Commercial Byproducts from Municipal Solid Waste & Cellulosic Biomass Loan Guarantee Program
1703: Eligible Projects: Innovative Technologies Loan Guarantee Program
1819: Hydrogen Participation Study
1833: Renewable Energy on Federal Land

Alternative Vehicles & Fuels
706: Joint Flexible Fuel/Hybrid Vehicle Commercialization Initiative
721/722: Pilot Program-Alternative Fuel/Fuel Cell Vehicles; Reports to Congress
731: Fuel Cell Transit Bus Demonstrations
743: Fuel Cell School Buses
782: Federal and State Procurement of Fuel Cell Vehicles and Hydrogen Energy Systems
783: Federal Procurement of Stationary, Portable, & Micro Fuel Cells
1341: Alternative Motor Vehicle Credit

Alternative Vehicles & Fuels continued
1342: Credit for Installation of Alternative Fueling Stations
1501: Renewable Content of Gasoline
1823: Alternative Fuels Report

Department of Energy: Technology Transfer & Collaboration Initiatives
1001: Improved Technology Transfer of Energy Technologies
1002: Technology Infrastructure Program
1010: University Collaboration

Fuel Emissions Reduction & Efficiency
741: Clean School Bus Program
742: Diesel Truck Retrofit and Fleet Modernization Program
751: Railroad Efficiency
753: Aviation Fuel Conservation and Emissions
754: Diesel Fueled Vehicles
757: Biodiesel Engine Testing Program
773: Study of Feasibility and Effects of Reducing Use of Fuel for Automobiles

Fossil Fuels: Technological Initiatives & Development of Programs
369: Oil Shale, Tar Sands & Other Strategic Unconventional Fuels
963: Carbon Capture Research and Development Program
967: Complex Well Technology Testing Facility
968: Methane Hydrate Research

Clean Energy Technologies
1306: Advanced Nuclear Power Facilities Production Credit
1307: Credit for Investment in Clean Coal Technologies

Climate Change: Technologies & Greenhouse Gas Reduction Strategies
1601: Greenhouse Gas Intensity Reducing Strategies:
- (c) National Climate Change Technology Policy
- (d) Climate Change Technology Program
- (e) Inventory
- (f) Advisory Committee
- (g) Deployment
- (h) Standards

1611: Climate Change Technology Deployment in Developing Countries:
- Reduction of Greenhouse Gas Intensity; Initial Report
- Technology Inventory for Developing Countries
- Trade-Related Barriers to Export of Greenhouse Gas Intensity Reducing Technologies
- Greenhouse Gas Intensity Reducing Technology Export Initiative

Energy Independence and Security Act
Selected Technologies

Energy Security Through Improved Vehicle Fuel Economy
102: Average Fuel Economy Standards for Automobiles and Certain Other Vehicles
104: Credit Trading Program
105: Consumer Information
131: Transportation Electrification
132: Domestic Manufacturing Conversion Grant Program
133: Inclusion of Electric Drive In Energy Policy Act of 1992
135: Advanced Battery Loan Guarantee Program
136: Advanced Technology Vehicles Manufacturing Incentive Program

Energy Security Through Increased Production of Biofuels
202: Renewable Fuel Standard
203: Study of Impact of Renewable Fuel Standard
206: Study of Credits for Use of Renewable Electricity in Electric Vehicles
207: Grants for Production of Advanced Biofuels
221: Biodiesel
222: Biogas
223: Grants for Biofuel Production Research and Development in Certain States
224: Biorefinery Energy Efficiency
225: Study of Optimization of Flexible Fueled Vehicles to Use E-85 Fuel
226: Study of Engine Durability and Performance Associated with the Use of Biodiesel
227: Study of Optimization of Biogas Used in Natural Gas Vehicles
228: Algal Biomass
229: Biofuels and Biorefinery Information Center
230: Cellulosic Ethanol and Biofuels Research
232: Environmental Research and Development
233: Bioenergy Research Centers
234: University Based Research and Development Grant Program
242: Renewable Fuel Dispenser Requirements
243: Ethanol Pipeline Feasibility Study
244: Renewable Fuel Infrastructure Grants
248: Biofuels Distribution and Advanced Biofuels Infrastructure

Energy Savings Through Improved Standards for Appliance and Lighting
310: Standby Mode
315: Improved Energy Efficiency for Appliances and Buildings in Cold Climates

Energy Savings in Buildings and Industry
421: Commercial High-Performance Green Buildings
422: Zero Net Energy Commercial Buildings Initiative
433: Federal Building Energy Efficiency Performance Standards

Energy Savings in Buildings and Industry continued
434: Management of Federal Building Efficiency
436: High-Performance Green Federal Buildings
439: Cost-Effective Technology Acceleration Program
451: Industrial Energy Efficiency
471: Energy Sustainability and Efficiency Grants and Loans for Institutions
491: Demonstration Project
493: Environmental Protection Agency Demonstration Grant Program for Local Governments

Energy Savings in Government and Public Institutions
501: Capitol Complex Photovoltaic Roof Feasibility Study
503: Energy and Environmental Measures in Capitol Complex Master Plan
505: Capitol Power Plant Carbon Dioxide Emissions Feasibility Study and Demonstration Projects
532: Utility Energy Efficiency Programs
542: Energy Efficiency and Conservation Block Grant Program

Accelerated Research and Development
602: Thermal Energy Storage Research and Development Program
603: Concentrating Solar Power Commercial Application Studies
604: Solar Energy Curriculum Development and Certification Grants
613: Thermal Energy Storage Research and Development Program
618: Center for Geothermal Technology Transfer
624: International Geothermal Energy Development
633: Marine and Hydrokinetic Renewable Energy Research and Development
641: Energy Storage Competitiveness

Carbon Capture and Sequestration
702: Carbon Capture and Sequestration Research, Development, and Demonstration Program
703: Carbon Capture
708: University Based Research and Development Grant Program

International Energy Programs
914: Actions by Overseas Private Investment Corporation
917: United States-Israel Energy Cooperation
923: Duties of a Foundation

Small Business Energy Programs
1203: Small Business Energy Efficiency

Smart Grid
1304: Smart Grid Technology Research, Development, and Demonstration

EPAct05

Provisions, Actions & Authorizations

Energy Efficiency Provisions
101: Energy & Water Savings Measures in Congressional Buildings

Action
Directs ARCH to submit a plan to Congress that identifies and applies cost-effective energy and water conservation measures for every facility administered by Congress. The plan must include a schedule of continuing surveys of all buildings every five years to ensure that changes in technology and costs are considered in the development of cost-effective projects. Additional requirements include a study that identifies the costs and benefits associated with the installation of sub-metering services for each building, and the distribution of "how-to" save energy guides for each Member and employing authority of Congress.

Energy Efficiency Provisions
104: Procurement of Energy Efficient Products

Action
Requires federal agencies to purchase Energy Star-qualified or Federal Energy Management Program (FEMP) designated products. Applies to products and equipment purchased through any agency's procurement action, except when the purchase is not cost-effective or does not meet functional requirements.

Energy Efficiency Provisions
106: Voluntary Commitments to Reduce Industrial Energy Intensity

Action
Permits DOE to enter into voluntary agreements with industrial sectors that consume significant quantities of primary energy for each unit of physical output. The goal of the voluntary agreements is to reduce energy intensity in production activities by 2.5% each year during the period of calendar years 2007 - 2016. Parties that enter into a voluntary agreement with DOE and put forth specified energy efficiency goals are eligible for grants or technical assistance. DOE must submit three reports to Congress that study and evaluate the effectiveness of the program.

Energy Efficiency Provisions
109: Federal Building Performance Standards

Action
Directs the DOE to revise federal building energy efficiency performance standards that are at least 30 percent below American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standards or the International Energy Conservation Code. The standards, applicable to all federal buildings, must incorporate sustainable design principles, reduced energy consumption levels, and "life-cycle cost-effective" water conservation technologies.

Energy Efficiency Provisions
123: State Energy Programs

Action
Provides formula grants totaling $100 million for each of fiscal years 2006 and 2007 and $125 million during fiscal year 2008 for state energy conservation and renewable energy programs. To receive financial assistance, state plans must contain goals that make the usage of energy at least 25% more efficient in 2012 than in 1990. The plan may contain interim energy efficiency goals.

Governors of each state receiving assistance must meet with DOE every three years, beginning in August 2008. Energy conservation plans may be revised during the meetings and those plans are encouraged to consider the energy conservation plans of other states within the region.

Authorizations
$100,000,000 for each of the fiscal years 2006 and 2007 and $125,000,000 for fiscal year 2008.

Energy Efficiency Provisions
134: Energy Efficiency Public Information Initiative

Action
Directs DOE to carry out a comprehensive national program designed to educate consumers, through advertising and media awareness programs, about the needs and benefits associated with reducing personal energy consumption.
Section 134 of EPAct05 emphasizes specific cost-effective measures, including:
(1) heating and cooling duct and equipment maintenance;
(2) home and building weatherization measures;
(3) energy efficient product purchases; and
(4) proper tire maintenance.

Section 134 also mandates collaborative efforts with state and local governments and the private sector. DOE must submit a report to Congress by July 1, 2009; the program terminates on December 31, 2010.

Authorizations
$90,000,000 for each of fiscal years 2006 through 2010.

Energy Efficiency Provisions
137: Energy Labeling

Action
Directs FTC to complete a rulemaking that evaluates the effectiveness of consumer products labeling for the purchase of energy-efficient products; mandates FTC to consider changes to existing product labeling rules to improve their effectiveness; and, requires FTC to complete a rulemaking pertaining to labeling requirements for ceiling fans.

Energy Efficiency Provisions
138: Intermittent Escalator Study

Action
Directs GSA to conduct a study on the advantages and disadvantages of employing intermittent escalators in the U.S.; mandates that the study include an analysis of the energy end-cost savings, and the cost savings derived from reduced maintenance requirements.

Energy Efficiency Provisions
139: Energy Efficient Electric & Natural Gas Utilities Study

Action
Directs DOE, in consultation with the National Association of Regulatory Utility Commissioners (NARUC) and the National Association of State Energy Officials (NASEO), to conduct a study of state and regional policies that promote cost-effective programs designed to reduce energy consumption and increase energy efficiency.

