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BY U.S. MAIL AND EMAIL
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RE: Comments on EPA's Draft Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions under the Clean Air Act

Docket ID No. EPA-HQ-OAR-2008-0318

The District of Columbia Department of the Environment ("the District") hereby files these comments in response to the Environmental Protection Agency ("EPA") Advance Notice of Proposed Rulemaking for Regulating Greenhouse Gas Emissions under the Clean Air Act ("ANPR"), 73 *Fed. Reg.* 44354 (July 30, 2008). The District supports regulation of greenhouse gas ("GHG") emissions from mobile sources and existing as well as new or modified stationary sources under the Clean Air Act ("CAA"). EPA stated in the preamble to the ANPR its belief the CAA is "an outdated law" that "is ill-suited for the task of regulating global [GHGs]." 73 *Fed Reg.* at 44355. Appropriate analysis of the CAA, however, shows that the CAA contains measures that allow prompt action to thwart the potentially severe and costly impacts of climate change ranging from higher temperatures and elevated levels of ozone pollution, to increased flooding and widespread disease. Accordingly, EPA must make a determination that GHGs cause or contribute to an endangerment, and having made such determination, must then regulate GHGs from mobile and stationary sources. The CAA contains many flexible and useful tools that allow EPA to regulate GHG emissions by: establishing a nation-wide cap-and-trade program; establishing standards to reduce GHG emissions from vehicles and fuels (through mobile source authorities); establishing industrial equipment upgrades and process changes to

improve energy efficiency (*i.e.* New Source Performance Standards and permitting); and reducing power plant emissions by increasing efficiency and promoting cleaner technologies (*i.e.* New Source Performance Standards and permitting). Accordingly, the Executive Branch can and should begin acting immediately, and need not await legislative or regulatory changes that may yield more far reaching reductions in GHGs. Indeed, the CAA, as interpreted by the U.S. Supreme Court in *Massachusetts v. EPA*, 127 S. Ct. 1438 (2007), clearly requires EPA to regulate GHG from these sources and failure to regulate GHG emissions from these sources would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

Climate change is the single greatest environmental challenge facing the world today. Although climate change is a global problem, effective action at the national level is needed to achieve the necessary reductions in CO_2 emissions. Scientists overwhelmingly agree that GHG emissions must be reduced to well below 1990 levels within a few decades if we are to stabilize the climate. Therefore, according to the experts, action to reduce GHG emissions is needed immediately. As the chairman of the United Nations Intergovernmental Panel on Climate Change recently declared: "If there's no action before 2012, that's too late. What we do in the next two to three years will determine our future."

Many States and the District have taken action to reduce GHG emissions on a local level. Along with other mayors from around the country, District of Columbia Mayor Adrian Fenty endorsed the U.S. Mayor's Climate Protection Agreement and pledged to meet the Kyoto Protocol targets for reducing GHGs. Mayor Fenty considers global warming a serious environmental issue and has furthered the District's commitment to GHG emission reductions by challenging, and in some instances mandating, residents, businesses, property owners and developers to reduce their GHG emissions and help build a sustainable nation's capital. Some examples of the District's activities to curb GHG emissions include:

- Updating the District's Renewable Energy Portfolio Standards in 2008, which requires that, by 2020, twenty percent (20%) of the District's energy must to come from renewable sources in order to achieve long term decreased emissions in the District. D.C. Code § 34-1432.

- Implementing the District's Green Building Act which will reduce energy and water consumption, and increase the use of alternative power sources.

- Implementing the District's Clean Cars Act which adopts the California emission standards, including GHG reductions.

- Strictly enforcing the District's anti-idling regulations.

- Amending the District's Solid Waste Management and Multi-Material Recycling Act to reduce GHGs and energy consumption through reusing and recycling as much as possible.

- Revising and updating the District's Greenhouse Gas Inventory.

- Investigating reductions, via the Mayor's Green Team, of greenhouse gas emissions that result from government operations. The Green Team includes a specific Climate Change working group and is implementing greater recycling, environmentally preferable purchasing and energy conservation throughout the government.

In addition to the activities mentioned above, the District has launched a multi-organizational climate action planning process to develop community-level solutions to the global GHG emissions problem.

In 2008, the Metropolitan Washington Council of Governments proposed Resolution R-31-07, which created a Climate Change Steering Committee and regional climate change initiative. *See* Climate Change Steering Committee for the Metropolitan Washington Council of Governments Board of Directors, National Capital Region Climate Change Report at 1 (July 9, 2008 Review Draft) (hereinafter "NCR Climate Change Report"). The Climate Change Steering Committee recently published a final report reflecting its work, "the NRC Climate Change Report," that represents an accumulation of information and research concerning the specific impacts that climate change has had and will continue to have on the Washington region, as well as recommending actions to reduce local GHG emissions. The Metropolitan Washington Council of Governments has set goals of reducing GHG emissions 10% below 2005 levels by 2012, 20% below 2005 levels by 2020, and 80% below 2005 levels by 2050. *See* NCR Climate Change Report at 7-8.

In addition, a growing number of other cities and states have various types of GHG inventories and reporting programs, climate action plans, GHG emission targets, climate change advisory boards, public benefit funds for clean energy supply, and renewable energy portfolio standards. *See* EPA, Clean Energy: State Best Practices, http://www.epa.gov/cleanenergy/energy-programs/state-and-local/state-best-practices.html; and EPA, Climate Change: State and Regional Climate Actions Tables, http://epa.gov/climatechange/wycd/stateandlocalgov/state_actionslist.html. Further, some states are participating in regional cap-and-trade programs to reduce GHG emissions.

Although these voluntary initiatives are a good first step, they are not enough to sufficiently curb the effects of global warming before they become overly costly and severe. GHG emissions must be actively regulated and reduced on a nation-wide basis. The impacts of GHG emissions are not localized, as they are with other types of air pollutants. Therefore, they need to be regulated on a larger scale.

I. Greenhouse Gas is an Air Pollutant that Endangers Public Health and Welfare in the District of Columbia, in the United States, and Throughout the World.

