Environmental Due Diligence In The Era Of Climate Change: Why Building Owners and Lenders Need to Be Concerned About Climate Change

Summary: To preserve liability defenses and manage environmental risks, purchasers of real estate and their lenders usually perform environmental due diligence. For the most part, the environmental due diligence is based on the federal All Appropriate Inquires (AAI) Rule that became effective on November 1, 2006 or the ASTM E1527-05 Standard Practice for Phase 1 Audits.[1]

A patchwork of state and local governments have adopted mandatory greenhouse gas (GHG) emissions reduction programs that are designed to reduce local GHG emissions. When one takes a close look at these local regulatory initiatives, it is clear that brunt of the GHG emissions reductions will fall on owners and operators of multi-family residential and commercial buildings since the buildings account for the largest source of GHG emissions in most cities. Thus, regardless if one believes that Climate Change is primarily or just partially anthropogenic in origin, it is now clear that that purchasers, owners, and lenders as well as their professional service providers are going to have to take Climate Change into account when evaluating future transactions. As a result, the costs to comply with the aggressive GHG emissions reduction strategies may soon become an important element of due diligence.

Since the advent of environmental regulation in the 1970s, the focus of federal and state environmental programs has been primarily on industrial and manufacturing facilities that emit significant quantities of pollutants. To the extent that commercial and residential buildings came under the regulatory microscope, it was usually due to the presence of damaged asbestos, lead-based paint or leaking underground storage tanks.

Following the 1973-74 oil embargo first energy crisis in 1974, Congress recognized that buildings played a large role in the nation's energy crisis and enacted a voluntary program for improving energy efficiency of new buildings [2] and existing buildings[3]. The legislation recognized that energy conservation could serve as a relatively quick and inexpensive way to develop "new energy". *National Energy Conservation Policy Act*[4] the Energy Conservation and Production Act enacted to reduce energy demand through development of energy-efficient residential and commercial buildings,[5]

Following the second energy shock of the 1979, Congress established manadatory energy efficiency requirements for buildings. However, by the mid-1980s, concern over energy dropped with lowering crude oil prices and Congress abloshed the program.

Energy consumption and greenhouse emissions are inexorably linked and we can only speculate how the program could have minimized the current crisis. What we do know is that greenhouse emissions from buildings have increased at an annual rate of 1% to 2 %, and that the

building sector is now the largest source of carbon emissions when direct emissions and energy-related emissions are taken into account. Buildings are also consume the most energy in the United States of any other sector with residential and commercial buildings responsible for 39.4% of the total energy consumed in the United States. Residential buildings account for 54.6% of the energy consumed by the building sector.[6] Most of the energy used for residential buildings is for space heating (30%), followed by water heating (12%), lighting (12%) and air conditioning (11%).[7] In the commercial sector, most of the energy is used for lighting (21%), followed by space heating (12%), air conditioning (9%) and office equipment (8%).[8]

Buildings also account for 67.9% of the electricity consumed in the country with residential structures responsible for 48.8% of the total electrical demand. [9] The energy used to heat and power buildings leads to the consumption of large amounts of energy, primarily from burning fossil fuels with 58% of the building end-use energy coming from fuel that is burned on-site.

The large amount of energy required by buildings generates significant amounts of carbon dioxide (CO2). Nationwide, commercial and residential buildings account for 38.1% of the nation's CO2 emissions (approximately 2,521 metric tones)[10] with residential buildings responsible for 20.6% of the total CO2 emissions.[11] It is estimated that CO2 emissions from buildings will grow at a rate of 1.8% annually until 2030, faster than any other sector.[12]

In densely populated cities, buildings can be responsible for close to 80% of total GHG emissions. Indeed, a 2007 study by the New York City Office of Long-Term Planning and Sustainability calculated that the city's 950,000 buildings are responsible for 79% of the city's total greenhouse gas emissions.

Buildings may be associated with the release of other GHGs. For example, buildings are for an estimated seven percent of methane emissions from disposal of construction and demolition debris in landfills and incomplete combustion of wood in fireplaces and stoves.[13] and the extraction and manufacturing of building materials may also generate greenhouse gas emissions. Buildings also require enormous amounts of raw materials. It is estimated that buildings use 40% of raw materials globally (3 billion tons annually).[14]

It is projected that approximately 15 million new buildings will be constructed by 2015 and that if just half of new commercial buildings used 50% less energy the reduced CO2 emissions would be equal to removing 1 million cars off the roads each year.[15]

It is not surprising, then, that state and local governments that have announced ambitious goals to reduce their greenhouse gas emissions and mitigate the impacts of climate change have turn their attention to the environmental impacts of buildings. However, these emission reduction initiatives will not achieve their objectives if they simply focus on newly constructed public buildings. According to the latest census data, there are over 120 million residential buildings and over 5 million office buildings. Approximately 1.8 million residential buildings and 170,000 commercial structures are constructed annually while 44,000 commercial buildings are demolished each year. The vast majority of buildings in existence today will be still be in use in 2015. At the current pace, 85% of the existing building stock will still be in existence by 2030. By mid-century, half of the building stock will still be in use. Thus, retrofitting and upgrading the efficiency of building mechanical systems will be necessary to achieve significant.[16]

Environmental benefits are not the only reason why building owners and tenants are turning to green buildings. Because of greater efficiencies, green buildings have lower operating and maintenance costs over the life of the building. At the same time, studies have shown that green buildings certified to the Leadership in Energy and Environmental Design (LEED) ranking

system were able to command rent premiums of $11.24 per square foot over conventional buildings and had a 3.8% higher occupancy rate. Moreover, LEED-certified buildings sold for an average of $171 more a square foot than comparable conventional buildings. [17]

Overview of Greenhouse Gases and Emissions Sources

The principal GHG s of concern are carbon dioxide (CO_2), methane (CH_4), Nitrous Oxide (N_2O), hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulfur hexafluoride (SF6). Global emissions of these six GHGs have grown since pre-industrial times and have increased by 70% between 1970 and 2004. In 2000, U.S. GHG emissions accounted for approximately 21% of the global total.[18] There are other GHGs and aerosols that have climatic warming effects: water vapor, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, stratospheric and tropospheric ozone (O_3), and black carbon.[19]

Pursuant to the United Nations Framework Convention on Climate Change (UNFCCC) that the United States ratified in 1992, EPA prepares an annual complete inventory of GHG emissions from human activities as well as natural processes that absorb or remove GHGs from the atmosphere (e.g., CO_2 uptake by plants through photosynthesis).

The primary GHG emitted as a result of human activities in the United States is CO_2, representing approximately 85% of total GHG emissions. CO_2 results primarily from fossil fuel combustion to generate electricity, power vehicles and factories, heat buildings, etc. Methane emissions comprise approximately 8% of total U.S. GHG emissions. However, methane has 20 times the trapping heat ability than CO_2.. The largest sources of methane emissions are enteric fermentation (22.7%), landfills (22.6%), natural gas systems (18.4%), coal mining (10.5%), and manure management (7.5%). Smaller sources such as rice cultivation and incomplete fossil fuel combustion account for the remainder.

Nitrous Oxide emissions are just over 5% of total U.S. GHG emissions. However, N_2O is approximately 300 times more powerful than CO_2, The main anthropogenic activities producing N_2O in the United States are agricultural soil management (72%), and fuel combustion in motor vehicles (9%). A variety of chemical production processes and liquid waste management sources also emit N_2O.

The three other GHGs (HFCs, PFCs, and SF_6) are often grouped together because they contain fluorine. This combined emissions from , these GHGs made up 2.1% of total U.S. GHG emissions in 2006. However, Intergovernmental Panel on Climate Change has found that SF6 is the most potent greenhouse gas that it has evaluated, with a global warming potential of 22,200 times that of CO_2. HFCs and some PFCs are increasingly being used as substitutes for the ozone depleting substances controlled under the Montreal Protocol and Title VI of the CAA. The largest source is the use of HFCs in air conditioning and refrigeration systems. Other sources include HFC-23 mitted during the production of HCFC-22, electrical transmission and distribution systems (SF_6), and PFC emissions from semiconductor manufacturing and primary aluminum production.

Potential CAA Authorities for Regulating GHG Emissions From Building

EPA does not regulate greenhouse gas emissions from stationary or mobile sources under the CAA. In 1999, a group of states, local governments, and private organizations filed a

rulemaking petition asking EPA to regulate carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons from new motor vehicles under § 202 of the CAA (the "ICTA Petition").[20]

The petition alleged that climate change will have serious adverse effects on human health and the environment and that the agency had already confirmed that it had the power to regulate carbon dioxide.[21] The petitioners asserted that EPA was required under section 202 of the CAA to promulgate emissions standards for "any air pollutant" that EPA determines has caused or contributed to air pollution reasonably anticipated to endanger public health or welfare.

In September 2003, EPA denied the request on the basis that the CAA did not require and it would be unwise for the agency to regulate GHG emissions The agency also concluded that greenhouse gases cannot be "air pollutants" within the meaning of the CAA because the only feasible method of reducing CO2 tailpipe emissions would be to improve fuel economy which would interfere with fuel economy standards issued by the Department of Transportation (DOT) under the Energy Policy and Conservation Act (EPCA).

The United States Court of Appeals for the District of Columbia Circuit upheld EPA's denial of the petition in a 2-1 opinion. [22] However, the United States Supreme Court reversed and held in a 5-4 decision that EPA had improperly denied ICTA's petition in *Massachusetts v. EPA*.[23]

The Court first held that petitioners had standing to challenge EPA's denial of their rulemaking petition since at least one petitioner state properly asserted a concrete injury from the potential further loss of its coastal land, much of which was owned by the state, from rising sea levels caused by climate change.

The Court also rejected the argument that EPA could not regulate new motor vehicle emissions because of the potential conflict with the DOT fuel economy standards, holding that EPA's mandate to protect public health and welfare is "wholly independent of DOT's mandate to promote energy efficiency," even if the authorities may overlap. [24]

Turning to whether CO_2, CH_4, N_2O, and HFCs fit the CAA's definition of "air pollutant", the Court noted that the sweeping CAA definition of "air pollutant" included "*any"* physical or chemical substance or matter that is emitted into or otherwise enters the ambient air." Since the definition of "air pollutant" encompassed all airborne compounds and that the four GHGs were "physical or chemical substances that are emitted into the ambient air, the court ruled that greenhouse gases fit well within the CAA's "capacious definition" of air pollutant and that EPA has the statutory authority to regulate the emission of such gases from new motor vehicles. [25]

Because the GHGs fell within the definition of air pollutants, the Court said EPA must then determine if the GHG emissions caused or contributed to air pollution that may reasonably be anticipated to endanger public health or welfare. If EPA finds that new motor vehicle GHG emissions meet the endangerment test, the agency would be required under section 202(a)(1) of the CAA to promulgate motor vehicle standards for GHG emissions. In remanding the decision back to EPA, the Court cautioned that generalized concerns about scientific uncertainty were insufficient unless "the scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment as to whether greenhouse gases contribute to global warming." [26]

Following *Massachusetts v. EPA*, President Bush issued Executive Order (EO) 13432 requiring EPA to work with DOT and the Departments of Energy and Agriculture to develop draft proposed regulations that would reduce GHG emissions from motor vehicles and their fuels. The federal agencies were instructed to protect the environment with respect to greenhouse gas emissions from motor vehicles, non-road vehicles, and non-road engines in a manner

consistent with sound science, analysis of benefits and costs, public safety, and economic growth.

Congress passed and the President signed the Energy Independence and Security Act (EISA). Title II of EISA amended the Renewable Fuels Standard (RFS) of section 211(o) of the CAA to increase the amount of RFS from 7.5 billion gallons in 2012 to 36 billion gallons in 2022. [27] EISA also separately amended EPCA with regard to the DOT's authority to set CAFE standards for vehicles

Since the Massachusetts decision, the agency has received seven petitions seeking regulation of GHG emissions under sections 202(a) (3), 211, 213 and 231 of the CAA from fuels and a wide array of mobile sources including ocean-going vessels; road engines and equipment, such as locomotives, construction equipment, farm tractors, forklifts, harbor crafts, and lawn and garden equipment; aircraft; and rebuilt heavy-duty highway engines.

While the Massachusetts decision related to GHG emissions from mobile sources, the definition of "air pollutants" also applies to stationary sources. In addition, numerous sections of the CAA addressing stationary sources have endangerment language similar to that found in section 202, including sections 108, 111, 112, and 115. Thus, if EPA if determines that GHG emissions from mobile sources contribute or cause air pollution that endanger public health or welfare, the agency may also be required to control GHG emissions from stationary sources.