Requires DOE to evaluate energy conservation programs carried out by state-regulated and unregulated utilities and encourages recommendations for model policies that promote energy efficiency programs.

Energy Efficiency Provisions
154: Energy Strategy for Housing and Urban Development

Action
Directs HUD to develop and implement a strategy that integrates cost-effective energy conservation and efficiency measures into the construction of public and assisted housing; requires HUD to develop energy reduction goals and incentives for public housing agencies.

Energy Efficiency Provisions
1223: Advanced Transmission Technologies

Action
Defines advanced transmission technology as any "technology that increases the capacity, efficiency, or reliability of an existing or new transmission facility" and calls upon FERC to encourage its deployment, as appropriate, through the Federal Power Act (FPA) and the Public Utility Regulatory Policies Act of 1978 (PURPA).

Provides examples of advanced transmission technologies, including: high-temperature lines; advanced conductor technology; high-capacity ceramic electric wire, connectors, and insulators; modular equipment; wireless power transmission; ultra-high voltage lines; high-voltage DC technology; flexible AC transmission systems; energy storage devices; controllable load; distributed generation; enhanced power device monitoring; direct system state sensors; fiber optic technologies; power electronics; and mobile transformers and mobile substations.

Energy Efficiency Provisions
1332: Credit for Construction of New Energy Efficient Homes

Action
Creates a business tax credit to contractors for the construction of new energy efficient homes. If homes are 50% more energy efficient than the International Energy Conservation Code's 2003 building standards (IECC 2003 standards), a maximum of $2,000 is provided. A maximum of $1,000 is provided if the home is 30% more energy efficient than IECC 2003 standards. If annual heating and cooling consumption is at least 30% less than a comparable dwelling unit, a home is considered energy efficient under Section 1332.

The tax credit applies to homes whose construction is substantially completed after December 31, 2005 and are purchased after December 31, 2005 and prior to January 1, 2008. Additionally, the Department of the Treasury, in consultation with DOE, must prescribe guidance procedures and methods for calculating energy and cost savings.

Energy Efficiency Provisions
1333: Credit for Certain Non-business Energy Property

Action
Provides a nonrefundable, 10% personal credit for the purchase of qualified energy efficiency improvements to existing homes and a full (but lifetime-limited) credit for qualified residential energy property expenditures, such as water boilers and air circulating fans. The tax credit applies to property placed in service after December 31, 2005, and before January 1, 2008. DOE must also promulgate rules that describe performance and quality standards and certification requirements (if any) for energy efficiency and property energy expenditures.

Energy Efficiency Provisions
1353: Recycling Study

Action
Treasury, in consultation with DOE, shall conduct a study to determine and quantify the energy savings achieved through the recycling of glass, paper, plastic, steel, aluminum, and electronic devices, as well as identify tax incentives to encourage recycling of the above materials.

Energy Efficiency Provisions
1802: Study of Energy Efficiency Standards

Action
Requires DOE to contract with NAS for the commission of a study that examines whether the goals of energy efficiency standards are best served by measuring the total energy consumed and efficiency improvements at the actual site of energy consumption, or the full fuel cycle, beginning at the source of energy production.

Energy Efficiency Provisions
1829: Energy & Water Savings Measures in Congressional Buildings

Action
ARCH, as part of the process to update the Master Plan Study for the Capitol Complex, shall:
(1) conduct a study that evaluates the energy infrastructure of the Capitol complex to determine how to augment the infrastructure to become more energy efficient,
(2) evaluate the feasibility of installing energy and water conservation measures on the rooftop of the Dirksen Senate Office Building (Dirksen); and
(3) submit a report to Congress on the above findings.

Authorizations
$2,000,000 for each of fiscal years 2006 through 2010.

Renewable & Alternative Energy
201: Assessment of Renewable Resources

Action
Directs DOE to conduct an initial review and subsequent annual inventories of renewable energy sources within the U.S., including solar, wind, biomass, ocean (including tidal, wave, current, and thermal), geothermal and hydroelectric resources. Requires reports to Congress, which must undertake new assessments of renewable energy sources when necessary, as well as consider changes in market conditions and available technologies.

Authorizations
$10,000,000 for each of fiscal years 2006 through 2010.

Renewable & Alternative Energy
203: Federal Purchase Requirement

Action
Directs DOE to ensure that the federal government purchases certain percentages of renewable energy out of the total amount of electric energy consumed, beginning in FY 2007. Section 203 mandates, "where economically feasible and technically practicable," the following renewable energy goals:

(1) 3% or more for FY 2007 – 2009;
(2) 5% or more for FY 2010 – 2012; and
(3) 7.5% or more for FY 2013 and beyond.

DOE must also submit a report to Congress detailing the federal government's progress in meeting the above goals.

Renewable & Alternative Energy
204: Use of Photovoltaic Energy in Public Buildings; Commercialization/Evaluation Program

Action
Sets forth procedural guidelines under which the Administrator of General Services is authorized to establish a photovoltaic energy commercialization program for the procurement and installation of photovoltaic solar electric systems for electric production in new and existing public buildings.

Authorizations
Photovoltaic Energy Commercialization Program: $50,000,000 for each of fiscal years 2006 through 2010. Such sums shall remain available until expended.
Photovoltaic Systems Evaluation Program: $10,000,000 for each of fiscal years 2006 through 2010. Such sums shall remain available until expended.

Renewable & Alternative Energy
208: Sugar Cane Ethanol Program

Action
Authorizes grants for the States of Hawaii, Florida, Texas and Louisiana ($9 million per state) for demonstration projects to study the production of ethanol from cane sugar, sugar cane, and sugar cane byproducts. After locating and constructing sugar cane ethanol facilities, each state must provide information on methods for replicating the scale of sugar cane ethanol production.

Authorizations
$36,000,000, to remain available until expended.

Renewable & Alternative Energy
210: Grants to Improve the Commercial Value of Forest Biomass

Action
Provides USDA and DOI with discretionary grant-making authority to any person (individual, corporation, community, Indian tribe, small business, or nonprofit) who owns or operates a facility that uses biomass as a raw material to produce electric energy, sensible heat, or transportation fuels. The grants are designed to offset the purchase of biomass and may not exceed $500,000 per person.

Priority is given to preferred communities, which includes any Indian tribe, town of less than 50,000 people, or county that is not within a metropolitan statistical area.

Authorizations
$50,000,000 for each of the fiscal years 2006 through 2016 to carry out this section.

Renewable & Alternative Energy
804: Plan - Hydrogen & Fuel Cell Program

Action
Directs DOE to submit a report to Congress that outlines a coordinated program for each fuel cell and hydrogen initiative created under EPAct05. The plan must describe, at a minimum, the:
(1) agenda for the next five years for programs authorized under the program;
(2) types of entities to carry out the program's activities, and the role each entity is expected to fill;
(3) milestones to evaluate the programs within five years;
(4) most significant technical and non-technical hurdles that may slow down the program's goals;
(5) methods to address those hurdles, including any assumptions that may affect hydrogen's sources or marketability.

Renewable & Alternative Energy
811: Reports - Hydrogen & Fuel Cell Program

Action
Directs DOE to submit a report that describes and evaluates the progress of each DOE hydrogen and fuel cell technology activity. Specific directives include an evaluation of the progress towards achieving the goal of producing and deploying at least 100,000 hydrogen-fueled vehicles in the U.S. by 2010, and the goal of 2.5 million hydrogen-fueled vehicles by 2020.

Authorizations
$1,500,000 for each of fiscal years 2006 through 2020.

Renewable & Alternative Energy
812: Solar and Wind Technologies

Action
Directs DOE to establish a roadmap for the development of five solar and five wind energy demonstration projects that produce hydrogen. Specifically, DOE shall provide for the construction and operation of new solar power devices or solar power cogeneration facilities that produce hydrogen either concurrently with (or independently of) the production of electricity. DOE must also support the development of hydrogen-producing wind and solar technologies at colleges and universities.

Authorizations
Such sums as are necessary for carrying out the activities under this section for each of fiscal years 2006 through 2020.

Renewable & Alternative Energy
1303: Clean Renewable Energy Bonds

Action
Provides qualified borrowers with a financing mechanism for clean renewable energy projects in the form of Clean Renewable Energy Bonds (CREBs) under a total authorized national volume cap of $800 million. A qualified borrower is defined as a mutual or cooperative electric company (as described in Section 54 of the Code), or a governmental body. Section 1303 applies to bonds issued after December 31, 2005.

The following renewable energy projects qualify for CREBs:
(1) wind facilities;
(2) closed and open-loop biomass facilities;
(3) geothermal or solar energy facilities;
(4) small irrigation power facilities;
(5) landfill gas facilities;
(6) trash combustion facilities;
(7) refined coal production facilities; and
(8) qualified hydropower facilities, as defined in Section 45 of the Code.

Renewable & Alternative Energy
1510: Commercial Byproducts from Municipal Solid Waste & Cellulosic Biomass Loan Guarantee Program

Action
Establishes a loan guarantee program for the construction of facilities that process and convert municipal solid waste and cellulosic biomass into fuel ethanol and other commercial byproducts (e.g., biorefineries). Preference is given to loan proposals that either meet all federal and state permitting requirements, or are most likely to be successful based on location in markets that have limited land available for waste disposal, availability of sufficient quantities of cellulosic biomass, or a high level of demand for fuel ethanol or other commercial byproducts of the facility.

Authorizations
Such sums as are necessary to carry out this section.

Renewable & Alternative Energy
1703: Eligible Projects: Innovative Technologies Loan Guarantee Program

Action
Requires DOE to establish a loan guarantee program for projects that avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases and employ new or significantly improved technologies, as compared to commercial technologies in service in the U.S. at the time the guarantee is issued. Examples of eligible projects include: renewable energy systems; advanced nuclear energy facilities; carbon capture and sequestration technologies; efficient electrical generation, transmission and distribution technologies; pollution control equipment; and oil refineries.

DOE must also guarantee loans for the following types of gasification projects: integrated gasification combined cycle; industrial gasification; petroleum coke gasification; and coal-to-oil liquefaction.

Renewable & Alternative Energy
1819: Hydrogen Participation Study

Action
Requires DOE to submit a report that evaluates "methodologies to ensure the widest participation practicable in setting goals and milestones" for DOE's hydrogen program.

