Edison Electric Institute Response
to Dingell-Boucher Letter of February 27, 2007

March 19, 2007

The Edison Electric Institute (EEI) commends Chairmen Dingell and Boucher and the House Energy and Commerce Committee for soliciting input from our industry and others on important greenhouse gas (GHG) policy issues raised in your letter of February 27, 2007. We appreciate the opportunity to respond, and look forward to continued work with you and your staffs on important issues relating to global climate change.

EEI urges the Committee to afford the power sector and others an opportunity to submit comments and participate in hearings on legislative proposals that it and the Subcommittee on Energy and Air Quality consider prior to mark-ups.

1. *Please outline which issues should be addressed in the Committee's legislation, how you think they should be resolved, and your recommended timetable for Congressional consideration and enactment. For any policy recommendations, please address the impacts you believe the relevant policy would have on:*
   (a) emissions of greenhouse gases and the rate and consequences of climate change; and
   (b) the effects on the U.S. economy, consumer prices, and jobs.

The best guidance that EEI can provide to the Committee is articulated in the EEI Global Climate Change Principles, recently adopted by our Board of Directors and set forth in their entirety below:

"BACKGROUND

"EEI's member companies clearly recognize the growing concerns regarding the threat of climate change. Since 1994—when EEI joined the U.S. Department of Energy in the Climate Challenge—the electric utility industry has led all other industrial sectors in reducing greenhouse gas emissions. Through various programs now under way—

including Power Partners[SM], the Asia-Pacific Partnership and individual company efforts—that commitment continues.

"Today, EEI's members recognize a growing imperative to make even deeper reductions in greenhouse gas emissions. No matter what the ultimate path is, success in that mission—while maintaining the reliable and reasonably priced electricity supply so vital to our economic well-being and national security—will require an aggressive and sustained commitment by the industry and policymakers to the development and deployment of a full suite of technology options, including:

- An intensified national commitment to energy efficiency, including advanced efficiency technologies and new regulatory and business models;
- Accelerated development and cost-effective deployment of demand-side management technologies and renewable energy resources;
- Advanced clean coal technologies (e.g., advanced pulverized coal, fluidized bed and IGCC technologies);
- Carbon capture and storage for all types of fossil-based generation;
- Increased nuclear capacity and advanced nuclear designs; and
- Plug-in electric hybrid vehicles.

"Although some of these options are currently available—albeit at a higher cost than conventional generation sources—many are not. All have different time horizons, but all are critical to our dual goals of addressing greenhouse gas emissions and maintaining a reliable, affordable electricity supply in a carbon-constrained world. Moreover, because of the global nature of the problem, solutions will require the participation of the entire world economy, including China and India.

"PUBLIC POLICY PRINCIPLES

"EEI will continue to emphasize the importance of:

- A reliable, stable and reasonably-priced electric supply to maintain the competitiveness of the U.S. economy;
- A fuel-diverse generation portfolio to assure system reliability, energy security and price stability;

- Public policies and initiatives to accelerate the development of viable and cost effective energy efficiency programs and technologies; zero- or low-emissions generation technologies; and carbon capture and storage technologies;

- International partnerships to address climate change as a global issue that requires global solutions, including appropriate participation by developing nations, such as China and India; and

- Solutions compatible with a market economy that deliver timely and reasonably priced greenhouse gas reductions.

"EEI supports federal action or legislation to reduce greenhouse gas emissions that:

- Involves all sectors of the economy, and all sources of GHG;

- Assures stable, long-term public/private funding to support the development and deployment of needed technology solutions;

- Assures compliance timelines consistent with the expected development and deployment timelines of needed technologies;

- Employs market mechanisms to secure cost-effective GHG reductions, and provides a reasonable transition and an effective economic safety valve;

- Establishes a long-term price signal for carbon that is moderate, does not harm the economic competitiveness of U.S. industry and stimulates future investments in zero- or low-carbon technologies and processes;

- Addresses regulatory or economic barriers to the use of carbon capture and storage and increased nuclear, wind or other zero- or low-GHG technologies;

- Minimizes economic disruptions or disproportionate impacts;

- Recognizes early actions/investments made to mitigate greenhouse gas emissions;

- Provides for the robust use of a broad range of domestic and international GHG offsets;

- Provides certainty and a consistent national policy; and

- Recognizes the international dimensions of the challenge and facilitates technology transfer."

It is critical that any federal action or legislation to reduce GHG emissions:

- **Ensures the development and cost-effective deployment of a full suite of "climate-friendly" technologies, and helps provide for their funding.**
- **Minimizes economic disruption to customers and avoids harm to the competitiveness of U.S. industry.**
- **Ensures an economy-wide approach to GHG reductions.**

2. *One particular option that has received a substantial amount of attention and analysis is "cap-and-trade." Please answer the following questions regarding the potential enactment of a cap-and-trade policy:*

    a. *Which sectors should it cover? Should some sectors be phased-in over time?*

Assuming a U.S. cap-and-trade system were mandated, **EEI would strongly support an economy-wide approach to regulating GHGs.** Electric generation is responsible for 32 percent of GHGs in the U.S., but transportation is responsible for 28 percent, industry for 19 percent, commercial and agriculture for 7 percent apiece, and residential for 6 percent. Environmental Protection Agency (EPA), Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004 (Apr. 15, 2006). The least economically harmful and most equitable regulatory system would be comprehensive: It would involve all major emitting nations, all sources and sinks, all GHGs and all sectors of the economy.

In contrast, a sector approach would tend to focus costs unnecessarily and unfairly on one or more sectors of the economy, which could cause severe economic harm to that sector or sectors. Specifically, a sector approach singling out the power sector would create

disproportionate increases in energy costs in the sector that also would be harmful to U.S. industrial and commercial sectors, causing them to cut production and jobs and perhaps even to close their operations and move overseas, as well as the commercial, agricultural and residential sectors. Even with certain stationary sources -- such as power plants, which cannot migrate overseas -- there would be competitive issues with regard to cheaper power imports from Canada and Mexico.[1] Moreover, electrification and the wider and wiser use of electrotechnologies in end-use applications can play an important role in the long-term de-carbonization of energy systems. A policy that would single out the electric sector would be detrimental because it would perversely promote de-electrification instead. For example, widespread deployment of plug-in hybrid electric vehicles (PHEVs) could actually increase emissions in the power sector, but the U.S. would benefit from a net decrease in emissions overall.

Furthermore, a recent report by McKinsey & Co. shows that GHG emissions reductions are available from other sectors of the economy – buildings, transportation, forestry and agriculture/waste – at a lower cost than from the power sector. See P. Enkvist, T. Naucler & J. Rosander, "A cost curve for greenhouse gas reduction," McKinsey Quarterly 5 (Exh. 3), No. 1 (2007) (McKinsey Report), available at: http://www.mckinseyquarterly.com/article_page.aspx?ar=1911&12=3&13=41&srid=17&g.

[1] Mexico is not subject to binding commitments under the Kyoto Protocol, and although Canada is, it is one of the many developed countries that are not expected to come close to meeting their Protocol targets.

In sum, all sectors of the economy should be covered: utilities, transportation, industry, commercial, agricultural, residential, etc. Neither sectors nor sub-sectors should be exempted. If some sectors or sub-sectors could demonstrate that they would be unfairly harmed or overly burdened, special compensation could be provided initially through the allocation system and then phased out over time. While there could be some flexibility for particular sectors, an overriding objective of any emissions trading program should be fungible credits, liquidity and the facilitation of trades between sectors.

b. To what degree should the details be set in statute by Congress or delegated to another entity?

Details should be set in statute by Congress, not delegated to another entity. As was the case with the Clean Air Act (CAA),[2] important policy and design features should appropriately be determined by Congress, rather than by EPA, the Department of Energy (DOE) or other agencies. Leaving too much discretion to an administrative agency, with little direction, criteria or guidance, could have far-reaching, adverse consequences.

[2] Any appropriate climate cap-and-trade regime should be enacted in a freestanding piece of legislation and not as part of the CAA. In fact, since GHGs such as carbon dioxide (CO_2) are not pollutants, the legislation should not be modeled on the CAA. If, in lieu of a freestanding vehicle, the Committee prefers to amend an existing statute, the Energy Policy Acts (EPAct) of 1992 and 2005 and other legislation may be better models for GHG regulation. See also our response to question 3 below regarding the CAA title IV acid rain program.

c. Should the program's requirements be imposed upstream, downstream, or some combination thereof?

There was considerable attention paid to this topic during the National Commission on Energy Policy-CERA workshops in the fall of 2005. For example, a chart supplied on this topic lists two downstream approaches, with the remaining four approaches being some variation of upstream/downstream or hybrid approaches.[3]

Two examples are offered below that encompass a range of point-of-regulation approaches. Our industry does not endorse either of these particular examples.

- **Example A – Upstream (or near upstream) regulation for all fossil-fuel energy production.** Some experts believe that placing the point of regulation upstream (or somewhat midstream such as at refineries) would have a much better chance of efficiently capturing all sources of CO_2 emissions in the economy. Under an upstream system, fossil-fuel producers and importers would be required to surrender allowances for the CO_2 emissions associated with the fuels that they sell. Downstream fuel users (utilities, industries, households) would see fuel price increases. If GHG regulation were truly to be economy-wide, downstream regulation under a cap would be very difficult to implement, requiring the regulation of every vehicle on the road[4] and fossil-fuel use in every home (*e.g.*,

[3] See www.energycommission.org, Previous Events, Design Issues in Market-based Greenhouse Gas Reduction Strategies, Workshop 2, R. Nordhaus, "Downstream Regulation Design Options" 3.

[4] While it may be difficult to regulate GHGs from the transportation sector in a downstream permitting system, this sector should be covered under any GHG regulatory system.

space and water heating, cooking, etc.). An upstream system would be more cost-effective than a downstream system largely because of the increased administrative burdens associated with downstream control. "Upstream and Downstream Approaches to Carbon Dioxide Regulation," Electric Power Research Institute (EPRI) climate brief (Jan. 2005), available at: www.epriweb.com/public/000000000001007762.pdf.

However, there would be challenges with an upstream system, such as the burden on fossil-fuel producers and the challenge in capturing fossil-fuel imports and crediting exports (if the system were not linked with other, international cap-and-trade systems), as well as in ensuring that there are provisions for crediting those fossil fuels whose combustion products were captured and stored.

- **Example B – Downstream regulation of fossil fuels with a limited number of users (*e.g.*, coal), and a hybrid system for all other fossil fuels that ensures economy-wide coverage under the cap**. The latter could mean upstream regulation of some sectors and downstream regulation of other sectors, all within the context of a cap-and-trade system. The electric utility industry has implemented and established an administrative process under the CAA title IV acid rain program that could help to provide a basis for developing a much more comprehensive GHG program (although, as we note on p. 6 n. 2, *supra*, the CAA need not be the model for a GHG regulatory regime).

> Globally, most GHG policies and proposals to date have either 1) focused a downstream cap on emissions sources within a group of sectors (*e.g.*, electric generators and large industry) or 2) embraced hybrid regimes with some downstream focus under an emissions cap and a mix of efficiency and technology standards outside of the cap to cover emitting activities not amenable to regulation at the source under the cap. For example, the European Union (E.U.) emissions trading system (ETS) covers less than 50 percent of economy-wide emissions, but the E.U. will supplement the ETS in Phase II with taxes, efficiency standards, technology standards and incentives in unregulated sectors. EPRI climate brief, *supra.* At a minimum, if a hybrid approach is followed, it should still be imposed upstream of all energy end-users, and no end-user's source of energy should be exempted.

