Climate Change Risks: Corporate Disclosure Requirements
Navigating the Groundbreaking SEC Guidance to Meet Corporate Reporting Obligations

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Jim Coburn, Senior Program Manager, Ceres, Boston
Jeffrey A. Smith, Partner, Cravath Swaine & Moore, New York

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Climate Risk Disclosure in SEC Filings

An Analysis of 10-K Reporting by Oil and Gas, Insurance, Coal, Transportation and Electric Power Companies

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Ceres is a national coalition of investors, environmental groups and other public interest organizations working with companies to address sustainability challenges such as global climate change. Ceres directs the Investor Network on Climate Risk, a group of more than 80 institutional investors from the US and Europe managing approximately $7 trillion in assets.

Environmental Defense Fund (EDF) is a leading national nonprofit organization representing more than 500,000 members. Since 1967, EDF has linked science, economics, and law to create innovative, equitable, and cost-effective solutions to society's most urgent environmental problems.

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Foreword

America is moving forward. We are working to revitalize our economy and to address the climate crisis. Across the nation smart solutions are being forged to reduce global warming pollution and expand investments in America's clean energy economy. As public and private institutions alike respond to these challenges, investors have a right to know which businesses are forging innovative solutions for the Twenty-First Century.

This report examines corporate disclosure of climate risks and opportunities in Securities and Exchange Commission filings, as well as the SEC's responsibility to protect investors in a changing climate. The Commission must do its part to reclaim a fair marketplace that protects the interests of all investors from Wall Street to Main Street. This report shows that far too often investors receive insufficient disclosure about companies' responses to a changing climate.

Transparency and accountability are the hallmarks of a fair marketplace. Investors must know which companies are leading and which are lagging behind in addressing the risks and opportunities associated with climate change. Investors have a right to know which companies are well-positioned for a changing climate.

In September 2007, we joined the nation's largest institutional investors in asking the SEC to clarify climate-related disclosure obligations for publicly traded companies. We reiterate that call for the Commission to shed sunlight on the marketplace as the nation confronts the climate crisis.

The Securities and Exchange Commission must do its part. The lessons learned from the current economic downturn leave no doubt. Reclaiming transparency and accountability in the marketplace will help secure lasting prosperity for our nation.

Mindy S. Lubber, President, Ceres, and Director, Investor Network on Climate Risk
Fred Krupp, President, Environmental Defense Fund
Foreword

This year, the California Public Employees’ Retirement System is asking the Securities and Exchange Commission for a number of corporate governance reforms to improve corporate risk management, including guidance to ensure robust corporate disclosure of material environmental and governance risks, including climate change-related risks. Because inadequate corporate responses to climate change pose significant financial risks to our investments, improved disclosure is needed for investors to properly assess these risks.

CalPERS has a widely diversified portfolio that is impacted by all segments of the economy. The fund also has a long-term perspective, since it must meet beneficiaries’ retirement needs now, and long into the future. As such, we must be aware of shifting conditions and liabilities affecting companies in our portfolio.

Climate change presents bottom-line risks that must be disclosed to ensure a fair and transparent marketplace. The economic case for promptly assessing and disclosing climate risks is clear. Climate risks may include profound physical risks to companies’ capital assets and operations, as well as regulatory and litigation risks. CalPERS wants its portfolio companies to be well positioned to avoid these risks and to capitalize on new opportunities such as alternative energy technologies.

As a member of the Investor Network on Climate Risk, a network of 80 investors managing $7 trillion in assets, CalPERS has repeatedly advocated for full disclosure of corporate climate risks in securities filings, and for action from the SEC to ensure that this occurs.

In 2007, CalPERS joined a petition, drafted by Ceres and Environmental Defense Fund, which called on the SEC to ensure that publicly traded companies disclose material financial risks from global warming in securities filings, as required under existing securities law. CalPERS helped draft the Global Framework for Climate Risk Disclosure and then integrated the Framework into its Core Principles of Accountable Corporate Governance. These disclosure initiatives, which are consistent with the highest fiduciary standards, are designed to help CalPERS achieve positive financial returns while fostering energy savings, sustainable growth and sound environmental practices.

Despite these efforts, this report is powerful evidence that corporate climate disclosure falls far short of what CalPERS and other investors need to carry out their fiduciary duties.

Although voluntary climate risk disclosure guidelines have been refined over the last 10 years, the information that is voluntarily reported often lacks the information required by a reasonable investor to properly assess risks. The lack of SEC guidance, including a standardized format for climate risk disclosure, have resulted in reporting with little consistency in the format or level of detail presented.

As we’ve recently seen, an emphasis on short-term thinking, and a failure of private and public accountability mechanisms, can severely damage investors and financial markets. We need to take a prudent, long-term view to address systemic risks like climate change. Given the significance of climate risks for corporations’ financial position in a carbon-constrained economy, reporting on climate issues in SEC filings is a necessity.

The 10-K report will remain the gold standard for reporting information to investors. It is the most efficient and effective way for investors to access climate-related information. Investors require that all material information relevant to investment decisions be included in 10-Ks. As the federal protector of investors’ interests, we call on the SEC to ensure that information regarding climate change effects are accessible and delivered to investors.