Renewable & Alternative Energy
1833: Renewable Energy on Federal Land

Action
Directs DOI to enter into a contract with NAS requiring NAS to study the potential of developing wind, solar, and ocean energy resources (including tidal, wave, and thermal energy) on all onshore and offshore federal lands. The study must include assessments of any federal laws or regulations relating to the development of renewable energy resources, and recommendations of statutory and regulatory mechanisms for the development of renewables.

Alternative Vehicles & Fuels
706: Joint Flexible Fuel/Hybrid Vehicle Commercialization Initiative

Action
Directs DOE to establish a program to improve technologies for the production of commercially-viable combination hybrid/flexible fuel and plug-in/flexible fuel vehicles. Provides funding preferences to proposals that:
(1) achieve the greatest reduction in miles per gallon of petroleum fuel consumption;
(2) achieve a minimum of 250 miles per gallon of petroleum fuel consumption; and
(3) have the greatest commercial potential within five years.

Authorizations
$3,000,000 for fiscal year 2006; $7,000,000 for fiscal year 2007; $10,000,000 for fiscal year 2008; and $20,000,000 for fiscal year 2009: to remain available until expended.

Alternative Vehicles & Fuels
721: Pilot Program-Alternative Fuel/Fuel Cell Vehicles; 722: Reports to Congress

Action
Directs DOE to consult with DOT regarding the establishment of a pilot program that provides a maximum of 30 grants of $15 million each (with 50% cost sharing) to state and local governments or metropolitan transit authorities for the acquisition of alternative-fuel vehicles, hybrid vehicles, and fuel cell vehicles. The initiative is called "Clean Fleet" and is managed by DOE's "Clean Cities" program. The Clean Fleet initiative allows for the purchase of ground support vehicles for airports, passenger vehicles, motorized 2-wheel vehicles and ultra-low sulfur diesel vehicles. Grants may also be used for the installation or acquisition of necessary infrastructure to support, operate and maintain such vehicles.

Alternative Vehicles & Fuels
731: Fuel Cell Transit Bus Demonstrations

Action
Directs DOE, in consultation with DOT, to establish a five-year transit bus demonstration program based upon competitive, merit-based awards for a maximum of 25 fuel cell transit buses (and necessary infrastructure) in five geographically dispersed localities. Preference for authorizations is given to those projects most likely to mitigate congestion and improve air quality.

Authorizations
$10,000,000 for each of fiscal years 2006 through 2010.

Alternative Vehicles & Fuels
743: Fuel Cell School Buses

Action
Directs DOE to establish cooperative agreements with the private sector to develop cost-sharing fuel-cell-powered school buses and demonstration projects. DOE must submit a report to Congress that evaluates the process of converting natural gas infrastructure to accommodate fuel cell-powered school buses and assesses the results of the demonstration program.

Authorizations
$25,000,000 for the period of fiscal years 2006 through 2009.

Alternative Vehicles & Fuels
782: Federal and State Procurement of Fuel Cell Vehicles and Hydrogen Energy Systems

Action
Directs the federal government to lease or purchase fuel cell vehicles and hydrogen energy systems no later than January 1, 2010. DOE must provide incremental cost funding and exemptions if the vehicles are not available or appropriate for federal fleet needs. DOE must also promulgate regulations that extend and augment energy savings goals for each federal agency from 2008 to 2010.

Authorizations
$15,000,000 for fiscal year 2008; $25,000,000 for fiscal year 2009; $65,000,000 for fiscal year 2010; and such sums as are necessary for each of fiscal years 2011 through 2015.

Alternative Vehicles & Fuels
783: Federal Procurement of Stationary, Portable, & Micro Fuel Cells

Action
Requires any federal agency that uses electrical power from stationary, portable, or micro-portable devices to lease or purchase a stationary, portable, or micro-portable fuel cell to meet energy savings goals identified under Section 808 of EPAct05. DOE must pay the cost of leasing or purchasing fuel cells for federal agencies.

Authorizations
$20,000,000 for fiscal year 2006; $50,000,000 for fiscal year 2007; $75,000,000 for fiscal year 2008; $100,000,000 for fiscal year 2009; $100,000,000 for fiscal year 2010; and such sums as are necessary for each of fiscal years 2011 through 2015.

Alternative Vehicles & Fuels
1341: Alternative Motor Vehicle Credit

Action
Provides tax credits for the purchase of fuel cell, advanced lean burn, hybrid, and alternative fuel motor vehicles. For fuel cell vehicles, the tax credit is determined by weight and fuel efficiency increases. For lean burn vehicles, the tax credit is determined by fuel economy and lifetime fuel savings.

For hybrid vehicles, the tax credit is based on fuel economy, lifetime fuel savings, and the percentage increase in initial cost of the hybrid vehicle over a comparable vehicle (based on total fuel economy achieved). For alternative fuel vehicles, the tax credit is determined by a percentage (50 -80%) of the incremental cost of an alternative fuel vehicle over the same model that uses gasoline or diesel from the same manufacturer.

Alternative Vehicles & Fuels
1342: Credit for Installation of Alternative Fueling Stations

Action
Provides a 30% tax credit (equal to 30% of the cost of the fueling station) for the costs of installing clean-fuel vehicle property at the taxpayer's place of business or principal residence. An alternative fueling station is defined as one that dispenses at least 85% (by volume) one or more of the following fuels: ethanol, natural gas, compressed natural gas, liquefied natural gas, liquefied petroleum gas, or hydrogen, or any mixture of biodiesel and diesel fuel that contains at least 20% biodiesel.

Alternative Vehicles & Fuels
1501: Renewable Content of Gasoline

Action
Amends Section 211 of the Clean Air Act and establishes a Renewable Fuels Standard (RFS) of 7.5 billion gallons by 2012. EPA must conduct a survey to determine market shares of conventional and reformulated gasoline containing renewable fuels and report the survey results to Congress annually. Of the 7.5-billion-gallon RFS, 250 million gallons of renewable fuel must be derived from cellulosic ethanol by 2013 and each calendar year thereafter. EPA and DOE have discretion to adjust the RFS beyond 7.5 billion gallons after 2012.

EPA must also promulgate regulations to ensure that gasoline contains the applicable volume of renewable fuel (as determined by EPAct05). The regulations are required to provide for the generation of an appropriate amount of credits for biodiesel, small refineries, and any person that refines, blends, or imports gasoline that exceeds renewable fuel requirements mandated under Section 1501(2)(B) of EPAct05.

Alternative Vehicles & Fuels
1823: Alternative Fuels Report

Action
Directs DOE to submit two separate reports to Congress regarding the potential for biodiesel and hythane fuels to become large-scale sustainable alternative fuels. The reports must:
(1) assess the potential markets of biodiesel and hythane;
(2) identify activities necessary for the commercialization of the fuels;
(3) assess any potential barriers or impediments to the commercialization of the fuels; and
(4) assess the infrastructure needed to produce, blend, store and distribute the fuels.

Department of Energy: Technology Transfer & Collaboration Initiatives
1001: Improved Technology Transfer of Energy Technologies

Action
Directs the Secretary of Energy to appoint a Technology Transfer Coordinator (the Coordinator), the principal advisor to the Secretary on all matters relating to technology transfer and commercialization activities performed by DOE National Laboratories, single-purpose research facilities, and other DOE-authorized technology transfer facilities. The Coordinator is the director of the Technology Transfer Working Group, which the Secretary is directed to establish under EPAct05 .

Section 1001 also directs the Secretary of Energy to establish a Technology Commercialization Fund, which is to be used for "matching funds with private partners to promote promising energy technologies for commercial purposes." DOE must submit a technology transfer execution plan to Congress and provide annual updates.

Department of Energy: Technology Transfer & Collaboration Initiatives
1002: Technology Infrastructure Program

Action
Directs the Secretary of Energy to establish a technology infrastructure program that supports projects between National Laboratories, single-purpose research facilities, institutions of higher education, technology-related business concerns, nonprofit institutions and agencies of state, tribal or local governments. Preference is given to those National Laboratory or single-purpose research facility-managed projects that have the potential to promote the commercial development of sustainable technology clusters or the commercial use of technological innovations.

The costs of carrying out projects are shared, and federal funds are not available for projects that last more than five years. A report to Congress on whether the program should be continued, and, if so, how it should be managed, is due no later than July 1, 2008.

Authorizations
$10,000,000 for each of fiscal years 2006 through 2008

Department of Energy: Technology Transfer & Collaboration Initiatives
1010: University Collaboration

Action
Requires DOE to transmit a report to Congress regarding the feasibility of promoting collaborations between major universities on energy grants, contracts and cooperative agreements. DOE must provide incentives to increase the inclusion of small institutions of higher education (including minority-serving institutions) in energy grants, contracts, and cooperative agreements.

Fuel Emissions Reduction & Efficiency
741: Clean School Bus Program

Action
Authorizes EPA to administer a program that awards competitive grants for the replacement or retrofitting of certain diesel school buses to achieve emissions reductions. Eligible applicants are school districts, state and local government programs, federally recognized Indian tribes, and non-profit organizations.

Authorizations
$55,000,000 for each of fiscal years 2006 and 2007; and such sums as are necessary for each of fiscal years 2008, 2009, and 2010.

Fuel Emissions Reduction & Efficiency
742: Diesel Truck Retrofit and Fleet Modernization Program

Action
Authorizes EPA, in consultation with DOE, to administer a competitive grant program for modernizing truck fleets and retrofitting diesel trucks. Grants are awarded with preference to state or local governments that allocate funds for major hauling operations, particularly at ports. Trucks that are replaced must be model year 1998 or older.

Authorizations
$20,000,000 for fiscal year 2006; $35,000,000 for fiscal year 2007; $45,000,000 for fiscal year 2008; and such sums as are necessary for each of fiscal years 2009 and 2010.

Fuel Emissions Reduction & Efficiency
751: Railroad Efficiency

Action
Directs DOE, in cooperation with DOT and EPA, to establish cost-shared public-private research partnerships to develop and demonstrate fuel-efficient, emissions-reducing locomotive technologies that lower operating costs.