EPA must formally issue a positive endangerment determination as soon as possible in order to move forward with the process of issuing regulations to reduce GHG emissions from mobile and stationary sources. EPA has already been granted clear guidance by the Supreme Court to implement motor vehicle emissions regulations under CAA Section 202(a)(1). *See Massachusetts v. EPA*, 127 S.Ct. 1438, 1459-60 (2007) (holding that the CAA unambiguously includes carbon dioxide as an "air pollutant"). Section 202 requires the Administrator to regulate

emissions of any "air pollutant" from motor vehicles where in the Administrator's judgment such emissions "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." CAA § 202(a)(1). The Court further found that the term "air pollutant" is broadly defined under the Act, *Massachusetts*, 127 S.Ct. at 1460,[1] and is properly interpreted to include GHGs.

EPA must find that GHGs in the atmosphere are an air pollutant that is "reasonably anticipated to endanger public health or welfare." CAA § 202(a)(1). Indeed, "[t]he harms associated with climate change are serious and well recognized." *Massachusetts*, 127 S.Ct. at 1455. The information contained in EPA's *Technical Support Document for Endangerment Analysis for Greenhouse Gas Emissions under the Clean Air Act (Sixth Order Draft)* (June 21, 2008) (hereinafter "Endangerment TSD") alone clearly requires a finding that GHGs are reasonably anticipated to endanger public health and welfare. EPA's Endangerment TSD documents the widespread and severe adverse effects that GHGs in the atmosphere have already caused and are projected to continue causing damage in the future. Apparently, EPA completed its internal process of drafting a positive endangerment determination in 2007. Letter from Chairman Henry A. Waxman to Stephen L. Johnson, Administrator, U.S. EPA (Mar. 12, 2008). However, no formal endangerment finding has yet been issued.

The District believes that EPA has unreasonably delayed in issuing regulations under CAA Section 202, as directed by the Supreme Court in *Massachusetts v. EPA*, 127 S.Ct. 1438 (2007), resulting in continued excessive accumulation of greenhouse gases ("GHGs") in the atmosphere and closing the window of time for the most effective mitigation of the dangers of global climate change. This delay is inappropriate given the significant human health, welfare, and environmental resources that are at stake.

A. All Six Major Greenhouse Gases Should Be Regulated as One "Air Pollutant" under the Clean Air Act.

The District recommends that EPA find that the six identified GHGs – Carbon Dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) – are all types of a single pollutant – GHGs – for purposes of regulation under the CAA. These six gases (which are referred to collectively as "GHGs" herein) should be regulated as a single air pollutant. These six pollutants all contribute to the harms discussed in EPA's Endangerment TSD and highlighted below.

Although CO_2 dominates GHG emissions in the United States, some of the other GHGs, such as methane, have a much higher radiative forcing value and thus are much more effective at trapping heat than CO_2. *See* Endangerment TSD at 99-100. So, even though GHGs other than CO_2 are emitted in small quantities in the United States, their substantial radiative forcing ability causes these gases to still significantly contribute to the overall GHG emissions. *Id*. Emissions

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[1] Under the CAA, "air pollutant" includes "[a]ny air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters ambient air." CAA § 302(g). Under the CAA, language referring to "effects on welfare" includes "effects on . . .weather . . . and climate." CAA § 302(h).

of each GHG should be weighted so that any cap or emissions standard, for example, weighs emissions of gases with higher radiative forcing values more than those with lower radiative forcing values. A holistic approach to GHG regulation is necessary to produce the substantial reductions that are needed.

B. Greenhouse Gases in the Atmosphere are Reasonably Anticipated to Endanger Public Health and Welfare.

Increasing GHG concentrations in the atmosphere causes radiative forcing, which results in temperature increases and other climate change effects. Endangerment TSD at 19. "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." Endangerment TSD at 21 (quoting IPCC Fourth Assessment Report). EPA recognizes increased global mean surface temperatures, including in the United States over the last 100 years. Endangerment TSD at 23-26.

Temperature in the Washington region increased at a much faster rate in the last fifty years compared to the last hundred years. It is clear that the rate of annual temperature increase of 0.027°F in the last fifty years (1955-2005) is three times larger than the annual rate of increase of 0.009°F during the period 1893-2005. According to the IPCC, average temperature in the Washington region is projected to increase in future years. Five of the last 10 years have ranked as the top 10 warmest in the United States, since record keeping began in the late 19th century. NCR Climate Change Report at 23.

"The scientific record shows there is compelling and robust evidence that observed climate change can be attributed to the heating effect caused by global anthropogenic GHG emissions," ANPR, 73 *Fed. Reg.* at 44427, and the Endangerment TSD "points toward the robust conclusions that expected rates of climate change (driven by past, present and plausible future GHG emissions) pose a number of serious risks to the U.S." ANPR, 73 *Fed. Reg.* at 44428; *see also Massachusetts*, 127 S.Ct. at 1457 ("EPA does not dispute the existence of a causal connection between man-made greenhouse gas emissions and global warming.") (Emphasis added). Studies to detect causes of climate change show clear evidence of human influences on the climate system, including temperature, ocean warming, continental-average temperatures, temperature extremes, and wind patterns, Endangerment TSD at 37. EPA has also acknowledged that global warming models "have consistently provided a robust and unambiguous picture of significant climate warming in response to increasing greenhouse gases." Endangerment TSD at 49. Climate change models project continued warming of the atmosphere through the end of the century, Endangerment TSD at 50, including rising temperatures in the United States, *id*. at 53-54.

Warming of the air, land, and oceans caused by anthropogenic GHG emissions has a broad array of severe secondary effects on human health and welfare. Warmer temperatures, including more frequent and extreme heat waves, have and will continue to have a significant adverse impact on human health in the U.S., including: increased deaths, injuries, infectious disease, stress-related disorders, and other adverse effects from extreme weather; increased illness and death, particularly among the young, elderly, and frail, from heatwaves; and expanded ranges of vector-borne and tick-borne diseases. Endangerment TSD at 64.

Dr. James Hansen, Director of the NASA Goddard Institute for Space Studies, agrees that global warming may reach a "tipping point" for dramatic climate impacts. According to Dr. Hansen:

> there is no significant doubt (probability > 99%) that such additional global warming of 2°C would push the Earth beyond the tipping point and cause dramatic climate impacts including eventual sea level rise of at least several meters, extermination of a substantial fraction of the animal and plant species on the planet, and major regional climate disruptions.

