CLIMATE CHANGE, GREENHOUSE GAS EMISSIONS, AND RELATED AIR POLLUTION ISSUES

William W. Carter, Esq. and K. Ryan Hiete, Esq.

I. Overview[1]

Local, state, and federal government officials are rapidly moving forward on their plans to regulate and reduce greenhouse gas emissions. For example, California recently passed two landmark global warming laws, Assembly Bill 32 and Senate Bill 1368, that establish comprehensive, state-wide programs designed to combat greenhouse gases and promote the development and use of innovative energy-efficient technologies. Local and state governments, as well as non-profit groups, are also initiating legal actions in their efforts to reduce these heat-trapping gases. For almost a decade, international agreements have also encouraged industrialized nations to reduce the global generation of such gases.

Carbon dioxide is the main focus of greenhouse gas regulations and recent legal actions. Carbon dioxide is produced by the burning of fossil fuels, such as coal, petroleum, natural gas, or wood, and is discharged primarily from exhaust pipes and industrial smokestacks. Because greenhouse gas emissions are directly related to the use of energy, any measures designed to conserve energy can indirectly reduce greenhouse gas emissions.[2]

These regulatory and legal actions will have a profound impact on almost every sector of our economy and communities. The most immediate impact will be felt by a wide-range of both private and public entities engaged in activities that consume significant amounts of energy. The affected activities and operations will include, among others, energy and power production, educational institutions, chemical production, landfills, manufacturers, cement production, agriculture, forestry, land use, health care facilities, construction, transportation, shipping, and goods movement. These new laws will affect the type and amount of energy we use, our modes of transportation, how our government agencies and businesses operate, the agricultural crops we grow, and the products we manufacture and consume.

Potentially affected parties must now start thinking about how these laws and policies will impact their operations and activities. To better understand such potential impacts, these parties should get involved and participate in the discussions currently taking place among legislative and government officials, environmental groups, and the regulated community regarding the proposed greenhouse gas regulations. By actively engaging in these discussions, as well as participating in noticed public workshops, hearings, and seminars, affected parties can inform the agencies responsible for drafting and implementing proposed legislation and regulations of their specific issues and concerns. More importantly, affected parties should also

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[1] Updated April 26, 2007.

[2] Other greenhouse gases include methane, nitrous oxide, and hydrofluorocarbons (HFCs), which are man-made chemicals typically used in refrigeration and air conditioning and were developed as alternatives to ozone-depleting chemicals, such as chlorofluorocarbons (CFCs). Methane is most commonly generated by landfills or agricultural and farming activities, such as dairies or feedlots. Nitrous oxides are generally emitted from fertilizers.

start designing and implementing strategies to voluntarily reduce their greenhouse gas emissions. In the short term, affected parties need to identify their "carbon footprint;" that is, the amount of greenhouse gases currently generated by their activities or operations. Once such a footprint or baseline is established, effective emissions reduction strategies can be developed and implemented. Voluntary emissions reductions accomplished prior to the implementation of California's new laws will not only contribute to the protection of public health and the environment, but will also earn emission reduction "credits" under those laws. It is also anticipated that proposed "cap and trade" market programs will generate significant growth in investment in low-emission or "clean" technologies and operating processes. Thus, affected entities that significantly reduce their emissions before the implementation of the proposed regulations are not only acting responsibly, but also stand to benefit economically.

The following are a few examples of greenhouse gas reduction efforts currently underway at the local, state, national, and international levels.

II. Kyoto Protocol and International Efforts

Many of these "climate change" actions have been prompted by the findings and recommendations made in the United Nations' global warming and greenhouse gas reduction agreements known as the "Kyoto Protocol." In 1997, the United States, Japan, and members of the European Union entered into this agreement. In 2001, however, the United States withdrew from the agreement. Today, the United States and Australia are the only industrialized nations that are not members of the agreement. Despite the lack of participation by the United States, other industrialized nations have attempted to establish a global regulatory framework for reducing greenhouse gas emissions. These efforts include reducing dependence on fossil fuels and providing incentives for nations and businesses to invest in emission-reducing strategies and technologies.

A report known as "The Stern Review" was recently prepared by the former chief economist of the World Bank on behalf of the British government. The report identifies a number of the major global sources of greenhouse gas emissions. According to the report, annual global emissions contributed by these sources include: power companies (24%); land use (18%); transportation (14%); agriculture (14%); and industry (14%). The report states that scientific evidence shows that climate change presents serious risks to the world's environment, public health, and the economy. The report further finds that these risks demand an urgent global response. The report therefore proposes, among other things: (1) the efficient use of global energy supplies; (2) the promotion of cleaner energy and transportation technologies, with non-fossil fuels accounting for at least 60% of energy output by 2050; (3) the creation of a global market for carbon pricing and trading; and (4) the expansion of the European Union's greenhouse gas emissions market-based trading scheme by adding the United States, India, and China.

The European Commission recently announced that, beginning in 2011, all airlines flying into the European Union must possess carbon pollution trading allowances issued through its greenhouse gas market-based scheme. Such a requirement will obviously affect any U.S. airline flying into EU airports, which could result in higher ticket prices. The purpose of the program is to provide airlines with a financial incentive to reduce emissions. If they do reduce emissions, they can sell any pollution allowances they don't use to other airlines or industries. However,

should they fail to convert to low-carbon technology or increase their emissions by increasing the number of their flights, they must purchase additional allowances in order to release more carbon dioxide. According to the EU, aircraft emissions comprise approximately 3% of the total global greenhouse gas emissions, which is higher than any other single industry.