Authorizations
$15,000,000 for fiscal year 2006; $20,000,000 for fiscal year 2007; and $30,000,000 for fiscal year 2008.

Fuel Emissions Reduction & Efficiency
753: Aviation Fuel Conservation and Emissions

Action
Directs the FAA and EPA to initiate a study that analyzes:
(1) the impact of aircraft emissions on air quality in non-attainment areas;
(2) methods to promote fuel conservation measures for aircraft to enhance fuel efficiency and reduce emissions; and
(3) opportunities to reduce air traffic inefficiencies that increase fuel burn and emissions.

Fuel Emissions Reduction & Efficiency
754: Diesel Fueled Vehicles

Action
Directs DOE to accelerate efforts to improve diesel combustion and after-treatment technologies for use in diesel-fueled motor vehicles. By 2010, DOE must develop and demonstrate diesel technologies that meet EPA's Tier 2 emissions standards and heavy-duty vehicle emissions standards of 2007.

Fuel Emissions Reduction & Efficiency
757: Biodiesel Engine Testing Program

Action
Directs DOE to work with engine and fuel injection manufacturers to test biodiesel in advanced diesel fuel engines, determine impacts of different biodiesel blendstocks, and study the emissions and warranty impacts of different blendstocks.

Authorizations
$5,000,000 for each of fiscal years 2006 through 2010.

Fuel Emissions Reduction & Efficiency
773: Study of Feasibility and Effects of Reducing Use of Fuel for Automobiles

Action
Requires the Administrator of NHTSA to conduct a study regarding the feasibility and effects of reducing (by a significant percentage) the amount of fuel consumed by automobiles by model year 2014. The study shall consider alternatives to the policy under federal law, and the extent to which potential fuel cell technologies could contribute to achieving the reduction in automobile fuel consumption. NHTSA must also submit a report to Congress that details the findings, conclusions, and recommendations of the study.

Fossil Fuels: Technological Initiatives & Development of Programs
369: Oil Shale, Tar Sands & Other Strategic Unconventional Fuels

Action
Provides for the recovery of liquid fuels from oil shale and tar sands resources in BLM administered lands located in Colorado, Utah and Wyoming. Before developing oil shale and tar sands resources, DOI must submit a final programmatic environmental impact statement (PEIS) and Record of Decision (ROD) identifying potential areas for the development of oil shale and tar sands resources.

DOI must also consult with each applicable state, locality, Indian tribe and other interested persons to determine the level of support for developing the resources. If sufficient support and interest exists, DOI may conduct a lease sale under the commercial leasing program regulations. Evidence of interest in a lease sale may include appropriate areas that potential lessees and other interested parties have nominated.

Authorizations
Such sums as are necessary to carry out this section.

Fossil Fuels: Technological Initiatives & Development of Programs
963: Carbon Capture Research and Development Program

Action
Requires DOE to carry out a 10-year carbon capture research and development (R&D) program to develop CO2 capture technologies on combustion-based systems for use in new coal-utilization facilities and fleets of preexisting coal-based units.

Authorizations
$25,000,000 for fiscal year 2006; $30,000,000 for fiscal year 2007; and $35,000,000 for fiscal year 2008.

Fossil Fuels: Technological Initiatives & Development of Programs
967: Complex Well Technology Testing Facility

Action
Directs DOE, in coordination with industry leaders of extended research drilling technologies, to establish a Complex Well Technology Testing Facility at the Rocky Mountain Oilfield Testing Center (RMOTC). The purpose of the facility is to research and increase the range of extended drilling technologies.

Fossil Fuels: Technological Initiatives & Development of Programs
968: Methane Hydrate Research

Action
Amends the Methane Hydrate Research and Development Act of 2000 and directs DOE, in consultation with DOC, DOD, DOI, and NSF, to establish a methane hydrate research and development program. Provides DOE with authority to award grants and enter into contracts or cooperative agreements with universities, oceanographic institutions, and industrial enterprises for the purposes of conducting research to identify, explore, assess, and develop methane hydrate as a commercially viable source of energy.

DOE must also establish a Methane Hydrates Advisory Panel and submit a report to Congress assessing the methane hydrate research program. Further, DOE must submit an annual report to Congress that details the results of actions taken to carry out the Act and shall offer to enter into an agreement with the National Research Council (NRC) to carry out an assessment study of the program.

Authorizations
$15,000,000 for fiscal year 2006; $20,000,000 for fiscal year 2007; $30,000,000 for fiscal year 2008; $40,000,000 for fiscal year 2009; and $50,000,000 for fiscal year 2010.

Clean Energy Technologies
1306: Advanced Nuclear Power Facilities Production Credit

Action
Extends the production tax credit (PTC) of 1.8 cents per kilowatt hour (kWh) (not adjusted for inflation) to any nuclear power plant with a "new" design that has a construction start date before January 1, 2014, and enters commercial operation by January 1, 2021. The owner of an eligible plant can reduce its tax liability by up to 1.8 cents for each kWh, equal to the product of 1.8 cents, multiplied by the kWh hours of electricity produced and sold during the 8 years after the facility has been placed in service. Note that there are additional limitations on the amount of tax credits a utility can receive.

Clean Energy Technologies
1307: Credit for Investment in Clean Coal Technologies

Action
Creates an investment tax credit program for qualifying advanced clean coal projects that produce electricity. The total aggregate credits may not exceed $1.3 billion, of which $800 million is authorized for integrated gasification combined cycle (IGCC) projects and $500 million for projects that use other advanced coal-based generation technologies. The gasification credit for any taxable year is equal to a 20% tax credit for industrial gasification or IGCC and a 15% tax credit on other advanced coal-based generation technologies. The amount eligible for credit is limited to $650 million per project. Section 1307 also includes an additional $350 million for projects that support activities other than electricity generation under the qualifying gasification project program.

Climate Change: Technologies & Greenhouse Gas Reduction Strategies
1601: Greenhouse Gas Intensity Reducing Strategies:
(c) National Climate Change Technology Policy
(d) Climate Change Technology Program
(e) Inventory
(f) Advisory Committee
(g) Deployment
(h) Standards

Action
Requires DOE's Committee on Climate Change Technology to submit to DOE and the President a national strategy that promotes the deployment and commercialization of greenhouse gas intensity reducing technologies and practices. The national strategy must be updated every five years.

Requires DOE to establish a climate change technology program to assist in the interagency coordination of climate change technology research, development, demonstration, and deployment to reduce greenhouse gas intensity and to assist in other programs established in the Climate Change Section (Title XVI) of EPAct05.

Conduct an inventory and evaluation of greenhouse gas intensity reducing technologies that have been developed or are currently under development and submit a report to Congress.

DOE may establish a Climate Change Technology Advisory Committee (Advisory Committee) of stakeholders to identify barriers to the commercialization and deployment of greenhouse gas intensity reduction technologies, and to provide Congress with recommendations on how to overcome those barriers.

Based on the strategy and reports developed in Title XVI of EPAct05, the Committee on Climate Change Technology must develop recommendations that provide for the removal of domestic barriers to the commercialization and deployment of greenhouse gas intensity reducing technologies and practices. The Committee may recommend demonstration projects and shall include the recommendations in a report to Congress.

DOE, in collaboration with NIST, must develop standards and best practices for calculating, monitoring, and analyzing greenhouse gas intensity. DOE shall, subject to the availability of appropriations, support relevant cost-sharing demonstration projects.

Authorizations
Such sums as are necessary to carry out this subsection.

Climate Change: Technologies & Greenhouse Gas Reduction Strategies
1611: Climate Change Technology Deployment in Developing Countries:
--Reduction of Greenhouse Gas Intensity; Initial Report
--Technology Inventory for Developing Countries
--Trade-Related Barriers to Export of Greenhouse Gas Intensity Reducing Technologies
--Greenhouse Gas Intensity Reducing Technology Export Initiative

Action
DOS shall act as the lead agency for integrating into U.S. foreign policy the goal of reducing greenhouse gas intensity in developing countries. DOS must submit two detailed reports to Congress regarding the identification and energy use evaluations of the 25 largest greenhouse gas-emitting countries.

DOE, in coordination with DOS and DOC, shall conduct an inventory of already-developed (or those that are currently in development) U.S. greenhouse gas intensity reducing technologies that are suitable for transfer to, deployment in, and commercialization in the 25 developing countries outlined in the reports mandated under Section 1611(a) of EPAct05. A report to Congress detailing the results of the inventory and obstacles to the transfer of the inventories' technologies must be submitted.

Identify foreign trade barriers that hinder or prevent the export of greenhouse gas intensity reducing technologies and practices from the United States to the developing countries identified in Section 1611(a)'s report. Negotiate with identified countries to remove foreign trade barriers and submit annual progress reports to Congress.

Establishes an interagency working group, chaired by the Secretary of State, to carry out a Greenhouse Gas Intensity Reducing Technology Export Initiative that:
(1) promotes the export of greenhouse gas intensity-reducing technologies and practices from the United States;
(2) identifies developing countries that should be designated as priority countries for the purpose of exporting greenhouse gas intensity-reducing technologies and practices;
(3) identifies potential barriers to the adoption of exported greenhouse gas intensity reducing technologies and practices; and
(4) identifies previous efforts to export energy technologies to learn best practices.

Authorizations
Such sums as are necessary.

Additional provisions that authorize appropriations of the selected technologies within EPAct05:

723: Authorization of Appropriations

Action
There are authorized to be appropriated to the Secretary to carry out this part $200,000,000, to remain available until expended.

797: Authorization of Appropriations

Action
There is authorized to be appropriated to carry out this subtitle $200,000,000 for each of fiscal years 2007 through 2011, to remain available until expended.

1704: Authorization of Appropriations

Action
There are authorized to be appropriated such sums as are necessary to provide the cost of guarantees under this title.

EISA

Provisions, Actions & Authorizations

Energy Security through Improved Vehicle Fuel Economy
102: Average Fuel Economy Standards for Automobiles and Certain Other Vehicles

Action
Amends federal transportation law to instruct the Secretary of Transportation (Secretary in this title) to prescribe separate average fuel economy standards for passenger and for non-passenger automobiles for model years 2011-2030. Repeals the current requirement that the average fuel economy standard for passenger automobiles manufactured after model year 1984 be 27.5 miles per gallon. Incorporates 27.5 miles per gallon into a formula for determining the minimum standard for domestically manufactured passenger automobiles.