Declaration of James Hansen at 22, *Central Valley Chrysler-Jeep, Inc. v. Witherspoon*, No. 04-06663, 2007 WL 135688 (E.D. Cal. Jan. 16, 2007), *available at* http://www.columbia.edu/~jeh1/case_for_california.pdf. Moreover, Dr. Hansen believes that CO_2 concentrations in the atmosphere must be stabilized within ten years. James E. Hansen, The Need for an International Moratorium on Coal Power, The Bulletin Online: Global Security News and Analysis, Jan. 22, 2008, http://www.thebulletin.org/columns/james-hansen/20080124.html.

Ocean Warming and Sea Level Rise:

EPA has also found that there "is strong evidence that global sea level gradually rose in the 20th century and is currently rising at an increased rate, after a period of little change between AD 0 and AD 1900." Endangerment TSD at 29. In addition, sea level is projected to continue to rise between 0.18 and 0.59 meters by the end of the century (relative to 1980-1999 levels), Endangerment TSD at 53; ANPR, 73 *Fed. Reg.* at 44427, with sea levels rising higher than the global average in parts of the U.S., *id*. at 56.

The Washington region is located where a rise in sea level of 40 inches will cause severe flooding especially along waterways such as Rock Creek, and the Anacostia and Potomac Rivers. States on the East Coast below Cape Cod are particularly vulnerable to problems such as loss of coastal wetlands, erosion of shorelines, saltwater intrusion into drinking water, and decreased longevity of low-lying infrastructure because this part of the East Coast is low and sandy. *See* D.C. et al., *Petition for Rule Making Seeking the Regulation of GHGs from Aircraft* (Dec. 4, 2007). The highest rate of sea level rise during the past 10 years includes areas of the U.S. east coast. ANPR, 73 *Fed. Reg.* at 44426.

A recent report by the Metropolitan Washington Counsel of Governments found that the Washington, D.C. region is experiencing the effects of climate change with rising sea levels and a warmer Chesapeake Bay. NCR Climate Change Report at 6. The shorelines of the Chesapeake Bay and its tributaries such as the Potomac River are among the region's most threatened resources. Wetlands such as coastal marshes and shoreline ecosystems provide important ecological functions, serving as nurseries and critical habitat, sources of dissolved organic carbon, modifiers of local water quality, and sinks for the CO_2 . The loss or submerging of wetlands would eliminate those important ecological functions, further degrading water quality and adversely impacting the living resources of the Bay and its tributaries. Submerged aquatic vegetation, which is a critical element of the Chesapeake Bay's shoreline ecosystems, would also be adversely impacted by increased water depth due to higher sea levels. In addition,

wetlands serve to mitigate the impacts of storm surges, and their loss would increase the likelihood of flooding in many low-lying areas. NCR Climate Change Report, *citing* Comments of Dr. Christopher R. Pyke, Director of Virginia Institute of Marine Science's Climate Change Services and Chesapeake Bay Program STAC member; U.S. Senate Committee on Environment and Public Works Hearing on "The Impact of Global Warming on the Chesapeake Bay" (Sept. 26, 2007).

A recent report by the Scientific and Technical Advisory Committee to the Chesapeake Bay Project, a regional program dedicated to protection and restoration of the Chesapeake Bay, projects an enhanced local sea level rise of 70–160cm in the Chesapeake Bay by 2100. The impacts of rising sea levels on the Chesapeake Bay and its rivers include: (a) heightened risk and vulnerability of wetlands and other low-lying lands to storm surges and coastal flooding; (b) saltwater contamination of fresh water in the Potomac estuary; and (c) degraded water quality in the Bay and its tributaries. The current and forecast rates of climate change are likely to overwhelm these ecosystems' inherent resilience. NCR Climate Change Report at 23.

Long-term temperature records indicate that Chesapeake Bay waters are warming. In fact, the NCR Report found that the Chesapeake Bay warmed more than 2°C (3.6°F) in the past 70 years. NCR Climate Change Report at 6. Submerged aquatic vegetation would be adversely impacted by higher water temperatures. Rising water temperatures may damage the Chesapeake Bay's oyster population, an important ecosystem element for filtering the Bay's water and maintaining water quality. Higher water temperatures, coupled with both increased pollutant runoff in the spring (as a result of changes in precipitation patterns) and higher air temperatures during summer months, will likely lead to increased frequency and duration of algal blooms. Some of those blooms may be deemed potentially harmful to human health and definitely would lead to degraded water quality. NCR Climate Change Report at 24-25, *citing* Comments by Dr. Christopher R. Pyke, Director, Virginia Institute of Marine Science's Climate Change Services and member, Chesapeake Bay Program Scientific and Technical Advisory Committee to the Committee on Environment and Public Works, U.S. Senate (Sept. 26, 2007).

Changes in Precipitation:

EPA has found that "[a] consequence of rising temperature is increased evaporation . . . leading to precipitation increases in some areas . . . and increase[ing] the potential incidence and severity of droughts in other areas." Endangerment TSD at 27. In addition, EPA recognizes that "changes are occurring in the amount, intensity, frequency and type of precipitation." Endangerment TSD at 27. These changes have been observed in the U.S., Endangerment TSD at 29, and are expected to continue, *id*. at 53, 55-56.

According to a report prepared for the Association of Metropolitan Water Agencies (AMWA Report), the "humid East and Midwest" can expect more rainfall in the winter and late spring, and potentially less rainfall in late summer and fall, with more extreme droughts. NCR Climate Change Report at 26, *citing* Cromwell et al, Implications of Climate Change for Urban Water Utilities; Association of Metropolitan Water Agencies (2007). This would result in lower base flows in surface waters and reservoir levels in the summer and fall, which accounts for some of the Washington region's drinking water needs, and would also adversely impact groundwater levels. In addition, decreases in precipitation during summer months may lead to

increased demands for non-drinking water within the region, including increased demand for irrigation water in the upper Potomac, further stressing drinking and non-drinking water resources. NCR Climate Change Report at 26.

Increased Intensity of Storm and Climate Events:

EPA has found that global climate change has resulted in increased frequency and intensity of extreme events relating to temperature, precipitation, tropical cyclones, and sea level rise in the United States and around the world. Endangerment TSD at 34-36. These events are expected to increase in their frequency and severity if GHGs in the atmosphere are not reduced. Endangerment TSD at 56-58.

Among other consequences, increased storm intensity would increase the flow of sediment and pollutants to the Chesapeake Bay and its tributaries. This would lead to degraded water quality both within local streams as well as to the Chesapeake Bay and its tributaries, as increased sediment and nutrient runoff degrades water quality. *See* NCR Climate Change Report at 25.