Chief executives of many of the world's largest companies recently met with the British Prime Minister to discuss global warming and climate change issues. These companies have a combined global customer base of approximately 250 million. These CEOs agreed to create a collective partnership designed to reduce greenhouse gases emitted by their respective companies. The partnership also hopes that by promoting the reduction of such emissions, it will "empower" customers to purchase "green" products and services.

III. State of California

Two of the top air pollution priorities in the State of California are: (1) the comprehensive regulation of greenhouse gases; and (2) the increased regulation of diesel-powered mobile sources. The recent passage of several landmark laws and the adoption of new regulations clearly demonstrate the state's commitment to reducing such emissions and promoting cleaner, more efficient energy and technology. These measures include AB 32 (Nunez) California Health and Safety Code Section 38500 et seq.) and SB 1368 (Perata) (California Public Utilities Code Section 8340 et seq.) relating to greenhouse gas emissions, and the California Air Resources Board's (CARB) adoption of rules regulating goods movement by diesel-powered trucks, ships, cargo-handling equipment, and locomotives.

In order to achieve its reduction goals, California will first focus much of its efforts on industry and businesses, including the transportation sector, which produces approximately 40% of the state's total pollution emissions. Other measures could include taxes and incentives to reduce fuel consumption, as well as market-based "cap and trade" programs.

In addition to regulatory efforts, California leaders are promoting the development of advanced technologies and innovative transportation strategies. A major component of these new technologies and strategies will be alternative fuels, such as bio-fuels (i.e., ethanol), and electric or hydrogen fuel cell vehicles.

A. California Global Warming Solution Act (AB 32; California Health and Safety Code Section 38500 et seq.)

AB 32 is the state's global warming bill that establishes a first-in-the-nation comprehensive state-wide program of regulatory and market-based mechanisms specifically designed to achieve real, quantifiable, and cost-effective reductions of greenhouse gases. Under the law, CARB is responsible for drafting and implementing the regulatory scheme and with monitoring the state's greenhouse gas reduction efforts.

This law was signed by the Governor in September 2006. The stated purpose of the law is to regulate and reduce greenhouse gas emissions from "emission sources" and "categories of sources." These terms mean any source of greenhouse gas emissions "whose emissions are at a level of significance, as determined by [CARB], that its participation in the program will enable [CARB] to effectively reduce greenhouse gas emissions and monitor compliance with the

statewide greenhouse gas emissions limit." This term is sufficiently broad to capture a wide-range of industry and activities that generate greenhouse gas emissions.

Under the law, the statewide greenhouse gas emissions mean the total annual amount of greenhouse gases in the state, including all emissions of greenhouse gases from the generation of electricity delivered to and consumed in California, accounting for transmission and distribution line losses, whether the electricity is generated in the state or imported. Statewide emissions shall be expressed in tons of carbon dioxide equivalents.

In order to implement this law, there are two initial tasks CARB must undertake. The first is to establish the state's 1990 baseline or "inventory" of greenhouse gas emissions. CARB must then adopt measures ensuring that the 1990 level of emissions is achieved by 2020. The 2020 target level must be adopted by January 1, 2008.

The second task for CARB is to adopt regulations governing emissions reporting by greenhouse gas emission sources. These regulations also must be adopted by January 1, 2008.

In a nutshell, AB 32 requires CARB to:

- Adopt a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse emissions levels in 1990 to be achieved by 2020.

- Adopt regulations that require the reporting and verification of statewide greenhouse gas emissions, as well as the monitoring and enforcement of compliance with this program; and

- Adopt regulations that achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions.

In drafting and adopting these regulations, CARB must hold workshops and public hearings. CARB has created a Climate Change website that lists these workshops, conferences, and other regulatory activities. The website is www.arb.ca.gov/cc/cc.htm.

On January 22, 2007, CARB held two workshops relating to the implementation of AB 32. One workshop focused on CARB's overall implementation plan and schedule for crafting AB 32 regulations, while the second workshop focused specifically on CARB's plans for developing the list of "early" emissions reduction actions mandated under AB 32. Handouts and other materials relating to these workshops can be found at CARB's website.

During the first workshop held on January 22, CARB advised attendees that it would be closely coordinating its efforts with, among others, the Governor's Climate Action Team and the California Climate Action Registry. In particular, CARB indicated that it would use the emissions reduction strategies recommended in the report issued by the Climate Action Team in March 2006, as a "foundation" for its implementation plan. CARB also strongly encouraged potentially affected parties to join and register their greenhouse gas emissions with the California

Climate Action Registry (Registry).[3] According to CARB, entities that voluntarily inventory, verify, report, and reduce their emissions through the protocols and procedures established by the Registry stand a better chance of receiving "credit" for such early reduction efforts. In the second workshop, CARB identified two likely candidates for early emissions reduction actions: (1) establishment of a low carbon fuels standard;[4] and (2) restriction of the retail sale of certain HCFs in small cans. In both workshops, CARB also set forth an ambitious timetable, beginning in March 2007, in which it and other public entities would interact and exchange information with potentially affected parties in the drafting and implementation of AB 32 regulations and requirements, including identifying "significant sources" subject to regulation, setting emission reduction and reporting levels, developing criteria for awarding "credits" for voluntary reduction efforts, and ultimately, establishing reduction strategies.