Anne Stausboll, Chief Executive Officer, California Public Employees’ Retirement System
Executive Summary

For decades, investors have relied on SEC filings to learn how publicly traded companies are evaluating and managing risks material to their operations and performance. Robust corporate risk disclosure is the hallmark of a transparent and fair marketplace in which investors can make informed decisions. The current financial turmoil is a painful reminder of how markets can fail when transparency and accountability are neglected.

Climate change is for many companies a material risk. Rising seas and stronger storms will severely damage physical infrastructure, placing capital investments at risk, requiring costly adaptation measures, and threatening the profitability of insurance providers. Policy responses to slow climate change’s impact will require pollution reductions for industries that are major emitters of greenhouse gases, such as the electric power, coal, oil and gas, and transportation sectors.

Securities law mandates that publicly traded corporations disclose material risks. But few companies currently provide information about how climate change will impact their business.

This Ceres/Environmental Defense Fund report evaluates the current state of climate risk disclosure by 100 global companies in five sectors that have a strong stake in preparing for a low carbon future: electric utilities, coal, oil and gas, transportation, and insurance. It assesses climate risk disclosure in the SEC filings made by these companies in Q1 2008, and finds very limited disclosure. Fifty-nine companies made no mention of their greenhouse gas emissions or their position on climate change, 28 had no discussion of climate risks they face, and 52 failed to disclose actions to address climate change. Even more telling, the very best of disclosure for any of the companies could only be described as “Fair”—and only a handful of companies achieved this ranking.

This poor disclosure highlights the critical need for SEC guidance on appropriate disclosure of material climate risks. Investors are clearly not getting the depth of disclosure they need to make wise investment decisions, even though they have been requesting it for years.

Investors have filed hundreds of shareholder resolutions with individual companies seeking better climate risk disclosure. They have developed a protocol, the Global Framework for Climate Risk Disclosure, to encourage standardized reporting and to make it easier for companies to disclose and for investors to analyze risks. And in September 2007, a coalition of the nation’s largest institutional investors, representing $1.5 trillion in assets, sent a petition to the SEC urging it to clarify that material climate risks must be disclosed under existing law.

Regulators too are demanding better disclosure of climate risks. In 2007, the New York State Attorney General subpoenaed five major energy companies requesting disclosure of material risks from climate change, and in March 2009 the National Association of Insurance Commissioners issued mandatory disclosure requirements for all major insurers.

Despite the demand for appropriate disclosure of climate risks, the SEC has yet to issue guidance on climate disclosure or to properly oversee climate disclosure practices. Absent SEC action, investors are left in the dark about companies’ plans for evaluating and managing material risks in a changing climate.

Report Findings by Industrial Sector

This report uses the Global Framework for Climate Risk Disclosure to evaluate the disclosure of the 100 companies studied. It assesses company filings in three main categories: 1) emissions and climate
Climate Risk Disclosure in SEC Filings

change position, 2) risk assessment, and 3) actions to address climate risks and opportunities. The report also includes case studies, in Appendix A, providing deeper analysis of current climate disclosure practices. Among the key findings of this report:

**Electric Utilities:** Disclosure was widespread but minimal. None of the 26 companies studied achieved a “Fair” rating on disclosure of emissions and climate change position, only 3 out of 26 companies (12%) ranked “Fair” on climate risk assessment, and only 2 out of 26 companies (8%) provided “Fair” disclosure of actions to address climate change. Seven of the companies studied provided no information on actions to address climate change. Nevertheless, the electric power sector ranked higher than the other sectors and had three of the highest disclosing companies in the study—AES, Xcel, and PG&E.

**Coal:** All six coal companies surveyed included some disclosure of climate change issues in their 10-K filings, though only one achieved a “Fair” score in any of the three categories analyzed. Coal companies’ strongest disclosure was in the area of risk assessment; five of the companies provided disclosure in this category that was rated “Limited” or “Fair.” Rio Tinto provided the best disclosure, including valuable information on emissions, while Yanzhou Coal Mining Co. performed the worst overall.

**Oil and Gas:** The majority of the 23 companies studied provided some disclosure on climate risk assessment, but disclosure was weak with none ranking “Fair” and 22 out of 23 (96%) scored as “Limited” or “Poor.” Disclosure in the other two categories was even more limited. Twelve out of 23 companies (52%) provided no disclosure on actions to address climate change, while 17 out of 23 companies (74%) disclosed no information on their emissions or climate change position. Apache, Exxon Mobil and Anadarko were noted for particularly weak overall disclosure, while Shell scored best across the board.

**Transportation:** Companies in this sector provided minimal disclosure in SEC filings. Only 5 of 19 (26%) disclosed their emissions or their climate change position, and none were ranked as “Fair” for this disclosure. General Motors was the only company to provide information on past emissions from its operations, while not a single company disclosed emissions associated with vehicle use. Transportation companies provided somewhat more informative disclosure on climate risk and actions to address climate change, with 68% providing some disclosure in each of these categories. The disclosure was weak, however, and did not meet investors’ needs. Only 3 companies scored “Fair” on climate risk assessment and 2 scored “Fair” on their actions to address climate risks. Honda, Daimler and General Motors scored the highest overall.

**Insurance:** Although prudent risk assessment is the basis for a viable insurance industry, the 27 companies studied in this sector provided the least disclosure across the board compared to other sectors. Eighteen out of 27 companies (67%) had no mention of climate change or related risks anywhere in their SEC filings. Twenty-three out of 27 companies (85%) failed to disclose their emissions or a statement on climate change, while 24 out of 27 companies (89%) omitted disclosure on actions to address climate change, despite the wide range of opportunities for new, climate-related insurance products. The handful of companies that did provide more informative disclosure—Swiss Re, Munich Re and Zurich Financial—were all non-U.S. companies.