In addition, events such as these will result in environmental and structural damage across the region, repairs which are not currently accounted for and will require additional funding in the future. The National Capitol Planning Commission issued a report in 2007 stating that even with an improved levee, many areas of the District, including East Potomac Park, the Tidal Basin, and the National Mall up to the Reflecting Pool are at risk for severe overbank flooding and the cost of cleanup and restoration resulting from a single catastrophic event or repeated inundations could be substantial. National Capital Commission Quarterly, January/February/March 2007, page1; *available at* http://www.ncpc.gov/UserFiles/File/Quarterly%20March%2007.pdf

Impacts on Terrestrial and Freshwater Environmental Resources:

EPA has identified significant impacts of global warming on terrestrial and freshwater ecosystems in the United States, including decreases in and earlier melting of the snow covered area in North America, increases in surface water temperatures in lakes and rivers, and other changes in terrestrial, marine, and freshwater ecosystems. Endangerment TSD at 33-34. Snow season and snow depth are expected to continue to decrease in most of North America, accompanied with widespread increases in thaw depth over most permafrost regions. Endangerment TSD at 56.

EPA identified significant impacts of global warming on terrestrial and freshwater ecosystems around the world, including shrinking of the extent and thickness of Arctic sea ice, losses of mountain glaciers, later freeze-ups and earlier breakups of river and lake ice, increasing severity of droughts and rains, increasing runoff and stream flow, and increasing water temperatures and changes in water chemistry in freshwater lakes and streams. Endangerment TSD at 31-33. Additionally, EPA outlines the impacts these changes have on the biosphere, which include poleward and elevational shifts in the range of flora and fauna, changes in the abundance of certain species, variation in the growing season, changes in fresh water availability, earlier egg-laying dates for many birds, earlier end of hibernation and breeding in small

mammals, and changes in the productivity, community composition, phonology, distribution, and migration of freshwater fish species. Endangerment TSD at 33.

There will be adverse impacts to the terrestrial and freshwater ecosystems in the Washington region as well. Today, more than half of the Mid-Atlantic region is covered by a maple-beech-birch deciduous forest. Over time, the southern pine and mixed oak-pine forests in the Southeast may become more dominant as they migrate north. This shift in dominant forest types is occurring at such a rapid rate that native species cannot shift fast enough leaving ecosystems vulnerable to invasive species and reductions in biodiversity. NCR Climate Change Report at 24; *available at* http://www.pewclimate.org/press_room/sub_press_room/2000_press_releases_/pr_1213ecoreport.cfm.

Increased Risk of Abrupt Climate Change:

There is also an increased risk of abrupt climate change. Although EPA found that this cannot be predicted with confidence for specific regions, Endangerment TSD at 58, it identified certain abrupt climate change events that could occur from a warming climate and resulting changes in weather patterns, including abrupt slowdown or shutdown of the Atlantic meridional overturning circulation, rapid disintegration of the Greenland Ice Sheet, resulting in a 7-meter rise in sea levels, and collapse of the West Antarctic Ice Sheet, resulting in a 5-6-meter rise in sea level. Endangerment TSD at 59-60.

"The scientific record shows there is compelling and robust evidence that observed climate change can be attributed to the heating effect caused by global anthropogenic GHG emissions." ANPR, 73 *Fed. Reg.* at 44427. EPA's "Technical Support Document points toward the robust conclusions that expected rates of climate change (driven by past, present and plausible future GHG emissions) pose a number of serious risks to the U.S." ANPR, 73 *Fed. Reg.* at 44428. Moreover, any residual scientific uncertainty that remains concerning global climate change as a result of anthropogenic GHG emissions does not support inaction under CAA § 202(a)(1), which specifically provides that EPA "shall" prescribe motor vehicle standards applicable to the emissions of any air pollutant "which in this judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare" (emphasis added). This highly precautionary standard reflects Congress' intent that EPA proceed with regulation when there is evidence of significant danger to public health or welfare, notwithstanding the existence of some scientific uncertainty.

Given the scientific evidence of the substantial harm that GHGs in the atmosphere pose to human health and welfare, EPA must publish a positive Endangerment Determination in the Federal Register as soon as possible and begin drafting GHG emission reduction regulations.

II. EPA Must Regulate Greenhouse Gas Emissions from Mobile Sources.

Because emissions of GHGs from mobile sources contribute to air pollution that is reasonably anticipated to harm human health or welfare, EPA must regulate GHGs from mobile sources. The weight of the evidence supporting a positive endangerment determination is

overwhelming as stated above. Since GHG emissions from mobile sources clearly meet the statutory requirements for regulation, it would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" if EPA fails to regulate GHG emissions from new motor vehicles, non-road vehicles and engines, and aircraft. 5 U.S.C. § 706(2)(A).

A. Emissions from Mobile Sources are Causing or Contributing to the Greenhouse Gas Pollution that Endangers Human Health and Welfare.

As EPA has noted, there are a number of different ways of assessing the CAA "cause and contribute" standard. The District recommends that EPA compare a sector's GHG emissions against the total aggregated U.S. GHG emissions for analyzing whether a given sector "contributes or causes" GHG pollution. This approach is consistent with the method used for the currently listed criteria pollutants and is consistent with regulating all six GHGs as a single "air pollutant" under the CAA. However, under any of the assessment methods, the emissions from new vehicles in the U.S. are contributing to greenhouse gas levels in the U.S. and around the world.

The U.S. Supreme Court has specifically found that GHG emissions from the transportation sector significantly contribute to air pollution and global warming:

> And reducing domestic automobile emissions is hardly a tentative step. Even leaving aside the other greenhouse gases, the United States transportation sector emits an enormous quantity of carbon dioxide into the atmosphere . . . .
>
> Considering just emissions from the transportation sector, which represent less than one-third of this country's total carbon dioxide emissions, the United States would still rank as the third-largest emitter of carbon dioxide in the world, outpaced only by the European Union and China. Judged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, according to petitioners, global warming.

Massachusetts, 127 S.Ct. at 1457-58.

Finding that GHG emissions from mobile sources are not causing or contributing to that pollutant would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). Although the Endangerment Analysis allows the Administrator to use his judgment to make this determination, it does not give Administrator unfettered discretion. "[T]he use of the word 'judgment' is not a roving license to ignore the statutory text. It is but a direction to exercise discretion within defined statutory limits." *Massachusetts*, 127 S.Ct. at 1462.