The essential components of AB 32 include:

1. Mandatory Greenhouse Gas Emissions Reporting

By January 1, 2008, CARB must adopt regulations requiring the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with the program. These regulations will (1) require the monitoring and annual reporting of greenhouse gas emissions, starting with sources that contribute the most to statewide emissions; and (2) account for greenhouse gas emissions from all electricity consumed in the state, including losses from transmission and distribution lines. Standards and protocols developed by the California Climate Action Registry will be used to develop the greenhouse gas emission reporting program.

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[3] The Registry was statutorily-created as a non-profit organization designed to register greenhouse gas emissions. Through such a registration process, both public and private entities can inventory or quantify their emissions footprint, which can thereafter be used as a baseline or starting point from which future mandated or voluntary reduction efforts can be measured. The Registry has developed both general and industry-specific protocols and guidance that participants can use to inventory, certify, report, and reduce their emissions. As of January 2007, over 200 entities have registered their emissions with the Registry. These participants include corporate giants such as Kodak and Dow Chemical, power companies such as Southern California Edison, and public entities such as the City of San Francisco and the Los Angeles Community College District. More information about the Registry can be found at www.climateregistry.org.

[4] On January 18, 2007, the Governor issued an Executive Order establishing a low carbon fuel standard (LCFS) for transportation fuels sold in California. Examples of lower carbon fuels include ethanol blends, biogas, natural gas, hydrogen, and electrical power. Pursuant to this LCFS, the carbon intensity of passenger vehicle fuels must be reduced by 10% by the year 2020. As discussed in more detail below, on April 20, 2007, CARB released a report entitled, "Proposed Early Actions to Mitigate Climate Change in California," in which three "discrete early action measures" designed to reduce greenhouse gas emissions were identified. Moreover, on April 23, 2007, CARB held a second workshop on proposed early actions at which it discussed the report issued on April 20, 2007, and confirmed that the three early action measures required under AB 32 were: (1) LCFS; (2) restriction of the retail sale of HFCs; and (3) capture of methane from landfills.

2. Statewide Greenhouse Gas Emissions Limit

By January 1, 2008, CARB must determine what the statewide greenhouse gas emissions level was in 1990 and approve a statewide greenhouse gas emissions limit that is equivalent to that level to be achieved by 2020. In determining and approving these levels, CARB will hold publicly noticed workshops and public hearings.

3. Greenhouse Gas Emissions Reductions

By June 30, 2007, CARB must publish a list of "early action" greenhouse gas emission reduction measures. On April 20, 2007, CARB released a report entitled, "Proposed Early Actions to Mitigate Climate Change in California," in which "discrete early action measures" designed to reduce greenhouse gas emissions were identified. These reduction measures were grouped into three categories: Group 1; Group 2; and Group 3. The three measures proposed in Group 1 are designed to satisfy the early action mandates under AB 32 and include: (1) LCFS; (2) restriction of the retail sale of HFCs; and (3) capture of methane from landfills. The reduction strategies and measures proposed in Groups 2 and 3, while not mandated under AB 32 as "discrete early action" items, have been identified by CARB as part of its broader efforts to reduce greenhouse gas emissions and other pollutants that impact the climate, including diesel emissions.[5] CARB contemplates that the reduction strategies and measures identified in all three Groups will be either accomplished or initiated during the period 2007-09.[6]

By January 1, 2010, CARB must adopt regulations designed to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions from emissions sources.

CARB is required to draft and adopt these proposed regulations in an open and public process. In drafting these reduction regulations, CARB must, among other things:

– Consult with all state agencies having jurisdiction over sources of greenhouse gases, including the California Public Utilities Commission, and State Energy Resources Conservation and Development Commission.

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[5] There are 23 reduction measures identified in Group 2 that include, among others: the development of educational guidance and protocols for local governments to promote emissions reductions; similar educational guidance to businesses; light-covered paving, "cool" roofs, and tree-planting programs to increase energy efficiency; alternative chemicals in fire suppression equipment; heavy-duty diesel emissions reductions; tire inflation programs; and alternate refrigerants in motor vehicles. The 10 reduction measures identified in Group 3 include, among others: diesel emissions reductions in harbor craft, trucks, and main engines on vessels; and evaporative standards for aboveground storage tanks.

[6] It should be noted that other state agencies, including the Department of Food and Agriculture, California Energy Commission, California Public Utilities Commission, Department of Water Resources, and the Department of Transportation, are also contemplating taking regulatory actions to reduce greenhouse emissions. These reduction efforts are not mandated under AB 32, but rather, are being pursued through the Climate Action Team, which was created pursuant to Executive Order in 2005. These reduction measures include, among others: energy-efficient building, appliance, and tire standards; solar energy incentives; restrictions on certain blends of cement; hydrogen fuel standards; "smart" land use and growth; recycling programs; and landfill gas recovery.

– Identify and make recommendations relating to direct gas emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and monetary incentives.

– Consider any information relating to greenhouse gas emissions reduction programs in other states, Canada, and the European Union.