Taken together, these findings are strong evidence that investors are not getting the information they need in SEC filings, even from industries facing clear, immediate risks from climate change. Climate change is a serious issue and investors have a right to know which companies are responding and which are lagging behind, particularly for the five sectors evaluated in the report. Despite scientific consensus on the urgent need for action and the momentum building for
comprehensive climate policy in the U.S., the report finds that major corporations are still falling short on disclosing the risks and opportunities they face from a changing climate.

This report affirms that the SEC must move swiftly to improve climate risk disclosure in SEC filings.

As the SEC formulates its direction to companies, it should incorporate investor guidance on proper climate risk disclosure as outlined in the Global Framework for Climate Risk Disclosure. The 2007 investor climate risk petition is another useful benchmark for the SEC, as it includes wide-ranging evidence about the risks and opportunities climate change poses to businesses, and discusses how climate-related disclosure fits into existing SEC regulations.

Until the SEC acts, companies can begin to meet investor needs by using the Global Framework for Climate Risk Disclosure as a guide for reporting on their climate-related risks and opportunities. The Framework consists of the following four elements of disclosure, which are discussed in detail in Appendix B:

- Total historical, current, and projected greenhouse gas emissions
- Strategic analysis of climate risk and emissions management
- Assessment of physical risks of climate change
- Analysis of risk related to the regulation of greenhouse gas emissions
Over the past several years, the scientific consensus around climate change has solidified, providing a compelling body of evidence that human activity is contributing to the Earth’s warming. In 2007, the Intergovernmental Panel on Climate Change (IPCC), a scientific body established by the World Meteorological Organization and the United Nations Environment Programme, released its “Fourth Assessment Report.” Among other conclusions, the IPCC found that evidence of warming is unequivocal, and that most of the observed increase in temperatures since the mid-20th century is “very likely” due to an increase in greenhouse gas (GHG) concentrations caused by human activity.1

The Fourth Assessment Report describes substantial changes in the physical environment that will likely occur over the next few decades as a result of unmitigated climate change. Global mean temperatures can be expected to increase by two to five degrees Celsius by sometime between 2030 and 2060, with some studies showing a 20% chance that temperatures will increase by more than five degrees Celsius unless corrective action is taken. Precipitation patterns will change substantially, increasing the likelihood of droughts and floods as well as the intensity (and possibly the number and location) of hurricanes. Climate change will increase the “risk of abrupt and large-scale changes in the climate system,” including significant sea level rise.2

Indeed, recent studies show that impacts from climate change may be occurring at a rate even faster than previously predicted. Published studies have found that sea ice loss is occurring at a faster rate than predicted,3 sea level rise is also occurring at a rate faster than predicted,4 and significant impacts on human health and ecosystems can occur more rapidly than previously believed.5

Policy Actions Implemented to Address Climate Change

Policy makers have responded to the scientific evidence by adopting measures designed to mitigate climate change. Foremost among these is the Kyoto Protocol to the UN Framework Convention on Climate Change, an international treaty. The Protocol requires the 37 developed countries that have ratified the treaty to reduce their emissions of six greenhouse gases (GHGs) by various amounts from 1990 levels, to result in a 5.2% aggregate reduction by 2012.6 One hundred eighty-four parties have ratified the Kyoto Protocol as of March 2009, including the major European economies.7 A negotiating mandate for a successor treaty to Kyoto, which runs until 2012, was agreed upon in December 2007, with a goal of agreeing on a new treaty by December 2009.8

Countries and the one non-country party (the European Union) that have ratified the Kyoto Protocol have implemented measures to meet emissions reduction targets. For example, in 2005, the EU Greenhouse Gas Emissions Trading program created a trading market for GHG emissions applicable to over 10,000 facilities in six industry sectors in 25 EU member countries. Emitters are allocated emission allowances; those whose emissions exceed their limits must buy allowances to make up the difference, while those whose emissions are below their limits may sell the excess allowances.9

In the United States, there have been significant climate policy developments at the federal, regional and state levels. As of July 2008, lawmakers in the 110th Congress had introduced over 235 bills, resolutions and amendments addressing climate change and GHG emissions.10 Federal climate policy has shifted under the Obama administration, as President Obama has stated that his
presidency “will mark a new chapter in America’s leadership on climate change that will strengthen our security and create millions of new jobs in the process.”11 He has announced a goal of reducing carbon dioxide emissions to 14% below 2005 levels by 2020, and to approximately 83% below 2005 levels by 2050.12 In his proposed 2010 budget, President Obama stated that his Administration “will work expeditiously with key stakeholders and Congress to develop an economy-wide emissions reduction program to reduce GHGs.”13

Already, the Environmental Protection Agency (EPA) has proposed a national system for reporting GHG emissions, which many view as the first step in regulating emissions under existing law.14 And in April 2009, the agency issued a proposed finding that greenhouses gases endanger public health and welfare.