Emissions from the transportation sector are a significant contributor to GHG emissions from the Washington region. The transportation sector accounts for approximately 30 percent of the overall regional CO_2 emission inventory, thus the ability of the transportation sector to reduce emissions will have a large bearing on the region's ability to meet its greenhouse gas emission reduction goals. The region is growing by many measures. From 2002-2008, population, households, and employment have each grown by approximately 11 percent, increasing the

number of vehicle trips from 20 to 22 million and total vehicle miles traveled from 146 to 160 million miles per day. Based on current business-as-usual projections of growth in population, housing, and employment, total emissions from transportation in the region will increase by 38 percent by 2030 and 47 percent by 2050.[2] NCR Climate Change Report at 49. The GHG emissions from these massive transportation increases must be reduced.

B. EPA Should Set Emissions Standards for Greenhouse Gas Emissions from New Motor Vehicles under CAA § 202.

CAA Section 202 grants EPA broad powers to regulate new on-road motor vehicles, and a positive endangerment finding mandates regulation of GHG emissions from mobile sources. *See* CAA § 202(a)(1); *Massachusetts*, 127 S.Ct. at 1462; *Ethyl Corp. v. EPA*, 541 F.2d 1, 20 n.37 (D.C. Cir. 1976)(emphasis added); *Bluewater Network v. EPA*, 370 F.3d 1, 5 (D.C. Cir. 2004) (under another CAA section providing that EPA "shall" issue mobile source regulations when certain triggering circumstances exist, Court held that where EPA makes a threshold finding, it "must adopt standards"); *United States v. Monsanto*, 491 U.S. 600, 607 (1989) (discussing mandatory nature of "shall"); *Ameren Services Co. v. FERC*, 330 F.3d 494, 501 n.12 (D.C. Cir. 2003) (same).

Section 202(a) requires EPA to set "standards applicable to the emission" of the air pollutant at issue, which "shall take effect after such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period." CAA § 202(a)(2). *See also NRDC v. EPA*, 655 F.2d 318, 322 (1981) (noting that the standards set under CAA §§ 202(a)(1) and (2) "are 'technology-based,' and the levels chosen must be premised on a finding of technological feasibility"). EPA has acknowledged that present technology does offer a "practical way to reduce tailpipe emissions of CO_2." 68 Fed. Reg. 52929.

Section 202 grants EPA broad authority to set emissions regulations for new motor vehicles. While the standards must be technology-based, they can be technology-forcing, considering cost, necessary lead-time, safety, impact on consumers, and impacts on energy. CAA § 202(a)(2). Many of the technologies that decrease GHG emissions from motor vehicles do so by increasing gas mileage. A GHG emission standard for motor vehicles would likely result in also increasing the vehicle's gas mileage; however, the Supreme Court held that this is not a reason to avoid setting a GHG emission standard for new motor vehicles. *Massachusetts*, 127 S.Ct. at 1461-62.

Technology is readily available for motor vehicles to increase their gas mileage and decrease their GHG emissions per mile traveled. The automotive industry has attempted in the past to argue that GHG emissions reductions are not technically feasible or economically practicable. In *Green Mountain Chrysler-Plymouth Dodge Jeep v. Crombie*, however, the Vermont Federal District Court reviewed such arguments and held that the automakers "failed to carry their burden to demonstrate that the regulation [requiring increased fuel economy] is not

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[2] Note that population growth estimates and employment forecasts are based on historic trends and do not account for potential behavior change (travel behavior and demand for housing) due to increasing energy prices.

technologically feasible or economically practicable." 508 F.Supp.2d 295, 383 (D. Vt. 2007).

In addition to being legally required, EPA regulation of GHG emissions from new motor vehicles is desirable. EPA recently denied California's waiver to set its own standards under CAA Section 209 to regulate GHG emission from new motor vehicles. 73 Fed. Reg. 12156 (Mar. 6, 2008). This was the first time EPA had denied California such a waiver. Sixteen other states joined California in its petition, and the District recently adopted similar standards under the District of Columbia Clean Cars Act. In conveying EPA's denial of the petition, Administrator Johnson cited the fundamental global nature of the problem and the need for a comprehensive nation-wide solution. *See* Letter from Stephen L. Johnson, Administrator, U.S. EPA, to Arnold Schwartzenegger, Governor, State of California (Dec. 19, 2007) (hereinafter "California Waiver Denial Cover Letter"), *available at* http://www.epa.gov/otaq/climate/20071219-slj.pdf. *See also* Statement of Stephen L. Johnson, Administrator, U.S. EPA, before the Committee on Environment and Public Works, U.S. Senate (Jan. 24, 2008) (stating that "climate change and greenhouse gases are global problems" and Administrator Johnson acknowledged that a comprehensive nation-wide solution is necessary to reduce GHG emissions and address the certain harms posed by global climate change). Although the District does not support EPA's denial of California's waiver application, there is no dispute that a uniform, comprehensive, and nation-wide GHG emission reduction program is desirable instead of a piecemeal approach.

Finally, EPA must regulate emissions from new motor vehicles despite any potential findings that reducing GHG emissions from motor vehicles alone will not reverse global climate change or that reducing GHG emissions from motor vehicles may result in only incremental improvements in global GHG levels. The Supreme Court specifically found that this is not a valid basis to refuse to regulate GHG emissions under the CAA:

> While it may be true that regulating motor-vehicle emissions will not by itself *reverse* global warming, it by no means follows that we lack jurisdiction to decide whether EPA has a duty to take steps to *slow* or *reduce* it. . . . Because of the enormity of the potential consequences associated with man-made climate change, the fact that the effectiveness of a remedy might be delayed during the (relatively short) time it takes for a new motor-vehicle fleet to replace an older one is essentially irrelevant.

Massachusetts, 127 S.Ct. at 1458. Moreover, the fact that GHGs are global pollutants with relatively long residence times in the atmosphere likewise does not relieve EPA of the duty to regulate GHG emissions from U.S. motor vehicles. As the Supreme Court articulated:

> Nor is it dispositive that developing countries such as China and India are poised to increase greenhouse gas emissions substantially over the next century: A reduction in domestic emissions would slow the pace of global emissions increases, no matter what happens elsewhere.

Massachusetts, 127 S.Ct. at 1458. The District was a petitioner in *Massachusetts v EPA* and strongly supports regulation of GHGs from mobile sources.