– Evaluate the total potential costs and total potential economic and non-economic benefits of the plan for reducing greenhouse gases to California's economy, environment, and public health, using the best available economic models, emissions elimination techniques, and other scientific models.

By January 1, 2011, CARB must adopt greenhouse gas emission limits and emission reduction measures. To the extent possible, CARB must also adopt greenhouse gas emission reduction regulations that direct public and private investment toward the most disadvantaged communities in California and provide an opportunity for small businesses, schools, affordable housing associations, and other community institutions to participate in and benefit from statewide efforts to reduce greenhouse gas reductions.

4. Market-Based Compliance Mechanisms

CARB is authorized to consider adopting a market-based (i.e., "cap and trade") compliance mechanism to achieve greenhouse gas emission reductions. The market-based mechanism must be designed to prevent any increase in emissions. The market-based compliance mechanism includes emissions exchanges, banking, credits, and other transactions that result in the same greenhouse gas emission reduction, over the same period, as direct compliance with a greenhouse gas reduction measure adopted by CARB. The market-based trading program could be similar to SCAQMD's RECLAIM program.

Pursuant to a recently issued Executive Order, the Secretary of Cal/EPA will coordinate the state's overall greenhouse gas emission reduction efforts. The Secretary also was directed to work with CARB and the Governor's Climate Action Team in developing programs that permit emissions trading with the European Union, as well as seven other states that have established a regional Greenhouse Gas Initiative. In December 2006, pursuant to the Executive Order, the Secretary announced the formation of a 14-member Market Advisory Committee tasked with making recommendations to CARB by June 30, 2007, on the design of a proposed market-based compliance program.[7]

[7] In order to serve as an effective emissions reduction measure, any market-based mechanism must first establish an accurate and complete emissions inventory or baseline, then set fair and realistic emissions limits or caps. Any statewide credit or trading system must also strive to prevent the problems suffered by other emissions trading systems, such as the over-issuance of emissions allowances or credits or the abuse by fraudulent transactions. These potential problems can seriously undermine confidence in the system and thereby diminish any emissions reduction benefits.

5. Voluntary Reductions

CARB is required to adopt regulations relating to the voluntary reduction of greenhouse gas emissions. Specifically, CARB must ensure that entities that voluntarily reduce their greenhouse gas emissions prior to the implementation of the AB 32 program will "receive appropriate credit" for any such reductions. Thus, any entity that can establish that it has voluntarily reduced its greenhouse gas emissions prior to the implementation of the law in 2012, should receive credit for such reductions. Therefore, as noted above, any entity hoping to receive credit for any early or voluntary reporting and reduction efforts should consider joining and participating in the California Climate Action Registry.[8]

6. Enforcement

The proposed regulations must include enforcement provisions that ensure compliance with the reporting and reduction requirements and penalize violators.

7. Advisory Committees

By July 1, 2007, CARB must convene an Environmental Justice Advisory Committee that is comprised of representatives from communities having significant exposure air pollution, minority populations, or low-come populations. CARB must also appoint an Economic and Technology Advancement Advisory Committee to advise CARB on activities that will facilitate the investment in and implementation of technological research and development opportunities, including identifying new technologies, research demonstration projects, funding opportunities, developing state, national, and international partnerships and technology transfer opportunities, and identifying and assessing research and advanced technology investment and incentive opportunities that will assist in the reduction of greenhouse gas emissions.

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[8] In its April 20, 2007 report entitled, "Proposed Early Actions to Mitigate Climate Change in California," as well as during its early action workshop held on April 23, 2007, CARB reiterated its intent to recognize voluntary early action emissions reductions undertaken by public and private entities prior to the implementation of AB 32. According to CARB, although it is not prepared at this time to provide the methodology or criteria under which any "credit" for such reductions would be awarded and allocated, it clearly stated that reductions must "rise beyond business as usual." CARB will soon be holding public workshops and soliciting public comments on the development of regulations relating to the quantification, documentation, verification, and awarding of emissions reduction credits, including the process by which credit requests would be submitted and considered.

8. Emergency Provisions

In the event of extraordinary circumstances, catastrophic events, or threat of significant economic harm, the Governor may adjust the applicable deadlines for the regulations.. Any such adjustment, however, may not exceed more than one year.

IMPORTANT AB 32 DEADLINES:

By June 30, 2007, CARB must publish a list of "early action" greenhouse gas emission reduction measures.

By January 1, 2008, CARB must adopt regulations that require reporting and verification of statewide greenhouse gas emissions and determine what the statewide greenhouse gas emissions level was in 1990.

By January 1, 2009, CARB must adopt a scoping plan for achieving maximum technologically feasible and cost effective reductions by 2020.

By January 1, 2010, CARB must adopt regulations for the early action measures.

By January 1, 2011, CARB must adopt regulations setting forth greenhouse gas emissions limits and reduction measures.

By January 1, 2012, the greenhouse gas emission regulations will take effect.

B. Greenhouse Gases Emission Performance Standard for Baseload Electrical Generating Resources (SB 1368, California Public Utilities Code 8340 et seq.)

This law was also signed by the Governor in September 2006 and regulates the same greenhouse gas emissions as AB 32. This law sets forth a clear policy statement that California will rely on clean, cost-effective, efficient, and environmentally sound electrical supply sources in order to provide reliability and consistency with the state's energy priorities. The law expressly states, that as the largest electricity consumer in the western United States, California has an obligation to provide clear guidance on performance standards for the procurement of electricity by both private and publicly-owned power companies.