It is important to understand that the decision about the point of regulation would be independent from the decision about allocations of allowances. EPRI climate brief, *supra.* Any allocations that would be justifiable for a downstream system could be just as justifiable under an upstream system.

Moreover, no matter which point-of-regulation approach is chosen, a system should include non-CO_2 GHGs in order to be truly comprehensive. Most of these are produced as byproducts of industrial processes. Not only should the appropriate point of regulation

be established for these gases, but also appropriate "exchange rates" between these gases and CO_2 (*i.*e., CO_2 equivalents) should be established.

Furthermore, regardless of which point-of-regulation approach is adopted, the regulatory system should ensure that allowances or permits are fully tradable across sectors. Fungible credits and liquidity in the marketplace are key elements of any successful emissions trading system.

As with other key issues, this issue is difficult to address in isolation, and views could change depending on how other issues, such as allocations versus. auctions and so-called "set-asides" or "carve-outs," were treated.

d. How should allowances be allocated? By whom? What percentage of the allowances, if any, should be auctioned? Should non-emitting sources, such as nuclear plants, be given allowances?

EEI generally supports allocations over auctions. A near 100-percent allocation – with a small percent reserved for annual auctions – would be recommended. We also recommend that Congress should allocate allowances, not an administrative agency such as EPA or DOE. Under the CAA Amendments of 1990, more than 97 percent of the sulfur dioxide (SO_2) allowances are allocated and less than 3 percent are auctioned, with the revenues from the auction flowing back to the affected entities.[5]

[5] Contrast this with the Regional Greenhouse Gas Initiative (RGGI), where New York and as many as three other states proposed to go down the path of a 100-percent auction.

Further, **we disagree with the argument that has been advanced by some that "windfall profits" for electric utilities would result from allocations.** Companies in regulated power markets are required to return the value of any allocations to the ratepayer in full, so even a 100-percent allocation to such companies would not create any profits at all, much less "windfall" profits. Regulatory lag in cost recovery is an additional issue. For a further critique of economic models suggesting "windfalls," see A. Smith, M. Ross & D. Montgomery, "Implications of Trading Implementation Design for Equity-Efficiency Trade-offs in Carbon Permit Allocations" 1 (Dec. 2002).

Within an allocation scheme, issues relating to new sources/new units or updating would need to be addressed. **Regarding "set-asides" or "carve-outs," priority could be given to affected industries that incur significant costs to operate within the mandated emissions limits.**

The program should also contain 1) provisions to credit companies for actions taken that lead to improvements in GHG intensity or reductions in GHG emissions prior to the beginning of the program, 2) baseline protection or 3) both credit for early action and baseline protection.[6] However, it is important to note that while there may be multiple attractive set-asides, increases in the number of set-asides in a cap-and-trade system – and

[6] These credits should include reductions, avoidances and sequestrations reported under DOE's EPAct 1992 section 1605(b) program as well as other credible programs. See also our response to question 2.h below.

in the percentages of such carve-outs – would increase the costs of compliance. Moreover, any set-asides should be consistent with the goals of the legislation and the EEI Global Climate Change Principles that we set forth in our response to question 1 above.

It is important to understand that the decision about allocation of allowances would be independent from the decision about the point of regulation.

e. How should the cap be set (e.g., tons of greenhouse gases emitted, CO_2[7] intensity)?

Generally speaking, EEI would favor a carbon or GHG intensity-based cap over one based on absolute emissions reductions. A GHG-intensity approach is more consistent with the fact that economic growth and technological development are needed. A gradual approach, focusing on intensity, would allow time for development and deployment of zero- and lower-emitting technologies, and could also yield significant GHG emissions reductions.

Regarding possible metrics for comparing efforts across nations, the use of the GHG-intensity metric would seem to be the most appropriate for comparing most advanced economies. As graphics 1 and 2 in the Appendix demonstrate, the U.S. has improved its GHG intensity significantly compared to almost all of its key developed country competitors. Only the U.K. edges the U.S. in reducing carbon intensity from

[7] We assume that this reference could also be to GHG intensity.

1993 to 2002, and that was largely because of the U.K.'s "dash to gas" (*i.e.*, its electric utility industry switching primarily from coal to natural gas generation). The intensity metric would also allow for the continued growth of emissions, albeit at a slowing rate, which recognizes the expected significant growth in energy demand. The use of an intensity approach is also alluded to in the seminal work by Wigley, Richels and Edmonds,[8] where they note that "pathways involving modest reductions below a BAU [business as usual] scenario in the early years followed by sharper reductions later on were found to be less expensive than those involving substantial reductions in the short term."

Whatever the nature of the cap, three other factors are critical:

- **The stringency of the cap.**
- **The baseline year (or years) chosen, and the type of baseline chosen.**
- **The nature of the metric.**

We address each of these factors in turn.

First, t**he most critical element in any cap-and-trade proposal would be the stringency of the targets and timetables**. "As always, the main determinant of cost is the stringency of the measure." A. Smith, J. Platt and A. Ellerman, "The Cost of Reducing SO_2 (It's Higher Than You Think)," Public Utilities Fortnightly 29 (May 15, 1998). Other design features would be overshadowed by this overriding mandate.

[8] T. Wigley, R. Richels & J. Edmonds, "Economic and environmental choices in the stabilization of atmospheric CO2 concentrations," Nature 242, Vol. 379 (Jan. 18, 1996).

Second, the baseline year or years, and the nature of the baseline, could be critical. In addition, the nature of the baseline could make a difference. As Dr. Richard Richels of EPRI and other noted commentators have pointed out, "where flexibility" and "when flexibility" are important in reducing the costs of compliance with a GHG cap-and-trade regime. EEI favors a **multi-year baseline**, which would help to provide flexibility in compliance by smoothing out the vicissitudes of weather (which affect hydroelectric generation and peak demand), spikes or downturns in fossil-fuel prices, constraints on fossil-fuel supplies, nuclear plant refueling cycles, and the like.

Third, the nature of the metric would be critical. For electric utilities, **any metric** (whether based on absolute emissions reductions or reductions in GHG intensity) **must recognize off-system and non-generation actions offsetting and affecting GHGs from generation.** This would include landfill and coal-bed methane capture projects, forestry projects, sulfur hexafluoride (SF_6) capture projects and reuse of coal combustion products. The crucial role of offsets in reducing compliance costs is also discussed in the response to question 2.j below.

f. Where should the cap be set for different years?

We interpret this question as another example of how "when flexibility" can help to reduce the costs of compliance. **Multiple phases for compliance** (or multiple compliance periods), **with banking**, help to provide additional needed inter-temporal

flexibility. This is proving to be helpful in lowering the costs of compliance in the CAA title IV acid rain program.

Compliance deadlines should be consistent with, and harmonized with, the availability of new and advanced technologies. In the power sector, new nuclear plants may come on-line around 2015-2020. With respect to CO_2 capture and storage (CCS), commercial-scale facilities fully integrated with both gasification technologies and advanced combustion technologies may be available around 2020-2025, although widespread deployment will likely require additional time. And for nuclear plants, CCS and all new generation, there are important regulatory issues that must be addressed. **Technology deployment realities should be paramount in the design of any mandatory climate regime.** Otherwise, it would be impossible to slow, stop and reverse GHG emissions trends without causing premature turnover of capital stock and stranded investment, and, in the electric utility industry, triggering massive fuel switching from coal to natural gas; such fuel switching would divert investment from the development and deployment of advanced technologies that could deliver far greater reductions in the long term while allowing for cost-effective, sustained economic growth.

Congress should periodically examine the state of technology, and if it determines that technology development and deployment are lagging and the emissions reductions path is unrealistic, it should adjust national policy appropriately.

See also our responses to questions 2.*l* and 4 below.

g. Which greenhouse gases should be covered?

All six GHGs with global warming potentials established by the Intergovernmental Panel on Climate Change should be covered, namely, CO_2, methane, nitrous oxide, SF_6, perfluorocarbons and hydrofluorocarbons. Appropriate exchange rates between CO_2 and the other gases (or CO_2 equivalents) should be established in order to facilitate inter-gas emissions trading. As Dr. Richels and other experts have observed, there is significant scope for GHG reductions among the non-CO_2 GHGs. *See* D. van Vuuren, J. Weyant & F. de la Chesnaye, "Multi-gas scenarios to stabilize radiative forcing," Energy Economics 102, Vol. 28 (2006).

h. Should early reductions be credited? If so, what criteria should be used to determine what is an early reduction?

Yes, early reductions or actions should be credited. The reason for our industry's interest in these issues is quite simple: Under the section 1605(b) guidelines established by DOE pursuant to EPAct 1992, we have been the primary reporter of GHG reductions, avoidances and sequestrations in the Energy Information Administration's (EIA) data base since 1994. In both 2004 and 2005, the power sector accounted for 63 percent of all tons reduced, avoided or sequestered in the EIA data base. In fact, but for the power sector's voluntary GHG actions, GHGs in our sector would have been 10.3 percent higher from 1994 to 2005, and the nation's GHGs would have been 3.5 percent higher. If these early actions are not credited or recognized, companies would in effect be penalized

for having reduced their baseline emissions levels prior to the effective date of legislation. Instead, having expended considerable manpower, money and resources on these actions, our industry should be rewarded, not penalized, for "first mover" or "early mover" activities.

As for the criteria to be used to determine early reductions, the answer is obvious: DOE's 1605(b) voluntary reporting guidelines established in 1994. Those guidelines have been revised, but the new guidelines do not become effective until later this year. There is no other national reporting system that has been in effect over the same period of time. And 1994 is a good year to begin counting early reductions from, as it represents the starting point for both the prior Administration's plan to encourage voluntary climate actions and implementation of Congress's most substantive foray into climate actions (title XVI of EPAct 1992, as amended by title XVI of EPAct 2005).

i. Should the program employ a safety valve? If so, at what level?

EEI's Global Climate Change Principles (see response to question 1 above) specifically single out the need for a safety valve in mandatory climate legislation**. A safety valve is critical, at a reasonably low level.** It would send a price signal, but provide some protection against harm to the economy and U.S. international competitiveness.

If the Committee were to consider cap-and-trade legislation with an auction – contrary to the position stated above in response to question 2.d – a safety valve would be critical in

limiting the significant additional costs imposed by the auction. A safety valve is also a more significant cost control mechanism than other mechanisms (such as borrowing) proposed in one of the Senate bills.

The use of revenues from a safety valve is addressed in our response to question 2.k below. The value of a safety valve vis-à-vis international climate regulatory programs is addressed in our response to question 4 below.

Along with the robust use of a wide range of domestic and international GHG offsets, a safety valve is critical to reducing the costs of compliance with a mandatory climate regime.

j. Should offsets be allowed? If so, what types of offsets? What criteria should govern the types of offsets that would be allowed?