C. EPA Should Set Emissions Standards for Greenhouse Gas Emissions from Nonroad Vehicles and Engines under CAA § 213.

Section 213 of the CAA grants EPA broad authority to regulate off-road vehicles and engines, including a broad array of equipment, machines, and vessels powered by nonroad engines. *See* ANPR, 73 *Fed. Reg.* at 44458, n.163. Section 213 provides that:

> If the Administrator determines that any emissions . . . from new nonroad engines or vehicles significantly contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, the Administrator may promulgate (and from time to time revise) such regulations as the Administrator deems appropriate from those classes or categories of new nonroad engines and new nonroad vehicles . . . which in the Administrator's judgment cause, or contribute to, such air pollution, taking into account costs, noise, safety, and energy factors associated with the application of technology which the Administrator determines will be available for the engines and vehicles to which such standards apply.

CAA § 213(a)(4) (emphasis supplied).

As described above, GHG emissions "may reasonably be anticipated to endanger public health or welfare." GHG emissions from nonroad engines should be regulated because they significantly contribute GHG pollution. According to EPA's inventory, in 2006, nonroad engines accounted for 12% of the total mobile source CO_2 emissions,[3] and are expected to increase significantly over the coming years if not regulated. ANPR, 73 *Fed. Reg.* at 44462. This is a significant contribution to GHG emissions in the U.S., and thus a positive endangerment finding must be made for nonroad engines.

The District supports development of nonroad vehicle and equipment GHG standards. Although EPA has suggested that widespread adoption of application-specific GHG standards for nonroad vehicles and engines might result in a diverse array of standard work units and measurement techniques, the District supports this approach because, as EPA has identified, "this can offer significant opportunity for GHG emissions reductions." ANPR, 73 *Fed. Reg.* at 44465.

A cap-and-trade program for nonroad vehicles and engines is not appropriate under Section 213. A cap-and-trade program could not practically apply to individual engines or vehicles, so some of the dirtiest may be left unchanged (even if they have a remaining useful life). Rather, Section 213 states that any standard set by EPA must achieve the greatest degree of emissions reductions achievable through application of technology that will be available to meet the standard, taking into account costs, noise, safety, and energy factors. CAA § 213(a)(4). Thus, new EPA standards controlling emissions from each fleet of mobile sources will achieve the greatest degree of emission reductions achievable.

In addition, under the factors laid out in Section 213(a)(4) for EPA to consider when

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[3] GHG emissions from nonroad engines are dominated by CO_2 emissions. ANPR at 325.

setting standards for nonroad vehicles and engines, EPA should weigh the benefits of reduced energy use and consumption of fossil fuels in addition to the direct effect of reducing GHG emissions from the vehicle or engine subject to regulation. Thus, EPA should consider the benefits associated with increasing fuel efficiency of vehicles and engines subject to regulation under Section 213. Consideration of these benefits weighs in favor of more stringent controls on GHG emissions from these nonroad vehicles and engines.

D. EPA Should Set Emissions Standards for Greenhouse Gas Emissions from Aircraft under CAA § 231.

The CAA Section 231 grants EPA authority to set emissions standards for aircraft engines. The District has submitted a petition to EPA (along with 4 States, New York City, and the South Coast Air Quality Management District) to make an endangerment finding with respect to aircraft emissions and to require emissions reductions from new and in-use aircraft with all possible speed (either through emissions limits, operational practices, or cap-and-trade). Document ID EPA-HQ-OAR-2008-0318-0026. The District hereby incorporates and preserves the comments and arguments made therein.

III. EPA Must Regulate Greenhouse Gas Emissions from Stationary Sources.

Stationary sources contribute a substantial portion of the GHG emissions in the U.S. In order to adequately protect the public health and welfare, EPA must regulate GHG emissions from these sources. Again, because the scientific evidence shows "compelling and robust evidence that observed climate change can be contributed to the heating effect caused by global anthropogenic emissions," ANPR, 73 *Fed. Reg.* at 44427, and because stationary sources make up a large portion of the GHG emissions in the U.S., it would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" if EPA fails to regulate them. 5 U.S.C. § 706(2)(A).

A. Emissions from Stationary Sources Cause or Contribute to Greenhouse Gas Pollution.

Stationary sources include the electricity generation, industrial, commercial, and residential sectors. These sectors together account for 63.5% of the total U.S. GHG emissions. ANPR, 73 *Fed. Reg.* at 44402-44403. Moreover, without regulation, total gross GHG emissions in the U.S. are projected to increase 30% between 2000 and 2020. ANPR, 73 *Fed. Reg.* at 44400. In the Washington region, the energy sector accounts for approximately 66% (electricity and fuel use) of GHG emissions. NCR Climate Change Report at 39. Any solution to reduce emissions in the region must address energy supply and demand into the future.

The District has taken measures to reduce GHG emissions from District-owned stationary sources, such as the reduction of energy demand from District government buildings including automatic shut-down of computers from 8pm-5am, and the installation of light-emitting diode ("LED") traffic lights throughout the District. The District has also recently partnered with ICLEI-Local Governments for Sustainability to develop a Greenhouse Gas Inventory and Climate Action Plan to create emissions reduction targets and plans for the District. Although

important, isolated voluntary efforts and individual local efforts will not be enough to affect the substantial GHG reductions necessary to prevent the lasting effects of global climate change. Rather, a comprehensive national program is necessary to achieve the substantial GHG emissions reductions required from stationary sources throughout the country.

B. EPA Must Regulate Greenhouse Gas Emissions from Stationary Sources.

In order to adequately address global climate change and the harms it poses to public health and welfare, GHG emissions from existing and new or modified stationary sources must be significantly reduced. Specifically, EPA must formulate a market-based system for reduction of GHG emissions – either a GHG emission cap-and-trade program or a carbon tax for new and existing stationary sources. In addition, EPA must set New Source Performance Standards for GHG emission sources and incorporate GHG emissions reductions into permitting programs.

A nation-wide cap-and-trade program or a carbon tax program makes sense for reduction of GHG emissions from stationary sources because of the nature of the pollutant, and such programs' abilities to incorporate older facilities that are grandfathered into other control mechanisms. Once emitted into the atmosphere, GHGs have a long life and are well-mixed in the atmosphere. ANRP at 92-93. As a result, GHG levels are relatively uniform throughout the U.S. and even around the world. *Id*. *See also* 73 Fed. Reg. 12156, 12160/3 (Mar. 6, 2008). Thus, emissions reductions from different sources in different areas of the country are fungible and there is no risk that "hot spots" might develop if a source or groups of sources in a particular area choose to buy credits or pay a carbon tax instead of installing controls. Indeed, the most important consideration is that GHG emissions from the U.S. as a whole be significantly reduced.