Among other things, the law caps greenhouse gas emissions from both private and public power companies and prohibits large utilities from purchasing electrical power from energy suppliers that do not meet the state's strict limits on greenhouse gas emissions. Under the provisions of this law, California power companies are urged to enter into long-term contracts with energy suppliers that do not generate significant amounts of greenhouse gas emissions. One of the primary goals of the law is that by 2010, 20% of the state's energy supply will be generated by renewable resources, such as wind and solar.

In early 2007, the California Public Utilities Commission is expected to approve a measure that will prohibit investor-owned utilities from entering into contracts to purchase electricity from energy suppliers using resources that emit significant amounts of greenhouse

gases, such as coal. It is anticipated that a similar measure aimed at municipal utilities will soon follow.

In December 2006, Southern California Edison announced a new energy contract in which it will double the company's wind power-generating capacity in California. The contract will create one of the largest wind power farms in the U.S. and should help the company achieve the state's goal of generating 20% or more of its electrical supply from clean, renewable energy sources. The California Public Utilities Commission and other government agencies must now review the company's request to build the high-voltage transmission lines needed to carry the electricity from the new wind farm to its customers.

Also in December 2006, California's largest utility, Pacific Gas & Electric Company, announced the creation of the "climate smart" program in which its customers will be allowed to calculate and offset the amount of carbon dioxide generated during the production of their power needs. The average residential customer who volunteers for the program will be charged an extra $4.00 each month or $52 a year, depending on the amount of electricity and natural gas used. PG& E anticipates that approximately 4% of its customers will volunteer for the program during the next three years. If this estimate proves correct, the program will generate approximately $20 million. These funds will be used to support projects designed to off-set emissions of carbon dioxide and other greenhouse gases generated in California, including reforestation and conservation projects. The program is scheduled to begin in the Spring of 2007. The California PUC has already approved the program.

IMPORTANT SB 1368 DEADLINES:

By February 1, 2007, California Public Utilities Commission must establish greenhouse gas emission performance standards for power companies.

By June 30, 2007, CARB and the California Energy Commission must publish a list of "early action" greenhouse gas emission reduction measures and establish emission performance standards for local publicly-owned power utilities.

By January 1, 2008, CARB must adopt regulations that require reporting and verification of statewide greenhouse gas emissions and determine what the statewide greenhouse gas emissions level was in 1990.

By January 1, 2009, CARB must adopt a scoping plan for achieving maximum technologically feasible and cost-effective reductions by 2020.

By January 1, 2010, CARB must adopt regulations for the early action measures.

By January 1, 2011, CARB must adopt regulations setting forth greenhouse gas emissions limits and reduction measures.

By January 1, 2012, the greenhouse gas emission regulations will take effect.

C. CARB Diesel Regulations

CARB has recently adopted regulations specifically designed to reduce air emissions and health risks in communities near ports, rail yards, and high traffic corridors. The vessels, trucks, harbor craft, locomotives, and cargo-handling equipment that transport goods are typically powered by long-lived diesel engines. The regulations seek to reduce emissions of nitrogen oxides (NOx), sulfur oxides (SOx), and diesel particulates, which CARB has identified as toxic air contaminants. Compliance with the regulations will be phased in during 2007.

One example is CARB's regulation of mobile cargo-handling equipment, which includes yard trucks, forklifts, and cranes. These regulations establish best available control technologies for new and in-use equipment at ports and intermodal rail yards. The regulations also include provisions that allow operators under certain prescribed conditions to delay compliance. In addition, the regulations contain alternative compliance plans, which include early engine replacement, alternative fuels or fuel additives, exhaust treatment controls, or engine modifications.

Emissions from auxiliary diesel engines on ocean-going vessels are also the subject of new CARB regulations. These engines, which are one of the largest sources of air pollutants in port communities, are used to provide power while the vessel is in or near port, including the production of electricity for lighting, refrigeration, and navigation equipment. CARB's regulations require vessels operating within 24 nautical miles of the California coast to significantly reduce their emissions from such engines. Under the regulations, vessels can achieve such reductions by using cleaner energy sources, including connecting to a shore-based electrical power grid (i.e., "cold ironing") or burning low-sulfur marine fuels.[9]

IV. Other Notable State and Local Initiatives

Many cities and local governments throughout the U.S. are implementing greenhouse gas reduction measures and promoting projects that encourage the use of more efficient fuels and energy. The mayors of more than 300 cities across the nation, including those in Los Angeles, Seattle, Portland, San Francisco, New York, Miami, Dallas, and Denver, have signed a Climate Protection Agreement in which they have pledged to meet the emissions-cutting timetables established by the Kyoto Protocol, regardless of the actions of our federal government. As noted above, California has created the Climate Action Board that is responsible for implementing initiatives designed to reduce greenhouse gas emissions in the state.