EEI's Global Climate Change Principles (see our response to question 1 above) **specifically call "for the robust use of a broad range of domestic and international GHG offsets."**

Offsets that are not part of allowances or permits provided under the cap (in other words, an allowance for activities or projects that are "off budget"[9]) would be an important

[9] While we do not endorse the Kyoto Protocol, we note that its clean development mechanism (CDM) allows for offsets outside of the cap. Implementation of the CDM has been fraught with problems – problems that should be studiously avoided in an

design element. Offsets are critically important to 1) minimize the costs of complying with mandatory GHG regulatory schemes and 2) provide incentives for GHG reductions from other, non-covered sectors. From an economic standpoint, many actions that can be taken to address GHGs are located outside of utility systems. As the McKinsey Report, discussed *supra*, indicates, many GHG emissions reductions are available from other sectors of the economy at a lower cost than from the power sector. From the perspective of the global nature of GHGs, it also makes sense for utilities and other entities subject to GHG regulation to have the option to undertake activities or projects anywhere in the world. P. Bernstein, W. Montgomery & S. Tuladhar, "Potential for Reducing Carbon Emissions from Non-Annex B Countries through Changes in Technology" (Sept. 2005). For example, it may be much more cost effective from a global perspective for a utility to take actions to reduce GHGs and GHG emissions intensity in China or India under the Asia-Pacific Partnership for Clean Development and Climate (APP) than to take those same actions in its service territory. International offsets have also been undertaken under the U.N. Framework Convention on Climate Change (FCCC) and the U.S. Initiative on Joint Implementation.

Moreover, it makes sense for utilities and other entities to undertake offsets projects to address the non-CO_2 GHGs, where actions may be particularly cost-effective. *See* van Vuuren *et al.*, *supra*.

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appropriate offsets program under a cap-and-trade regime. Nonetheless, any U.S. cap-and-trade regime should not bar entities from using CDM credits.

In short, geographic or "where" flexibility is crucial for those who need to reduce GHGs or GHG intensity. **Under an economy-wide program, it would be important to allow offsets to be taken without limitation.** Artificial constraints or quotas on offsets are economically unsound, raise costs unnecessarily and, as pointed out above, make no sense from a global climate standpoint. We would oppose the kinds of quantitative, project-type and geographic restrictions that permeate many of the bills currently before Congress, that are prevalent in the RGGI Model Rule[10] and that are also present to some degree in the Massachusetts CO_2 regulations. We also note that while the Kyoto Protocol does contain a provision allowing for offsets, the CDM, which helps to lower the costs of compliance, restrictions on the types and quantities of eligible projects have thus far stunted its potential effectiveness. See also our response to question 3 below.

Along with a safety valve, the robust use of domestic and international offsets is critical to reducing the costs of compliance of a mandatory climate regime.

[10] For example, the RGGI Model Rule limits the availability of offsets by listing only six types of projects eligible for crediting; requiring those project types to meet an extensive array of standards; limiting the geographic scope of the projects by providing only half-credit for projects undertaken in a non-participating state; and limiting the overall use of offsets to only 3.3 percent of the covered entity's CO_2 budget for the applicable control period.

k. If an auction or a safety valve is used, what should be done with the revenue from those features?

(i) From an auction

Revenues from an auction should flow back to the affected entities. See our response to question 2.d. If the percentage of allowances subject to an auction were to increase over time – contrary to the position stated above in response to question 2.d – revenues should be used as set forth in subpart (ii) below.

(ii) From a safety valve

First and foremost, **revenues from a safety valve should be segregated into an off-budget trust fund, not subject to annual appropriations**.

The fund should then be used for two purposes: **1) basic research and development (R&D) for "break-through" technologies to reduce, avoid or sequester GHGs; and 2) climate technology research, development and demonstration (R, D & D) that helps to meet the goals of the legislation.**

Regarding fund purpose number 1, many experts – among them Dr. David Montgomery, Dr. Anne Smith and Lee Lane of CRA International – have argued that the long-term solution to reducing GHGs lies in technology research, development, demonstration and deployment (R, D, D & D) on a global basis. Given rapidly increasing population growth, urbanization and energy demand in most parts of the world, reliance on development, demonstration and deployment of **existing** technologies and practices (both

supply side and demand side) is insufficient to slow, stop and reverse the trend of GHG emissions growth. Instead, what is needed is a fresh, concerted approach, which ultimately will result in the R, D, D & D of **new** technologies and practices that will respond to the challenge of reducing GHGs. This could mean nuclear fusion, fuel cells, hydrogen vehicles and exotic technologies not yet developed or even conceived of.

Some experts have suggested that the model for implementing such an ambitious program be the Defense Advanced Research Projects Agency (DARPA), which during the Cold War was the idea incubator for advanced missile defense, weapons and satellite systems, among other things. Several Senators and Representatives in the last Congress and this Congress have introduced bills that would establish an "ARPA-E," or energy ARPA, which would (among other things) address climate technology R, D & D. These ideas have merit, although an ARPA-E need not be housed within DOE, but rather could be established in a freestanding entity.

With respect to fund purpose number 2, we are in favor of funds dedicated to climate technology R, D & D that would help the power sector cost effectively reduce, avoid and sequester GHGs on both the supply side and the demand side. The power sector already has a collaborative R, D & D organization – EPRI – that is well suited for managing and directing funds for climate technology R, D & D. See also our response to question 2.*l* below.

l. Are there special features that should be added to encourage technological development?

As discussed in our responses to questions 2.f and 2.k above, technology is the key to mitigating GHGs and adapting to the impacts of climate change. **There is no "silver bullet" or "magic bullet" technology to scrub CO_2 from power plant emissions, making the achievement of short-term mandatory reduction targets problematic.** There is only one zero-emitting baseload option currently available, which is nuclear power. Encouraging the development of new nuclear power plants has begun with provisions of EPAct 2005, and should be continued in any climate policy. However, new nuclear plants are not expected until 2015-2020. The other principal baseload option available, coal-fired plants, has a readily available domestic fuel source and must remain a key component of the nation's generating mix for many years to come. Yet it is the most carbon intensive, and while improvements are being made in increasing generation efficiency, the technology to capture, transport and store the CO_2 emissions and turn those plants into zero- or lower-emitting generators will not be available until 2020-2025, with widespread deployment likely requiring additional time.

According to EPRI, the power sector will need all of the following technology advancements in order to reduce GHG emissions significantly over the coming decades:

1. **Smart grids and communications infrastructure to enable end-use energy efficiency and demand response, distributed generation and PHEVs.**
2. **A grid infrastructure with the capacity and reliability to operate with 20-30 percent intermittent renewables in specific regions.**

3. **Significant expansion of nuclear energy enabled by continued safe and economic operation of existing nuclear fleet, and a viable strategy for managing spent fuel.**

4. **New commercial-scale coal-based generation units operating with 90 percent CCS in a variety of geologies.**

The government and private funding shortfall for the R, D & D of these and other climate technologies has been estimated by EPRI to be as much as $2 billion annually.

Strategies should be adopted to encourage 1) development and cost-effective deployment of zero- and lesser-emitting generation technologies, especially renewables, taking into account economic turnover of capital stock, and 2) in the short term, cost-effective energy-efficiency and DSM measures and offsets that reduce GHGs and emissions intensity. Finally, there should be serious international and national discussions of the best ways to provide incentives and funding for technology R, D, D & D, with the ultimate goal being a less carbon-intensive economy.

Also critical is the availability of viable and cost-effective technologies to respond to any mandatory program. Many CAA programs – notably the ones addressing SO_2 and nitrogen oxides (NO_x) – have only been mandated after a thorough review of the viable technologies and their cost-effectiveness in responding to the mandate. A program aimed at reducing CO_2 must account for the lack of availability of smokestack and tailpipe control technologies for directly reducing CO_2, by allowing time for such technologies to be developed and cost effectively deployed and by allowing for flexible, cost-effective

compliance options, such as the robust use of offsets, a safety valve, etc. Moreover, mandatory carbon regulation or setting a carbon price would not necessarily lead to technology development. W. Montgomery & A. Smith, "Price, Quantity, and Technology Strategies for Climate Change Policy," Human-Induced Climate Change: An Interdisciplinary Assessment (Oct. 11, 2005; published by Cambridge Univ. Press 2006).

Before addressing special features that should be added to encourage technology development, **we urge this Committee to do everything within its power to fully implement EPAct 2005.** There are many excellent provisions in that legislation that have yet to be implemented (some partially, some fully), including the loan guarantee program under title XVII, programs assisting Regional Carbon Sequestration Partnerships, and energy-efficiency programs. We understand that this may be a "package" that may need to be worked on in conjunction with energy legislation and tax legislation, and with other committees such as Science and Technology, and Ways and Means.

Special features that could encourage technology development include the following:

1. **A segregated or dedicated, off-budget trust fund, not subject to annual appropriations.** See our response to question 2.k above.

2. **Tax credits** – such as production tax credits, investment tax credits (ITC) or emissions reductions credits – and other financial incentives (for nonprofit entities). A couple of examples: For CCS, this could mean tax credits, indemnification of storage and eminent domain legislation for pipelines. For energy efficiency and DSM, this could mean an incremental ITC.

3. **Technology transfer and transfer of best practices** to developing countries, through such mechanisms as providing full funding and support for the APP and the Clean Energy Technology Exports Initiative (CETEI).[11] See also our response to question 2.m below.

4. **Reasonable timelines for compliance keyed to the availability of advanced technologies.** Unreasonable deadlines for compliance that are inconsistent with commercially feasible technology would only cause the power sector to engage in massive fuel switching from coal to natural gas. See also our responses to questions 2.f above and 4 below.

m. *Are there design features that would encourage high-emitting developing countries to agree to limits on their greenhouse gas emissions?*

It is difficult to see how **domestic** legislation can encourage GHG **limits** for developing countries. A binding international regime may be the only enforceable way to limit GHG emissions by developing countries. See our response under question 4 below. Other ideas to be considered could include the periodic review or "reopener" provisions proposed in some legislation in the last and current Congresses, which need strengthening in order to be fully functional "triggers" or international "off-ramps."

Under any scenario, efforts must continue and increase to encourage GHG emissions **reductions** by developing countries. Technology transfer to developing countries can achieve large near-term emissions reductions by closing the gap in emissions intensity between developing and advanced economies. Foreign direct investment is the most effective vehicle for technology transfer, so it is critical to focus engagement on facilitating technology transfer by improving the investment climate in developing

[11] Sen. Byrd has a particular interest in the CETEI.

countries. This would involve using such mechanisms as the APP and CETEI to develop jointly beneficial proposals to: 1) remove obstacles to investment, such as subsidized pricing of energy and lack of protection of intellectual property, and 2) create incentives for U.S. companies to use their best technology and increase their level of investment in developing countries. These points are discussed in more detail in the paper, "Impact of Economic Liberalization on GHG Emission Trends in India," by W. Montgomery and S. Tuladhar (Climate Policy Center, May 2005). See also EPAct 2005, section 1611 *amending* Global Environmental Protection Assistance Act of 1989, sections 732(c), 736(a)(2).

One possible way to encourage GHG reductions by developing countries is through the APP, which involves key developed and developing country GHG emitters. The APP seeks to reduce emissions through improved efficiencies and market-based opportunities. The power sector is firmly committed to supporting this initiative, and has engaged and is engaging in a number of programs in response. Ultimately, the best way to ensure actions by all nations is to develop the zero- and less-emitting climate technologies needed to produce the energy that the world demands, and let the markets disseminate those technologies. As with the developing country evaluation process, EPAct 2005 contains a number of provisions addressing the development of these technologies, and these provisions also should be fully funded and implemented. In fact, EPAct 2005 outlines the type of strategy and funding levels that will need to be pursued

under any U.S. program to ensure the development of zero and less GHG-emitting energy technologies.