Additionally, market-based GHG abatement programs have already been demonstrated as viable methods for reducing GHG emissions in the U.S. The Regional Greenhouse Gas Initiative ("RGGI"), for example, is a mandatory market-based cap-and-trade program that includes the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. *See* RGGI Website *at* http://www.rggi.org/about. Although comprised of individual state laws and carbon auctions, in the aggregate these state programs function as a single cap-and-trade system. *Id*. Similarly, the Western Climate Initiative ("WCI") is also in the process of developing a GHG cap-and-trade system, which will include both U.S. states and Canadian provinces. The active members are the states of Arizona, California, Montana, New Mexico, Oregon, Utah, and Washington and the Canadian provinces of British Columbia, Manitoba, Ontario, and Quebec. *See* Western Climate Initiative, Design Recommendations for the WCI Regional Cap-and-Trade Program (Sept. 23, 2008) *available at* http://www.westernclimateinitiative.org/ewebeditpro/ items/O104F20432.PDF. The WCI has recognized that a carbon tax can also be incorporated into the regional cap-and-trade program. *See id*. at 4. The WCI will reduce GHG emissions from the participant states and provinces to 15% below 2005 levels by 2020. Both of these programs have demonstrated the viability of market-based GHG controls in the U.S.

In addition, to a nation-wide cap-and-trade or carbon tax program, the District also supports New Source Performance Standards ("NSPS") for GHG emissions from all major stationary sources under CAA § 111. The NSPS path offers EPA substantial flexibility. A GHG

NSPS for a particular source category covers new and modified sources and, if there are no GHG NAAQS (and we recommend that there not be a GHG NAAQS), also covers existing sources. EPA has discretion to define the source categories covered by the NSPS, the size of sources covered and the pollutants to include in an NSPS and to identify facilities within the source category to be covered. EPA also is given much discretion in setting the NSPS level (defined as best demonstrated technology, or BDT), including consideration of costs. ANPR, 73 *Fed. Reg.* at 44486-44487. Existing sources may have less stringent standards than new and modified sources and longer compliance deadlines. ANPR, 73 *Fed. Reg.* at 44487.

NSPS offer additional benefits. They can be multi-pollutant, and we strongly encourage EPA in updating and issuing NSPS to make sure they incorporate GHG emissions and criteria pollutant emissions so as to assist states in attaining and maintaining criteria pollutant NAAQS, in addition to reducing GHG emissions. NSPS are usually numerical emission standards expressed as performance levels, but EPA could set efficiency standards or specify work practice standards. ANPR, 73 *Fed. Reg.* at 44490-44491. Energy efficiency offers significant cost-effective opportunities for reducing GHG emissions quickly in the near term, so aggressive efficiency standards should be strongly considered by the agency for any source category (though efficiency improvements alone should not be the only GHG emission reduction strategy considered by EPA).[4] In addition, the District urges EPA to consider technology-based projects, such as fueling new and modified power plants with biodiesel, biomass, or natural gas.

CAA permitting programs, such as Prevention of Significant Deterioration ("PSD") and New Source Review ("NSR"), are also appropriate tools for incorporating pollution controls during the construction or modification[5] of "major sources," which includes any stationary source that emits GHGs. Under the CAA, a PSD permit must include a best available control technology ("BACT") emission limitation for air pollutants that are "subject to regulation." 42 U.S.C. § 7475(a)(4); *see* 40 C.F.R. § 52.21(b)(50)(iv) (BACT required for "any pollutant that is otherwise subject to regulation under the Act."). The statute defines BACT as "an emissions limitation . . . based on the maximum degree of reduction for each pollutant subject to regulation under the Act" that the Administrator determines is achievable "on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs." 42 U.S.C. There are currently GHG reduction technologies, such as coal gasification, that should be considered in a BACT analysis.

The PSD and NSR Programs require owners and operators of major stationary sources of air pollutants to obtain construction permits prior to building or modifying their facilities. Because stationary sources tend to emit carbon dioxide in far greater amounts than other air pollutants, the current thresholds for the PSD/NSR programs could sweep in a large number of previously unregulated sources. Critics of regulation have argued that this proves that the Clean

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[4] EPA identifies some significant efficiency improvements that could be achieved by industrial boilers, electric utility boilers, petroleum refineries and iron and steel operations in its technical support document regarding stationary source regulation.

[5] A "modification" that triggers NSR is any physical or operational change that results in an increase in emission of any regulated air pollutant or emission of an air pollutant not previously emitted. CAA § 169(2)(C) (cross-referencing CAA § 111(a)(4)).