In Boulder, Colorado, voters recently approved the first "carbon tax" in the nation. Beginning in April 2007, a tax, based on the number of kilowatt-hours used, will be levied on all homes and businesses. It is anticipated that the tax will add approximately $16 a year to an

[9] In December 2006, the Pacific Merchant Shipping Association (PMSA) filed a federal civil action in the Eastern District of California challenging CARB's regulation of auxiliary diesel engines. In that suit, PMSA v. Catherine Witherspoon, the PMSA argues that CARB's regulations are invalid because, among other things, they: (1) are preempted by certain provisions of the federal Clean Air, the federal Submerged Lands Act, and the federal Ports and Waterways Safety Act; and (2) interfere with foreign and interstate travel and commerce, in violation of the Commerce Clause of the United States Constitution.

average homeowners' electric bill and under $50 for an average business. The tax will be collected by the local electric companies. The tax will fund a climate action plan, which is designed to increase energy efficiency in homes and businesses, promote renewable energy, and reduce vehicle miles traveled. A similar climate action plan was recently implemented in Portland, Oregon, where a 3% fee is assessed on electricity bills by the local power companies and deposited in an energy trust account managed by a non-profit organization. The trust distributes funds as incentives to businesses and residents for using alternative energy sources like solar and wind power, biomass energy, and structural improvements to increase efficiency.

Many cities are also replacing traffic-light bulbs with light-emitting diodes (LEDs) which use approximately 80% less energy, and are retrofitting older buildings with more efficient energy systems, including the installation of solar panels. Cities are also replacing their gasoline or diesel-powered fleets with hybrids or other vehicles that run on bio-fuels, such as ethanol, and are promoting extensive tree-planting programs.

Numerous county and municipal leaders are also directing government agencies within their jurisdictions to prepare and implement climate change action plans. These programs offer a performance-based framework to reduce greenhouse gas and air pollution emissions throughout their communities. These plans typically include: (1) the creation of an emissions inventory, baseline, or "carbon footprint" to determine and quantify greenhouse gas emissions in the jurisdiction; (2) the establishment of emission reduction targets (i.e., a specific reduction amount achieved by a certain date – 20% by 2020); (3) the development of a climate action plan consisting of both existing and future actions, which, when implemented, will meet (or exceed) the local greenhouse gas reduction targets; (4) the implementation of the action plan; and (5) the monitoring and reporting on the progress and results of the plan.

Moreover, under the provisions of the California Environmental Quality Act (CEQA), county and municipal general plans, revisions to those plans, and environmental impact reports (EIRs) will have to consider the emissions reduction requirements of AB 32. Specifically, such plans and EIRs will have to identify the amount of greenhouse gases emitted by a proposed project (i.e., the amount of emissions generated by the project, the vehicle miles resulting from the project, etc.), the project's overall impact on climate change, and any emissions mitigation measures that will be implemented, such as the use of energy-efficient alterative fuels, extensive tree-planting programs, or increased availability of public transportation. As noted below, there are a number of pending civil suits in California in which land use decisions have been challenged on the basis that the process failed to take greenhouse gas/climate change issues into account when approving a particular project or development. It should also be noted that the California Attorney General's Office has publicly stated that under CEQA, land use and development decisions must adequately analyze the greenhouse gas emissions that may result from a particular project, as well as address mitigation measures designed to reduce such emissions.

Larger U.S. ports are also considering ways in which to reduce air pollution emissions generated by vessels, shore-side equipment, trucks, and locomotives moving goods through their facilities. For example, in November 2006, the Commissions for the Ports of Los Angeles and Long Beach approved a $2 billion plan designed to reduce air pollution emissions in those ports, including those emitted from ocean-going vessels, diesel trucks, terminal equipment, and harbor

craft. As part of the plan, each port will contribute more than $100 million to replace the fleet of approximately 16,000 aging diesel trucks used to transport goods between the docks and railcars. The total cost of replacing the trucks is estimated to be as much as $1.8 billion. The plan also requires ocean-going vessels to use low-sulfur fuels within 20 nautical miles of the ports, and will require many of the docks and terminals to be retrofitted so that vessels can use shore-based electrical power, rather than using onboard diesel-powered generators. The five-year plan hopes to reduce air pollution by at least 45%. The plan was developed in conjunction with the SCAQMD, CARB, and US EPA.

Native American groups are also coordinating and sharing information on the impacts of climate change and global warming. These groups have thousands of years of traditional knowledge about and continuous experience with natural cycles, resources, and the environment in North America and are therefore in a unique position to assess such impacts on their cultures and communities. Recently, a Tribal Lands Climate Conference was hosted by the Cocopah Indian Nation and National Wildlife Federation in Arizona. During this conference, which was one of the first of its kind, Native peoples from throughout the U.S. gathered to exchange information and to develop strategies that will enable them to more actively participate in and influence the national and international debates regarding climate change policies and solutions.