Momentum towards a national climate policy is growing. President Obama has signaled his strong support for the rapid establishment of a national cap-and-trade policy.15 Business coalitions have formed to press for federal action on climate change. For example, the U.S. Climate Action Partnership (USCAP) and Business for Innovative Climate and Energy Policy (BICEP), two national coalitions including major multinational corporations with billions of dollars in annual revenue, have both released legislative recommendations supporting comprehensive federal action to combat climate change.16,17 In Congress, the House Energy and Commerce Committee recently passed out of committee the American Clean Energy and Security Act of 2009, which includes a wide range of measures to reduce global warming pollution, including a cap-and-trade program that would significantly reduce carbon emissions from covered entities.18

Moreover, several regional initiatives to limit GHG emissions have been established. The Regional Greenhouse Gas Initiative is an effort by ten Northeastern and mid-Atlantic states to reduce emissions from the power sector by 10% by 2018 using a cap-and-trade approach.19 This binding cap took effect in January 2009. The Western Climate Initiative is a collaboration of seven U.S. governors and four Canadian Premiers, whose objective is “to identify, evaluate, and implement collective and cooperative ways to reduce greenhouse gases in the region, focusing on a market-based cap-and-trade system.”20 Nine Midwestern governors and two Canadian premiers agreed to participate in or observe the Midwestern Greenhouse Gas Reduction Accord, which aims, among other goals, to set GHG reduction goals and develop a cap-and-trade emissions reduction program.21

Finally, more than half of the states have implemented measures aimed at mitigating climate change.22 Twenty-nine states have adopted standards requiring that a specified proportion of electricity be generated by renewable sources.23 Twenty-one states have established GHG emission reduction targets.24 California’s Global Warming Solutions Act of 2006 requires the California Air Resources Board (CARB) to develop regulations and market mechanisms that will ultimately reduce the state’s GHG emissions to 1990 levels by 2020.25 In June 2008, CARB issued a scoping plan that outlined the main strategies California will use to reach these goals and reduce global warming pollution, including a statewide cap-and-trade system.26

Policies are also being established to address global warming pollution from motor vehicles. On May 19, 2009, President Obama announced a nation-wide policy aimed at both increasing fuel economy and reducing greenhouse gas pollution for all new cars and trucks sold in the United States.27 In 2005, the U.S. Conference of Mayors unanimously endorsed a Climate Protection Agreement; since then over 900 mayors have signed on to the agreement committing their cities to reduce GHG emissions in their cities to 7 percent below 1990 levels by 2012.28

Financial Risks and Opportunities for Companies and Investors

Climate change and measures adopted to address it can affect companies in myriad ways, depending on the nature and location of their businesses, their near-term capital expenditure needs, the regulatory environments where they operate and their strategic plans. Generally, climate risks and opportunities for companies and their investors fall into four categories:
Companies that develop low-carbon products, clean energy technologies and efficient manufacturing and shipping processes could gain competitive advantage, while companies that are slow to innovate may lose market share.

- Physical risk from climate change
- Regulatory risks and opportunities related to existing or proposed GHG emissions limits
- Indirect regulatory risks and opportunities related to products or services from high emitting companies
- Litigation risks for emitters of greenhouse gases

Unmitigated climate change is likely to have severe physical impacts on companies with exposed assets or business operations. In particular, the increasing incidence of extreme weather under a warming climate is already placing major strains on the insurance industry. One example of a climate change impact that may increase claims and strain the profitability of insurance companies is more intense hurricane activity in North America, which has already been linked to rising temperatures. Just last year, Cincinnati Financial faced a difficult combination of significant catastrophe claims together with major investment losses.

Physical risks also affect companies outside the insurance sector. Increasing frequency of extreme weather events could impact a wide range of infrastructure investments. Observed and predicted increases in the number of Category 4 and 5 hurricanes and ongoing sea level rise will put coastal physical assets at risk, including major energy, industrial and manufacturing facilities. In Alaska, thawing permafrost is making oil pipeline installation and maintenance more costly, and warmer temperatures may disrupt petroleum exploration and extraction by shortening the season for low impact operations on ice roads and pads. A wide variety of other ongoing and expected consequences of climate change—including water shortages, increased numbers and intensity of heat waves, and changes in precipitation—may pose risks for specific industries and firms.

Policies to limit greenhouse gas emissions and stem the dangerous impacts of unmitigated climate change have major implications for companies in a number of sectors. In high emitting sectors, companies that develop low-carbon products, clean energy technologies and efficient manufacturing and shipping processes could gain competitive advantage, while companies that are slow to innovate may lose market share.

For example, existing and imminent carbon regulations will create incentives for emission reductions from the electric utilities industry, which was responsible for almost 35% of global warming pollution emitted in the U.S. in 2007. Policy-makers, responding to scientific consensus on the need for urgent action to combat climate change, have adopted various policies to reduce greenhouse gas emissions from power generation, such as the Regional Greenhouse Gas Initiative cap and trade system, state emission performance standards for power generators, and new mandates for renewable energy resources.

These policies create market opportunities for producers who generate electricity with lower greenhouse gas emissions, compared to utilities that rely on carbon intensive generation facilities. Awareness of the climate risks related to power generation projects has already led to the adoption of the Carbon Principles, a roadmap for banks and utilities to evaluate and mitigate climate risks in financing electricity generation projects, by five of the world’s largest commercial and investment banks. Concerns like these about the long-term viability of high-emitting electricity generation could increase the cost of financing, if lenders demand more favorable terms to compensate them for potential liability or avoid financing high-emitting generation.