Several CAA provisions require stationary sources that emit traditional air pollutants above specific emission thresholds to comply with certain requirements. Applying the same thresholds to GHGs could result in numerous sources, such large residential and commercial buildings, becoming newly subject to those requirements. Currently regulated sources could become subject to additional requirements. This would occur in part because most sources typically emit CO2 in much larger quantities than traditional air pollutants. Indeed, also received public comments seeking to include GHGs to the list of pollutants covered by the new source performance standard (NSPS) for several industrial sectors under section 111 of the CAA. In addition, legal challenges have been brought seeking controls for GHG emissions in preconstruction permits for several coal-fired power plants.

In July 2008, EPA issued an advance notice of proposed rulemaking (ANPRM) soliciting comments on the regulation of GHG emissions. In the ANPRM, EPA reviewed various authorities for regulating GHG emissions.

National Ambient Air Quality Standards (NAAQS)

Section 108 of the CAA authorizes EPA to list air pollutants that cause or contribute to air pollution. For every criteria pollutant listed, EPA is required by section 109 to set NAAQS that are "requisite" to protect public health and welfare. EPA may not consider the costs of meeting the NAAQS in setting the standards. If EPA lists GHGs as a criteria pollutant under section 108(a), the CAA generally would preclude listing the same GHG as a hazardous air pollutant (HAP) under section 112(b). Listing an air pollutant under section 108(a) also preludes regulation of that air pollutant from existing sources under section 111(d) of the New Source Performance Standard (NSPS) program.

In its ANPRM, EPA said that direct exposure to GHGs at current or projected ambient levels did not appear to have known adverse effects on human health. Instead, the agency suggested the direct effects of GHG emissions appear to be indirect impacts resulting from

ecological and meteorological changes (e.g., increased viability or altered geographical range of pests or diseases; increased frequency or severity of severe weather events including heat waves). Since these changes are principally or exclusively welfare-related, EPA speculated that it may be more appropriate to address these health effects by setting a secondary NAAQS rather than a primary NAAQS.

One complicating factor in establishing NAAQS for GHG is whether EPA should list the GHG individually or as a group. The agency said that GHGs vary in their global warming potential so it would be challenging to determine the appropriate indicator for use in measuring ambient air quality in comparison to a GHG NAAQS. One approach could be to measure the total atmospheric concentration of a group of GHGs on a CO2 equivalent basis

After determining that NAAQS should be established for GHGs, the next step would be to identify areas of the country that do not meet the primary and secondary NAAQS. In contrast to current NAAQS pollutants which vary regionally, EPA indicated in the ANPRM that it would likely have to establish a uniform GHG NAAQS since atmospheric concentrations of GHGs are relatively uniform Thus, the entire U.S. would be designated either attainment or non-attainment, depending on the level of the NAAQS compared to observed GHG ambient concentrations.

Under section 110, states are responsible for developing to state implementation plans (SIPs) for attaining, maintain, and enforcing the NAAQS and visibility protection goals as well as to prevent significant deterioration of air quality in areas meeting the NAAQS. If EPA designated the entire country as non-attainment for a primary GHG NAAQS, each state would be required to develop and submit a SIP that provided for attainment including all imposition of Reasonably Available Control Measures (RACM) that would at a minimum, impose emissions reductions on stationary sources through adoption of Reasonably Available Control Technology (RACT). In addition, pre-construction permits would be required for major new or modified stationary sources under the non-attainment new source review. EPA suggested that in the absence of substantial cuts in worldwide emissions, worldwide concentrations of GHGs would continue to increase despite active control efforts to meet a NAAQS, meaning that the entire U.S. would remain in non-attainment for an unknown number of years. This would result would be long-term application of sanctions, nationwide (e.g., more stringent offset requirements and restrictions on highway funding), as well as restrictions on approvals of transportation projects and programs related to transportation conformity[28]

On the other hand, if a primary or secondary GHG NAAQS were set at a level higher than ambient GHG levels at the time of designations, then the country would be in attainment. In this case, SIPs would be required to include PSD programs for GHGs, which would require preconstruction permitting of new major sources and significant modifications to existing major sources. If states needed to adopt measures beyond the PSD/NSR permit programs to maintain attainment, EPA suggested in its ANPRM that one available tool might be implementation of a nationwide cap-and- trade program similar to but broader in scope than existing programs such as the more limited NOx SIP Call regional cap-and-trade system..

New Source Performance Standards (NSPS)

EPA is authorized to set national performance standards (NSPS) for stationary sources under section 111. Under the NSPS program, EPA has established standards that do not necessarily set emission limits for all pollutants or even all regulated pollutants emitted by

sources within the relevant source category. Rather, the NSPS generally focus on specific pollutants of concern for a particular source category.

Section 111 establishes two distinct mechanisms for controlling emissions of air pollutants from stationary sources. Section 111(b) provides authority for EPA to promulgate NSPS which may be issued if there is a NAAQS for the pollutant but only for new and modified sources.

EPA has previously made endangerment findings under this section for more than 60 stationary source categories and subcategories that are now subject to NSPS. Air pollutants currently regulated through section 111(b) include the criteria pollutants listed under section 108 and certain additional pollutants. EPA would have to make an endangerment finding for listing additional source categories under section 111(b), but would not be required to regulate GHGs from source categories that have already been listed.

Once EPA has elected to set an NSPS for new and modified sources in a given source category, states are required under section 111(d) to promulgated a standard for existing sources in the regulated source category for a criteria pollutants or where the source emits listed Hazardous Air Pollutants (HAP) that are regulated under section 112. Likewise, listing an air pollutant as a HAP under section 112(b) generally precludes regulation of that air pollutant from existing sources under section 111(d). Like NSPS standards, the emission guideline established under section 111(d) must reflect the emission reduction achievable through the application of BDT.

The NSPS may take cost into account. EPA also has substantial discretion regarding the types and size of sources regulated. To define the affected facilities, EPA can use size thresholds for regulation and create subcategories based on source type, class or size. EPA may also determine the pollutants for which standards should be developed, and set the level of the NSPS. Emission limits also may be established either for equipment within a facility or for an entire facility.

EPA also has significant discretion to determine the appropriate level for the standards. In the ANPRM, EPA suggested that the NSPS and emission reduction guidelines could utilize energy efficiency, process efficiency improvements, recovery and beneficial use of process gases, and certain raw material and product changes that could reduce inputs of carbon or other GHG-generating materials. In addition, EPA indicated that it believes that the NSPS program is flexible enough to allow the use of certain market-oriented mechanisms to regulate emissions.

As with most other CAA authorities, however, establishment of a section 111 standard for any source category of GHGs would trigger preconstruction permitting requirements for all types of GHG major sources under the PSD program.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

Along with the NAAQS system and section 111 standards, section 112 is one of the three main regulatory pathways under the CAA for stationary sources. Section 112 of the CAA authorizes EPA to list and issue national emissions standards for hazardous air pollutants (NESHAPs) from existing and new major stationary sources that reflect to “maximum achievable control technology” (MACT) standards. EPA is also authorized to list and regulate smaller “area” sources of HAPs. CAA section 112(d)(5) provides that for area sources, EPA can

establish either MACT or less stringent generally available control technology or management practices (GACT) in lieu of
MACT.

HAPs are broadly defined as pollutants that present, or may present, a threat of adverse human or environmental effects. An adverse environmental effect is defined as "any significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas.

In its ANPRM, EPA indicated that if GHGs were listed as HAP, EPA would be required to regulate a very large number of new and existing stationary sources, including smaller sources than if alternative CAA authorities were used to regulate GHG. Indeed, estimated that that small commercial or institutional establishments and facilities with natural gas-fired furnaces would exceed this major source threshold of ten tons per year for C02. EPA said that a large single-family residence could exceed this threshold if all appliances consumed natural gas.

Prevention of Significant Deterioration (PSD) Pre-Construction Permitting

As noted previously, the PSD program requires new major stationary sources and modified major stationary sources that significantly increase emissions to obtain air pollution permits before commencement of construction and install best available control technology (BACT) for each pollutant (other than a HAP)regulated under the CAA. [29] The PSD permit must contain emissions limitations based on BACT for each pollutant "subject to regulation" under the CAA.

A "major emitting facility" is generally any source that emits or has the potential to emit 250 tons per year (tpy) of a regulated NSR pollutant, or belongs to specifically identified source categories and emits or has the potential to emit 100 tpy of a regulated NSR pollutant

EPA has defined the phrase "subject to regulation" to include pollutants that are regulated under a NAAQS or NSPS, a class I or II substance under Title VI of the Act. EPA has historically interpreted the phrase "subject to regulation under the Act" to describe air pollutants subject to CAA statutory provisions or regulations that require actual control of emissions of that pollutant.[30] Since there is currently no NAAQS for GHGs and GHGs are not otherwise subject to regulation under the CAA, the PSD program is not currently applicable to GHG. Thus, PSD permits have not been required to contain BACT emissions limit for GHGs because GHGs and CO_2 in particular.[31] Currently there is no defined significance level for GHGs because they are not regulated NSR pollutants, the significance threshold would be zero.

The Supreme Court's conclusion that GHGs are "air pollutants" under the CAA did not automatically make these pollutants subject to the PSD program. A substance may be an "air pollutant" under the Act without being regulated under the Act. The agency must first make an endangerment finding which EBA believes would not constitute a regulation requiring actual control of emissions. GHGs would become regulated pollutants under the Act if and when EPA subjects GHGs to control requirements under a CAA provision other than sections 112. Any decision to control emissions of CO2 or other GHGs under other provisions of the CAA would make parts of the PSD program applicable to these additional air pollutant(s) that EPA regulates modified source subject to PSD

If GHG emissions become subject to regulation under any of the stationary or mobile source authorities (except sections 112 and 211(o)), GHGs could become regulated NSR

pollutants. According to the ANPRM, many types of new GHG sources and GHG-increasing modifications that have not heretofore been subject to PSD would become subject to PSD permitting requirements. This is particularly true for CO2 because the mass CO2 emissions from many source types are orders of magnitude greater than for currently regulated pollutants. Thus, many types of new small fuel-combusting equipment could become newly subject to the PSD program if CO2 becomes a regulated NSR pollutant.

The extent that such equipment would become subject to PSD would depend upon whether, for each type of equipment, its maximum capacity considering its physical and operational design would involve constant year-round operation or some lesser amount of operation. For example, the calculated size of a natural gas-fired furnace that has a potential to emit 250 tpy of CO2 ,if year-round operation (8760 hours per year) were assumed,- would be only 0.49 MMBTU/hr, which is comparable to the size of a very small commercial furnace.

In practice, a furnace like this would likely operate far less than year round and its actual emissions would be well below 250 tpy. For example, such a furnace, if used for space heating, might only be burning gas for about 1000 hours per year, meaning that it would need to be sized at over 4 MMBTU/hr – a size more comparable to a small industrial furnace -- to actually emit 250 tons of CO2. For sources such as these, the interpretation of the term "potential to emit" and the availability of streamlined mechanisms for smaller sources to limit their potential to emit would determine whether they would be considered "major" for GHG emissions under PSD.

Once a source is major for any NSR regulated pollutant, PSD applies to significant increases of *any other* regulated pollutant, so significant increases of GHGs would become newly subject to PSD at sources that are now major for other regulated pollutants. Similarly, significant increases of other pollutants would become subject to PSD if they occur at sources previously considered minor, but which become classified as major sources for GHG emissions. Thus, for sources already major for other pollutants, it is likely that many more changes made by the source would also qualify as major modifications and become subject to PSD as well, unless potential approaches (including those discussed below) for raising applicability thresholds were implemented. Relatively small changes in energy use that cause criteria pollutant emissions too small to trigger PSD would newly trigger PSD at such facilities because such changes would likely result in greater CO2 increases.

For example, consider a hypothetical 500 MW electric utility boiler firing a bituminous coal that is well-controlled for traditional pollutants. Such a boiler, operating more than 7000 hours per year (out of a possible 8760), can emit approximately 4 million tons of CO2 per year, or more than 580 tons per hour. Assuming a 100 tpy significance level (rather than the current zero level for GHGs), any change resulting in just 10 additional minutes of utilization over the course of a year at such a source would be enough to result in an increase of 100 tons and potentially subject the change to PSD. By contrast, for NOx, the same change would require approximately 36 additional hours of operation assuming that the hypothetical source had a low-NOx burner, and 90 additional hours of operation assuming that the source also employed a selective catalytic reduction add-on control device.

Currently, EPA estimates that EPA, state, and local permitting authorities issue approximately 200-300 PSD permits nationally each year for construction of new major sources and major modifications at existing major sources. Under existing major source thresholds, EPA estimated in the ANPRM that if CO_2 became a regulated NSR pollutant (either as an individual GHG or as a group of GHGs), the number of PSD permits required to be issued each year would increase by more than a factor of 10 (i.e. more than 2000-3000 permits per year), unless action

were taken to limit the scope of the PSD program under one or more of the legal theories described below. The additional permits would generally be issued to smaller industrial sources, as well as large office and residential buildings, hotels, large retail establishments, and similar facilities. This is because these facilities consist primarily of equipment that combusts fuels of various kinds and release their exhaust gases through a stack or vent.