See also our responses to questions 2.*l* above and 4 below.

n. Other key issues

(i) Adaptation

Any serious piece of climate legislation should consider development of a plan or approach on how the U.S. will adapt to the effects of global climate change, as well as consider actions on how the country should mitigate GHG emissions. Recognition of the vital role of adaptation comes from sources as diverse as the Pew Center on Global Climate Change[12] and, most recently, the report by the U.N. Foundation and Sigma Xi Scientific Research Society titled "Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable" (Feb. 2007). The U.N. Foundation report speaks of integrating adaptation and mitigation to achieve multiple benefits, highlighting two ideas (among others): "Implementing carbon capture and storage from fossil-fueled power plants, which reduce impacts on climate while making available concentrated CO_2 that can be used in enhanced natural gas and oil recovery and in agricultural applications" and "Combining the sustainable use of biomass for energy

[12] See W. Easterling, B. Hurd & J. Smith, "Coping with Global Climate Change: The Role of Adaptation in the United States," Pew Center on Global Climate Change (June 2004).

. . .which can power development and remove CO_2 already emitted to the atmosphere" (p. 7). The report recommends the development of "strategies to adapt to ongoing and future changes in climate" (*id*. at 9).

(ii) Constitutional and federalism issues

In considering any mandatory climate legislation, the Committee should consider any number of important constitutional and federalism issues, many of which affect federal-state relations. Among the constitutional issues are the Supremacy Clause, the Commerce Clause, the Compacts Clause and those arising under Executive Branch powers to enter into treaties and conduct foreign policy. *See* Clean Air Markets Group v. Pataki, 194 F.Supp.2d 147 (N.D.N.Y. 2002), *aff'd*, 338 F.2d 82 (2d Cir. 2003); see also Y. Gross, "Kyoto, Congress, or Bust: The Constitutional Invalidity of State CO_2 Cap-and-Trade Programs," Thomas Jefferson Law Review, Vol. 28, No. 205 (2005), available at: http://ssrn.com/abstract=883687.

EEI and our member companies are particularly concerned about a patchwork or piecemeal approach to GHG regulation in regions or the states. Among EEI's Global Climate Change Principles (see our response to question 1) is that EEI supports federal action or legislation to reduce GHGs that "Provides certainty and a consistent national policy." Such certainty and consistency would not be served by overlapping federal, regional and state regulation of GHGs.

3. *How well do you believe the existing authorities permitting or compelling voluntary or mandatory actions are functioning? What lessons do you think can be learned from existing voluntary or mandatory programs?*

There is compelling evidence that voluntary efforts undertaken in the U.S. to reduce GHGs and GHG intensity have proven to be as effective as mandatory actions undertaken in the E.U. since 2000. In fact, as graphics 1-3 in the Appendix demonstrate, the U.S. compares favorably to the E.U. with regard to both absolute emissions and carbon intensity since 1993.

One reason for the U.S. success story is the fact that voluntary programs in the electric utility industry are functioning well. Based on an analysis of EIA's section 1605(b) data under EPAct 1992, approximately 445 million metric tons of CO_2-equivalent ($MMTCO_2e$) reductions, avoidances and sequestrations were reported, which represented a 6.3-percent improvement in reductions compared to 2003. The electric power sector reported the most reductions of any sector in 2004 at more than 282 $MMTCO_2e$, accounting for 63 percent of all reported reductions that year. That figure represents a 7.7-percent increase over reported reductions in 2003. In fact, the power sector has been responsible for more than two-thirds (69 percent) of all reductions, avoidances and sequestrations reported under the 1605(b) program since it began in 1994.

It is also worth noting that the number of entities reporting, and the industrial sectors they represent, has continued to grow every year since the program's inception. In fact, total power sector CO_2-equivalent emissions reductions from 1994-2005 were 3.5 percent of

total U.S. emissions and 10.3 percent of total U.S. power sector emissions. In other words, without these actions U.S. GHG emissions would have been even higher, yet the power sector voluntarily reduced its GHGs by more than 10 percent even though it lacked any mandate to do so.

We strongly encourage the Committee to review the Power Partners[SM] Annual Report (www.eei.org/power-partners-annual), as it discusses in greater detail the successes of voluntary efforts undertaken by the power sector since 2002. See also our response to question 5 below. Many voluntary federal programs that address GHG emissions – such as the DOE-led Climate VISION or EPA-led Climate Leaders programs – have continued to add new members year after year, and the reductions achieved under them have also continued to grow, further demonstrating their success. Even the privately run Chicago Climate Exchange, a voluntary GHG emissions trading market, has experienced annual growth in both members and volume of credits traded, all in a voluntary context.

One lesson to be learned from the success of these voluntary efforts is that they should be recognized and rewarded if a mandatory system were to be implemented. The use of credit for early actions or baseline protection (or both) is important in order to provide incentives and reward early actors. Thus, any mandatory program should contain 1) provisions to credit companies for actions taken that lead to improvements in GHG intensity or reductions in GHG emissions prior to the beginning of the program,

2) baseline protection or 3) both credit for early action and baseline protection. The awarding of credits should be based on reports to EIA pursuant to DOE's section 1605(b) program under EPAct 1992.

There are a number of lessons that the Committee can draw from two mandatory CO_2 reduction programs, the Kyoto Protocol and the E.U. ETS. Regarding the Protocol, it is becoming increasingly evident that its reduction targets are far too stringent. In fact, only two countries of the E.U.-15, Sweden and the U.K., are on track to meet those targets. Even with tighter allocations under Phase II, the E.U. ETS will not be able to deliver the level of reductions that the E.U.-15 under its burden-sharing plan needs to collectively meet. However, since there is no real enforceable compliance mechanism, it is unlikely nations will suffer a penalty for not meeting their Protocol targets. Thus, one lesson to be learned is that setting too stringent a cap may call into question the legitimacy of the proposed regime. In fact, it is causing many nations to question the wisdom of continuing to pursue a Kyoto-style approach to GHG emissions reductions.

On the positive side, without the use of market-based mechanisms – emissions trading, the CDM and joint implementation – **the costs of compliance with the Protocol would be even higher**. Further, the CDM, even with all of its problems and limitations (described below), has at least spurred the undertaking of climate-related projects in developing countries, particularly China and India.

There are several important lessons that can be taken from the CDM experience. One is the importance of including offsets as a compliance mechanism. Another is not to limit either the types of projects that can qualify for credits (including clean coal and CCS, large-scale hydro and nuclear generation, and all types of forest management practices, such as avoided deforestation) **or their geographic scope**. **A third lesson would be to set objective criteria for what types of projects would qualify and not leave those decisions in the hands of the CDM executive board.**

Since the types of projects eligible under the CDM are restricted, the Parties to the Protocol have criticized the CDM for its limited success in actually certifying projects and issuing reduction credits. **Thus, a U.S. system should have its own broader provisions for international offsets, rather than just a link to the CDM.**

There are several important lessons that can be learned from the E.U. ETS as it has been implemented to date. One of the foremost lessons is the need for an economy-wide approach to conducting emissions trading. By limiting the sectors covered by its program to less than half of GHG-emitting sources, the E.U. has limited the effectiveness of the ETS by allowing key emitting sectors to go unregulated. The E.U. ETS to date has focused primarily on the power sector, with only limited involvement of other sectors.

Another crucial lesson is the stringency of the cap governing the system. Under Phase I, the E.U. essentially allowed countries to allocate permits on the basis of business as usual emissions, leading to an oversupply and thus a collapse of the price. However, the E.U.-15's Protocol target of 8 percent below 1990 levels (which the ETS is designed to help meet) is far too stringent. If Phase II allocations were reduced to Protocol compliance levels, electricity prices would skyrocket in Europe. Instead, it appears that Phase II allocation levels will be more stringent than under Phase I but less than required under the Protocol.

The overall effect of all of this has been to increase electricity prices in Europe, affecting the competitiveness of European industries. And while there has been a demonstrated correlation between E.U. ETS permit prices and the price of natural gas, permit prices have not lead to increased use of gas. In fact, because of the high price of natural gas, Europe has seen the return of coal plants.

A GHG emissions trading system would be far more costly, complex and difficult to administer than the CAA title IV acid rain program. While there are certainly valuable lessons to be learned from the SO_2 cap-and-trade program, that program would pale in comparison to an international or national GHG cap-and-trade regime encompassing all GHGs, all sources and sinks, and all sectors of the economy.[13] As Dr.

[13] We note that the costs of compliance and investments in pollution control technologies under the Clean Air Interstate Rule and Clean Air Mercury Rule are projected to be $47.5

Smith wrote in her study for EEI, "The Challenges Ahead for Emissions Trading Programs: Nitrogen Oxides and Greenhouse Gases" vii-ix (March 1999) (emphasis in original):

> It is apparent that trading of utility SO_2 emissions poses consistently lesser challenges to achieving an efficient program design and to the ability of the market to generate significant cost reductions compared to [NO_x and GHG emissions trading programs].
>
> * * * *
>
> **Emissions Trading for Meeting Greenhouse Gas Targets.** . . .
>
> - Any domestic program undertaken without careful consideration of potential leakage may be very costly and ineffective simultaneously. In particular, this means that targets must be binding on a global basis.
>
> - Any attempts to make a GHG program more politically palatable by protecting households, consumer, and small businesses from increased prices for fossil fuels and energy-intensive goods and services will dramatically undermine the ability of an emissions market to come close to the least-cost outcome.
>
> * * * *
>
> **In conclusion, it would be a mistake to expect the SO_2 experience to be easily repeated by NO_x, or especially for GHG[s] . . . .**In the case of GHGs, there is still some potential to avoid egregious limitations in a domestic emission trading program, but the political challenges are large.

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billion between 2007 and 2025, and would be additional to the costs incurred in meeting a mandatory CO_2 reduction target. EPA Office of Air and Radiation (Oct. 2005).

4. *How should potential mandatory domestic requirements be integrated with future obligations the United States may assume under the 1992 United Nations Framework Convention on Climate Change? In particular, how should any U.S. domestic regime be timed relative to any international obligations? Should adoption of mandatory domestic requirements be conditioned upon assumption of specific responsibilities by developing nations?*

In responding to this question, it is important to emphasize the following points:

- Above all, a safety valve should be instituted, even at the cost of linkage with other international systems, since it would minimize economic damage and yield the far more important benefit of cost certainty.

- The robust and unlimited use of offsets is also extremely important.

- Regarding how a domestic regime should be timed relative to any international obligations, it is important to ensure that the regulatory regimes do not overlap, conflict with each other or lead to the premature retirement of capital stock, massive fuel switching to natural gas or other perverse outcomes.

- Reductions of GHG emissions in developing countries will be critical to the success of the global effort to reduce GHGs and to ensure that American business and industry are not placed at a competitive disadvantage internationally.

In discussing how potential mandatory domestic requirements should be integrated with future obligations the U.S. may assume under the FCCC, it is important not to divorce the discussion from the use of a safety valve feature. **A safety valve should be instituted, even at the cost of linkage with other systems or integration into future efforts under the FCCC or Kyoto Protocol, since it would minimize economic damage and yield the far more important benefit of cost certainty.** Any mandatory program established in the U.S. should have both features: a safety valve and linkage with other systems. Linking with other trading systems alone, without a safety valve, could not offer cost certainty and might not offer relief from rising compliance costs of a domestic regime.

The discussion below on inter-linkages is overlaid with the assumption that a safety valve feature is instituted.