In contrast, utilities that are investing in energy efficiency and renewable energy may face fewer material risks related to climate change regulation. For example, numerous utilities and independent power producers are making significant wind power investments: over 1,300 MW of wind power was installed in the U.S. between July and September of 2008, bringing the total installed wind generation capacity in this country to 21,017 MW. Because wind generation does not produce greenhouse gas emissions, electric utilities with substantial wind investments can reduce their carbon intensity and their exposure to regulatory risk. With new federal and state policies to limit greenhouse gas emissions, companies in any sector that develop low-emitting strategies may benefit.

Companies and investors may also be affected by indirect regulatory risks, such as new regulations which lead to increased demand for energy efficient products and manufacturing processes.
For example, stronger fuel economy regulations will lead automakers to provide more fuel-efficient vehicles. Companies may also be exposed to indirect risks through their procurement decisions, according to the findings of a recent report which surveyed corporate efforts to identify and mitigate indirect risks stemming from greenhouse gas emissions and energy use in their supply chains.\textsuperscript{38}

In addition, companies may be at risk from climate change related litigation. The number of climate-related lawsuits filed in the U.S. has grown steadily in recent years, with a total of approximately 100 climate-related lawsuits filed through 2007.\textsuperscript{39} Many lawsuits have focused on corporations that are major emitters of global warming pollution; some seek to make such companies pay damages for their contributions to climate change, creating clear risks to performance.\textsuperscript{40}

In addition, climate risk disclosure has drawn the attention of state regulators. In 2007, New York State Attorney General Andrew Cuomo subpoenaed five large energy companies—AES Corp, Dominion Resources, Xcel Energy, Dynegy Inc, and Peabody Energy—to investigate whether the companies had adequately disclosed their risks from climate change in SEC filings.\textsuperscript{41} In 2008, Attorney General Cuomo announced groundbreaking agreements with Xcel Energy and Dynegy that require the companies to improve their disclosure of climate risks in SEC filings.\textsuperscript{42} These agreements should improve the usefulness of the companies’ climate risk disclosure for investors.

Climate change—through both its impacts and efforts to prevent it—has major implications for a variety of companies and investors in those companies. For publicly traded companies, climate-related risks and opportunities may be material to financial performance. Where the risks of a changing climate are material, companies must disclose how they are recognizing and responding to these risks. Improved disclosure will help provide the accountability that investors need to make informed, prudent decisions in a fair and transparent marketplace.
Investor Demand for Climate-Related Information

As investors have come to better understand the financial risks and opportunities created by climate change, they have begun to demand that companies be more transparent about the financial impacts of climate change on their businesses. High-quality disclosure regarding these impacts, which are likely to be material in the case of many companies, serves several functions for investors.

First, it allows investors to take climate risks and opportunities into account when making decisions about buying or selling securities. An investor may wish to invest only in companies that are proactively positioning themselves to profit in a carbon-constrained world. Or an investor may wish to eliminate from its portfolio those companies that are lagging in this regard. An investor might view disclosure regarding climate risks and opportunities as essential to ensuring adequate diversification of portfolio risk. An investor or fund concerned about climate risk could screen out companies whose current practices do not include a proactive stance on climate change.

Second, disclosure on climate change may be relevant to an investor’s proxy voting decisions. For instance, in voting on the election of directors, an investor could take into account incumbent directors’ oversight of corporate strategy, including responses to climate change. Indeed, some Exxon Mobil shareholders have recently argued that the company’s board is not attuned enough to the risks inherent in the company’s exclusive strategic focus on oil and gas, which could leave the company poorly positioned in a carbon-constrained economy.43,44

In each case, the availability of complete disclosure on climate risks and opportunities supports institutional investors’ abilities to fulfill their fiduciary duties. Institutional investors that invest on others’ behalf are governed by rules that, generally speaking, require them to act in the best interests of beneficiaries. These rules may be imposed by state trust law, or they may arise under a federal statutory scheme applicable to a specific type of entity, such as the Investment Advisers Act (registered investment advisers) or the Employee Retirement Income Security Act (pension funds). Whatever the source of the obligation, access to full information improves the quality of the decisions institutions can make on behalf of their clients and beneficiaries.

Company disclosure falls into two main categories: voluntary and mandatory. Voluntary disclosure is not made in response to any legal mandate and may be contained in a corporate social responsibility or sustainability report, or in a report submitted in connection with a specific voluntary disclosure initiative. Companies make mandatory disclosures because they are required to do so by law or regulation.

Growth in Voluntary Disclosure Demonstrates Need for Climate Risk Information

The amount of voluntary disclosure of climate risks and opportunities has grown significantly in recent years. Many companies disclose this information on corporate websites or in sustainability reports produced in accordance with the Global Reporting Initiative reporting guidelines. Companies also disclose climate risks in response to shareholder resolutions asking for disclosure, which are almost always non-binding. The Carbon Disclosure Project, which sends a climate change question-
Voluntary disclosure is not uniform, frustrating efforts to benchmark companies against one another.

Climate Risk Disclosure in SEC Filings

Climate change is often discussed in corporate social responsibility or sustainability reports. A 2008 study by KPMG found that of the Global Fortune 250 companies, 79% issued a corporate social responsibility report; among those companies, over 60% discussed climate change in some way. Disclosure on climate change was most common in the mining, utilities, metals, oil and gas, and chemicals sectors. KPMG did not track mentions of climate change in its previous survey, which was published in 2005, but it seems likely that discussions of the subject have increased, given the overall jump in corporate social responsibility reporting from 52% of Global Fortune 250 companies in 2005. A 2007 study by KPMG and the Global Reporting Initiative (GRI) on a sample of 50 sustainability reports found that 45 companies mentioned climate change or global warming, while 33 had a separate section or chapter on climate change.