EPA cautioned that the estimate was uncertain because emissions information on these smaller sources has not been collected and the estimate was based on actual emissions, and thus excluded a potentially very large number of sources that would be major if they operated at their full potential-to-emit (PTE) (i.e. they emitted at a level that reflects the maximum capacity to emit under their physical and operational design). Such sources could be defined as major sources if they did not have enforceable limitations on their PTE. Sources with PTE exceeding the major source threshold can become minor sources by taking legally and practically enforceable limits on their PTE, by, for example, agreeing to operate only part of the year, or only so many hours per day, or by employing control devices. In any event, the estimate shows that the PSD program has the potential to dramatically expand the number of sources required to obtain PSD permits unless action is taken to limit the scope of the program.

Since the *Massachusetts v. EPA* decision, a number of challenges to draft PSD permits have been filed, asserting that the permitting agency should have included BACT emissions limits for CO2 in the draft permits. The outcome of these proceedings could also affect several other permits awaiting issuance by EPA and state regulatory agencies, and may have significant implications for the entire PSD program.[32]

In *Friends of the Chattahoochee, Inc. and Sierra Club v. Dr. Carol Couch, Director, Environmental Protection Division, Georgia Dept. of Natural Resources*, [33] the petitioners challenged the issuance of a permit for a coal-fired power plant on the grounds that the permit did not contain BACT for CO2. The petition argued that CO2 was an air pollutant "subject to regulation" because 40 CFR Part 75 imposed mandatory CO2 emissions monitoring on certain sources. However, an administrative law judge ruled that because EPA has not promulgated a NAAQS for CO2 and CO2 emissions were not "controlled or limited" under the CAA, CO2 was not a "regulated NSR pollutant. In June 2008, a state court reversed and remanded the matter to the ALJ. The court found that the ALJ had erred as a matter of law when ruling that BACT was limited to air pollutants for which there were numerical limitations. The court noted that the 40 CFR 52.21(b)(50)(i)-(iii) defined a "regulated NSR pollutant" as pollutants for which standards had been promulgated but that the catch-all provision of 52.21(b)(50(iv) applied to "any pollutant that otherwise is subject to regulation under the Act". Since CO2 was subject to regulation under the CAA, the court held that a PSD permit could not be issued with a CO2 emission limitation based on a BACT analysis [34]

The Kansas Department of Health and Environment ("KDHE") rejected permit filed by the Sunflower Electric Power Corp. to build two 700-megawatt electrical generators on the basis that the proposed $3.6 billion dollar plant near Holcomb emit an additional ten-to-fourteen million tons of CO2 each year.

Non-Attainment New Source Review (NNSR)

The other pre-construction permit program is non-attainment new source review (NNSR). If EPA established a GHG NAAQS with the country in non-attainment, the NNSR permitting program would be triggered nationally.

Like the PSD program, the NNSR program would apply to new and modified major stationary sources but contains significantly different requirements. The major source threshold begins at 100 tpy but may be significantly lower depending on the non-attainment classification.

A key difference is the requirement that the emissions increases from the new or modified source in a non-attainment area must be offset by reductions in existing emissions from the same non-attainment area or a contributing upwind non-attainment area of equal or higher non-attainment classification. The offsetting emissions reductions must be at least equal to the proposed increase and must be consistent with a SIP that assures the non-attainment area is making reasonable progress toward attainment.

Another key difference is that instead of BACT, sources subject to NNSR must comply with the Lowest Achievable Emission Rate (LAER),which is the most stringent emission limitation that is contained in any SIP for that type of source, or achieved in practice for sources of the same type as the proposed source. LAER does not allow for consideration of costs or of the other factors that BACT does. While LAER and offsets are likely of greatest significance for GHG regulation under NNSR, there are additional requirements for NNSR that would also apply such as an alternatives analysis requirement and the prohibition against permit issuance if the SIP is not being adequately implemented.

Title V Permit Program

Title V requires permitting for several types of sources subject to CAA requirements including all sources that are required to have PSD permits. Presently there are generally not any applicable requirements for control of GHGs that would be included in Title V permits but regulation of GHGs under any of the approaches described above, including PSD, could give rise to applicable requirements that would be included. . However, the addition of GHG sources to the program would trigger permitting requirements for numerous sources that are not currently subject to Title V because their emissions of other pollutants are too small.

The Title V cutoff would bring in even more sources than PSD because the 100 tpy (rather than 250 tpy) cutoff applies to all source categories, not just the ones specified in the PSD provisions. For example, while a 100 tpy CO2 source would usually have relatively small criteria pollutant emissions that would not by themselves have subjected the source to title V, once subjected to title V for CO2 emissions, the source would then need to include any SIP rules (e.g., generally applicable opacity limitations that exist in several SIPs) that apply to the source.

In the ANPRM, EPA estimated that more than 550,000 additional sources would require Title V permits if GHG became regulated as compared to the current universe of about 15,000-16,000 Title V sources.

Indirect Source Review

In the early years of the CAA, EPA contemplated imposing standards on developments that attracted high numbers of vehicles under its “indirect source review” authority. Because this effort was perceived as potentially stifling growth during an economically-changed era, Congress prevented EPA from devoting resources to this effort.

Now, though, some states with large component of transportation-related GHG emissions are dusting off this strategy. A recent example is the Indirect Source Review rule promulgated by the San Joaquin Valley Air Pollution Control District in 2005. The agency's jurisdiction encompasses the southern half of California's Central Valley that suffers some of the highest concentrations of ground-level ozone and particulate matter in the nation.

The goal of the rule is to achieve "emissions reductions from the construction and use of development projects through design features and on-site measures." It requires developers who build 50 houses or more to offset air emissions. The developers can Developers can either pay a mitigation fee to the district for the purchase of off-site emission reductions, or can incorporate into their projects elements that will minimize traffic-related emissions such as incorporating traffic controls to reduce congestion, siting new homes and businesses near public transit, adding bicycle lanes, or building walkable shopping. The National Association of Homebuilders ("NAHB") filed suit challenging the regulation this past arguing that local air districts do not have authority under the CAA to regulate of "indirect sources" of air pollution such as tailpipe emissions from construction equipment and motor vehicles related to home construction. The NAHB also argues that instead of reducing emissions, the rule will actually exacerbate air quality in the San Joaquin Valley's because residents will not be able to afford homes close to their jobs and have to commute longer distances. Environmental groups that have sought to intervene in the lawsuit contend that the measure is consistent with a 2003 California law mandated that districts regulate indirect emission sources.

The ANPRM should serve as a wake-up call to property owners and their lenders about the potential significant impact that GHG regulation may have on their buildings. It is unlikely that any further action on the ANPRM will be taken prior to the end of the Bush Administration and that the incoming administration will probably need at least a year to finalize a rule regulating GHG emissions. Property owners and their lenders should use this time to evaluate the operations of their buildings to identify steps they might be able to take minimize the impact of any such regulation.

II. **USING THE NATIONAL ENVIRONMENTAL REVIEW ACT (NEPA) TO SPUR ENVIRONMENTALLY-SUSTAINABLE DEVELOPMENT**

The National Environmental Review Act ("NEPA") was the first national environmental legislation. NEPA requires federal agencies to evaluate and mitigate the environmental impacts of major federal projects..

Federal courts have required agencies to consider GHG emissions under NEPA but usually have deferred to the agencies' climate change assessments. For example, in *Border Power Plant Working Group v. Department of Energy,* 260 F.Supp.2d 997 (S.D. Cal. 2003), the Southern District of California initially invalidated an Environmental Impact Statement ("EIS") by the Department of Energy ("DOE") involving a proposal to connect the southern California power grid with two coal-fired plants in Mexico but subsequently approved a modified EIS that calculated the project would increase global GHG emissions by 0.088 percent, and the United States' GHG emissions by 0.023 percent but concluded that the expected impacts to global climate change would be "negligible."

Mayo Foundation v. Surface Transp. Bd., 472 F.3d 545 (8th Cir. 2006), involved approval of new railroad lines for transporting low-sulfur coal from the Powder River Basin in Wyoming to power plants in the Midwest. The Eighth Circuit initially ruled that increased coal

consumption, and associated GHG emissions were a reasonably foreseeable consequence of the project, and Surface Transportation Board (the "Board") should have considered air quality issues in its EIS. However, the court upheld a supplemental EIS in December 2006 concluding that project would not have significant environmental impacts.

In *Friends of the Earth v. Mosbacher,* 2007 WL 962949 (N.D. Cal. Mar. 30 2007), the plaintiff alleged that the Overseas Private Investment Corporation and Export-Import Bank failed to comply with NEPA when the federal agencies provided funding and loan guarantees to overseas projects without assessing impact of GHG emissions from the energy-intensive projects. The court initially denied the government's motion to dismiss but then held that the agencies were not required to prepare an EIS because the foreign energy projects were not federal actions. However, in a nod to the plaintiffs, the court said it would be difficult to conclude that there was a genuine dispute that GHGs do not contribute to global warming, and suggested that future NEPA climate change litigation could be focused on whether a particular agency's action was the "but-for" cause of effects on the domestic environment. While this language is technically referred to by lawyers as "dicta" because it was not related to the holding of the issue before the court, it is not unreasonable to expect future litigation involving federally-financed projects such as airports, highways, rail projects, ports, or marine terminals that fail to analyze the climate impacts of those projects.

A number of GHG-related NEPA actions have been filed. In *Montana Environmental Information Center v. Johanns,* No. 07-CV-01311 (D.D.C. July 20, 2007) a group of environmental organizations have asked the United States District Court for the District of Columbia to enjoin the Rural Utilities Service ("RUS"), a branch of the U.S. Department of Agriculture ("USDA") from lending billions of dollars to private developers and utilities across the country to build new coal-fired power plants until climate-related impacts of these projects are evaluated under NEPA. The RUS facilitates the electrification of rural areas by making direct loans and issuing loan guarantees to electric utilities to finance the construction of electric distribution, transmission, and generation facilities. The complaint charged that the RUS has already elected to participate in the funding of a 250 megawatt coal plant near Great Falls, Montana and was considering funding an additional seven coal plants located across the country that will accelerate climate change and eliminate the market for clean power. The plaintiffs estimated that the RUS funded projects will account for a "significant share" of U.S. GHGs yet never took a "hard look" at the consequences of proposed major federal actions. Specifically, the plaintiffs alleged that the RUS failed to consider the cumulative or incremental impacts of GHG emissions from the seven other coal plants that it was considering funding, that the actual energy needs were significantly less than what was claimed in the EIS, that RUS failed to consider a reasonable range of alternatives, and that RUS should have prepared a supplemental EIS based upon new information that was received after the issuance of the EIS. The case was settled when EPA agreed to withdraw a letter issued to an industry consultant that owners of new power plants did not have to consider use of Best Available Control Technology ("BACT").

III State NEPAs and GHG Impacts

Most states have adopted their own versions of NEPA. These laws have been primarily used to evaluate potential environmental impacts from proposed developments such as air and water pollution, congestion, and noise. However, in the wake of the United States Supreme Court decision in *Massachusetts v. EPA,* 127 S. Ct. 1438 (2007) environmental organizations and

states are beginning to turn to state environmental quality laws to force developers to reduce the GHG impacts of their projects as well as to ensure that the developments meet sustainability requirements. Following are the more notable examples of such

A. Massachusetts

In April 2007, the Massachusetts Executive Office of Energy and Environmental Affairs ("EOEEA") issued a Greenhouse Gas Emissions Policy to be implemented under the Massachusetts Environmental Policy Act ("MEPA").[35] Under MEPA, projects conducted by either a state agency or a private developer utilizing state funds or requiring state approvals must undergo environmental review if they exceed certain thresholds (e.g., alteration of more than 25 acres of land or the creation of more than 300 new parking spaces). Unlike NEPA, MEPA has a substantive component that requires agencies to make a finding "that all feasible measures have been taken to avoid or minimize" environmental impacts.

The first step in the process is the filing of an Environmental Notification Form ("ENF") that describes the project, its potential impacts, and any required state approvals. If potential environmental impacts are identified, the project proponent must then submit as an Environmental Impact Report ("EIR") which is similar to the NEPA EIS. For projects with lesser environmental consequences, the Secretary of Environmental Affairs determines whether an EIR is necessary based on an initial threshold assessment.