As noted above, any mandatory system established in the U.S. should allow for the possibility of linkage with other GHG trading systems. While such linkages might not take effect immediately, the design of trading regimes in other countries after 2012 in the case of the Protocol cannot be foreseen and may offer additional practical opportunities to interlink.

Finally, if there were a global trading system that incorporated emissions reductions from China and India, it is possible that the U.S. would be a Party to that agreement and that such an agreement should be no more stringent than any domestic program in order not to affect U.S. trade and industrial competitiveness.

Perhaps even more important than including a linkage option is allowing the robust and unlimited use of offsets. The benefits of including low-cost emissions reduction opportunities in key developing countries, such as China and India, are well documented and were raised in the Senate Energy and Natural Resources Committee climate change White Paper released last year. The White Paper said that including such low-cost reductions would yield a system with "significantly lower costs than a system that excludes these low cost reductions" (p. 13). However, these benefits are more easily captured through provisions allowing for offsets for a wide range of project activities in

such countries. If a cap-and-trade system were adopted domestically, these offsets should be additional to the initial allocation pool. This would have the effect of expanding the pool of offsets activities available below the safety valve price, which in turn would likely spur the actual undertaking of projects instead of the purchase of reductions allowances. While Parties to the Protocol subject to emissions reductions obligations can meet those obligations in part through offsets projects in countries such as China and India through the CDM, this provision has its own limitations, which are discussed in response to question 3. Linkage of similarly structured trading programs would be expected to yield economic benefits by increasing the size of the allowance pool and the number of participants.

Regarding how a domestic regime should be timed relative to any international obligations, it is important to ensure that the regulatory regimes do not overlap, conflict with each other or lead to the premature retirement of capital stock, massive fuel switching to natural gas or other perverse outcomes. As with the safety valve, it may or may not be desirable to harmonize or link with other international systems or obligations, depending on a number of issues, such as: the stringency of targets and timetables, the nature of the targets (absolute or intensity-based) and a safety valve; countries, sources, sinks and GHGs covered; allowance distributions, treatment of new entrants and opt-in provisions; offsets; monitoring and verification; and compliance issues (banking, penalties and enforcement).

For example, the linking of a domestic regime to a more stringent international regime would lead to adverse impacts for some participants, and could make the achievement of targets more difficult by changing emissions levels. As Erik Haites and Fiona Mullins noted in their study for EPRI, the International Energy Agency and the International Emissions Trading Association, "Linking Domestic and Industry Greenhouse Gas Emission Trading Systems" (Oct. 8, 2001) at pp. viii, vii-viii:

> When two emissions trading programs are linked, the market price will be higher than the pre-link price in one of the programs and lower than the pre-link price in the other program. This means that buyers in the high price program and sellers in the low price program benefit from the link. Conversely, sellers in the high price program and buyers in the low price program suffer financially as a result of the link. Thus, even though linking trading programs should yield a net economic benefit, some participants may be worse off. In addition, linking programs may highlight differences in treatment of similar firms and create pressure to alleviate the resulting competitive distortions.
>
> Linking domestic emissions trading programs can also change national emissions levels; one country is likely to be a net importer of allowances/credits while the other is a net exporter. This means that actual emissions are below the aggregate emissions cap/baseline in the net exporter country and that the participants in that program earn revenue from the sale of allowances/credits. Conversely, national emissions will be higher than the desired trajectory in the net importer country, which may make achievement of its national emissions limitation commitment for 2008-2012 more difficult. However, the imported allowances/credits reduce compliance costs and may help protect the competitiveness of domestic industry.
>
> Differences in the design of linked programs have the potential to result in higher total emissions, to limit the economic benefits of the larger market, or to raise equity issues. These issues can be addressed, but depending upon the differences between the programs the resolution could be complex and time consuming.
>
> * * * *

> Most of these issues [that could complicate links between two or more programs], such as concerns over the effectiveness of compliance enforcement, involve protection of the environmental objective – the combined emissions target of the programs being linked.

There would be ways of overcoming these obstacles. Mutual recognition agreements could be negotiated between regimes to ensure that allowances from both programs are mutually acceptable, which might also include establishment of a standard method for approval of reduction credits or allowances. The two systems could also rely on commercial mechanisms to link them together.

> In general, the greater the similarity of the programs -- stringency of targets, distribution of allowances/credits, banking provisions, registry structure, etc. -- being linked, the fewer the issues that need to be addressed and the simpler it becomes to negotiate an agreement. This suggests that an agreement to link emissions trading programs is likely to lead to changes to the designs of the programs to increase their similarity. Where design features are not harmonised and have economic value, they will give rise to arbitrage trading.

Haites & Mullins, *supra*, at p. ix.

These points are borne out when examining if and how a U.S. system would link with the E.U. ETS. Linkage with the E.U. ETS might not be a practical option, given that it is based on absolute reductions tied to the Protocol and a U.S. system could be intensity-based and not tied to the Protocol's targets or 1990 baseline. It is also unlikely that the E.U. would allow inter-linkage with such a U.S. system due to the latter's less stringent nature, as exemplified by the E.U. decision not to allow inter-linkage with RGGI since the latter's targets are not as stringent as the ETS targets.

As noted earlier, a key feature of any U.S. system should be a safety valve. This feature, which would act as a price cap for emissions allowances, would also hinder linkage with an ETS-type system since the net effect of the safety valve, if triggered, would create an unknown quantity of allowances at the safety valve price that would be far less expensive than the capped allowances available under the ETS system.

Reductions of GHG emissions in developing countries will be critical to the success of the global effort to reduce GHGs and to ensure that American business and industry are not placed at a competitive disadvantage internationally. Without action by our nation's key competitors – both developed and developing – U.S. mandatory reduction efforts would adversely affect U.S. trade and industrial competitiveness while doing little to address overall GHG emissions. As has been widely acknowledged, one of the most fundamental flaws of the Protocol is that it includes no reductions commitments by key developing countries. Given that CO_2 emissions from China alone are projected to surpass those of the U.S. by 2009 (see graphic 4 in Appendix), it is critical that key developing nations also take binding actions to reduce their emissions in order to ensure an effective global response. Thus, similarity of action should be a key component of any domestic program, not merely the encouragement of major trading partners and large emitters of GHGs to take actions that are comparable to those of the U.S.

In addition, any mandatory domestic reduction program should include a process to evaluate efforts of other nations. Foremost, it would be important to ensure a comparability of actions among developed countries. For example, under the Protocol, the U.S. would face a total reduction of 30-35 percent from its projected emissions in 2008-2012 to meet its 7 percent below 1990 level target. On the other hand, the E.U. only faces a 4-5 percent reduction effort from its projected emissions in 2008-2012 to meet its combined 8 percent below 1990 levels target due to the reunification of Germany (which brought a significant amount of reductions into the E.U. due to the collapse of the East Germany economy), and the U.K. "dash to gas" (in which the U.K. replaced its coal-burning power plants with natural gas-fired ones). Thus, there was a disparity of commitments under the Protocol, a mistake that should not be repeated. Even with these two special advantages, the E.U. is unlikely to meet its Protocol target (see graphic 3 in Appendix), and the U.K. now finds itself running coal plants again due to the high cost of natural gas and dwindling North Sea gas supplies.

The nature of noncompliance penalties is another key issue that would need to be addressed in assessing the comparability of actions. It is unclear what consequences will be suffered, if any, by nations that fail to meet their Protocol targets. As noted in our response to question 3, the compliance regime governing the Protocol is nonbinding, and it is doubtful that any future international regime would contain penalties for noncompliance with the Protocol targets. It is also unclear what the consequences will be for noncompliance under the ETS post-2012. By contrast, noncompliance under a

domestic program would likely result in financial penalties and other adverse consequences for U.S. entities that do not meet their targets, although their competitors in the E.U. could potentially face no such consequences for failure to meet their targets under the Protocol or future regimes.

As to when such an evaluation should occur, any domestic program should include a review mechanism for no later than 2012-2013 to ensure that U.S. actions are not undertaken in isolation. There are no post-2012 targets in the Protocol, leaving the developed nations (with the possible exception of the E.U.) currently with no emissions reductions targets beyond 2012. Future reviews should allow for adjustment of the target – whether up or down – thereby ensuring the comparability of actions. See also our response to question 2.m above regarding possible **"triggers"** or **international "off-ramps."**

The Committee may also want to consider the use of a **sunset provision** on any mandatory domestic reduction targets and require congressional review of actions by other key emitting nations before the sunset date in order to properly evaluate whether the regulatory regime merits extension. This would help either ensure a comparability of actions or minimize the potential exposure of U.S. firms from competitiveness impacts if they were subject to a regulatory regime more stringent than their competitors'.

EPAct 2005 contains, in title XVI, a process for evaluating developing country actions that should be fully funded and implemented.

Regarding possible metrics for comparing efforts across nations, the use of the GHG-intensity metric would seem to be the most appropriate for comparing advanced economies. As graphics 1 and 2 in the Appendix demonstrate, the U.S. has improved its GHG intensity significantly compared to almost all of its key developed country competitors. A key flaw of the Protocol is its focus on absolute reductions, which are not economically achievable in the short term given the current global energy infrastructure. Absolute reductions could be possible in the long term *if* the development of clean coal and other advanced energy technologies, the construction of new nuclear plants and further expansion of renewables are fully realized.

The GHG- or carbon-intensity metric also would appear to be much more suitable than absolute emissions reductions to developing countries, who will undoubtedly experience a period of significant growth in population, urbanization and energy demand and whose priority concerns are sustainable development as well as a cleaner environment and reduced GHG intensity and emissions.

Ultimately, to ensure actions by all nations, we must bring about the development of the zero- and less-emitting climate technologies needed to produce the energy that the world demands, and then let the markets disseminate those technologies. EPAct 2005 contains

a number of provisions addressing the development of these technologies, and these provisions also should be fully funded and implemented. In fact, EPAct 2005 outlines the type of strategy and funding levels that will need to be pursued under any U.S. program to ensure the development of zero- and less-emitting energy technologies.

Another way to bring about GHG reductions by developing countries is through the APP, which involves six key developed and developing countries whose CO_2 emissions comprise half of the world's total. The APP seeks to reduce emissions through improved efficiencies and market-based opportunities. The power sector is firmly committed to supporting this initiative, and is engaged in a number of programs in response.

5. *What, if any, steps have your organization's members or its individual members taken to reduce their greenhouse gas emissions? Which of these have been voluntary in nature? If any actions have been taken in response to mandatory requirements, please explain which authority (State, Federal, or international) compelled them?*

The U.S. electric power industry leads all other sectors in taking voluntary actions to address GHG emissions. In fact, the power sector has long recognized the importance of addressing this issue and has been taking steps to reduce its GHG emissions since the mid-1990s. For example, under the **Climate Challenge**, the partnership created in 1994 between the power sector and DOE, reductions from projects undertaken by electric utilities comprised 70 percent of all GHG reductions reported to the federal government in the year 2000. In fact, over the lifetime of the Climate Challenge program, EEI members were responsible for more than two-thirds of all the reported reductions (including avoided and sequestered emissions) of GHG emissions

under the DOE 1605(b) voluntary GHG reporting system. The Climate Challenge program involved undertaking a diverse portfolio of voluntary individual company actions, which were the largest source of reductions and which included:

- Improvements to nuclear and fossil-fuel plants.
- Energy-efficiency and DSM projects.
- Methane recovery, forestry and fly ash reuse projects.
- Renewable energy initiatives such as the Utility Wind Interest Group and the Utility Photo Voltaic Group.