Although it can be useful to investors, voluntary disclosure has several important shortcomings. First, because it is voluntary, companies without a positive story to tell can simply decide not to disclose. In this way, disclosure will be skewed toward companies that are better positioned to address the risks and opportunities related to climate change. Second, voluntary disclosure tends to focus on opportunities related to climate change while omitting or downplaying the risks. The 2007 KPMG/GRI study found that in sustainability reports “companies reported far more on potential opportunities than financial risks for their companies from climate change.” Third, voluntary disclosure is not uniform, frustrating efforts to benchmark companies against one another. Fourth, companies making voluntary disclosure tend not to quantify the financial impact of risks and opportunities. Finally, voluntary disclosure lacks the enforcement mechanism that comes with mandatory disclosure requirements.

Strengths of a Mandatory Disclosure Framework

Mandatory disclosure, by contrast, applies to everyone and establishes uniform requirements, allowing comparisons among companies and imposing consequences for non-disclosure. In the U.S., the primary source requiring mandatory corporate disclosure regarding climate change is the federal securities laws, which apply only to companies whose shares are sold to the public through a process of registration and which satisfy certain other criteria related to the size of the public market for their securities. Specific securities law requirements are discussed below in more detail. In general, they mandate that a company disclose, at the time securities are first offered to the public and periodically thereafter, material information about its business, including the competitive environment and costs of complying with regulations; litigation; risk factors; and known trends, uncertainties or other factors that are reasonably likely to have a material impact on financial position or results. These disclosure requirements are enforced both through private litigation, in which investors sue for damages caused by faulty disclosure, and through actions brought by the Securities and Exchange Commission (SEC), which is tasked with interpreting and enforcing the federal securities laws.

Investor Requests for Improved SEC Disclosure

Over the past six years, investors have vigorously lobbied the SEC to improve the quality of mandatory disclosure through more robust enforcement of existing disclosure requirements and the issuance of guidance clarifying how those requirements apply in the context of climate risks and opportunities.

In September 2007, a group of 22 institutional investors and investment fiduciaries with $1.5 trillion in assets under management joined several environmental organizations to petition
the SEC to issue an interpretive release affirming the applicability of the existing disclosure rules to the risks and opportunities created by climate change.51 The petition led to a hearing in October 2007 before the U.S. Senate Banking Committee’s Subcommittee on Securities, Insurance and Investment, at which the chief investment officer of the California Public Employees’ Retirement System testified that “reporting on climate issues is no longer a mere virtue, but a legal obligation and a necessity for investors.”52 On June 12, 2008, the signatories submitted a petition supplement, describing developments since the original petition was filed.53

At the same time the original petition was filed, the investor group also sent a letter to the Director of the Division of Corporation Finance, the division of the SEC that reviews and evaluates the adequacy of companies’ periodic filings. The letter explained that current disclosure requirements compel disclosure of climate risks and opportunities and asked the Division to “systematically incorporate attention to climate disclosure into its review of registrants’ disclosures.”54

Although the securities laws and regulations account for most mandatory disclosure regarding climate risks and opportunities, state insurance regulators recently began requiring climate-related reporting. The National Association of Insurance Commissioners55 voted in March 2009 to mandate that insurers with annual premiums of at least $500 million report to state insurance regulators on a number of climate risk issues, including “how they are altering their risk-management and catastrophe-risk modeling in light of the challenges posed by climate change …. steps they are taking to engage and educate policymakers and policyholders on the risks of climate change, as well as whether and how they are changing their investment strategies.”56

Investors have developed protocols and other measures to inform and enhance the voluntary and mandatory disclosure provided by companies. In 2006, a group of 14 institutional investors and organizations released the Global Framework for Climate Risk Disclosure, a “statement of investor expectations for comprehensive corporate disclosure,” both voluntary and mandatory. The Global Framework aims to “encourage standardized climate risk disclosure to make it easy for companies to provide and for investors to analyze and compare companies.” The four major components of disclosure under the Global Framework are GHG emissions, strategic analysis of climate risk and measures to manage emissions, physical risks and an analysis of the effects of regulation.57

Investors have also sought better disclosure from companies by using a mechanism—the shareholder resolution—that allows shareholders to put matters to a vote of shareholders using the company’s own proxy statement.58 Shareholder resolutions are an inexpensive way for shareholders to register sentiment on various issues and are used to advocate many kinds of changes in corporate behavior. Although resolutions are almost always non-binding, meaning that if they receive support from a majority of shares the board is not bound to take the requested action, failure to implement a proposal that receives a great deal of support from shareholders can harm a company’s reputation and erode shareholder support for directors.