Under the new GHG Policy, an EIR must quantify the GHG emissions generated by the project and identify measures to avoid, minimize or mitigate the emissions. A project will be subject to the GHG Policy when an EIR is required and the project falls into one of the following categories:

- The Commonwealth or state agency is a project proponent;
- The Commonwealth or state agency is providing financial assistance to a private project proponent;
- The project is privately funded, but requires an air permit from the Massachusetts Department of Environmental Protection; or
- The project is privately funded but will generate: (i) 3,000 or more new vehicle trips per day for office projects; (ii) 6,000 or more vehicle trips per day for mixed use projects that are 25 percent office space; or (iii) 10,000 vehicle trips per day for other projects.

The Policy will be implemented in phases. Effective immediately, scoping documents for EIRs must identify and describe sources of project-related GHG emissions, and propose measures to avoid, minimize, or mitigate such emissions. Project proponents will not be expected to quantify GHG emissions until the state has developed a GHG protocol.

The Policy applies to the six GHGs covered by the Kyoto Protocol (CO2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and, sulphur hexafluoride). Applicants must also consider both "direct" emissions" such as emissions from boilers and "indirect" emissions such as emissions from vehicles driven by employees and plants supplying electricity to the proposed

project.

Although the Policy does not mandate the type of measures that must be used to avoid, minimize, or mitigate GHG emissions, EOEEA has developed a guidance document that provides examples of the type of emission reduction techniques that project proponents will be required to implement. These include:

- Energy efficiency improvements;
- Site orientation and building layout to maximize use of natural light, heating, cooling;
- use of low-impact development techniques such as reducing the use of asphalt and increasing the amount of shade provided by building elements or landscaping (e.g., green roofs);
- Transportation demand management (e.g., locating near mass transit, access to shuttle or bus services, ridesharing programs, bicycle and pedestrian accommodations; zip car spaces, etc.);
- On-site renewable energy and combined heat and power generation;
- use of clean and alternative fuels; and
- On-site reuse and recycling of construction and demolition materials and occupant waste materials.

Harvard University entered into the nation's first legally-enforceable GHG restrictions for a major real estate project in connection with the university's 20-year master plan for a new campus in Boston's Allston neighborhood. The project will increase the size of the Allston campus from 140 acres to approximately 215 acres.

Under a Draft Record of Decision issued under the state MEPA, the state DEP granted a waiver of a full environmental impact review for construction of a Science Complex consisting of a four-building, 589,000-square-foot project. The proposed waiver was based on the project's minimal environmental impact, ample available infrastructure, commitments for future environmental reviews of other aspects of the project, and other specified conditions One of the conditions is that the Science Complex will have to achieve 50 percent reduction in GHG emissions compared with national standards set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. ("ASHRAE").

Under a second MEPA document, Harvard agreed to establish a Special Review Procedure that would be used in lieu of the traditional two-step environmental review process. A Special Review Procedure is frequently used to provide environmental review for complex development that will be implemented over several years. The Special Review Procedure for this project requires Harvard to provide Interim Updates every three years and mandates project-specific filings to go through an extensive public comment process. Harvard also agreed to provide resources to facilitate technical review of documents by a citizens' advisory group.

A third scoping document also delineates "sustainable development principles" that Harvard must implement. These practices include stormwater and wastewater standards, and high-level transportation requirements as Harvard develops its Allston Campus Master Plan.

B. California

The California Environmental Quality Act ("CEQA") requires state and local agencies to determine if a project that requires discretionary approval may have significant environmental effects and to impose feasible mitigation measures. In general, the project proponent must prepare an EIR and may prepare a Mitigated Negative Declaration to reduce or mitigate a project's potentially significant effects. CEQA has procedural requirements that are similar to NEPA but also contains substantive provisions that prohibit agencies from authorizing actions with significant, unmitigated environmental impacts. These substantive provisions have allowed plaintiffs to argue that state and local agencies must require developers to measure and mitigate climate change impacts from new developments, and to require the agencies to assess climate change in their reviews.

Following passage of the California Global Warming Solutions Act of 2006, public agencies have began receiving comments on draft EIRs demanding that the project's contribution to climate change be assessed by estimating the project's GHG emissions. Earlier this year, the state Attorney General filed a lawsuit against the County of San Bernardino's General Plan alleging that county's general plan failed to analyze climate change issues.

California's adoption of statewide emission-reduction targets in 2006 supplied the basis for the State of California's claims in *State of California v. San Bernardino County*., San Bernardino recently settled the lawsuit and agreed to amend its General Plan. Under the terms of the settlement, the General Plan must establish a policy to reduce GHG emissions "reasonably attributable to discretionary land use decisions" and internal operations, and require adoption of a "Greenhouse Gas Emissions Reductions Plan." The Plan must set a baseline inventory of current sources of GHGs within San Bernardino, establish an inventory of the 1990 GHG emissions from those same sources and project new GHG emissions in San Bernardino in 2020 from its discretionary land use decisions and governmental operations. The Plan must then target reductions of those projected emissions.

A key to the San Bernardino settlement will be the identification of feasible mitigation measures that can be used to minimize GHG emissions. At this point in time, feasible measures appear to include high-density development to reduce vehicle trips, promoting carpooling, alternative fuel vehicles, public transportation, transportation impact fees; energy efficient design for buildings and appliances, use of solar panels, water reuse systems, and on-site renewable energy production.

As a result of the settlement, it appears that developers and project proponents will have to address GHG emissions in their CEQA documents. Indeed, air districts and other public agencies are now considering requiring project proponents to estimate their projects' GHG emissions and discuss their contribution to potential global warming effects. It would appear the future projects will have to be designed to reduce direct and indirect GHG emissions. In addition, to pass CEQA muster, project proponents will have to provide a clear analysis in the CEQA documents showing how those designs or measures will reduce GHG emissions so that public agencies can determine that climate change impacts have been properly evaluated.

A number of lawsuits have been filed under CEQA challenging the adequacy of climate change analysis prepared for private developments. The plaintiffs have challenged an EIR for a 2,700 unit residential/commercial development in *Center for Biological Diversity vs. City of Desert Hot Springs,* an EIR for a 1500 residential development in Banning (*Center for Biological Diversity vs. City of Banning*), have challenged a permit for commercial composting facility in *Center for Biological Diversity vs. San Bernardino County* and a permit for a 520,000-square-foot, big-box retail development with a 24-hour Wal-Mart Super center and generate close to 40,000 daily vehicle trips in *Center for Biological Diversity v. City of Perris.*

In another case, NRDC v. Reclamation Board, environmental groups are seeking to require a permitting agency to consider whether potential climate change impacts affect the viability of a development project. Plaintiffs allege that the Reclamation Board must consider how rising sea levels will exacerbate the environmental impacts of a 4,900 acre mixed-use development in Sacramento's San Joaquin Bay Delta, a system of lowland islands created by myriad levees and natural and man-made sloughs.

The California Public Utilities Commission proposed that all new housing developments and commercial buildings would have to produce all of their power needs so that should achieve "zero net energy" by 2020. The energy would be produced from solar panels, windmills or small generators. The commission also proposed that California electric utilities create a statewide energy efficiency plan rather than pursuing their own separate programs.

The California Energy Commission is recommending legislation that would mandate regional growth plans for areas with more than 100,000 residents to identify housing needs, development patterns and areas that should remain off-limits. Some utilities and municipal utility districts are working with local governments to site power stations more efficiently and communicate with developers early on in the planning stage to implement non-transportation efficiency measures.

C. Kings County, Washington

King County in the State of Washington issued an Executive Order requiring County agencies to consider climate change impacts as part of their project review under Washington's State Environmental Policy Act ("SEPA"). The Executive Order took effect on September 1, 2007.

The Executive Order applies to any project that requires a SEPA checklist and utilizes the United States Supreme Court decision in Massachusetts v. EPA, as a basis for its authority. It also cites previous Executive Orders under which County departments were directed to "employ increasingly aggressive strategies" and "innovative environmental management," including "coordinated strategies to mitigate and adapt to global warming. The Executive Order raises a number of issues:

- Climate Impacts-Is information required for "upstream impacts" (for example, from particular building materials), "mid-stream impacts" (impacts generated by the construction of the project itself) or

"downstream impacts" (increased vehicle trips associated with development).

- Vesting issues-.Because the regulatory requirements under this policy will be developed over a 16 month period, it is unclear when vesting will be available under the new Executive Order.
- Reliability of information. Without a clear indication of what information the County is seeking, it will be extremely difficult for project proponents to know what data to collect and submit in connection with their SEPA checklists.
- Regulatory focus- Will the focus be on mitigation such as through cap and trade or through direct reduction of GHG emissions.

Transportation Planning Compliance with State SIP- To comply with the SIP transportation planning obligations, current county policy is to require road improvements and improved traffic signals to reduce impacts. However, if mitigation becomes the preferred mechanism, projects may have to reduce overall vehicle trips and facilitate greater use of public transportation

IV. State and Local Energy Codes

Building codes are written legal requirements governing the design and construction of buildings. Most of the codes adopted by state and local governments set minimum standards for safe occupancy and to protect individuals from substandard living and working conditions. All building codes generally reflect a consensus of current design and construction practice. Because the greatest opportunity for making buildings more efficient is during the construction stage, many states have imposed energy efficiency requirements in building codes or have adopted energy codes.[36]

Unlike building codes, energy codes are not established to protect the immediate health and safety of the building occupants. Instead, they provide general benefits by reducing energy consumption. Energy codes most commonly address wall and ceiling insulation, window and doors specifications, lighting fixtures and controls as well as Heating, Ventilation, and Air-Conditioning (HVAC) equipment efficiency. The codes will refer to standards developed by professional organizations such as the Standard 90.1 jointly developed by the American Society of Heating, Refrigerating, and Air-conditioning Engineers, Inc. (ASHRAE) and the Illuminating Engineering Society of North America(IESNA).

Energy code compliance is measured in two ways. The most common is the prescriptive approach where a building must be constructed to the prescribed insulation and other values found in the code. Trade-offs may allowed between certain building components that have different energy performances to provide a degree of flexibility. The alternative method of compliance is a performance standard where the building is given an energy budget (total allowable energy use), and can use a combination of different insulation values and equipment efficiencies to achieve this budget. The overall energy performance of the building is what is measured. For example, a builder can use less insulation but a more efficient furnace to meet the allocated energy budget for the particular structure.

Under the Energy Policy and Conservation Act (EPCA), states are required to adopt the most recent version of ASHRAE Standard 90.1 that the Department of Energy (DOE) has determined will save energy. Alternatively, states can follow the commercial building provisions of the International Energy Conservation Code (IECC). Many state building or energy codes

reference the ASHRAE/IESNA Standard 90.1[37] or the IECC[38]. However, a number of states have also developed their own energy codes. As a result, state energy codes can vary greatly from state to state in scope and stringency.

It has been estimated that the IECC 2006 could increase energy efficiency by 30% in residential and commercial buildings while ASHRAE 90.1-2004 could reduce energy consumption in commercial buildings 30% below current standards. As of July 2008, though, less than half the states have adopted the most energy-efficient codes for commercial or residential buildings.

A growing number of states have established Renewables Portfolio Standards (RPS) where the utility is required to have a certain percentage of a utility's overall or new generating capacity or energy sales must be derived from renewable resources. Another similar program is known as a "set aside" where a utility is required to include a certain amount of renewable energy capacity in new installations. Utilities may be required to offer customers the option to purchase power generated from renewable sources. Utilities usually may provide the green power from renewable resources they own or purchase. Some states also allow utilities to purchase credits from a renewable energy provider certified by the state's Public Utilities Commission.

Many states have enacted corporate tax incentives allow corporations to receive credits or deductions ranging from 10% to 35% against the cost of equipment or installation to promote renewable energy equipment. The states vary on the amount of investment that must be made in a given renewable energy project before a credit can be claim. In most cases, though, there is no maximum limit imposed on the amount of the deductible or credit.

Many states also offer personal income tax credits or deductions to cover the expense of purchasing and installing renewable energy equipment. In some cases, the income tax credits may be a percentage or predetermined dollar amount for the cost or installation or renewable energy equipment. In other instances, the credit may be limited to a certain number of years following the purchase or installation or renewable energy equipment. The eligible technologies will vary with the state and may include solar and photovoltaic energy systems, geothermal energy, wind energy, biomass, hydroelectric, and alternative fuel technologies.

Some states also provide sales tax incentives such as exemption from the state sales tax for the cost of renewable energy equipment.

States may have also rebate programs to promote the installation of renewable energy equipment solar water heating and/or photovoltaic systems. The majority of the programs are available from state agencies and municipally-owned utilities and support. The rebates are usually available to residents and businesses but may be available to industry, institutions, and government agencies as well. Rebates can range from $300 to well over $1 million.

A number of states also offer a variety of grants to encourage the use and development of renewable energy technologies. Again, these grant program vary on amount and the kinds of technology that may be eligible for financial assistance.

State governments also offer low-interest loans for the purchase of renewable energy equipment. In many states, loans are available to residential, commercial, industrial, transportation, public, and nonprofit sectors. Repayment schedules will vary but may be as long as 10 years.