V. Proposed Federal Actions

Senator Dianne Feinstein (D. California) has identified global warming issues as her top environmental priority. According to Senator Feinstein, California can reap the benefits of a low-carbon economy by developing greener and more efficient technologies and standards. Senator Feinstein recently introduced a bill would require automakers to improve the mileage on their vehicles by 10 miles per gallon by 2017. The bill would require power plants and other major sources of greenhouse gas emissions to cap their emissions or obtain credit from other companies that have already lowered their emissions below targeted limits. The bill also would allow agricultural and forest industries to join in a market-based "cap and trade" system for greenhouse gas emissions. Under this system, farmers and landowners who plant trees or convert crops into bio-fuels would be allowed to earn emission credits that could be sold to companies that exceed their emission limits.[10]

In January 2007, Senator Barbara Boxer (D. California) assumed the Chair of the Senate Environment and Public Works Committee. Senator Boxer has stated that global warming issues

[10] Several other federal greenhouse gas bills containing mandatory "cap and trade" schemes have been introduced and are receiving much attention from industry and environmental groups. Under a proposed cap and trade scheme, the government would create a fixed number of permits or credits authorizing the emission of greenhouse gases, then allocate or auction them to regulated entities. The emissions credits could then be banked, sold, or traded in a market-based trading scheme similar to the one in the European Union. The proposed mandatory schemes include those proposed by Senators Joseph Leiberman, John McCain, Barack Obama, Thomas Carper, and Jeff Bingaman. Some of these proposals include "safety valves," which would ease some emissions limits if the economic impacts of reduction requirements were deemed too draconian. Recently, a coalition of some of the largest companies in the world have voiced their support for federal legislation mandating a "cap and trade" system. These companies include, Alcoa, Inc., DuPont Co., General Electric, and Entergy Corp. The current Administration has stated its opposition to any mandatory "cap and trade" system.

are a top legislative priority. As such, Senator Boxer has introduced a bill that mandates emissions reductions across a wide range of greenhouse gas emissions, including those from industry, utilities, and motor vehicles. Under Senator Boxer's plan, U.S. emissions would be reduced to 1990 emissions levels by 2020, and to 80% below 1990 emissions levels by 2050. Senator Boxer's bill, however, does not include a mandatory market-based "cap and trade" emissions scheme.

House Speaker Nancy Pelosi recently stated that she will create a special committee on global warming and climate change. According to Speaker Pelosi, the special committee will conduct research and educate the public on global warming and energy-efficiency and independence issues. Although the committee will not draft legislation, it will attempt to coordinate global warming legislation that is within the jurisdiction of several other House committees.

The US EPA is currently pursuing the "National Clean Diesel Campaign," which seeks to identify and promote innovative technologies designed to reduce air pollution emissions from ocean-going vessels. These clean technologies include optimizing fuel injection systems, exhaust gas recirculation, water injection systems, seawater scrubbing, and catalytic reduction. Other emission-reduction strategies include the use of low-sulfur fuels and natural gas, as well as shore-based electrification. The US EPA is currently coordinating with local air pollution control districts, port state authorities, engine manufacturers, and international maritime organizations on this campaign.

The federal government also recently announced that it is considering placing polar bears on the endangered species list because their habitat has been threatened by climate changes. Although the United States Department of the Interior has not specifically attributed the melting of the ice caps in the Artic to human activity, it is now recognizing that global warming has significantly impacted that species' ability to survive in a warming environment.

VI. Litigation

On April 2, 2007, the United States Supreme Court issued a landmark decision relating to greenhouse gases and climate change in the case Massachusetts v. US EPA. In that case, the Supreme Court essentially held that (1) greenhouse gases, including carbon dioxide, are "pollutants" under the federal Clean Air Act; (2) US EPA has authority to regulate such emissions under the Act; and (3) US EPA can therefore issue carbon dioxide emissions standards for motor vehicles under the Act.

In Massachusetts v. US EPA, a coalition of states, led by California and Massachusetts, filed a civil action against US EPA based on its decision in 2003 not regulate carbon dioxide emissions from vehicles. US EPA had questioned the severity of the problem and claimed that it did not have authority to regulate carbon dioxide because it is not a pollutant under the federal Clean Air Act. US EPA also claimed that the current Administration is already taking adequate measures to address the climate change issue. A number of national, state, and local entities weighed in on the side of California and Massachusetts in this suit against US EPA. Specifically, the United States Conference of Mayors, the National Association of Counties, and

several other large cities, including Seattle, filed briefs arguing that climate change may force local governments to respond to more hurricanes, floods, and deadly heat waves.

There are a number of other pending state and federal cases relating to greenhouse gas issues. The outcomes of several of these cases could significantly impact the future direction of and greenhouse gas and land use regulation in this country. Some of these cases include:

California v. General Motors Corp., Ford Motor Company, Chrysler Motors Corp., Honda North America, Toyota Motor North America, and Nissan North America

In September 2006, California sued the six largest U.S. and Japanese automakers for damages related to greenhouse gas emissions. The State is arguing that emissions from their vehicles have harmed the health of Californians, damaged the environment, and cost the state millions of dollars in its efforts to combat these harmful effects. The State is proceeding on the theory that greenhouse gases are a "public nuisance" under both California and federal law. This action is similar to another lawsuit in which California and several other states sued five power plants in an effort to reduce their greenhouse gas emissions.

Center for Biological Diversity v. City of Banning, California:

This civil action seeks to overturn the city council's approval of a 1,500 home housing project, alleging that the city's environmental reviews failed to consider the affects of greenhouse gas emissions that would be caused by the construction of new homes and increased traffic. The suit alleges that CEQA requires cities and counties to consider greenhouse gas emissions in deciding whether a development should be approved. According to the suit, the development will produce significant greenhouse gas emissions.

Natural Resources Defense Council v. The Reclamation Board of Resources Agency:

This civil action seeks to block the issuance of state permits for a project that would allow the construction of 11,000 homes on an island located in the Sacramento-San Joaquin River Delta in California. The suit alleges that the environmental impact report for the project failed to consider the effects of global warming on the delta and the possibility that rising water levels could threaten levees protecting the development.