The Climate Challenge program also included five sector-wide initiatives:

- **UtiliTree Carbon Company**: Under this reforestation program, 10 projects were undertaken — a diverse mix of rural tree planting, forest preservation, forest management, and research efforts — that together will sequester about 3 million tons of CO_2 emissions over their 40- to 100-year lifetimes.
- **EnviroTech Investment Funds**: This effort consisted of two electric utility industry venture capital funds (EnviroTech Fund and Utech Climate Challenge Fund) that invested in companies focused on the commercialization of emerging electric and renewable energy technologies that were more energy efficient than those in the marketplace. The funds had a total capitalization of $52 million and were fully vested.
- **International Utility Efficiency Partnerships**: This initiative, which promoted energy efficiency in developing countries, funded a total of 23 projects in 15 countries that will result in total CO_2 "offsets" reductions of more than 80 million metric tons over project lifetimes.
- **EV America**: This program worked to accelerate the introduction of electric vehicles (EVs) in the marketplace and to help local governments address public policy needs that arise with EV introductions. Widespread EV use could yield significant environmental benefits, *i.e.*, a 3-percent EV market share could reduce almost 10 million tons of CO_2-equivalent GHGs per year.
- **National Earth Comfort Program (NECP)**: NECP sought to increase the use of geothermal heating and cooling technology, and attracted interest by more than

250 utilities and 700 other entities, including manufacturing, energy service companies, engineers and universities.

Although GHGs are not pollutants and are not federally regulated, in 2002 the federal government created a national goal of reducing the nation's GHG intensity – that is, the ratio of carbon emissions to economic activity – 18 percent by 2012.

Power Partners[SM] is the latest voluntary partnership between the electric power industry and DOE to reduce GHG emissions. In fact, Power Partners[SM] is a sector initiative within the broader Climate VISION program housed at DOE. This program was created in response to the national goal of substantially reducing GHG emissions intensity in the economy over 10 years. In February 2003, the federal government and industry organizations representing thousands of companies from 12 energy-intensive economic sectors joined the voluntary Climate VISION partnership.

In December 2004, DOE and Power Partners[SM] signed a Memorandum of Understanding (MOU) establishing a voluntary framework for reducing the GHG emissions intensity of the power generation sector. Power Partners[SM] climate actions are guided by the principles of improved energy efficiency, increased investments in research and development, technological innovation, market-based initiatives and cost-effective CO_2 emissions reductions. Power Partners[SM] have pledged to reduce collectively the power sector's GHG emissions intensity by an equivalent of 3-5 percent (measured as GHG emissions per unit of electricity produced in our sector) below 2000-2002 baseline levels,

as measured over the 2010-2012 period. The Department of Agriculture and the National Rural Electric Cooperative Association also signed an MOU to identify and advance technologies that will help achieve the national GHG emissions-intensity goal.

The Power Partners[SM] annual report (www.eei.org/power-partners-annual, Fig. E.S. 1, p. 1 and Fig. 3, p. 5) indicates that the power sector is currently on track to meet its GHG intensity-reduction target, with adjusted GHG intensity approaching a 3-percent reduction compared to the baseline level after only three years into the 10-year program.

While individual company actions are the cornerstone of Power Partners[SM] voluntary programs, the electric power industry also is participating in the following industry-wide initiatives to reduce, avoid, and sequester GHG emissions:

- **PowerTree Carbon Company**: This initiative, formally announced in 2004, is a new reforestation effort in the lower Mississippi River Valley. Twenty-five power generators have committed more than $3 million for six tree-planting projects that will restore habitats and will remove and store more than 1.5 million tons of CO_2 over their 100-year lifetimes.

- **Coal Combustion Products Partnership (C2P2)**: This initiative is designed to increase the use of coal combustion products (CCP) in lieu of limited natural resources to avoid the generation of 20 million tons of CO_2 annually by 2011, and to increase the CCP utilization rate from 32 percent to 50 percent by 2011. To date, 43 utilities have become C2P2 partners, and 19 have pledged additional funding to help meet these goals.

- **International Power Partnerships**: This program works to identify GHG-reduction opportunities overseas. In 2006, 10 projects that will reduce, avoid, or sequester more than 35 million metric tons of CO_2 over project lifetimes have been selected for funding.

- **Resource Guide**: The Resource Guide is a Web-based tool designed to help companies identify supply- and demand-side options to reduce, avoid and sequester GHGs in the power sector.

- **Pilot-Scale Test Centers for Engineering, Economic and Environmental Evaluation of CO_2 Capture and Containment**: This effort is being undertaken in conjunction with the Electric Power Research Institute (EPRI). EPRI and Alstom plan to build and operate a CO_2 capture pilot plant, treating approximately 5 megaWatt (MW)-equivalent flue gas and focused on a variation of solvent scrubbing using chilled ammonia.

- **CoalFleet for Tomorrow**: This initiative is being undertaken in conjunction with EPRI to accelerate deployment of advanced coal generation technology. This program is designed to facilitate the development and commercial deployment of a portfolio of advanced, near-zero emissions, CO_2 capture-capable coal technologies suited for all types of power generators around the world, using a variety of North American and international merchant coals.

In addition, many of the Power Partners[SM] organizations are working on additional climate projects with EPRI, including specific programs focused on CCS research and climate technology development.

In January of this year, Power Partners[SM] released its first annual report examining the progress of our efforts to date and identifying the areas where additional actions may be needed, just two years after signing the MOU with DOE. The report, which is graphic 4 in the Appendix, highlights the many ways that the electric power sector is reducing its GHG emissions intensity, including:

- Industry-wide activities.

- Individual company actions.

- Public power initiatives.

- Government partnerships.

- Energy-efficiency efforts.
- Cross-sector projects.
- Technology research and development.

As noted above, Power Partners[SM] was formed as a means of power sector involvement in the federal **Climate VISION** program housed at DOE. Since 2002, 15 industry sectors —representing 90 percent of U.S. industrial GHG emissions — have joined the program. Under Climate VISION, each participating sector must develop a voluntary, GHG intensity-reduction goal to help the nation meet the voluntary, 18-percent GHG intensity-reduction goal set by President Bush. To implement these voluntary goals, each sector also must develop a work plan specifying the types of actions that will be taken.

In addition to Climate VISION, 92 companies are participating in EPA's **Climate Leaders** program, including 10 electric utilities. Many of these companies have announced voluntary GHG reductions goals or are in the process of developing such goals (*e.g.*, achieve net zero U.S. GHG emissions by 2008, reduce U.S. GHG emissions by 18 percent per kiloWatt-hour from 2001 to 2008, reduce global GHG emissions by 20 percent per dollar of revenue from 2002 to 2010, etc.). Some companies already have exceeded their voluntary goals and are developing new goals.

Another significant voluntary effort is the **APP initiative**, the international counterpart to domestic voluntary programs. The APP involves governments working with the private

sector to expand investment and trade in cleaner energy technologies to address the challenges of reducing poverty and promoting economic development while reducing GHG emissions. Together, the partner countries — Australia, China, India, Japan, Korea and the U.S. — emit half of the world's CO_2 emissions. They have agreed to work together to meet goals for climate change, energy security and air emissions in ways that promote sustainable economic growth and poverty reduction.

The APP has established eight task forces covering: 1) cleaner use of fossil energy; 2) renewable energy and distributed generation; 3) power generation and transmission; 4) steel; 5) aluminum; 6) cement; 7) coal mining; and 8) buildings and appliances. U.S. industry representatives are participating in each of these task forces, which have developed action plans outlining how the task forces will meet their goals. For example, improving the generation efficiency of the coal-fueled power plants in APP member nations by just 1 percent would yield significant reductions in GHGs.

Other voluntary efforts in which electric utilities are involved include:

- **Chicago Climate Exchange**: Thirty-five companies and more than 100 other entities are participating in the Chicago Climate Exchange (CCX), a voluntary GHG trading market. In order to participate, companies must announce a reduction target and then meet the target through reductions in their emissions, the purchase of offsets credits or both. By the end of Phase I (December 2006), all CCX members had reduced direct emissions 4 percent below a baseline period of 1998-2001. Phase II, which extends the CCX reduction program through 2010, requires all members to reduce GHG emissions an additional 2 percent, to meet the target of 6 percent below their baseline.

- **FutureGen**: Under FutureGen, industry and DOE plan to build and operate a 275-(MW coal plant that produces both electricity and hydrogen with essentially

zero emissions. The FutureGen Industrial Alliance involves American Electric Power, Southern Co., PPL Corp., CONSOL Energy, Kennecott Energy, Peabody Energy, BHP Billiton, Foundation Coal, China Huaneng Group and U.K. Anglo American.

- **Carbon Sequestration Leadership Forum (CSLF)**: Established in June 2003, the CSLF is an international climate change initiative focused on the development of improved cost-effective technologies for the separation and capture of CO_2 for its transport and long-term safe storage. The purposes of the CSLF are to make these technologies broadly available internationally, and to identify and address wider issues relating to CCS. To date, 17 projects have been undertaken.

- **Methane to Markets**: The Methane to Markets partnership was established in November 2004. This is a voluntary framework for cooperation to advance the recovery and use of methane as a valuable and clean energy source. Sixteen countries belong to the partnership, which is chaired by the U.S. The partnership is organized around sources of methane: oil and gas, landfill, agriculture and coal. One of the major goals of the partnership is to develop and transfer methods and technologies for methane capture. The coal mine group has completed an action work plan and has begun conducting workshops in member countries that will identify key barriers to wider capture and use of coal mine methane.

The power sector has also been subject to many state and federal laws and mandates affecting GHGs. One of the most significant is the required reporting of CO_2 emissions under section 821 of Public Law No. 101-549 enacting the CAA Amendments of 1990. Other state and federal laws and mandates that affect power sector GHG emissions include: new source review rules preventing significant modifications of power plants that would not only increase efficiency but in some cases reduce GHGs; state and regional laws regulating GHGs – such as RGGI, state CO_2 mandates (California, Oregon, Washington, Massachusetts and New Hampshire), and the Western Regional Climate Action Initiative; and state renewable portfolio standards (now in 22 states and Washington, D.C.). There are also integrated resource plans and DSM and energy-