Some states may also enact laws specifically addressing solar or wind easements that allow existing rights of to a renewable resource to be secured from an owner whose property could be developed in such a way as to restrict that resource. The easement is transferred with

the property title so that the access rights runs with the land. Solar easements are the most common type of state solar access rule. Some states also prohibit neighborhood covenants that preclude the use of renewable energy sources.

Property taxes are usually collected by local governments but some states have adopted laws that specifically allow local governments authorities to provide a property tax incentive for renewable energy devices. Property tax incentives typically follow one of three basic structures: exemptions, exclusions, and credits but most provide that the added value of the renewable device is not included in the valuation of the property for taxation purposes.

Many county governments have signed the Cool Counties Declaration establishing local greenhouse gas inventory and the target of an 80 percent reduction in global warming emissions by 2050. The National Association of Counties (NACo) recently announced that it has joined the American Institute of Architects' 2030 Challenge to have zero net carbon emissions from public buildings by 2030. It sets intermediate targets for fossil-fuel reduction, beginning with a 60% decrease for all new buildings by 2010. NACo has also launched a County Climate Protection program to assist counties with their greenhouse-gas reduction targets.

V. State and Local Government Green Building Initiatives

22 states have entered into regional pacts that impose mandatory GHG emissions caps on a number of business sectors such as utilities, manufacturing facilities and transportation. Over 800 mayors had signed The U.S. Conference of Mayors Climate Protection Agreement, committing to reduce GHG emissions in cities below 1990 levels. Indeed, according to a fact sheet issued by Ceres and Environmental Defense in mid-September 2007, as a result of this patchwork of state and local GHG programs, approximately 58% of the country’s gross domestic product and 54% of the nation’s population are now subject to some sort of GHG emissions restrictions. The fact sheet also stated that half of the revenues of Standard & Poor’s 500 companies occur in nations that are parties to the Kyoto Protocol.

Many of the local initiatives rely on so-called “urban village” or compact design, or other high-density designations as part of their zoning or comprehensive plans to encourage mixed used development as a means of reducing vehicle trips. However, 90% percent of the cities require or anticipate requiring that new city government buildings be more energy efficient and environmentally sustainable. Perhaps most important, three-quarters of the cities plan to launch initiatives to encourage or impose energy efficient and use sustainable building techniques on privately owned buildings.

As of August 2008, approximately 115 municipalities have adopted green building policies requiring newly constructed public buildings, certain renovations of existing public buildings to meet certain green building standards. Approximately 75 incorporate the Leadership in Energy & Environmental Design (“LEED”) construction certification standard adopted by the U.S. Green Building Council ("USGBC") rating system.

In many jurisdictions, the definition of public buildings for the purpose of their green building requirements is broadly defined so that it applies to projects receiving a certain level of public funding including tax increment financing. Some cities have extended there green building requirements to construction and renovation of privately-owned buildings. The thresholds and performance standard vary with the jurisdiction.

Local governments are also turning to various legal mechanisms to protect solar access, including solar access ordinances, development guidelines requiring proper street orientation, zoning ordinances that contain building height restrictions, and solar permits

A. **What is a "Green" Building?**

Sustainable or "green building" refers to the practice of designing, constructing, operating, maintaining, and replacing buildings in ways that cut energy use, conserve natural resources and reduce greenhouse gas emissions. Green building practices also create healthier and more productive indoor environments.. A number of private consensus standards systems have been developed over the past few years that serve as performance standards for green buildings. These consensus standards vary in scope and certification procedures. The most widely accepted green building rating systems are the:

- Building Research Establishment's Environmental Assessment Method (BREEAM);
- Comprehensive Assessment Systems for Building Environmental Efficiency (CASBEE);
- GBTool;
- Green Globes U.S.; and
- Leadership in Energy and Environmental Design (LEED).

Note: ***Because of the flexibility of most green building rating systems, a building with poor energy efficiency can be certified as "green". Since energy-related points may not be required by a particular green rating system, it is important to evaluate how the property was rated on energy. Additionally, since green recognition is often given to a building prior to it being fully occupied and commissioned, it is important to determine if the fully-commissioned building has achieved its intended efficiency.***

The LEED rating system is a third party certification program created by the United States Green Building Council (USGBC). The USGBC is working with the American Society of Heating and Air-Conditioning Engineers and the Illuminating Engineering Society of North America to integrate LEED into commercial building codes.

The LEED family of rating systems is the most commonly used benchmark for he design, construction and operation of high performance green buildings. LEED certification is available for all building types including new construction and
major renovation (LEED-NC), existing buildings (LEED-O&M), commercial interiors (LEED-CI), core & shell (LEED-CS), schools (LEED for Schools) and homes (LEED for Homes).LEED systems for neighborhood development, retail and healthcare are currently pilot testing. To date, there is over 3 billion square feet of construction space involved with the LEED system.

LEED is a point based system where projects earn LEED points for satisfying six categories of green building performance criteria. The six categories include Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality

and Innovation in Design. Each category contains a range of various points that are available. Depending on the particular LEED rating system being used, projects must achieve certain minimum performance standards known as prerequisites for which no points are awarded but that must be achieved to satisfy the category. The project may earn for various subcategories that go beyond the required prerequisites for the particular environmental category.

LEED has four progressive certification levels. The minimum certification level is Certified, followed in ascending order by Silver, Gold and Platinum. The project must achieve a minimum total overall points to satisfy the certification levels though the mix of points can vary with the project.

LEED Performance Categories

- **Sustainable Sites-** The purpose of this category is to incentivize so-called "smart" development. Depending on the LEED system being pursued, developers must prevent the loss of soil during construction, prevent discharge of sedimentation into sewers and streams and comply with air pollution emissions requirements for dust or particulate matter.

  Points may be awarded if the building is located on a a brownfield, is not prime farmland, in a flood-plain, critical habitat of threatened or endangered species, within 100 feet of any wetland, within 50 feet of a water body or former parkland, protecting or restoring habitat, and maximizing open space . Additional points are available for re-development of a site in a densely populated community, within proximity to a residential area and mass transit. Points may also be awarded for providing space for bicycles and fuel efficient vehicles parking, minimizing stormwater system runoff, roofing materials that do not absorb a high amount of heat and reduce excess nighttime exterior lighting.

- **Water Efficiency**- This category requires the efficient use of water in building operation. Depending on the LEED rating system being pursued, points are available warded for water efficient landscaping such as reducing use of potable water consumption for irrigation. Points are also available for innovative wastewater technologies, such as using water-conserving plumbing fixtures or non-potable water to reduce potable water use.

- **Energy & Atmosphere-** This category requires optimization of energy-efficient. In general, the prerequisites to achieving any points in this category are verifying that the buildings energy systems are installed, calibrated and perform as designed. In addition, the building and building systems must meet minimal energy efficiency standards. Finally, there must be no chlorofluorocarbon (CFC)-based refrigerants in the building. Points are available on a sliding scale based on the overall energy savings as compared to a typical building. Additional points are awarded for using renewable energy either onsite or pursuant to an agreement with an energy provider, managing refrigerants properly, and measuring energy savings.
- **Materials & Resources-** This category requires that collection and storage of recyclables is provided for in building design and operations. It also encourages

the use of recycled materials, locally manufactured environmentally responsible materials, and certified wood. Points can be obtained for minimizing construction waste and for using recycled and locally-manufactured materials. In addition, major renovation projects are eligible for points for reusing the existing walls, floors and roof, and for reusing interior non-structural elements

- **Indoor Environmental Quality-** This category seeks to ensure that green buildings have optimal lighting, thermal comfort and healthy indoor air quality for their occupants. In general, the prerequisite is that the building acvhieve minimum indoor air quality (IAQ) performance standard, and prohibits smoking in the building. Points are available for increased ventilation, indoor air quality management during and after construction, the use of low emitting materials, carbon dioxide monitoring, and allowing occupants to control the systems in their personal workspace.
- **Innovation and design process**- This category is intended to encourage project planning and design that improves the coordination and integration of the various elements in a green building. Points are available for using a LEED-accredited professional, developing and implementing strategies that address sustainability issues in ways that are either not covered in the LEED guidelines or that substantially exceed LEED requirements.

Individual LEED Rating Systems

USGBC has established the following building rating systems:

LEED for New Construction (LEED-NC) – This is by far the most common LEED rating system used to date. LEED-NC applies to both new construction and major renovations and is most frequently used for commercial and institutional projects such as office buildings, hotels, high-rise residential buildings, government buildings, recreational facilities, retail and service establishments and institutional buildings (libraries, schools, museums, places of worship, etc.).

The maximum points available for the LEED for New Construction is 69 points with the scoring for the four levels of certification as follows: Certified (26-32 points), Silver (33-38 points), Gold (39-51 points) and Platinum (52-69 points).

LEED for Core & Shell (LEED-CS) -This rating system establishes a set of performance standards for certifying the sustainable design and construction of speculative and core and shell buildings such as structure, envelope and the HVAC system.

LEED-CS encourages the implementation of green design and construction practices in areas the developer can control. LEED-CS can be used for projects where the developer controls the design and construction of the entire core and shell base building such as MEP/FP systems but has no control over the design and construction of the tenant fit-out. Examples of this type of project are a commercial office building, medical office building, retail center, warehouse, or lab facility.

LEED-CS recognizes that developers of speculatively developed building. and.Thus, the scope of LEED-CS is limited to those elements of the project under the direct control of the owner/developer. The scope can range significantly depending on the specifics of a particular project.

LEED-CS can also be used for projects where key building areas may be outside the direct control of the developer or building owner such as interior space layout, interior finishes, lighting, mechanical distribution, and other tenant-related systems. This is often found in retail development. USGBC cautions that projects with limited scope should review the specific credit requirements for guidance.

Note: LEED-CS Credit requirements can be achieved either through Design and construction of the building core and shell or establishment of tenant requirements that meet the LEED-CS credit requirementsbut will be implemented as part of the tenant controlled buildout.

A core and shell rating can also be attained without making any requirements of a tenant.A tenant can decline to pursue a LEED-CI without impacting the building's LEED-CS rating.. However, if a developer incorporates make specific lease requirements that meet a particular credit in the LEED-CS Rating System, the LEED-CS project may be able to receive a point for this credit even if the work is not part of the core and shell design and construction.

For projects that are designed and constructed to be partially occupied by the owner/developer, LEED-CS assumes the owner/developer has direct influence over the portion of the work that would typically be tenant interior construction. For projects of this type to utilize the LEED-CS Rating System, the owner/tenant must occupy 50% or less of the building's leasable space. USGBC recommends that when the owner/tenant occupies more than 50% of the tenant spaces, the project should utilize LEED-NC. LEED-CS is designed to complement LEED-CI.

LEED-CS addresses the following categories: Site selection, Water efficiency in core and shell building systems, Energy optimization of the core and shell systems and provisions for allowing tenant spaces to optimize operational building energy efficiency, materials and resource guidelines for construction of building core and shell, and indoor environmental quality planning to ensure tenant build-out spaces are able to make optimal use of Indoor Environmental Quality attributes such as thermal comfort, daylight and views as well as prevention of contamination from indoor pollutants.

Once a project is registered as a LEED-CS, the project team may apply for precertification. The LEED-CS Precertification is a unique aspect of the LEED-CS rating system and serves as formal recognition by USGBC that a project has established a goal to develop a LEED-CS building. LEED-CS Precertification is available after USGBC has reviewed early design stage documentation. Once precertification is granted, the developer/owner can market the building's proposed green features to potential tenants and financiers

The LEED-CS reference guide acknowledges design teams may encounter challenges in applying a LEED-CS prerequisite or credit to a particular project where the Reference Guide does not sufficiently address a specific issue or there is a special conflict that requires resolution. To address such issues, the USGBC has established the LEED-CS Credit Interpretation Ruling (CIR) process

Another feature of LEED-CS is that separate certification applications can be submitted for the design and construction instead of waiting for all project documentation to be

submitted at the end of the construction phase. Project teams will be able to submit designated "design phase credits" at the end of the design phase for review by USGBC. Design phase credits are those credits that USGBC can reasonably evaluate based on design phase documentation. For example, a project that will be built on a brownfield site could obtain Sustainable Sites Credit at the design phase.

Once USGBC has received the complete design phase application and the design phase fee portion of the total certification fee, the USGBC will formally rule on the application by designating each attempted credit as either Anticipated or Denied. No final certification is made at this at this time nor are any credits be awarded. Instead, this process the project the opportunity to assess the likelihood of credit achievement. It also is designed to ensure that the design is executed in the construction phase according to design specifications.

When construction is completed, the project team will submit all attempted credits for review. If the project team had a design phase review and ny of the design phase Anticipated credits have changed, additional documentation must be submitted to substantiate continued compliance with credit requirements. Otherwise, the project team must submit a verification that the design has been executed as planned in the construction phase.