California v. County of San Bernardino:

In this civil action, the State of California seeks to vacate and set aside the County's approval of its updated General Plan. The suit alleges that the final environmental impact report relating to that update did not fully evaluate global warming and climate change issues, in violation of CEQA.

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In enacting its groundbreaking laws and regulations, California will assume a global leadership role in the regulation and reduction of greenhouse gases. California's actions will

also inspire new and innovative policies and markets for emissions trading and clean energy technologies. California leaders hope that the state's economy, technology centers, financial institutions, and private businesses will benefit from the national and international efforts to reduce such emissions. In support of such efforts, the Governor recently proposed $95 million in the state's budget to create the Governor's Research and Innovation Initiative. A portion of these funds will be used to promote "green" or "carbon neutral" technology programs at several University of California campuses. These programs include the development of super-efficient solar energy, alternative fuels, and improved energy conservation measures. By funding these programs, the Governor hopes the campuses will become even more competitive in their bids to win both public and private technology grant monies.

California's landmark laws will undoubtedly serve as a catalyst and model for other states hoping to initiate their own greenhouse gas reduction programs. California's example will also exert significant influence in the debate over the creation of a national greenhouse gas reduction program.

These new laws and regulations pose many challenges to entities operating or doing business in California, including the possibility of increased operating costs and higher prices for goods and services. On the other hand, the new laws provide many opportunities, including the prospect of developing, using, and benefiting from innovative energy-saving and low-emission technologies and strategies. Some of these opportunities include the use of (1) renewable and sustainable energy sources, such as bio-fuels, wind, and solar; (2) carbon sequestration (i.e., capturing emissions and injecting them into depleted oil and gas wells or saline aquifers); and (3) geothermal or tidal energy.

As these new laws and regulations are being drafted, potentially affected parties should get "ahead of the curve" and start considering the tangible benefits of voluntarily identifying and reducing their emissions of greenhouse gases. Specifically, these parties should consider, among other things, the benefits of (1) maximizing energy efficiency; (2) using renewable or sustainable energy resources; (3) installing or retrofitting buildings with more energy-efficient materials; (4) practicing sustainable land use or re-use policies; (5) providing transportation alternatives to employees; (6) developing, promoting, or marketing energy-efficient or "green" technologies; (7) protecting any intellectual property rights for such green technologies; (8) investing in innovative energy-efficient technologies, including alternative fuels, solar, and wind; (9) ensuring that suppliers or vendors are also pursuing compliant and energy-efficient operating strategies; (10) securing and selling carbon rights by participating in market-based greenhouse gas emissions trading programs; and (11) responding to the concerns of shareholders and consumers about global warming and climate change.

Affected parties might also consider joining or forming associations that will advocate, promote, or implement their particular policies or strategies for reducing greenhouse emissions under these new laws and regulations. For example, such associations could advocate for certain emissions goals or the implementation of particular emissions monitoring, reporting, and reduction strategies, including market-based emissions trading systems or best available control technologies. Such associations or groups could also take the initiative by (1) promoting voluntary emissions reduction measures by its members; (2) sharing information regarding effective emissions reduction efforts among its members and with the government; (3)

encouraging investment in clean and innovative technologies; and (4) collaborating with the government in identifying policies and incentives for affected parties to reduce their emissions.

In the coming months, both public and private entities should pay close attention to the evolving greenhouse gas regulations and related debates. Plans and operating strategies will also soon have to be developed and implemented in order to identify carbon footprints and to thereafter reduce emissions. In short, affected parties throughout the state, and perhaps throughout the nation, must be prepared to respond and adapt to these new requirements, responsibilities, and opportunities.

William W. Carter is a Partner in the Public and Environmental Law Group of Musick, Peeler, & Garrett. Mr. Carter formerly served as the Chief of the Environmental Crimes Section of the United States Attorney's Office for the Central District of California, where he was involved in the successful prosecution of numerous maritime and vessel pollution violations, as well as air pollution violations, including cases involving refineries, CFCs, and schemes to defraud market-based emissions trading programs. Mr. Carter also served as the Assistant Secretary for Law Enforcement and Counsel for the California Environmental Protection Agency (Cal/EPA), where he oversaw the enforcement actions and legal affairs of the agency, including those of the California Air Resources Board, California Department of Toxic Substances Control, Department of Pesticide Regulation, California Integrated Waste Management Board, State Water Resources Control Board, and the Office of Environmental Health Hazards Assessment

K. Ryan Hiete is a Partner in the Public and Environmental Law Group of Musick, Peeler & Garrett. Mr. Hiete practices environmental law, representing both private and public sector clients. Public sector clients include school districts, colleges, cities, counties and water districts. Specific areas of practice include CERCLA, RCRA, CEQA, Endangered Species Act, Clean Air Act, California's Greenhouse Gas Legislation (AB 32), Proposition 65, soil and groundwater pollution, brownfield redevelopment, environmental insurance, energy, mass transportation projects, Brown Act and hazardous waste management. Mr. Hiete also has experience in the environmental aspects of commercial transactions including due diligence reviews and all environmental issues associated with the purchase and sale of environmentally impacted properties.