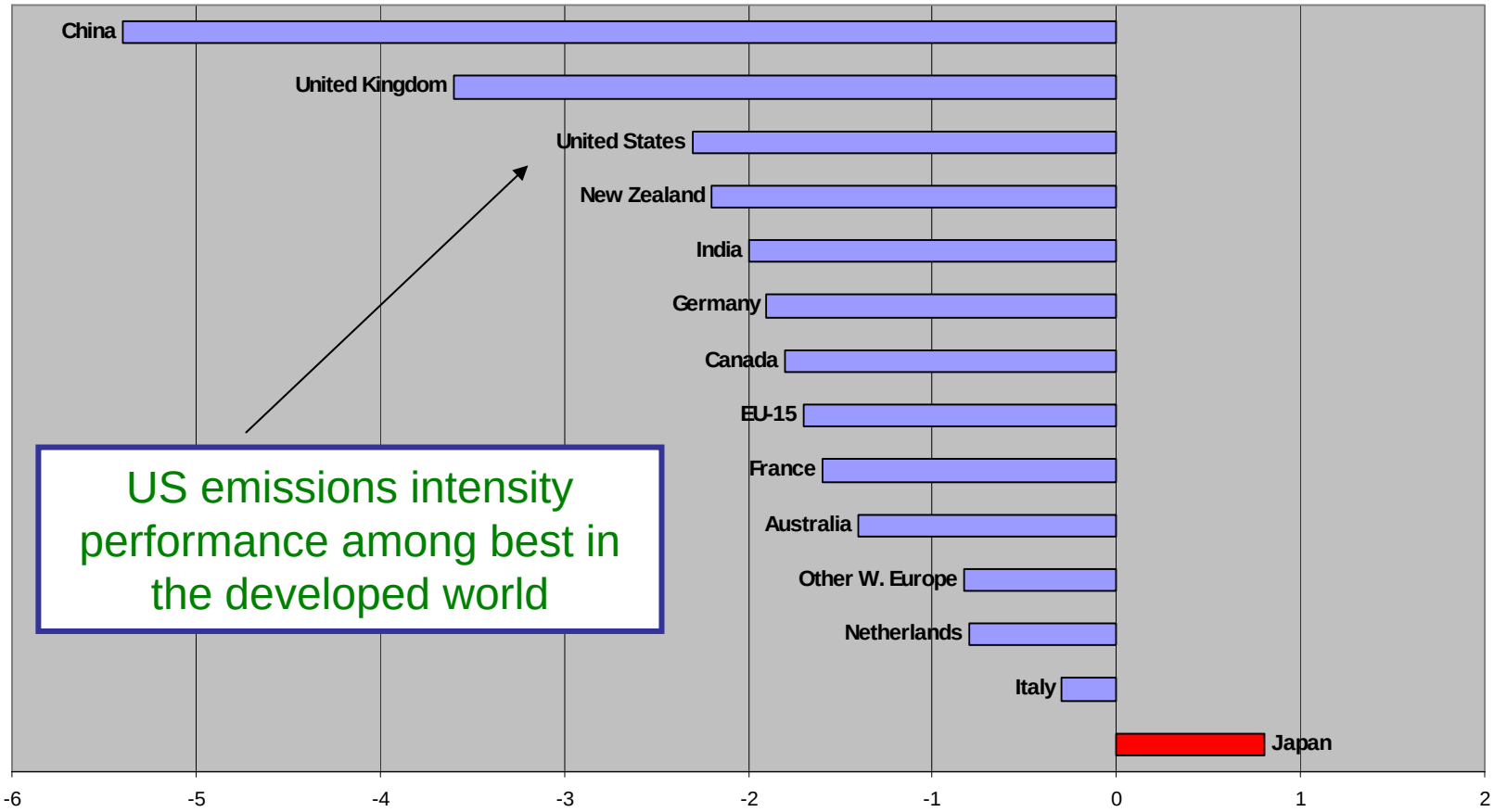
efficiency regulations mandated by state commissions, as well as carbon adders in some states. Utilities, as customers or businesses, are also subject to CAFÉ standards, appliance efficiency standards and building codes.

See also our response to question 3.

Attachment

Graphic 1 - Trends in CO_2 Intensity 1993 - 2002

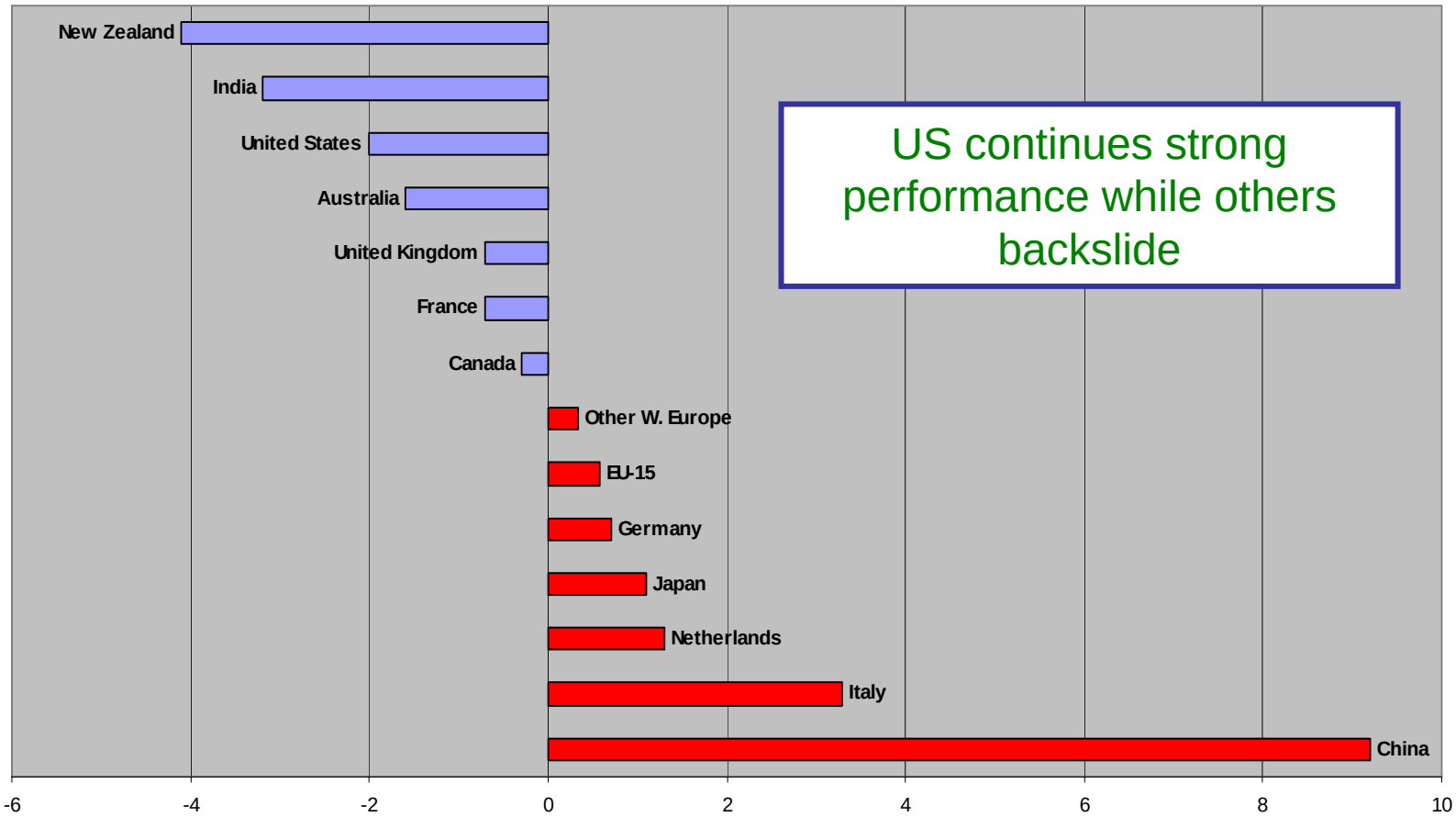
Carbon Intensity (CO2/GDP) 1993-2002 Compound Annual Percent Change Source EIA IEA 2004 Table H.1gco2



Other W. Europe – Austria, Belgium, Denmark, Finland, Greece, Ireland, Luxembourg, Portugal, Spain, Sweden

Graphic 2 - Trends in CO_2 Intensity 2002 - 2004

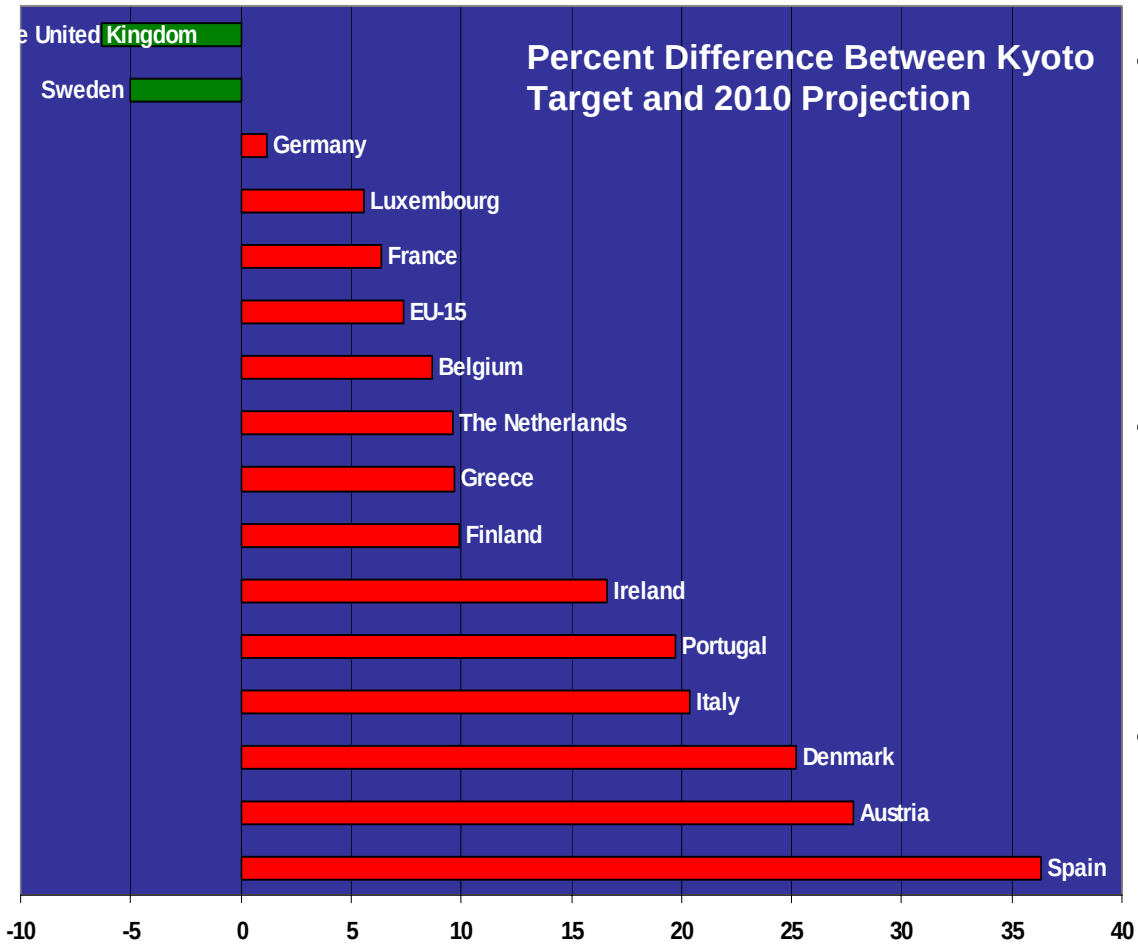
Carbon Intensity (CO2/GDP) 2002-2004 Compound Annual Percent Change Source EIA IEA 2004, Table H.1gco2



Other W. Europe – Austria, Belgium, Denmark, Finland, Greece, Ireland, Luxembourg, Portugal, Spain, Sweden

China began a major economic expansion in 2001 that continues today and, unlike the US, they experienced significant fuel supply allocation/distribution problems that resulted in power shortages and brownouts. The government is attempting to rectify these problems.