Once USGBC has received the complete application and fee (the remainder of the total certification fee, if a design review has been conducted), the USGBC will formally rule on the full application. All applicant-verified design phase credits that were designated as anticipated and have not changed since the design phase review will be declared as Achieved. All other credits will be designated as either Achieved or Denied.

The LEED-CS rating levels are awarded as follows: Certified (23-27 points), Silver (28-33 points), Gold (34-44 points) and Platinum (45-61 points).

LEED for Commercial Interiors (LEED-CI)- This the LEED rating system for the tenant improvement market. It is the recognized system for certifying high-performance green interiors that are healthy, productive places to work; are less costly to operate and maintain; and have a reduced environmental footprint. LEED for Commercial Interiors gives the power to make sustainable choices to tenants and designers, who do not always have control over whole building operations

LEED for Existing Buildings: Operations and Maintenance (LEED-O&M)- This rating system identifies and rewards current best practices that use less energy, water and natural resources; improve the indoor environment; and uncover operating inefficiencies. The new version of LEED-O&M now establishes minimum energy requirements of at least 20% but also provides 50% more points for energy efficiency. The certification levels under the revised LEED-O&M are 24-42 points for Certified, 43-50 points for Silver, 51-67 points for Gold and 68-92 points for Platinum.

The LEED-NC and LEED-CI focus largely on the construction and/or major renovation phase of a building. However, the LEED requires buildings to obtain LEED re-certification at least once every five years. LEED O&M can be used to provide ongoing certification that buildings that that obtained certification under LEED-NC, LEED-CS, LEED-CI and LEED-Schools are operating as designed and constructed to ensure high performance over the lifecycle of the building.

Note: Buildings can re-certify annually. Annual certification might be beneficial in cases where building operators want yearly feedback on building performance for performance reviews and udgets, or in cases where LEED certification scores are included in lease agreements as a metric for quality of delivered space. Applications for re-certification only requires documentation of changes in policies and performance data that have occurred since initial certification.

LEED-O&M may also be used for existing buildings that gave not previously obtained LEED certification. With over 60 billion square feet of existing building stock, LEED-O&M presents the greatest potential for reducing the country's energy consumption and CO2 emissions

A key goal of LEED-O&M is to institutionalize a process of reporting, inspection and review over the lifespan of the building. LEED-O&M does not necessarily require any major upgrades but promotes using performance records, testing and analysis and tracking resource use. LEED-O&M addresses whole-building cleaning and maintenance issues (including chemical use), recycling programs, exterior maintenance programs, and systems upgrades. LEED-O&M requires a minimum of three months of operational data for an initial certification and at least 12 months of continuous months for complete certification. However, longer performance period are required for certain of the energy efficiency points.

Existing buildings undergoing substantial renovations (alternations or additions that involve more than 5% but less less than 50% of the total building floor area or relocation of no more than 50% of building occupants). Buildings with additions or alterations that exceed these thresholds should pursue LEED-NC certification.

LEED for Schools- This rating System recognizes the unique nature of the design and construction of K-12 schools. Based on the LEED for New Construction rating system, it addresses issues such as classroom acoustics, master planning, mold prevention and environmental site assessment. By addressing the uniqueness of school spaces and children's health issues, LEED for Schools provides a unique, comprehensive tool for schools that wish to build green, with measurable results. LEED for Schools is the recognized third-party standard for high-performance schools that are healthy for students, comfortable for teachers, and cost-effective. As of April 20, 2007, all new construction and major renovations of K-12 school facilities seeking LEED certification must use the LEED for Schools Rating System. LEED for New Construction can no longer be used to certify K-12 school building projects. LEED for Schools is recommended – though not required – for Early Education, Daycare, and Higher Education facilities. For more guidance on registering for LEED for Schools, please use the LEED for Schools Registration Guidelines document.

LEED for Retail Pilot- recognizes the unique nature of the retail environment and addresses the different types of spaces that retailers need for their distinctive product lines. USGBC and over 80 Pilot project teams are collaborating to create two new rating systems: LEED for Retail: New Construction, and LEED for Retail: Commercial Interiors – both expected for market launch in the first quarter of 2009. The pilot project teams are providing real market feedback on how to apply LEED for New Construction v2.2 and LEED for Commercial Interiors v2.0 to retail spaces. Although each retail rating system is on a different development schedule, a comprehensive LEED for Retail Reference Guide will be printed and available in the first quarter of 2009.

The LEED for Retail Pilot is no longer accepting expressions of interest for participation. Project teams interested in using LEED for Retail-NC and/or LEED for Retail-CI must wait until market launch. In the interim, interested project teams can review the LEED for Retail drafts below. Project teams are also encouraged to register any potential retail projects under LEED for New Construction v2.2 or LEED for Commercial Interiors v2.0 today and switch to LEED for Retail once it becomes available. An announcement will be made when LEED for Retail is open to the market with instructions on how to switch your project over.

LEED for Homes This rating system that promotes the design and construction of high-performance green homes. A green home uses less energy, water and natural resources; creates less waste; and is healthier and more comfortable for the occupants. Benefits of a LEED home include lower energy and water bills; reduced greenhouse gas emissions; and less exposure to mold, mildew and other indoor toxins. The net cost of owning a LEED home is comparable to that of owning a conventional home.

LEED homes are rated by LEED for Homes Providers – local organizations with demonstrated experience and expertise in their region's market. A LEED for Homes Provider will provide marketing assistance to builders, providing green home rating support services to builders as well as training, coordinating and overseeing LEED qualified inspectors and builder support staff. For the pilot phase, USGBC selected 12 LEED for Homes providers in some of the country's leading housing markets. Providers demonstrated outstanding abilities and have a proven record of supporting builders in the construction of high-performance, sustainable homes. During the LEED for Homes pilot, these providers were responsible for selecting appropriate pilot projects and verifying that the homes were built to meet the requirements of the rating system.

Homeowners interested in buying or building a LEED home should contact one of the LEED for Homes providers below. If there is not a provider in your area, please feel free to contact a geographically proximate provider. USGBC will be selecting new providers as needed after the national roll-out of LEED for Homes.

Neighborhood Development (currently under development)- Currently in pilot stage, the LEED for Neighborhood Development Rating System integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. LEED certification provides independent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. LEED for Neighborhood Development is a collaboration among USGBC, the Congress for the New Urbanism and the Natural Resources Defense Council. The pilot program is no longer accepting projects. The post-pilot version of the rating system, which will be available to the public, is expected to launch in 2009.

According to the USGBC, the benefits of Developing a LEED for Neighborhood Development Community are Reduce Urban Sprawl by locating buildings that are closer to existing town and city centers areas with good transit access, infill sites previously developed sites sites adjacent to existing development. Typical sprawl development, low-density housing and commercial uses located in automobile-dependent outlying area, can harm the natural environment in a number of ways. It can consume and fragment farmland, forests and wildlife habitat; degrade water quality through destruction of wetlands and increased stormwater runoff; and pollute the air with increased automobile travel.

This pilot is also intended to encourage healthy living by creating compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities. Research has shown that living in a mixed-use environment within walking distance of shops and services results in increased walking and biking, which improve human cardiovascular and respiratory health and reduce the risk of hypertension and obesity.

The standard also hopes to minimize fragmentation and loss of habitat are major threats to many imperiled species by encouraging compact development patterns and the selection of sites that are within or adjacent to existing development to minimize habitat fragmentation and also help preserve areas for recreation.

LEED for Healthcare- This rating system was developed to meet the unique needs of the health care market, including inpatient care facilities, licensed outpatient care facilities, and licensed long term care facilities. LEED for Healthcare may also be used for medical offices, assisted living facilities and medical education & research centers. LEED for Healthcare addresses issues such as increased sensitivity to chemicals and pollutants, traveling distances from parking facilities, and access to natural spaces.

The starting point in the LEED process is the establishment of objectives by the owner, in consultation with its architect and LEED consultant, and the selection of the particular rating to be achieved. The criteria for that rating are then incorporated by the architect into the drawings and specifications, for implementation by the contractor.

Property owners and developers should review the requirements of the various LEED rating systems, and discuss the benefits and tradeoffs with their by green building professionals to ensure that the building will meet the project objectives. Once the green building team establishes the objectives, green building specifications can be developed.

Note: Because of the various ways that points may be accumulated, there can be significant variation in the costs and time needed to achieve a particular certification as well as long-term operations and maintenance costs. Thus, it is important even if after the Parties agree upon the level of certification, e.g., LEED-NC Silver, they must then agree upon the combination of credits used to achieve that point total. Failure to do so could result in the contract containing significant ambiguity on its precise terms leading to subsequent varying interpretations, significant cost overruns, and time delays. Based on the points earned, a building may be rated as Certified, Silver, Gold and Platinum.

The LEED rating process begins with registration of a project on the USGBC Web site and completion of an online application.[39] At the end of construction or renovation, a project must submit verification that the particular design elements were actually implemented to receive certification Following submission of the application, the USGBC formally rules on each attempted point as "achieved" or "denied"; the project team has a limited opportunity to appeal. Following completion of the USGBC review and any applicable appeal, USGBC will recognize buildings that achieve one of the rating levels with a formal letter and a mountable plaque.

B. Green Building Initiative ("GBI")- Another standard growing in popularity is the GBI "Green Globes" building rating system. Green Globes is an online building assessment tool that

may be used for new construction of commercial buildings and with the maintenance and improvement of existing buildings. It is questionnaire driven and is generally acknowledged to be less cumbersome and less expensive to administer than LEED, although not as well known or rigorous. GBI uses a 1,000 point scale and projects can earn between one and four Globes, with four indicating the highest level of sustainability within the system.

In 2005, GBI became the first green building organization to be accredited by the American National Standards Institute ("ANSI"), the United States' official certifier of more than 10,000 voluntary consensus standards across dozens of business sectors. In contrast, USGBC does not plan to submit its LEED system for ANSI certification.

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C. **American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and Illuminating Engineers Society of America (IESNA)-** These organizations are currently developing a standard for the design of high-performance green buildings known as Proposed Standard 189. This standard is intended to new buildings and major renovations of existing buildings. The ASHRAE/IESNA standard will addresses sustainable sites, water use efficiency, energy efficiency, materials and resources, and indoor environmental quality.

Most importantly, the standard will be written in code language and will contain a series of mandatory provisions applicable to all projects as well as additional prescriptive and performance options for compliance. The first version of this standard will be released in late 2008 the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), in collaboration with USGBC and the Illuminating Engineers Society of America (IESNA), is currently developing a standard for the design of high-performance green buildings, referred to as Proposed Standard 189. n16 This standard provides minimum criteria that apply to new buildings and major renovation projects n17 and, like LEED, addresses sustainable sites, water use efficiency, energy efficiency, materials and resources, and indoor environmental quality. However, it also provides minimum criteria for a buildings GHG emissions. The standard will be written in code language and will contain a series of mandatory provisions applicable to all projects as well as additional prescriptive and performance options for compliance. It is expected that forward-thinking jurisdictions may add it to their building codes either for all new buildings or only for new buildings which have some jurisdictional participation, such as public financing. It is expected that the first version of this standard will be released in late 2008

D. **National Association of Home Builders Research Center ("NAHB")**- This trade organization recently developed its own Model Green Home Building guidelines for national standard certification known as NAHB ICC-700.

Under the NAHB green building program, a building would simply have to register its project on the new NAHB website (www.nahbgreen.org) and then use the software scoring tool for the building components that the builder seeks certification. Four certification standards are available: bronze, silver, gold or emerald. Builders must hire NAHB-trained verifers. The NAHB plans to charge a $150 verification fee per project for members.

E. Department of Energy Energy Star Program- Because of the scope of the LEED standards and the need for third-party verification, owners of smaller buildings may find that achieving LEED certification may be cost prohibitive. Another option for building owners interested in having their buildings receive environmental recognition is to obtain Energy Star certification

from the EPA. Unlike LEED which examines building materials, air quality, sustainability as well as energy and water efficiency, Energy Star only focuses on a building's energy efficiency. Because of the extra construction costs and third party verifications, LEED certification is significantly more expensive than obtaining an Energy Star Certificate.

In New York City, for example, LEED certification can increase construction costs by 20 percent while meeting Energy Star requirements may only result in a 10 percent premium in construction costs. For many small building owners, LEED certification is simply not cost-effective. According to some real estate experts, obtaining an Energy Star certificate can increase building value by 15 percent.

To qualify for Energy Star, a building must be among the top 25 percent of energy efficient buildings. Until recently, Energy Star was not available for buildings more than three stories in height. However, EPA and the New York State Energy Research and Development Authority ("NYSERDA") are finalizing standards to certify mid-rise and high-rise residential buildings.