Requires the combined fuel economy average for model year 2020 to be at least 35 miles per gallon for the total fleet of passenger and non-passenger automobiles manufactured for sale in the United States for that model year. Requires the average fuel economy to be attained by each fleet of passenger and non-passenger automobiles manufactured for sale in the United States for model years 2021-2030 to be the maximum feasible standard for each fleet.

Directs the Secretary to study the fuel efficiency of work trucks and commercial medium-duty or heavy-duty on-highway vehicles to determine appropriate test procedures, methodologies, and metrics for measuring such efficiency.

Energy Security through Improved Vehicle Fuel Economy
104: Credit Trading Program

Action
Authorizes the Secretary to establish a corporate average fuel economy (CAFE) credit trading program that allows manufacturers whose automobiles exceed prescribed average fuel economy standards to earn credits to: (1) be sold to manufacturers whose automobiles fail to achieve such standards; or (2) apply them within that manufacturer's fleet to a compliance category of automobiles that fails to achieve such standards.

Energy Security through Improved Vehicle Fuel Economy
105: Consumer Information

Action
Instructs the Secretary to develop and implement a program to require manufacturers to: (1) label new automobiles sold in the United States with information and a rating system on an automobile's performance on the basis of criteria reflecting fuel economy and greenhouse gas and other emissions; and (2) include pertinent information in the owner's manual for vehicles capable of operating on alternative fuels.

Energy Security through Improved Vehicle Fuel Economy
131: Transportation Electrification

Action
Instructs the Secretary of Energy to establish a competitive grants program to: (1) encourage the use of plug-in electric drive vehicles or other emerging electric vehicle technologies by governmental and quasi-governmental entities and private or nonprofit entities; and (2) conduct qualified electric transportation projects.

Directs the Secretary of Energy to develop a nationwide electric drive transportation technology education program, including a Dr. Andrew Frank Plug-in (hybrid) Electric Vehicle Competition to create or support related degree programs at institutions of higher education.

Authorizations
$90,000,000 for each of fiscal years 2008 through 2012, $95,000,000 for each of fiscal years 2008 through 2013, and such sums as may be necessary.

Energy Security through Improved Vehicle Fuel Economy
132: Domestic Manufacturing Conversion Grant Program

Action
Amends the Energy Policy Act of 2005 to direct the Secretary of Energy to establish a program to encourage domestic production and sales of efficient hybrid and advanced diesel vehicles and their components.

Authorizations
Such sums as may be necessary to carry out this section.

Energy Security through Improved Vehicle Fuel Economy
133: Inclusion of Electric Drive In Energy Policy Act of 1992

Action
Amends the Energy Policy Act of 2005 to direct the Secretary of Energy to establish a program to encourage domestic production and sales of efficient hybrid and advanced diesel vehicles and their components.

Authorizations
Such sums as are necessary to carry out this section for each of fiscal years 2008 through 2013.

Energy Security through Improved Vehicle Fuel Economy
135: Advanced Battery Loan Guarantee Program

Action
Directs the Secretary of Energy to establish a program to provide guarantees of loans by private institutions for the construction of facilities for the manufacture of advanced vehicle batteries and battery systems developed and produced in the United States, including advanced lithium ion batteries and hybrid electrical system and component manufacturers and software designers.

Authorizations
Such sums as may be necessary to carry out this section.

Energy Security through Improved Vehicle Fuel Economy
136: Advanced Technology Vehicles Manufacturing Incentive Program

Action
Directs the Secretary of Energy to provide facility funding awards to automobile manufacturers and component suppliers to pay up to 30% of the cost of: (1) modifying or establishing manufacturing facilities to produce qualifying advanced technology vehicles or components; and (2) engineering integration performed in the United States of qualifying vehicles and qualifying components.

Directs such Secretary to establish a program to provide up to $25 billion in loans for the costs of such activities. Requires loan applicants to provide written assurances that laborers and mechanics employed by contractors or subcontractors during construction, alteration, or repair financed by such loan shall be paid wages at rates not less than those prevailing on similar construction in the locality.

Instructs the Secretary to use at least 10% of loan funds for awards to small automobile manufacturers and component suppliers.

Authorizations
Such sums as are necessary to carry out this section for each of fiscal years 2008 through 2012.

Energy Security Through Increased Production of Biofuels
202: Renewable Fuel Standard

Action
Amends the Clean Air Act to direct the EPA Administrator to revise regulations to ensure that domestic transportation fuel sold or introduced into commerce, on an annual average basis, contains a specified volume of renewable fuel, advanced biofuel, cellulosic biofuel, and biomass-based diesel, and, in the case of renewable fuel produced from new facilities that commence construction after enactment of this Act, achieves at least a 20% reduction in lifecycle greenhouse gas emissions compared to certain baseline lifecycle greenhouse gas emissions.

Revises the applicable volumes of renewable fuel required for calendar years 2008 through 2012 gasoline sold or introduced into commerce in the United States (except in noncontiguous states or territories), on an annual average basis. Specifies such volumes for calendar years 2013 through 2022. Applies such applicable volumes to advanced biofuel, cellulosic biofuel, and biomass-based diesel for certain of these years.

Repeals the specification for the renewable fuel program that one gallon of cellulosic biomass ethanol or waste derived ethanol shall be considered to be the equivalent of 2.5 gallons of renewable fuel.

Authorizes the EPA Administrator to adjust to a lower percentage the 20%, 50%, and 60% reductions in lifecycle greenhouse gas emissions with respect to renewable fuel, biomass-based diesel, advanced biofuel, and cellulosic biofuel.

Authorizes the EPA Administrator to issue regulations providing for the generation of an appropriate amount of credits by any person that refines, blends, or imports additional renewable fuels.

Energy Security Through Increased Production of Biofuels
203: Study of Impact of Renewable Fuel Standard

Action
Directs the Secretary of Energy to enter into an arrangement with the NAS to assess the impact of renewable fuel program requirements on each industry regarding production of feed grains, livestock, food, forest products, and energy.

Energy Security Through Increased Production of Biofuels
206: Study of Credits for Use of Renewable Electricity in Electric Vehicles

Action
Directs the EPA Administrator to study and report to Congress on the feasibility of issuing credits under the renewable fuel program to electric vehicles powered by electricity produced from renewable energy sources.

Energy Security Through Increased Production of Biofuels
207: Grants for Production of Advanced Biofuels

Action
Directs the Secretary of Energy to establish a grant program to encourage the production of advanced biofuels.

Authorizations
$500,000,000 for the period of fiscal years 2008 through 2015.

Energy Security Through Increased Production of Biofuels
221: Biodiesel

Action
Requires the Secretary of Energy to report to Congress on research and development challenges inherent in increasing the proportion of diesel fuel sold in the United States that is biodiesel.

Energy Security Through Increased Production of Biofuels
222: Biogas

Action
Requires the Secretary of Energy to report to Congress on research and development challenges inherent in increasing transportation fuels sold in the United States with biogas or a blend of biogas and natural gas fuel.

Energy Security Through Increased Production of Biofuels
223: Grants for Biofuel Production Research and Development in Certain States

Action
Directs such Secretary to provide grants for research, development, demonstration, and commercial application (R&D) of biofuel production in states with low rates of ethanol production and of cellulosic biomass ethanol.

Authorizations
$25,000,000 for each of fiscal years 2008 through 2010.

Energy Security Through Increased Production of Biofuels
224: Biorefinery Energy Efficiency

Action
Amends the Energy Policy Act of 2005 to direct such Secretary to establish R&D programs for: (1) increased biorefinery energy efficiency; and (2) retrofit technologies to enable biorefineries that exclusively use corn grain or corn starch as a feedstock to produce ethanol to accept a range of biomass, including lignocellulosic feedstocks.

Energy Security Through Increased Production of Biofuels
225: Study of Optimization of Flexible Fueled Vehicles to Use E-85 Fuel

Action
Directs the Secretary to study and report to Congress on whether optimizing flexible fueled vehicles to use E-85 fuel would increase the fuel efficiency of flexible fueled vehicles.

Energy Security Through Increased Production of Biofuels
226: Study of Engine Durability and Performance Associated with the Use of Biodiesel

Action
Directs the Secretary to study and report to Congress on engine durability and performance associated with the use of biodiesel.

Energy Security Through Increased Production of Biofuels
227: Study of Optimization of Biogas Used in Natural Gas Vehicles

Action
Directs the Secretary to study and report to Congress on methods of increasing the fuel efficiency of vehicles using biogas by optimizing natural gas vehicle systems that can operate on biogas, (including advancement of vehicle fuel systems and the combination of hybrid-electric and plug-in hybrid electric drive platforms with natural gas vehicle systems using biogas).

Energy Security Through Increased Production of Biofuels
228: Algal Biomass

Action
Directs the Secretary to report to certain congressional committees on the progress of research and development on the use of algae as a feedstock for biofuels production.

Energy Security Through Increased Production of Biofuels
229: Biofuels and Biorefinery Information Center

Action
Directs the Secretary to establish a biofuels and biorefinery information center.

Authorizations
Such sums as are necessary to carry out this section.

Energy Security Through Increased Production of Biofuels
230: Cellulosic Ethanol and Biofuels Research

Action
Directs the Secretary to make cellulosic ethanol and biofuels research and development grants to ten eligible entities selected by the Secretary through a peer-reviewed competitive process.

Authorizations
$50,000,000 for fiscal year 2008, to remain available until expended.

Energy Security Through Increased Production of Biofuels
232: Environmental Research and Development

Action
Amends the Energy Policy Act of 2005 to: (1) direct the Secretary to establish a research, development, and demonstration program in environmental science; and (2) include among the goals of the DOE systems biology program technological development based on the biological functions of genomes, microbes, and plants that develop cellulosic and other feedstocks that are less resource and land intensive and that promote sustainable use of resources, including soil, water, energy, forests, and land, and ensure protection of air, water, and soil quality.