Climate change has been the subject of a large number of shareholder resolutions. Most proposals ask companies to disclose more information about their GHG emissions, describe actions they are taking to improve energy efficiency or analyze the risks and opportunities created by climate change. For the 2008 proxy season, a record 67 shareholder proposals on climate change were submitted to U.S. and Canadian companies. Although companies in high-emitting sectors tended to be targeted, proponents have broadened their focus to include homebuilders and retailers, which account for a significant amount of indirect emissions.59

Shareholder support for resolutions on climate change has climbed steadily over the past several years. In 2005, climate change resolutions averaged 10.8% support; by 2007, that number had risen to 18.7%. The average vote for resolutions dealing with energy efficiency increased from 18.4% in 2006 to 22% in 2007.60 In 2008, resolutions asking for GHG emissions reports averaged 30.6% support.61

A resolution may never go to a vote if the proponent and company agree to a settlement. Indeed, 20 of the 64 resolutions submitted for the 2008 proxy season had been withdrawn by May 6, 2008, after companies made positive commitments to respond to the proxy requests.62 Settlements have
brought about significant disclosure improvements at some companies. For example, in 2004, American Electric Power, a major utility with among the highest carbon dioxide emissions in the world, settled a proposal submitted by the Connecticut Retirement Plans and Trust Funds and several co-sponsors by agreeing to disclose the impact of proposed federal regulation on AEP’s business (including scenario analysis) and the actions AEP could take to mitigate those effects. The agreement was considered a template for future settlements.

**SEC Disclosure Requirements**

The overriding purpose of the disclosure requirements imposed by the securities laws is to remedy “information asymmetries” between current or potential investors and company insiders. To that end, the rules aim to “provide sufficient information so that largely market-driven segments of the economy can work.” To avoid inundating investors with insignificant information, the securities laws focus on disclosure of “material” information. Materiality is determined not with reference to a bright-line quantitative benchmark, but instead by evaluating the significance of the information to the reasonable investor. Information is material if “there is a substantial likelihood that [the fact] would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of information made available.”

The securities rules require companies to include financial statements prepared in accordance with Generally Accepted Accounting Principles (GAAP) in some SEC filings, including annual filings on Form 10-K and quarterly filings on Form 10-Q. For some companies, GAAP may require climate-related disclosure in the financial statements. Specifically, Statement of Financial Accounting Standards 5 (FAS 5), Accounting for Contingencies, mandates that a company record a liability if a loss is probable and the amount of the loss can be reasonably estimated. If both of those requirements are not met, but there is a reasonable possibility that the loss will occur, footnote disclosure should be made.

Outside the financial statements, companies may be obligated to make narrative disclosure regarding climate risks and opportunities. Regulation S-K supplies the main narrative disclosure requirements; its provisions are incorporated by reference into certain registration statements, the filings companies make when they initially offer securities to the public, and periodic filings. Periodic filings are made by companies with registered securities that also satisfy requirements relating to the size of the public market for those securities. Periodic filings are intended to keep market participants up-to-date regarding a company’s financial condition and business.

The following items of Regulation S-K may require disclosure of climate risks and opportunities:

**Item 101**: The company must describe its business, including the sources and availability of raw materials, competitive conditions in the business, and the material effects of compliance with environmental laws. A company with operations in a jurisdiction that has imposed emissions limits would be required to disclose the effects of those limits on its business, if they are material. Similarly, changes in the price of an input or raw material as a result of climate change or rules aimed at mitigating it might require disclosure under this item.

**Item 103**: The company must describe any “material pending legal proceedings,” other than routine litigation incidental to the business, to which the company is a party or its property is subject.

**Item 303**: The company must discuss its financial condition, changes in its financial condition and results of operations, including “known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations.” This discussion, which is included in the Management’s Discussion and Analysis (MD&A) section of SEC filings, is intended to allow investors to “look at the company through the eyes of management.”
The SEC has stated that the MD&A should “provide insight into material opportunities, challenges and risks, such as those presented by known material trends and uncertainties, on which the company’s executives are most focused for both the short and long term, as well as the actions they are taking to address these opportunities, challenges and risks.”\textsuperscript{72} The SEC’s staff has emphasized that the “requirement to discuss uncertainties in MD&A encompasses both financial and non-financial factors that may influence the business, either directly or indirectly.”\textsuperscript{73}

The risks and opportunities created by climate change clearly fit within the range of factors to which Item 303 applies. The scientific consensus and improved ability for scientists to quantify likely climate change impacts preclude an argument that climate change is not a “known” trend or uncertainty. The rapidly changing regulatory environment introduces the possibility that past financial results will not be indicative of future results, and the effect is certainly material for many companies.
The purpose of this report is to assess the current state of climate risk disclosure in SEC filings by companies in industries affected by climate change and regulations related to climate change. The report uses a systematic method for evaluating the quality, depth, and clarity of climate risk disclosure in selected 10-K reports, filed in 2008 to cover fiscal year 2007, in order to assess whether current disclosure practices are adequate. Because Fiscal Year 2008 filings were not available during the research period for this report, any improvements in disclosure in 2008 annual filings were not captured by this report.

Companies were evaluated on their absolute levels of disclosure on climate risk relative to the Global Framework for Climate Risk Disclosure (Appendix B); we did not take a best-of-class approach in which companies were ranked relative to one another. According to this method, if all the companies in a given industry group were to have weak disclosure, we would rate them all poorly, and would make no attempt to create a “normal distribution” or “bell curve” based on small differences among the companies.