Building owners that cannot qualify for one of the green building standards or where certification is simply too expensive may still be able offset or minimize the carbon emissions of their building and tenant operations by purchasing carbon offsets such as Renewable Energy Certificates ("RECs") from producers of alternative energy (e.g., wind, solar, geothermal, small-scale hydropower, biomass, etc) from a host of third-party voluntary offset certifiers. Because there are differing protocols for measuring and inventorying GHG emissions, it is important that purchasers verify the validity of offsets that will be used to reduce the carbon impact of a particular project.

Building owners and project developers can also purchase emission credits that are traded on one of the regulated markets such as the Chicago Climate Exchange ("CCX"). The 400 members of the CCX have agreed to reduce their GHG emissions through legally-binding mechanisms to meet annual GHG emission reduction targets. Those members who reduce below the targets may sell or bank their surplus allowances while those who exceed their targets must purchase additional allowances. Participants must have their emissions reductions verified GHG emissions are traded using a carbon financial instrument ("CFI") which represents 100 tons of CO2 equivalent ("CO2eq"). Trading is accomplished through a web-based platform. The CFI contract was recently trading at around $6 per contract, approximately double the cost from the fall of 2007.

D. Components of Local Green Building Initiatives-

Some cities have adopted standards that apply to private construction while others are relying on incentives such as waiving or refunding permit fees, implementing streamlined permitting or allowing greater density allocations to stimulate green buildings, tax credits, grants or loans, or reduced property taxes.

San Francisco recently adopted one of the nation's most rigorous green building standards. The green building codes apply to new commercial buildings with over 5,000 square feet and new residential structures over 75 feet in height, and renovations of commercial buildings with more than 25,000 square feet. New, non-high-rise residential buildings would have to achieve GreenPoint. The standards are to be phased in between 2008 and 2012, becoming more stringent each year. For example, new, large commercial buildings would have to meet the basic LEED standard in 2008 but LEED Gold would be required in such buildings starting in 2012. In 2004, the Board of Supervisors approved an ordinance requiring all new municipal construction and

major renovation projects to achieve LEED standards. In 2006, the city started fast-tracking permits for developers who voluntarily met LEED standards.

Los Angeles is requiring new buildings with more than 50 residential units or 50,000 square feet of commercial floor space to achieve at least LEED Certified status. Developers willing to achieve LEED Silver will qualify for expedited permit review that could save from two months to a year in processing time. All new school and public buildings 7500 square feet or larger must also comply with the LEED standards.

In January 2007, Boston added a new section to the city's zoning code that applies to projects involving 50,000 square feet or more of new development or substantial rehabilitation. Unlike San Francisco, Boston does not require developers to go beyond the silver standard. projects in Boston may substitute up to four "Boston Green Building Credits" to replace the traditional LEED points used to obtain certifiable status. These Boston-specific criteria allow the City to focus on issues of particular local importance, including historic preservation, modernizing the electric grid, groundwater recharge and transportation demand management.

Both Atlanta and Seattle have adopted ordinances that require new buildings and renovations of buildings that have more than 5,000 square feet trigger compliance to achieve LEED Silver certification.

To achieve New York City's goal of reducing GHG emissions 30 percent by 2030, construction projects involving new buildings or major alterations and substantial reconstruction of existing buildings that cost at least $2 million will have to achieve LEED Silver or higher rating. There are also efficiency requirements for boiler, lighting, HVAC and plumbing system installation/replacement that exceed certain cost thresholds. The city is also in the process of adopting a comprehensive retrofit program for existing buildings to achieve state-mandated cuts in energy consumption by 2015.

An example of a county-level initiative is Eagle County, Colorado. The county has implemented an its Efficient Building Code (ECOBuild) that requires new single-family and multi-family homes as well as expansions of existing homes that exceed 50 percent to comply with a point-based system that addresses some of the same components set forth in the LEED rating system. Buildings or projects that achieve LEED certification do not have to comply with ECOBuild. There are incentives for achieving points above the minimal standard such as permit fee rebates and other cash rebates.

In addition to the regulatory "sticks" requiring reductions carbon impacts of buildings, many states and the federal government are establishing financial incentives or "carrots" to encourage the construction of green buildings. For example, the Federal Energy Policy Act of 2005 authorizes a tax deduction of up to $1.80 per square foot for commercial buildings that reduce energy consumption for heating and cooling by at least 50 percent. The New York State Green Building Tax Credit provides a credit of up to seven percent for eligible costs.

VI. WHAT DOES THIS MEAN FOR BUILDING OWNERS-THE FUTURE OF DUE DILIGENCE? • The conventional wisdom is that the transportation and industrial sectors will be most affected by these local GHG initiatives. However, when one takes a close look at these local regulatory initiatives, it is clear that brunt of the GHG emissions reductions will fall on owners and operators of multi-family residential and commercial buildings since the buildings account for the largest source of GHG emissions in most cities. As a result, the costs to comply

with the aggressive GHG emissions reduction strategies may soon become an important element of due diligence.

According to a recent McKinsey report, market distortions provide disincentives for building owners and occupants to make energy-efficient investments in residential buildings. For example, a person renting an apartment may be use appliances that consume a lot of electric power but the landlord has little incentive to buy more efficient appliances because the tenant pays the electricity bills. Likewise, renters have little incentive to buy energy-efficient appliances that will have to be left in the apartment when they vacate it.

However, BOMA has indicated that developers and building owners are finding their profits squeezed by high energy and water costs. BOMA says that these factors constitute 28 percent of operating costs for downtown office properties, and 30.4 percent for suburban properties.

There has been some concern over the "green cost" premium and that impacts a building owners return on investment (ROI). It is generally true that green buildings are initially more costly than conventional buildings. So-called split incentives can cause both building owners and tenants to focus on the so-called "first-cost green premium" and not consider total life-cycle costs. how to evaluate those costs against the lower operating costs over the lifetime of the building. Moreover, the first-cost premium can be minimized with careful integrated planning and design.

Sophisticated commercial tenants are beginning to actively seek green alternatives, and many are including green requirements in the lease. In response, developers are going green to satisfy the market. The prestige and goodwill associated with green buildings is slowly redefining what constitutes a “Class A” office space. As a result, owners and investors of conventional building owners are beginning concerned that their buildings will be at a competive disadvantage as green buildings become the preferred choice of tenants. Some real estate firms have started to jump on the green building bandwagon because they have become nervous about holding a portfolio of obsolete, inefficient buildings. Increasingly, clients and tenants show a preference for green buildings, which have been proven to increase productivity, retain employees and lower absenteeism. Indeed, according to the McGraw-Hill study, green buildings have 3.5 percent higher occupancy rates, 3 percent higher rents, and an average 7.5 percent increase in building value. Corporations with sustainable business policies are building highly visible green headquarters including Bank of America, Toyota, Goldman Sachs, Hearst, IBM, JPMorgan Chase, and Herman Miller. The Freedom Tower, which replaces the World Trade Center, will be LEED-certified. The pressure to operate and build environmentally-sensitive buildings is not only coming from government. According to representatives from the real estate industry, influential tenants are demanding green office space in large cities, doing due diligence on buildings’ sustainability and asking about the certification level of the building.

Estimates for the cost of LEED compliance vary depending on the building type and LEED certification level. In general, it appears that LEED certification adds 1 to 5 percent to a construction project. Some LEED points are more costly than others and may not make economic sense for a particular project. For example, some of the higher level wastewater treatment and energy efficiency credits have significant budget impacts. Of course, offsetting some of those costs are lower operating costs as well as state and federal tax incentives.

Based on a study of 33 LEED-certified buildings published in 2003 by Gregory H. Kats of Capital E Analysis, the green premium for the varying LEED certification levels over typical development costs were roughly as follows:

1) Certified – 0.66 percent
2) Silver – 2.11 percent
3) Gold – 1.82 percent
4) Platinum – 6.50 percent

The Kats study showed that the average green premium for buildings in the sample set was less than 2%, or $3-$5 per square foot. The same study concluded that during the life of a green building, the cost savings are estimated as high as 20%, or $0.50 to $0.65 per square foot, when worker health and efficiency are considered along with energy and other associated savings. Using these numbers, California's Task Force on Green Building determined that spending an additional $100,000 to incorporate green building techniques and materials on a $5 million state project would result in a $1 million savings over the 20-year life of the structure. These savings are expected to increase dramatically by 2010 as green materials and design techniques become more readily available. Eventually, once green design and materials become commonplace, the green premium will no longer apply.

A study prepared by Northbridge Environmental Management Consultants in the same year estimated the cost of LEED certification at 4.5 to 11 percent over standard development costs. Both publications admitted to the difficulty of isolating LEED costs from standard costs in coming to their conclusions, but the Kats study supported its findings with costs associated with specific projects, whereas the Northbridge Environmental Management Consultants study was less clear on its methodology.

Increases in soft costs and hard costs are almost equally responsible for the green premium. Hard costs include, but are not limited to, the premium for green materials and the additional costs of maintaining a green construction site, which requires separation and recycling of construction waste. The soft costs include the additional costs of design, commissioning, LEED documentation and energy modeling. The documentation required by USGBC for LEED certification has been viewed by project teams as one of the most significant cost and time burdens of the system. Although USGBC has attempted to lessen this burden by use of an online system, the documentation process is onerous for a first-time project team.

Even with the current green premium, however, today's investors believe that "building green" can result in significant returns. The most apparent direct benefit associated with green building are the savings on energy, waste and water during the building's life. Other direct monetary benefits include the following: (1) tax savings and incentive programs, (2) insurance savings, (3) better financing opportunities and (4) expedited construction permitting procedures in some localities. Green buildings also meet the legal needs of industries that must comply with environmental regulations and stand ready to meet the needs of those industries that expect to soon be subjected to new federal regulations designed to address green concerns.

It is not inconceivable that in the near future, purchasers and lenders will be routinely asking if a building meets the requirements of local Climate Change initiatives and, if not, require cost estimates for bringing the building into compliance. If a building is not located in a jurisdiction that has adopted a Climate Change program, the lender might as a condition of the loan require the borrower to make capital investments to reduce the carbon footprint of the building. These costs may not only involve energy efficiency measures but possibly boiler retrofits and pollution control technology. For construction loans, lenders or anchor tenants may require developers to covenant that the building will meet certain sustainability standards or certifications, and to

require third-party verification that the building achieves the intended standard. Already, some banks are starting to provide better loan terms to owners of “green” buildings. These more favorable terms can include lower interest rates and larger loans as a result of lower operating costs (and lower building reserves). Landlords may start to inquire about the energy needs of tenants and require energy-intensive tenants such as medical offices to take measures to reduce their energy consumption. Shareholders and members of co-ops and condos may want their buildings to reduce carbon footprint.

Green construction will bring with it a host of novel legal contractual issues that attorneys for building owners, developers and lenders will need to anticipate and address in contracts, leases and loan agreements such as the specific responsibilities among the members of the project team. The American Institute of Architects (AIA) has already issued "Standard Form of Architect's Services" for LEED Certification (B214). A forthcoming article will discuss these issues in greater detail. For now, a summary of the issues attorneys need to consider are as follows:

- It is important to identify the design and performance standards, including long-term performance goals, in the bid packages. It is crucial for the project team to determine the certification goals early in the project. Not all credits are feasible for every project. The developer or building owner must understand that certification can involve tradeoffs. For example, lighting is the single largest source of energy consumption of a building. Efficient lighting is critical for scoring LEED points. Design professionals should ensure that the project developer/owner understands how certain lighting choices will impact building accents and promote efficient lighting design. Electrical engineers will have to work with architects to develop the most energy-efficient lighting design. Electrical engineers, in turn, need to work with mechanical engineers to select efficient pumps and other systems.
- Contractors must be informed of sustainable practices such as erosion and sediment controls, site restorationwaste management practices such as on-site sorting to minimize volume of wastes sent to landfills, material reuse and recycling practices to achieve specified percentages, and use of low-emitting construction equipment and other strategies for reducing emissions.
- It is also important that a member of the project team be responsible for selection of green construction materials, substitutions, use of building materials from local or regional locations, and certified wood. A team member should be responsible for confirming performance of the materials and verifying that the materials have received approval ratings such as Underwriters Laboratories or Factual Mutual rating.
- Verify that contract language clearly sets forth the specifications for achieving the desired standard, identify the parties who are responsible the different categories of points and ensure that the various members of the project team are contractually obligated to achieve their respective point goals and certification level;
- Determine if a liquated damages clause is appropriate for failure to achieve the mandated certification;
- Determine applicability of intellectual property infringements for certain green building designs, techniques or equipment, and who is responsible for address these issues
- Verify limits and scope of liability coverage of design professionals to determine if work is covered.
- Review forms, correspondence and contracts for language that could possibly void insurance coverage under the warranty and guaranty exclusion;

- Review property insurance coverage for building to determine costs for certification or requirement to upgrade to new green building code is covered, consider allocation of such costs in the lease, and responsibility for necessary endorsements and policy enhancements;

CONCLUSIONS

With the growing public and private pressure to reduce GHG emissions and the demand for green buildings, it is would not be surprising if purchasers and their lenders start requiring evaluation of a building's carbon footprint during due diligence. In the not to distant future, we may begin to see lenders and building owners performing Climate Impact Assessments or including GHG issues as a non-scope item in the Phase 1 like other environmental issues or perhaps address compliance with local Climate Change requirements in the Property Condition Assessment reports.