Amends the Biomass Research and Development Act of 2000 to encompass within the Biomass Research and Development Initiative: (1) improvement and development of analytical tools to facilitate the analysis of lifecycle energy and greenhouse gas emissions, including those related to direct and indirect land use changes, attributable to all potential biofuel feedstocks and production processes; (2) systematic evaluation of the impact of expanded biofuel production upon the environment, including forest lands, and upon the food supply for humans and animals; and (3) facilitation of small-scale production, local, and on-farm use of biofuels, including small-scale gasification technologies for biofuel production from cellulosic feedstocks.

Energy Security Through Increased Production of Biofuels
233: Bioenergy Research Centers

Action
Amends the Energy Policy Act of 2005 to direct the Secretary to establish at least seven bioenergy research centers to accelerate basic transformational research and development of biofuels, including biological processes.

Energy Security Through Increased Production of Biofuels
234: University Based Research and Development Grant Program

Action
Directs the Secretary to establish a competitive grant program, in a geographically diverse manner, for projects to conduct research and development of renewable energy technologies proposed by institutions of higher education.

Authorizations
$25,000,000 for carrying out this section.

Energy Security Through Increased Production of Biofuels
242: Renewable Fuel Dispenser Requirements

Action
Instructs the Secretary of Energy to study and report to Congress on: (1) market penetration for flexible-fuel vehicles in use within certain geographic regions; (2) the feasibility of requiring motor fuel retailers to install E-85 compatible dispensers and related systems at retail fuel facilities in regions where flexible-fuel vehicle market penetration has reached 15% of motor vehicles.

Energy Security Through Increased Production of Biofuels
243: Ethanol Pipeline Feasibility Study

Action
Instructs the Secretary of Energy to study and report to Congress on the feasibility of constructing dedicated ethanol pipelines.

Authorizations
$1,000,000 for each of fiscal years 2008 and 2009, to remain available until expended.

Energy Security Through Increased Production of Biofuels
244: Renewable Fuel Infrastructure Grants

Action
Directs such Secretary to establish an infrastructure development grants program to assist motor fuel dealers with installation, replacement, or conversion of motor fuel storage and dispensing infrastructure used exclusively to store and dispense renewable fuel blends (containing between 11% and 85% renewable fuel, or diesel fuel with at least 10% renewable fuel).

Directs such Secretary to contract with entities with demonstrated experience in assisting retail fueling stations in installing refueling systems and marketing renewable fuel blends nationally, for the provision of technical and marketing assistance to recipients.

Directs the Secretary to establish a competitive grant pilot program to governmental entities, Indian tribal governments, and metropolitan transportation authorities to establish refueling infrastructure corridors for renewable fuel blends.

Authorizations
$200,000,000 for each of the fiscal years 2008 through 2014.

Energy Security Through Increased Production of Biofuels
248: Biofuels Distribution and Advanced Biofuels Infrastructure

Action
Instructs the Secretary of Energy to implement a research, development, and demonstration program relating to existing transportation fuel distribution infrastructure and new alternative distribution infrastructure, with a focus upon physical and chemical properties of biofuels and efforts to prevent or mitigate against adverse impacts of those properties in designated areas.

Energy Savings Through Improved Standards for Appliance and Lighting
310: Standby Mode

Action
Requires test procedures and standards for all covered consumer products (other than automobiles) to include standby mode and off mode energy consumption.

Energy Savings Through Improved Standards for Appliance and Lighting
315: Improved Energy Efficiency for Appliances and Buildings in Cold Climates

Action
Amends the Energy Policy Act of 2005 to: (1) expand R&D programs to include technologies to improve the energy efficiency of appliances and mechanical systems for buildings in cold climates, including combined heat and power units and increased use of renewable resources, including fuel; and (2) make eligible for special allocations any state whose energy efficient appliance rebate program provides rebates to residential consumers for the purchase of products with improved energy efficiency in a cold climate.

Energy Savings in Buildings and Industry
421: Commercial High-Performance Green Buildings

Action
Requires the Secretary of Energy to appoint a Director of Commercial High-Performance Green Buildings (Commercial Director) to: (1) establish and manage the Office of Commercial High-Performance Green Buildings; (2) coordinate activities with the Office of Federal High-Performance Green Buildings; (3) promote research and development of high-performance green buildings; (4) jointly establish with the Federal Director a national high-performance green building clearinghouse to provide high-performance green building information and disseminate research results; and (5) work with GSA and relevant federal agencies to ensure full coordination of high-performance green building information and activities.

Requires the Commercial Director to: (1) formally recognize groups that qualify as a high-performance green building partnership consortium; and (2) report to Congress on the status of high-performance green building initiatives and development of such initiatives at the state and local level.

Energy Savings in Buildings and Industry
422: Zero Net Energy Commercial Buildings Initiative

Action
Requires the Commercial Director to establish the Zero-Net-Energy Commercial Buildings Initiative to: (1) reduce the quantity of energy consumed by commercial buildings and achieve zero net energy commercial buildings in the United States; and (2) competitively select a consortium to develop and implement the initiative.

Requires the Commercial Director and the Federal Director, in coordination with the Consortium, to implement public outreach to tell individuals and entities about the information and services available government wide.

Authorizations
$20,000,000 for fiscal year 2008; $50,000,000 for each of fiscal years 2009 and 2010; $100,000,000 for each of fiscal years 2011 and 2012; and $200,000,000 for each of fiscal years 2013 through 2018.

Energy Savings in Buildings and Industry
433: Federal Building Energy Efficiency Performance Standards

Action
Amends ECPA to direct the Secretary of Energy to establish specified federal building energy efficiency performance standards.

Energy Savings in Buildings and Industry
434: Management of Federal Building Efficiency

Action
Amends NECPA to require each federal agency to: (1) ensure that any large capital energy investment in an existing building that involves either replacement of installed equipment, or renovation, rehabilitation, expansion, or remodeling of existing space, employs the most energy efficient designs, systems, equipment, and controls that are lifecycle cost effective; and (2) report to the Director of the Office of Management and Budget (OMB) on development of a compliance review process for large capital energy improvements.

Directs OMB to evaluate and report to Congress on agency compliance.

Requires federal agencies to provide for equivalent metering of natural gas and steam by October 1, 2016, in accordance with guidelines established by the Secretary of Energy.

Energy Savings in Buildings and Industry
436: High-Performance Green Federal Buildings

Action
Instructs the GSA to establish an Office of Federal High-Performance Green Buildings and to appoint a Federal Director to: (1) establish and manage such Office;(2) coordinate activities with the Office of Commercial High-Performance Green Buildings, and with the Secretary of Energy; and (3) ensure full coordination of high-performance green building information and activities within GSA and relevant agencies.

Requires the Federal Director to identify and provide to the Secretary a certification system most likely to encourage a comprehensive and environmentally-sound approach to certification of green buildings.

Energy Savings in Buildings and Industry
439: Cost-Effective Technology Acceleration Program

Action
Directs the GSA Administrator to establish a cost-effective technology acceleration program at GSA facilities, including review of: (1) current use of cost-effective lighting technologies and geothermal heat pumps; and (2) the availability of cost-effective lighting technologies and geothermal heat pumps to such facilities managers.

Requires the GSA Administrator to: (1) ensure designation for each GSA facility of a manger responsible for reducing facility energy use; and (2) submit to Congress a compliance plan that identifies the specific activities needed to achieve at least a 20% reduction in operational costs from 2003 levels at GSA facilities within five years after enactment of this Act. Authorizes appropriations.

Authorizations
Such sums as are necessary to carry out this section, to remain available until expended.

Energy Savings in Buildings and Industry
451: Industrial Energy Efficiency

Action
Amends EPCA to establish an industrial energy efficiency program under which the EPA Administrator shall establish a recoverable waste energy inventory program that involves: (1) an ongoing survey of major domestic industrial and large commercial combustion sources and their locations; and (2) a review of the quantity and quality of waste energy produced at such sources.

Requires the EPA Administrator to: (1) establish a Registry of Recoverable Waste Energy Sources, and sites on which the sources are located; and (2) publish a rule for establishing criteria for site inclusion.

Instructs the EPA Administrator to: (1) calculate the total quantities of potentially recoverable waste energy from sources at the sites, nationally and by state; and (2) make such quantities public, including greenhouse gas emissions savings that might be achieved with recovery of the waste energy from all sources and sites listed on the Registry.

Requires the EPA Administrator to notify owners or operators of recoverable waste energy sources and sites listed on the Registry before publishing the listing.

Instructs the Secretary of Energy to establish a waste energy recovery incentive grant program to provide incentive grants to: (1) owners and operators of projects that successfully produce electricity or incremental useful thermal energy from waste energy recovery; (2) utilities purchasing or distributing the electricity; and (3) states that have achieved 80% or more of recoverable waste heat recovery opportunities.

Sets forth additional incentives for recovery, use, and prevention of industrial waste energy. Redesignates the Combined Heat and Power Application Centers of DOE as Clean Energy Application Centers.

Instructs the Secretary of Energy to: (1) relocate administration of the Clean Energy Application Centers to the Office of Energy Efficiency and Renewable Energy within DOE; and (2) award grants to universities, research centers, and other institutions to ensure continued operations and effectiveness of eight Regional Clean Energy Application Centers in specified regions.

Authorizations
To the Administrator to create and maintain the Registry and services authorized by this section: $1,000,000 for each of fiscal years 2008 through 2012; and to the Secretary to assist site or source owners and operators in determining the feasibility of projects authorized by this section, $2,000,000 for each of fiscal years 2008 through 2012; and to provide funding for State energy office functions under this section, $5,000,000.

To make grants to projects and utilities under subsection (b) $100,000,000 for fiscal year 2008 and $200,000,000 for each of fiscal years 2009 through 2012; and such additional amounts for fiscal year 2008 and each fiscal year thereafter as may be necessary for administration of the waste energy recovery incentive grant program; and to make grants to States under subsection (b), $10,000,000 for each of fiscal years 2008 through 2012, to remain available until expended.

$10,000,000 for each of fiscal years 2008 through 2012 to carry out this section.

Energy Savings in Buildings and Industry
471: Energy Sustainability and Efficiency Grants and Loans for Institutions

Action
Amends EPCA to instruct the Secretary of Energy to implement an information dissemination and technical assistance grants program to assist institutional entities in identifying, evaluating, designing, and implementing infrastructure projects in energy sustainability.