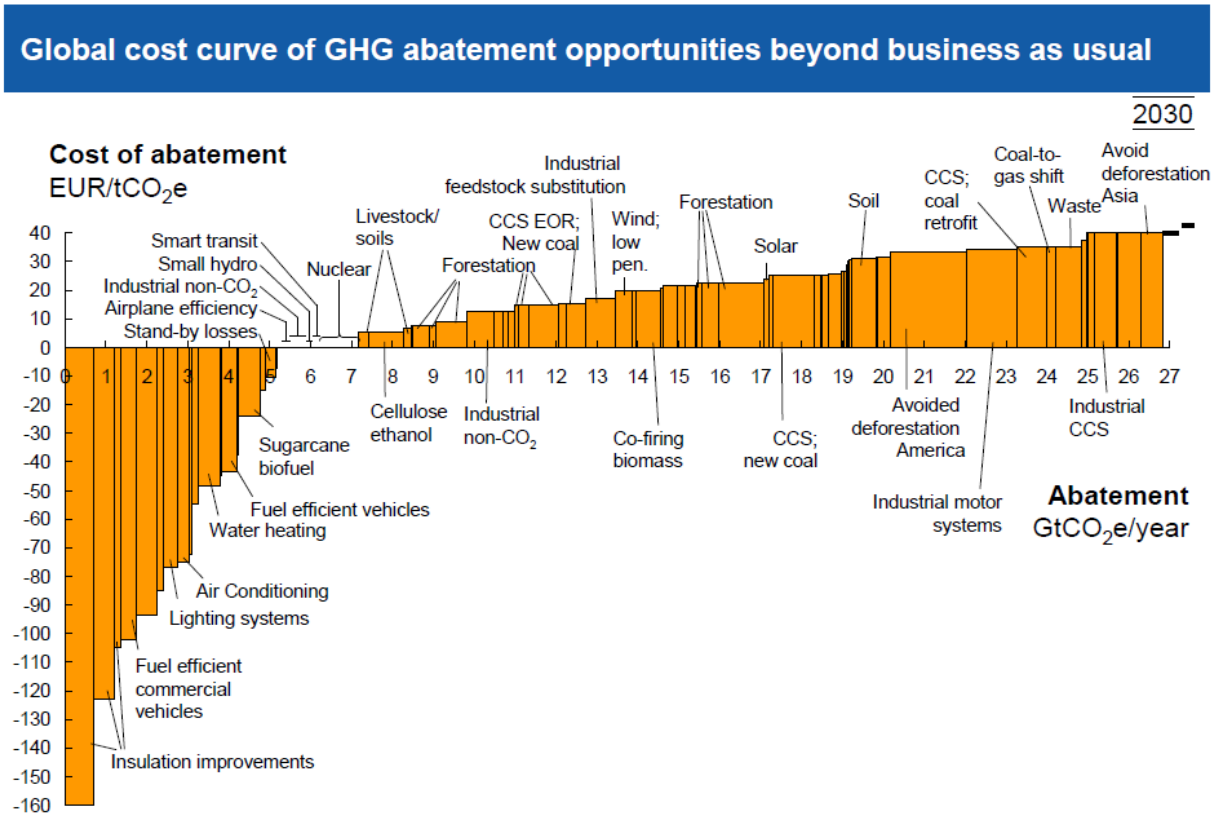
Air Act is an unworkable vehicle for regulating greenhouse gases. The District disagrees. If the current PSD/NSR thresholds are not practical for GHGs, then EPA must conduct an analysis to determine appropriate major source significant thresholds for GHG emissions and amend the PSD/NSR programs appropriately.

In sum, the District supports the use of a cap-and-trade or a carbon tax program, or a combination of these market-based controls, in addition to the already existing NSPS and NSR control mechanisms. Not only would they achieve the objective of GHG regulation – nation-wide reduction of GHG emissions, but they have already been researched and implemented by a number of sources, states and regional groups.

IV. Cost of Reducing GHG Emissions

Although cost is only appropriately considered under some provisions of the CAA, there are many cost-efficient and effective alternatives for reducing GHG emissions from mobile and stationary sources. EPA should take into consideration the potential to reduce U.S. GHG emissions from all sectors and categories of sources both because of the substantial public health and welfare harms from current and increasing levels of GHGs, as well as the availability of cost-effective controls. Indeed, there are many GHG abatement opportunities that would result in a net savings to the American people over the life of the program. EPA should take these additional benefits into account when evaluating GHG emissions controls, including energy efficiency programs.

There are many diverse methods available for reducing GHG emissions, including implementation of existing technologies and development of new technologies. The McKinsey Global Institute and the Vattenfall Institute of Economic Research at the University of Lund recently published a study of the cost-effectiveness of various GHG emission reduction technologies over the life of the method of reduction. One table from that study showing the cost-effectiveness of various carbon abatement methods is reproduced here for ease of discussion:



Vattenfall's Global Climate Impact Abatement Map, 12, *available at* http://www.iea.org/textbase/work/2007/priority/Nelson.pdf; *also published in* McKinsey Global Institute, The Carbon Productivity Challenge: Curbing Climate Change and Sustaining Economic Growth, at 15 (June 2007).

This "carbon abatement cost curve" from the McKinsey-Vattenfall study plots the marginal cost of various GHG emission reduction methods. The width of the bar indicates the amount of CO_2 that can be abated by the particular method, whereas the height of the bar indicates the marginal cost per ton abated. All of the methods shown on this figure have a very low marginal cost of less than $40 per metric ton of avoided GHG emissions. Indeed, several of the abatement options have negative marginal costs – meaning that those options actually provide net savings over their lifetimes. These GHG abatement opportunities that result in a net savings are represented by the bars that extend below the horizontal axis. As examination of the figure reveals, many GHG abatement methods result in large net savings, including many of the alternatives that would increase energy efficiency of commercial and residential buildings. In addition, implementation of technologies such as increased use of fuel efficient vehicles or development of sugarcane biofuel also could result in a net savings.

There are additional GHG abatement opportunities that, although they are not projected to result in net savings, have very low marginal costs. These include additional energy efficiency methods as well as expansion of renewable energy sources and avoided deforestation. In sum, the McKinsey-Vattenfall study demonstrates that there are a number of viable cost-effective methods for abating GHG emissions in the U.S.

As demonstrated by the McKinsey-Vattenfall carbon abatement cost curve, not only is GHG abatement necessary, it is also cost-effective. Although the CAA limits EPA's consideration of cost of control in some situations, it is important to note that market-based controls would promote implementation of the abatement opportunities that are lowest cost, including those that have negative marginal costs associated with them. This will result in very efficient regulation that is beneficial not only to human health and the environment, but also economically in the long run.

In addition, the Stern Report, written by Sir Nicolas Stern a development economist and former chief economist at the World Bank, further supports the cost of delaying global response to climate change. The report states that only 1% of the world's GDP by 2050 is needed to stabilize greenhouse gas levels in the atmosphere, while only a minimal 2-3 degrees of warming will result in a loss of up to 3% in global world output (with further warming leading to further economic losses). *See* http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/30_10_06_exec_sum.pdf.

V. Conclusion

EPA must make a positive endangerment finding that GHG emissions from mobile sources and GHG emissions from stationary sources endanger public health and welfare. The District believes that EPA has already unreasonably delayed in issuing a positive endangerment determination, which, apparently, has already been drafted and submitted to the U.S. Office of Management and Budget. EPA must not delay any further, and must issue a positive endangerment determination in a timely manner.

EPA must also promulgate rules comprising comprehensive regulatory programs to reduce GHG emissions from mobile sources and stationary sources. Such regulation must include reductions from motor vehicles, nonroad vehicles and engines, aircraft, and other mobile sources, as well as from existing stationary sources in addition to new or modified stationary sources. Indeed, for the reasons outlined above, it would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" if EPA failed to do so. 5 U.S.C. § 706(2)(A).