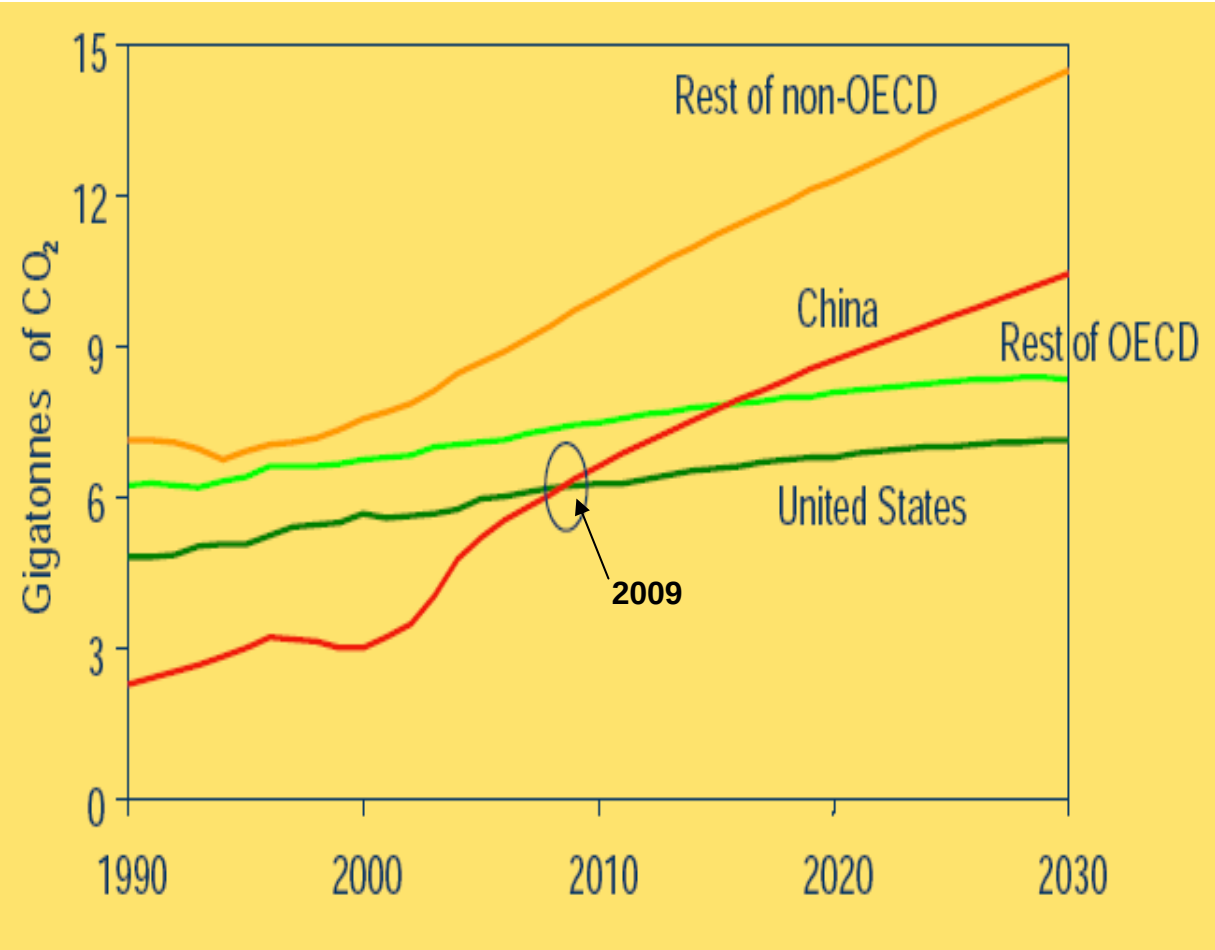
Graphic 3 - EU to Miss Kyoto Targets Despite Mandatory Requirements



- The EU assumed Mandatory emission reduction targets under Kyoto
- The EU projects that 13 of their 15 members will miss their Kyoto targets
- Unrealistic targets and timetables do not translate to sound policy

Source: European Environment Commission, Progress Report, October 2006

Graphic 4 - China Takes CO_2 Emissions Lead in 2009



- **China will surpass the US in CO_2 emissions in 2009**
- **The US is engaging China on emissions through the Asia-Pacific Partnership (APP) for this very reason**

Source: IEA WEO 2006

EXECUTIVE SUMMARY—EEI RESPONSE TO DINGELL-BOUCHER LETTER

The Edison Electric Institute (EEI) highlights key principles to be considered in developing any national program (pp. 1-4). It is critical that any federal action or legislation to reduce GHG emissions recognize the importance of:

- A reliable, stable and reasonably-priced electric supply to maintain the competitiveness of the U.S. economy;
- A fuel-diverse generation portfolio to assure system reliability, energy security and price stability;
- Public policies and initiatives to accelerate the development of viable and cost-effective energy-efficiency programs and technologies; zero- or low-emissions generation technologies; and carbon capture and storage technologies;
- International partnerships to address climate change as a global issue that requires global solutions, including appropriate participation by developing nations, such as China and India; and
- Solutions compatible with a market economy that deliver timely and reasonably priced greenhouse gas (GHG) reductions.

Success in reducing GHG emissions—while maintaining the reliable and reasonably priced electricity supply so vital to our economic well-being and national security—will require an aggressive and sustained commitment by the industry and policymakers to the development and cost-effective deployment of a full suite of technology options, including:

- An intensified national commitment to energy efficiency, including advanced efficiency technologies and new regulatory and business models;
- Accelerated development and cost-effective deployment of demand-side management technologies and renewable energy resources;
- Advanced clean coal technologies (e.g., advanced pulverized coal, fluidized bed and IGCC technologies);
- Carbon capture and storage for all types of fossil-based generation;
- Increased nuclear capacity and advanced nuclear designs; and
- Plug-in electric hybrid vehicles.

Although some of these options are currently available—albeit at a higher cost than conventional generation sources—many are not, and all have different time horizons.

While EEI neither endorses nor opposes a mandatory cap-and-trade regulatory regime, we note the following concerning design elements for a cap-and-trade program:

- Any effort to regulate GHGs should be economy-wide. (pp. 4-6)
- It is important to understand that the decision about where the point of regulation is would be independent from the decision about allocations of allowances. (pp. 7-10)
- EEI generally supports the use of allocations over auctions. We also recommend that Congress should allocate allowances, not an administrative agency such as the Environmental Protection Agency or Department of Energy (DOE). (pp. 10-12)
- Generally speaking, EEI would favor a carbon or GHG intensity-based cap over one based on absolute emissions reductions because it is more consistent with the fact that economic growth and technological development are needed. (pp. 12-13)

- Whatever the nature of the cap, three other factors are critical: stringency of the cap; baseline year (or years) chosen, and type of baseline chosen; and nature of the metric. (pp. 13-14). Early reductions or actions should be credited, based on reporting under DOE's Energy Policy Act (EPAct) of 1992 section 1605(b) voluntary reporting guidelines established in 1994. (pp. 16-17)
- Multiple phases for compliance (or multiple compliance periods), with banking, help to provide additional needed inter-temporal flexibility. (pp. 14-15)
- Technology deployment realities should be paramount in designing any mandatory climate regime. (p. 15)
- All six GHGs with global warming potentials should be covered. (p. 16)
- A safety valve, at a reasonably low level, is critical to reducing the costs of compliance, along with robust use of a wide range of domestic and international offsets. (pp. 17-20)
- Revenues from an auction should flow back to the affected entities. (p. 21)
- Safety valve revenues should be segregated into an off-budget trust fund, not subject to annual appropriations, for: 1) basic research and development for "break-through" technologies; and 2) climate technology research, development and demonstration (R, D & D) to help meet legislative goals. The power sector already has a collaborative R, D & D organization – the Electric Power Research Institute (EPRI) – that is well suited for managing and directing such funds. (pp. 21-22)
- Other features that could encourage technology development include: tax credits; transfer of technology and best practices to developing countries; and reasonable timelines for compliance keyed to the availability of advanced technologies. (p. 25-26)
- There is no "silver bullet" technology to scrub CO_2 from power plant emissions, making the achievement of short-term mandatory reduction targets problematic. (p. 23)
- According to EPRI, the power sector will need all of the following technology advancements in order to reduce GHG emissions significantly over the coming decades (pp. 23-24):
  - Smart grids and communications infrastructure to enable end-use energy efficiency and demand response, distributed generation and plug-in hybrid electric vehicles.
  - A grid infrastructure with the capacity and reliability to operate with 20-30 percent intermittent renewables in specific regions.
  - Significant expansion of nuclear energy enabled by continued safe and economic operation of existing nuclear fleet, and a viable strategy for managing spent fuel.
  - New commercial-scale coal-based generation units operating with 90 percent carbon capture and storage in a variety of geologies.
- The availability of viable and cost-effective technologies to respond to any mandatory program is also critical. (pp. 24-26)
- EPAct 2005 should be fully implemented. (pp. 25, 27-28)
- The Asia-Pacific Partnership for Clean Development and Climate, which involves key developed and developing countries, is one model for encouraging GHG reductions by developing countries. (pp. 27-28)
- Climate legislation should address adaptation as well as mitigation. (pp. 28-29)
- There are any number of important constitutional and federalism issues to be considered, many of which affect federal-state relations. (p. 29)

- EEI and our member companies are particularly concerned about a patchwork or piecemeal approach to GHG regulation in regions or the states. (p. 29)

Several lessons can be learned from current mandatory and voluntary programs:

- There is compelling evidence that voluntary efforts undertaken in the U.S. have proven to be as effective as mandatory actions undertaken in the European Union (E.U.) since 2000, due in large part to the fact that voluntary programs in the electric utility industry are functioning well. These efforts are detailed in the January 2007 Power Partners[SM] Annual Report. (pp. 30-31)
- Voluntary efforts should be recognized and rewarded through the use of credit for early action, baseline protection or both if a mandatory system were implemented. (pp. 31-32).
- Lessons drawn from the Kyoto Protocol include adopting too stringent a target can call into question the legitimacy of the reduction regime, and the importance of including offsets as a compliance mechanism. (pp. 32-33)
- The E.U. emissions trading system demonstrates the importance of the stringency of the cap and of using economy-wide approaches for trading. (pp. 33-34)
- A U.S. GHG emissions trading system would be far more costly, complex and difficult to administer than the Clean Air Act title IV acid rain program. (pp. 34-35)

Regarding how to integrate domestic requirements with international obligations, and the role of developing countries in reduction efforts, we emphasize the following points (pp. 36-41):

- A safety valve should be instituted, even at the sacrifice of linkage with other systems, since it would minimize economic damage and yield the far more important benefit of cost certainty.
- The robust and unlimited use of offsets is also extremely important.
- Regarding the timing of a domestic regime relative to any international obligations, it is important to ensure that the regulatory regimes do not overlap, conflict with each other or lead to the premature retirement of capital stock, massive fuel switching to natural gas or other perverse outcomes.
- Emissions reductions in developing countries will be critical to successfully reducing GHGs globally and ensuring that American business and industry are not placed at a competitive disadvantage.

How to compare systems, and the timing and consequences of such a comparison, are also key issues for consideration. (pp. 42-45)

Regarding voluntary and mandatory efforts the power sector has undertaken to reduce GHG emissions, the U.S. electric power industry leads all other sector in taking voluntary actions. As noted above, a detailed summary of these efforts can be found in the January 2007 Power Partners[SM] Annual Report. In short, EEI members have taken a wide range of voluntary actions, starting in 1994, to reduce their GHG emissions. These actions have been reported through the EPAct 1992 1605(b) reporting program. (pp. 45-50) Key programs in which EEI and its members are participating include Climate VISION (p. 50), Climate Leaders (p. 50) and the Asia-Pacific Partnership (pp. 50-51). The latter initiative is an innovative means of engaging key developing countries in emissions reductions activities.