Particularly for existing buildings, purchasers, tenants and lenders will want to determine if a local government has established green building requirements, if the particular building is subject to local GHG requirements or will be subject to such standards in the future, the implementation schedule of the future requirements and evaluate the costs of such compliance to determine if the purchase price should be adjusted to reflect those future costs. Purchasers or tenants of buildings marketed as a green building will want to verify the certification. Owners of buildings that will be subject to renovation upgrades who either plan to modify their buildings after the closing or who have tenants planning substantial renovations will want to ensure that the modifications comply with the applicable green building requirements. Lenders will want to know the anticipated costs of such future upgrades so that appropriate building reserves may be established. Building owners will also want to calculate any savings in operating expenses to determine if the projected savings can result in more favorable loan terms or reduced insurance premiums.

As cities begin to implement their aggressive GHG reduction goals, it is quite likely that the local governments will realize that they will be unable to achieve their aspirational goals simply by imposing green building standards on new construction projects. As a result, building owners and their lenders should anticipate that local governments will soon start requiring retro-commissioning of existing private buildings and imposing strict green building standards on renovations of existing buildings.

lenders who have developed their own environmental due diligence protocols that often exceed the ASTM E1527. These so-called ASTM-Plus protocols often require consultants to examine issues not addressed by the ASTM E1527 such as asbestos, lead-based paint, lead in drinking water, radon and mold. Given the relatively little amount of additional information that will be generated by AAI compared to E1527-00 and the increased competition for loans, some lenders have indicated that they will continue to require ASTM E1527-00 for pre-loan diligence but will use AAI/E1527-05 prior to workouts or foreclosures to ensure that they will qualify for the landowner liability protections in case they lose their secured creditor exemption.

Likewise, users who need greater certainty are concerned about risks posed by potential releases of hazardous substances should consider including evaluation of "business environmental risk" as an additional service.

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[1] 70 FR. at 66081.

[2] Energy Conservation Standards for New Buildings Act of 1976 "Pub. L. 94–385, title III, § 302, Aug. 14, 1976 (codified at 42 USC 6831)

[3] Energy Conservation in Existing Buildings Act of 1976", Pub. L. 94–385 (codified at 42 USC 6851)
[4] Pub. L. No. 95-619, 92 Stat. 3206 (1978) (codified in scattered sections of 12, 15, 23, 42 U.S.C.).
[5] Energy Conservation and Production Act, Pub. L. No. 94-385, 90 Stat. 1125 (1976);
[6] Annual Energy Review 2005. DOE/EIA-0384 (2005). Energy Information Administration, U.S. Department of Energy. July 2006
[7] Energy Information Administration 2004. 2001 Residential Energy Consumption Survey: Housing Characteristics Tables.
[8] Energy Information Administration 2002. 1999 Commercial Buildings Energy Consumption Survey: Consumption and Expenditures Tables, p. 124, table C1
[9] 2003 U.S. DOE Buildings Energy Data Book.
[10] EIA Annual Energy Review 2005. U.S. Energy Information Administration, U.S. Department of Energy
[11] U.S. Environmental Protection Agency, 2004 U.S. Greenhouse Gas Emissions and Sinks.
[12] Emissions of Greenhouse Gases in the United States" U.S. Energy Information Administration, U.S. Department of Energy, November 2007
[13] EIA, 2003 Emissions of Greenhouse Gases in the United States 2002, DOE/EIA-0573 (2002).
[14] Lenssen and Roodman, 1995, "Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns are Transforming Construction," Worldwatch Institute
[15] "Landmark Program to Reduce Energy Use in Buildings," William J. Clinton Foundation
[16] "Towards a Climate-Friendly Built Environment", Pew Center for Global Climate Change 2005.
[17] U.S. Green Building Council, "Newly Released Studies Confirm Energy Savings Significant in LEED, ENERGY STAR Buildings: Certified Buildings Outperform Peers"
[18] The data provided here come from "Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)
[19] The production and consumption of these substances are being controlled and phased out under the Montreal Protocol on Substances that Deplete the Ozone Layer, and under Title VI of the CAA because they deplete stratospheric O3, which protects against harmful ultraviolet B (UVB) radiation. Therefore, the climate change research and policy community typically does not focus on these substances .

Black carbon causes a warming effect by absorbing incoming sunlight in the atmosphere (whereas GHGs cause warming by trapping outgoing, infrared heat), and by darkening bright surfaces such as snow and ice, which reduces reflectivity and increases absorption of sunlight at the surface. Some recent research published after the IPCC Fourth Assessment Report, has suggested that black carbon may play a larger role in warming that previously thought. Like other aerosols, black carbon can also alter the reflectivity
and lifetime of clouds, which in turn can have an additional climate effect. How black carbon and other aerosols alter cloud properties is a key source of uncertainty in climate change science. Given these reasons, there is considerably more uncertainty associated with black carbon's warming effect compared to the estimated warming effect of the six long-lived GHGs. Black carbon is also co-emitted with organic carbon, which tends to have a cooling effect on climate because it reflects and scatters incoming sunlight. The ratio of black carbon to organic carbon varies by fuel type and by combustion efficiency. Black carbon is a subcomponent of particulate matter (PM), which is regulated as a NAAQS pollutant under the CAA Diesel vehicles are estimated to be the largest source of black carbon in the U.S., but these emissions are expected to decline substantially over the coming decades due to recently promulgated EPA regulations
targeting PM2.5 emissions from on-road and off-road diesel vehicles (the Highway Diesel Rule and the Clean Air Nonroad Diesel Rule, the Locomotive and Marine Compression Ignition Rule).
[20] 42 U.S.C.S. § 7521(a)(1))
[21] In 1998, Jonathan Z. Cannon, then EPA's General Counsel, prepared a legal opinion concluding that "CO emissions are within the scope of EPA's authority to regulate," even as he recognized that EPA had so far declined to exercise that authority.
[22] Massachusetts v. EPA, 415 F.3d 50 (D.C. Cir. 2005)
[23] 127 S. Ct. 1438 (2007)
[24] Id. at 1462. The Court stated that "there is no reason to think the two agencies cannot both administer their obligations and yet avoid inconsistency." Id.
[25] *Id.* at 1460.
[26] Id. at 1463.
[27] Section 210(b) of EISA provides that nothing in section 211(o) of the Act, or regulations issued pursuant to that subsection, "shall affect or be construed to affect the regulatory status of carbon dioxide or any other greenhouse

gas, or to expand or limit regulatory authority regarding carbon dioxide or any other greenhouse gas, for purposes of other provisions (including section 165) of this Act

[28] In addition, all non-attainment areas would have to meet requirements "general conformity" and "transportation conformity" requirements under section 176(c).The transportation conformity requires metropolitan planning organizations and the U.S. Department of Transportation may only to approve or fund transportation plans, programs and projects that
conform to an approved SIP for a NAAQS

[29] 42 U.S.C. § 7475.

[30] 43 FR 26388, 26397 (June 19, 1978); Gerald E. Emison, Director, Office of Air Quality Planning and Standards, Implementation of North County Resource Recovery PSD Remand (Sept. 22, 1987)

[31] See briefs filed before the Environmental Appeal Board on behalf of specific EPA offices in challenges to the PSD permits for Deseret Power Electric Cooperative (PSD Appeal No. 07-03) and Christian County Generation LLC (PSD Appeal No. 07-01), as well as the Response to Public Comments on Draft Air Pollution Control Prevention of Significant Deterioration (PSD) Permit to Construct [for Deseret Power Electric Cooperative], Permit No. PSD-OU-0002-04.00 (August 30, 2007), at 5-6, available at http://www.epa.gov/region8/air/permitting/deseret.html. EPA has not previously interpreted the BACT requirement to apply to air pollutants that are only subject to requirements to monitor and report emissions.
See, 67 FR 80186, 80240 (Dec. 31, 2002); 61FR 38250, 38310 (July 31, 1996); In Re Kawaihae Cogeneration Project 7 E.A.D. 107, 132 (EAB 1997); Inter-power of New York, 5 E.A.D. 130, 151 (EAB 1994); Memorandum from Jonathan Z. Cannon, General Counsel to Carol M. Browner, Administrator, entitled EPA's Authority to Regulate Pollutants Emitted by Electric Power Generation Sources (April 10, 1998) (emphasis added); Memorandum from Lydia N. Wegman, Deputy Director, Office of Air Quality Planning and Standards, entitled Definition of Regulated Air Pollutant for Purposes of Title V, at 5 (April 26, 1993).

[32] See briefs filed before the Environmental Appeal Board on behalf of specific EPA offices in challenges to the PSD permits for Deseret Power Electric Cooperative (PSD Appeal No. 07-03) and Christian County Generation LLC (PSD Appeal No. 07-01), as well as the Response to Public Comments on Draft Air Pollution Control Prevention of Significant Deterioration (PSD) Permit to Construct [for Deseret Power Electric Cooperative], Permit No. PSD-OU-0002-04.00 (August 30, 2007), at 5-6, available at http://www.epa.gov/region8/air/permitting/deseret.html. EPA has not previously interpreted the BACT requirement to apply to air pollutants that are only subject to requirements to monitor and report emissions.
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[33] 2007 Ga. Env. Lexis 60 (12/18/07)

[34] *Friends of the Chattahoochee, Inc. and Sierra Club v. Dr. Carol Couch, Director, Environmental Protection Division, Georgia Dept. of Natural Resources*, No. 2008-CV-146398 (Sup. Ct. Fulton Cty. 6/30/08).

[35] See Massachusetts Executive Office of Energy and Environmental Affairs Greenhouse Gas Emissions Policy (April 23, 2007). MEPA is codified at Mass. Gen. Laws, ch. 30, § 61, et seq.

[36] 1978 amendments to the Energy Policy and Conservation Act (EPCA) required states receiving financial assistance from the federal government to initiate mandatory programs and measures, including energy conservation standards for new buildings. The Energy Policy Act of 1992 (1992 Act) amended EPCA and requires the Department of Energy (DOE) to determine if Model Energy Code (MEC) and the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE) Standard 90.1-1989 would improve energy efficiency for residential and commercial buildings. Once DOE published positive determination is published in the Federal Register, each state has 2 years to certify that it has made revisions to its own energy code that it meets or exceeds the requirements of the latest iteration of the national models. A state may decline to adopt a residential energy code by submitting a statement to the Secretary of the DOE, detailing its reasons. The International Energy Conservation Code (IECC) has replaced MEC which was last updated in 1995. On January 4th 2001, the DOE issued a determination that the 1998 and 2000 IECC will improve on energy efficiency. On July 15th 2002, a positive

determination was issued for ASHRAE Standard 90.1-1999. Thus, the IECC and ASHRAE Standard 90.1 are the benchmark energy codes used DOE to fulfill its mandate under EPCA and the 1992 Act . Collectively, the IECC and ASHRAE Standard 90.1 are commonly referred to as the national model [energy] codes

[37] ASHRAE Standard 90.1 applies to all buildings except residential buildings less than three stories and provides minimum energy efficient design for new buildings as well as major remodeling or renovation in existing commercial buildings. ASHRAE Standard 90.1 is itself written in "code language" so that it is suitable as a mandatory code document. The first edition of ASHRAE Standard 90.1 was published in 1975 and revisions were approved in 1980, 1989, 1999, 2001, and 2004 (ASHRAE Standard 90.1-2004).

[38] The International Energy Conservation Code (IECC) is part of the family of International Codes developed by the International Code Council, a widely recognized building code development organization. The IECC is applicable to all residential and commercial buildings and provides the minimum energy efficiency provisions for residential and commercial buildings. The code contains building envelope requirements for thermal performance and air leakage while making allowances for different climate zones. Because it is written in mandatory, enforceable language, state and local jurisdictions can easily adopt the model as their energy code. The first IECC was released in 1998, followed by versions that produce even greater energy savings: the 2000 IECC with its 2001 supplement and the 2003 IECC with its 2004 supplement. The most current version is IECC 2006. The IECC commercial building energy codes are based on ASHRAE/IESNA Standard 90.1.

[39] For the LEED-NC rating system, the application is either completed at the end of construction or split into a design-phase application submitted at the end of design and a construction-phase application submitted at the end of construction.