Directs the Secretary to award grants to institutional entities to: (1) improve energy efficiency on their grounds and facilities; and (2) engage in innovative energy sustainability projects.

Sets forth mandatory allocations to institutions of higher education with small endowments.

Instructs the Secretary to: (1) provide loans to institutional entities to implementing energy efficiency improvements and sustainable energy infrastructure; and (2) establish procedures for solicitation and evaluation of potential projects for grant and loan funding and administration of the grant and loan programs.

Authorizations
There is authorized to be appropriated for the cost of grants authorized in subsections (b), (c), and (d) $250,000,000 for each of fiscal years 2009 through 2013, of which not more than 5 percent may be used for administrative expenses.
There is authorized to be appropriated for the initial cost of direct loans authorized in subsection (g) $500,000,000 for each of fiscal years 2009 through 2013.

Energy Savings in Buildings and Industry
491: Demonstration Project

Action
Instructs the Federal Director and the Commercial Director to: (1) establish guidelines to implement a demonstration project to contribute to the research goals of the Office of Commercial High-Performance Green Buildings and the Office of Federal High-Performance Green Buildings; and (2) carry out demonstration projects related to green features of federal buildings and other facilities and supportive of research initiatives regarding high-performance green buildings generally.

Authorizations
$10,000,000 for the period of fiscal years 2008 through 2012, and to carry out the demonstration project described in section (b)(2), $10,000,000 for the period of fiscal years 2008 through 2012, to remain available until expended.

Energy Savings in Buildings and Industry
493: Environmental Protection Agency Demonstration Grant Program for Local Governments

Action
Amends the Clear Air Act to direct the EPA Administrator to establish a competitive grants program to assist local governments, with respect to local government buildings, to: (1) deploy cost-effective technologies and practices; and (2) achieve operational cost savings, through application of cost-effective technologies and practices.

Authorizations
$10,000,000 for the period of fiscal years 2008 through 2012, and to carry out the demonstration project described in section (b)(2), $10,000,000 for the period of fiscal years 2008 through 2012, to remain available until expended.

Energy Savings in Government and Public Institutions
501: Capitol Complex Photovoltaic Roof Feasibility Study

Action
Authorizes the Architect of the Capitol (Architect) to: (1) conduct feasibility studies regarding construction of photovoltaic roofs for the Rayburn House Office Building and the Hart Senate Office Building.

Authorizations
There is authorized to be appropriated to carry out this section $500,000.

Energy Savings in Government and Public Institutions
503: Energy and Environmental Measures in Capitol Complex Master Plan

Action
Directs the Architect to: (1) include energy efficiency and conservation measures, greenhouse gas emission reduction measures, and other appropriate environmental measures in the Capitol Complex Master Plan.

Energy Savings in Government and Public Institutions
505: Capitol Power Plant Carbon Dioxide Emissions Feasibility Study and Demonstration Projects

Action
Directs the Architect to conduct a feasibility study evaluating the available methods to capture, store, and use carbon dioxide emitted from the Capitol Power Plant as a result of burning fossil fuels.

Authorizes the Architect to conduct demonstration projects to capture and store or use carbon dioxide emitted from the Capitol Power Plant as a result of burning fossil fuels, if the feasibility study determines that such a project is technologically feasible and economically justified.

Authorizations
There is authorized to be appropriated to carry out the feasibility study and demonstration project $3,000,000. Such sums shall remain available until expended.

Energy Savings in Government and Public Institutions
532: Utility Energy Efficiency Programs

Action
Amends the Public Utility Regulatory Policies Act of 1978 (PURPA) to require each electric utility to: (1) integrate energy efficiency resources into utility, state, and regional plans; (2) adopt policies establishing cost-effective energy efficiency as a priority resource; and (3) implement rate design modifications to promote energy efficiency investments.
Requires a natural gas utility to: (1) integrate energy efficiency resources into its plans and planning processes; (2) adopt policies that establish energy efficiency as a priority resource in such plans and processes; and (3) implement rate design modifications to promote energy efficiency investments.

Energy Savings in Government and Public Institutions
542: Energy Efficiency and Conservation Block Grant Program

Action
Instructs the Secretary of Energy to establish the Energy Efficiency and Conservation Block Grant Program to assist eligible entities in implementing strategies that: (1) reduce their fossil fuel emissions and total energy use; and (2) improve energy efficiency in the transportation, building, and other appropriate sectors.

Accelerated Research and Development
602: Thermal Energy Storage Research and Development Program

Action
Directs the Secretary of Energy to establish a research and development program to provide lower cost and more viable thermal energy storage technologies to enable the shifting of electric power loads on demand and extend the operating time of concentrating solar power electric generating plants.

Authorizations
$5,000,000 for fiscal year 2008, $7,000,000 for fiscal year 2009, $9,000,000 for fiscal year 2010, $10,000,000 for fiscal year 2011, and $12,000,000 for fiscal year 2012.

Accelerated Research and Development
603: Concentrating Solar Power Commercial Application Studies

Action
Requires the Secretary to study and report to Congress on methods to: (1) integrate concentrating solar power and utility-scale photovoltaic systems into regional electricity transmission systems; (2) identify new transmission or transmission upgrades needed to bring electricity from high concentrating solar power resource areas to growing electric power load centers; and (3) reduce the amount of water consumed by concentrating solar power systems.

Accelerated Research and Development
604: Solar Energy Curriculum Development and Certification Grants

Action
Directs the Secretary to establish: (1) in the Office of Solar Energy Technologies a competitive grant program to create and strengthen solar industry workforce training and internship programs in installation, operation, and maintenance of solar energy products; (2) a research and development program to assist in demonstration and commercial application of direct solar renewable energy sources to provide alternatives to traditional power generation for lighting and illumination, including light pipe technology; (3) a research, development, and demonstration program to promote less costly and more reliable decentralized distributed solar-powered air conditioning for individuals and businesses; and (4) a grant program for states to demonstrate advanced photovoltaic technology.

Authorizations
There are authorized to be appropriated to the Secretary for carrying out this section $10,000,000 for each of the fiscal years 2008 through 2012.

Accelerated Research and Development
613: Thermal Energy Storage Research and Development Program

Action
Instructs the Secretary of Energy with grants to support research, development, demonstration, and commercial application programs to expand geothermal energy production from hydrothermal systems, including programs for: (1) development of advanced hydrothermal resource tools; (2) field demonstration of industry coupled exploratory drilling.

Accelerated Research and Development
618: Center for Geothermal Technology Transfer

Action
Instructs the Secretary to award to an institution of higher education (or consortium) a grant to establish a Center for Geothermal Technology Transfer (Center) to serve as information clearinghouse for the geothermal industry on best practices to develop and utilize geothermal resources.

Accelerated Research and Development
624: International Geothermal Energy Development

Action
Directs the Secretary, in coordination with other federal and multilateral agencies (including the U.S. Agency for International Development (USAID)) to support international collaborative efforts to promote the research, development, and deployment of geothermal technologies used to develop hydrothermal and enhanced geothermal system resources, in partnership with the African Rift Geothermal Development Facility, Australia, China, France, the Republic of Iceland, India, Japan, and the United Kingdom.

Authorizations
$5,000,000 for each of fiscal years 2008 through 2012.

Accelerated Research and Development
633: Marine and Hydrokinetic Renewable Energy Research and Development

Action
Directs the Secretary to: (1) establish a research, development, demonstration, and commercial application program to expand marine and hydrokinetic renewable energy.

Accelerated Research and Development
641: Energy Storage Competitiveness

Action
United States Energy Storage Competitiveness Act of 2007 - (Sec. 641) Instructs the Secretary to: (1) implement a research, development, and demonstration program for energy storage systems for electric drive vehicles, stationary applications, and electricity transmission and distribution; and (2) establish an Energy Storage Advisory Council.

Requires the Council, in conjunction with the Secretary, to develop a five-year plan for integrating basic and applied research so that the United States retains a globally competitive domestic energy storage industry.

Directs the Secretary to: (1) conduct basic and applied research programs for such systems; and (2) establish up to four Energy Storage Research Centers to translate basic research into applied technologies to advance U.S. global competitiveness in such energy storage systems.

Directs the Secretary to implement programs of: (1) new demonstrations of advanced energy storage systems; (2) electric drive vehicle energy storage technology demonstrations; and (3) research, development, and demonstration of secondary applications of energy storage devices following service in electric drive vehicles, and technologies and processes for final recycling and disposal of such devices.

Instructs the Secretary to offer to arrange with the NAS to assess DOE performance in implementing such directives.

Authorizations
There are authorized to be appropriated to carry out the basic research program under subsection (f) $50,000,000 for each of fiscal years 2009 through 2018; the applied research program under subsection (g) $80,000,000 for each of fiscal years 2009 through 2018; and the energy storage research center program under subsection (h) $100,000,000 for each of fiscal years 2009 through 2018; the energy storage systems demonstration program under subsection (i) $30,000,000 for each of fiscal years 2009 through 2018; the vehicle energy storage demonstration program under subsection (j) $30,000,000 for each of fiscal years 2009 through 2018; and the secondary applications and disposal of electric drive vehicle batteries program under subsection (k) $5,000,000 for each of fiscal years 2009 through 2018.

Carbon Capture and Sequestration
702: Carbon Capture and Sequestration Research, Development, And Demonstration Program

Action
Add to program objectives the expediting and carrying out of large-scale testing of carbon sequestration systems in a range of geologic formations that will provide information on the cost and feasibility of deployment of sequestration technologies.

Directs the Secretary of Energy to carry out fundamental science and engineering research to develop and document the performance of new approaches to capture and sequester or use carbon dioxide to lead to an overall reduction of carbon dioxide emissions.

Requires the Secretary to promote regional carbon sequestration partnerships to conduct geologic sequestration tests involving carbon dioxide injection and monitoring, mitigation, and verification operations in a variety of candidate geologic settings.

Instructs the Secretary to: (1) conduct at least seven initial large-scale sequestration tests for geologic containment of carbon dioxide to collect and validate information on the cost and feasibility of commercial deployment of technologies for geologic containment of carbon dioxide; (2) give preference to proposals from partnerships among industrial, academic, and government entities in making certain competitive awards; and (3) require recipients to provide assurances that all laborers and mechanics employed by contractors and subcontractors in the construction, repair, or alteration of new or existing facilities performed in order to carry out a demonstration or commercial application activity authorized under this subsection shall be paid wages at rates not less than those prevailing on similar construction in the locality.

Authorizations
$240,000,000 for fiscal year 2008; $240,000,000 for fiscal year 2009; $240,000,000 for fiscal year 2010; $240,000,000 for fiscal year 2011; and $240,000,000 for fiscal year 2012.

Carbon Capture and Sequestration
703: Carbon Capture

Action
Directs the Secretary to demonstrate technologies for the large-scale capture of carbon dioxide from industrial sources of carbon dioxide.

Authorizations
$200,000,000 per year for fiscal years 2009 through 2013.

Carbon Capture and Sequestration
708: University Based Research and Development Grant Program

Action
Instructs the Secretary to: (1) establish a university based research and development program to study carbon capture and sequestration using the various types of coal; and (2) give special consideration to rural or agricultural based institutions in areas that have regional sources of coal and that offer interdisciplinary programs in environmental science to study carbon capture and sequestration.

Authorizations
There are to be authorized to be appropriated $10,000,000 to carry out this section.

International Energy Programs
914: Actions by Overseas Private Investment Corporation

Action
Expresses the sense of Congress that the Overseas Private Investment Corporation (OPIC) should promote greater investment in clean and efficient energy technologies by: (1) proactively reaching out to U.S. companies interested in investing in clean and efficient energy technologies in countries that are significant contributors to global greenhouse gas emissions; (2) giving preferential treatment to the evaluation and awarding of projects that involve the investment or utilization of clean and efficient energy technologies; and (3) providing greater flexibility in supporting projects that involve the investment or utilization of clean and efficient energy technologies, including financing, insurance, and other assistance.

International Energy Programs
917: United States-Israel Energy Cooperation

Action
Directs the Secretary of Energy, in implementing the "Agreement between the Department of Energy of the United States of America and the Ministry of Energy and Infrastructure of Israel Concerning Energy Cooperation" (February 1, 1996), to establish: (1) a grant program to support research, development, and commercialization of renewable energy or energy efficiency; and (2) an advisory board to monitor the grants program and provide periodic performance reviews.

Authorizations
The Secretary shall use amounts authorized to be appropriated under section 931 of the Energy Policy Act of 2005 (42 U.S.C. 16231) to carry out this section.

*Excerpt from EPAct05: There are authorized to be appropriated to the Secretary to carry out renewable energy research, development, demonstration, and commercial application activities, including activities authorized under this subtitle $632,000,000 for fiscal year 2007; $743,000,000 for fiscal year 2008; and $852,000,000 for fiscal year 2009.

International Energy Programs
923: Duties of a Foundation

Action
Requires the Foundation to: (1) make grants to promote projects outside of the United States that serve as models of how to reduce significantly the emissions of global greenhouse gases through clean and efficient energy technologies, processes, and services; (2) seek contributions from foreign governments and private organizations to supplement appropriations; (3) harness global expertise through collaborative partnerships with foreign governments and domestic and foreign private actors; (4) create a repository of information on best practices and lessons learned on the utilization and implementation of clean and efficient energy technologies and processes; and (5) promote the use of American-made clean and efficient energy technologies, processes, and services.

Small Business Energy Programs
1203: Small Business Energy Efficiency

Action
Directs the SBA Administrator to: (1) promulgate final rules establishing the government-wide consumer education program authorized by EPCA to encourage the conservation of energy in the use of consumer products; (2) develop and coordinate establishment of another government-wide small business energy efficiency program, building on the Energy Star for Small Business Program; and (3) develop a strategy to educate, encourage, and assist small business concerns in adopting energy efficient building fixtures and equipment.

Requires the SBA Administrator to establish a Small Business Energy Efficiency Program (Small Business Sustainability Initiative) to provide energy efficiency assistance to small business concerns through small business development centers. Authorizes appropriations.

Instructs the SBA Administrator to conduct a pilot program to provide information regarding telecommuting to small business concerns and to encourage them to offer telecommuting options to employees. Authorizes appropriations.

Amends the Small Business Act to instruct the SBA Administrator to ensure that certain federal departments and agencies give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system research and development projects.

Authorizations
$5,000,000 and such sums as are necessary to make grants and enter into cooperative agreements and to carry out this subsection.

Smart Grid
1304: Smart Grid Technology Research, Development, and Demonstration

Action
Directs the Secretary of Energy to implement a program that includes: (1) developing advanced techniques for measuring peak load reductions and energy-efficiency savings from smart metering, demand response, distributed generation, and electricity storage systems; (2) investigating means for demand response, distributed generation, and storage to provide ancillary services; and (3) conducting research to advance the use of wide-area measurement and control networks, including data mining, visualization, advanced computing, and secure and dependable communications in a highly-distributed environment.

Directs such Secretary to: (1) establish a smart grid regional demonstration initiative composed of demonstration projects specifically focused on advanced technologies for use in power grid sensing, communications, analysis, and power flow control; and (2) implement smart grid demonstration projects in up to five electricity control areas, including at least one rural area in which the majority of generation and transmission assets are controlled by a tax-exempt entity.

Authorization
There are authorized to be appropriated to carry out subsection (a), such sums as are necessary for each of fiscal years 2008 through 2012; and to carry out subsection (b), $100,000,000 for each of fiscal years 2008 through 2012.

Additional provisions that authorize appropriations of the selected technologies within EISA:

231: Bioenergy R&D, Authorization of Appropriations

Action
Section 931 of the Energy Policy Act of 2005 (42 U.S.C. 16231)
is amended—(1) in subsection (b)—(A) in paragraph (2), by striking ''and'' at the end; (B) in paragraph (3), by striking the period at the end and inserting ''; and''; and (C) by adding at the end the following: ''(4) $963,000,000 for fiscal year 2010.''; and (2) in subsection (c)— (A) in paragraph (2)— (i) by striking ''$251,000,000'' and inserting ''$377,000,000''; and (ii) by striking ''and'' at the end; (B) in paragraph (3)— (i) by striking ''$274,000,000'' and inserting ''$398,000,000''; and (ii) by striking the period at the end and inserting ''; and''; and (C) by adding at the end the following: H. R. 6—46 ''(4) $419,000,000 for fiscal year 2010, of which $150,000,000 shall be for section 932(d).''

440: Authorization of Appropriations

Action
There is authorized to be appropriated to carry out sections 434 through 439 and 482 $4,000,000 for each of fiscal years 2008 through 2012, to remain available until expended.

623: Authorization of Appropriations

Action
There are authorized to be appropriated to the Secretary to carry out this subtitle $90,000,000 for each of the fiscal years 2008 through 2012, of which $10,000,000 for each fiscal year shall be for carrying out section 616. There are also authorized to be appropriated to the Secretary for the Intermountain West Geothermal Consortium $5,000,000 for each of the fiscal years 2008 through 2012.

636: Authorization of Appropriations

Action
There are authorized to be appropriated to the Secretary to carry out this subtitle $50,000,000 for each of the fiscal years 2008 through 2012, except that no funds shall be appropriated under this section for activities that are receiving funds under section 931(a)(2)(E)(i) of the Energy Policy Act of 2005 (42 U.S.C.16231(a)(2)(E)(i)).

927: Authorization of Appropriations

Action
To carry out this subtitle, there are authorized to be appropriated $20,000,000 for each of the fiscal years 2009 through 2013.

Energy Efficiency and Renewable Energy Programs
($ millions)

Program	FY2006	FY2007	FY2008 Request	FY2008 House	FY2008 SAppC	FY2008 Conf.
Hydrogen Technologies	$153.5	$193.6	$213.0	$194.6	228.0	211.1
Biomass & Biorefinery Systems	89.8	199.7	179.3	250.0	244.0	198.2
Solar Energy	81.8	159.4	148.3	200.0	180.0	168.5
— Photovoltaics	58.8	—	137.3	149.0	145.3	136.7
Wind Energy	38.3	49.3	40.1	57.5	57.5	49.5
Geothermal Technology	22.8	5.0	0.0	44.3	25.0	19.8
Water Power (Hydro/Ocean)	0.5	0.0	0.0	22.0	10.0	9.9
Subtotal, Renew. & Hydrogen	386.6	606.9	580.6	768.4	744.5	657.0
Vehicle Technologies	178.4	188.0	176.1	235.4	230.0	213.0
Building Technologies	68.2	104.3	86.5	146.5	137.0	109.0
Industrial Technologies	55.9	56.6	46.0	57.0	57.0	64.4
Federal Energy Management	19.0	19.5	16.8	27.0	23.0	19.8
Subtotal, Efficiency R&D	321.4	368.4	325.4	465.9	447.0	406.2
Facilities & Infrastructure	26.1	107.0	7.0	195.7	7.0	76.2
Program Management	115.2	110.2	118.3	128.9	118.3	114.9
R&D Subtotal	849.2	1,192.6	1,031.3	1,558.9	1,316.8	1,254.3
Federal Assistance						
— Weatherization Grants	242.6	204.6	144.0	245.6	240.6	227.2
— State Energy Grants	36.1	58.8	45.5	49.5	55.0	44.1
— Renewables Deployment	38.2	18.4	15.4	19.9	12.0	10.9
— Cong.-Directed Assistance[b]	—	0.0	0.0	—	91.2	185.9
Federal Assistance Subtotal	316.9	281.7	204.9	314.9	398.8	468.1
Total Appropriation, EE & RE	1,166.1	1,474.3	1,236.2	1,873.8	1,715.6	1,722.4
Office of Electricity Delivery & Energy Reliability (OE)[a]	158.2	137.0	114.9	134.2	169.4	138.7

Sources: DOE FY2007 Operating Plan; H.Rept. 110-185; S.Rept. 110-127; Joint Explanatory Statement on the Consolidated Appropriations Act of 2007 (Cong. Record, Dec. 17, 2007, p. 15587 and p. H15940).

a. The Distributed Energy Program was moved from EERE to OE in FY2006.
b. In FY2006, there was $159.0 million in congressionally-directed funds spread over EERE accounts. For FY2008, the House approved (H.Rept. 110-185, part 2) $104.3 million for congressionally-directed assistance to be taken from available funds.