Companies were selected for this study based on their involvement in the coal, electric utilities, oil and gas, insurance, and transportation industries. Those industries were chosen because they have a high level of exposure to climate risks and opportunities. Companies were then sorted by market capitalization and by annual revenues, to identify those that were the largest in their sectors. The resulting list of 100 companies included a representative cross-section of corporations within the aforementioned industries.74

<table>
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<tr>
<th>Table 1</th>
<th>Overview of Assessment Methodology for Coal, Electric Utilities, Oil and Gas, and Transportation Companies</th>
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<tr>
<td><strong>Emissions &amp; Climate Change Position Disclosure</strong></td>
<td>Company discloses GHG emissions data in SEC filings  SEC filings mention climate change or state the company’s position</td>
</tr>
<tr>
<td><strong>Risk Assessment Disclosure</strong></td>
<td>Physical plant risks disclosed in SEC filings  Regulatory risks disclosed in SEC filings  Business model/strategic risks disclosed in SEC filings  Litigation risks disclosed in SEC filings</td>
</tr>
<tr>
<td><strong>Disclosure of Actions to Address Climate Risk</strong></td>
<td>Climate change-related opportunities disclosed in SEC filings  GHG emissions reduction pledges disclosed in SEC filings  Risk management and mitigation measures disclosed in SEC filings</td>
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</table>
For U.S. companies, we reviewed 10-K filings for the 2007 fiscal year, which were submitted to the SEC in 2008. For non-U.S. companies covered by this study, 20-F or 40-F annual filings, if available, were reviewed in place of 10-K filings. In some cases, 20-F or 40-F filings incorporated by reference separate documents, including the company’s Annual Report to shareholders. Where an Annual Report was incorporated by reference in a company’s 20-F or 40-F filing, that report was reviewed for this study. In cases where there was no 20-F or 40-F filing for a non-US company, the company’s Annual Report was reviewed in place of an SEC filing.

Analysis of the companies involved extracting information related to climate change and climate risks and opportunities within the filings using keyword searches and manual reviews of each document. This disclosure was then reviewed according to an evaluation framework developed jointly by The Corporate Library, Ceres and Environmental Defense Fund based on the Global Framework for Climate Risk Disclosure, a statement of investor expectations for comprehensive, standardized corporate disclosure, to make it easy for companies to provide information and for investors to analyze and compare companies (Appendix B).

For the purposes of this study, the Global Framework’s criteria were divided into three main areas of disclosure: 1) emissions and climate change position disclosure, 2) risk assessment disclosure, and 3) disclosure of actions to address climate risk. Within these broad categories, specific issues were identified, and companies were evaluated on the extent to which their disclosure addressed these issues. Companies in all industries were evaluated on the same basis, with the exception of insurance. As explained in detail in Tables 1 and 2, the specific items we looked for within each of these main categories were different for the insurance industry versus other industries due to the unique nature of its exposure to climate risk.

To illustrate how this framework was applied, a hypothetical company in the coal, electric power, oil and gas or transportation sectors with comprehensive disclosure on emissions and climate change would have reported its past, current, and projected future GHG emissions, as well as provided background information on emissions attributed to its industry as a whole. This would give investors context for how companies in that industry are tracking emissions, provide year-to-year comparisons, illustrate emissions reductions benchmarks, and indicate where the company ranks compared to its industry’s average. In addition, a company with sufficient disclosure in this area would also provide information about whether it has developed a climate change position, and the details of that policy.

### Table 2

**Overview of Assessment Methodology for Insurance Companies**

<table>
<thead>
<tr>
<th>Emissions and Climate Change Position Disclosure</th>
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<td>Enterprise risks related to climate change disclosed in SEC filings</td>
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<th>Disclosure of Actions to Address Climate Risk</th>
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<tr>
<td>Climate change-related opportunities disclosed in SEC filings</td>
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<tr>
<td>Enterprise risk management strategies related to climate change disclosed in SEC filings</td>
</tr>
<tr>
<td>Loss control measures related to climate change disclosed in SEC filings</td>
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In the risk assessment category, a company which provides good disclosure would describe physical risks to its operations resulting from climate change, and would attempt to quantify these risks for investors to the extent possible. This company would also disclose regulatory risks, describe current and pending future climate change regulations that would impact its business, and include a scenario analysis estimating potential impacts. The company would also disclose indirect regulatory and litigation risks that it might face related to climate change, and would aim to quantify the scale of these risks as well as efforts to mitigate them.

Finally, a company with full disclosure on its actions to address climate risk would identify opportunities to enter new markets as a result of climate change, and describe new products it has launched in response to climate change or R&D investments it has made in this area. This company would also disclose public pledges to reduce emissions that include quantitative reduction targets, a timeframe for meeting these goals, specific actions it is taking to meet reduction targets, and participation in voluntary and other emissions reduction programs. The company would include discussion of risk management and mitigation measures that include measures to safeguard its physical plants from climate impacts, engagement with climate-related organizations, and targets to shift its business model based on future expectations of climate impacts.

The above evaluation framework was applied to all industries in the study except for insurance. For this industry, the evaluation methodology was derived from the National Association of Insurance Commissioners’ (NAIC) new mandatory requirement that insurance companies disclose to regulators the financial risks they face from climate change.

Accordingly, for the insurance industry, a company with sufficient disclosure on emissions reporting would disclose its emissions data and its plans to mitigate its emissions, and would acknowledge anthropogenic climate change and its challenges. It should be noted, however, that less emphasis was given to emissions disclosure for the insurance industry, given its comparatively low emissions levels from operations.

Full insurance company disclosure on climate risk assessment would involve detailed discussion of underwriting risks. Commentary would include a description of these risks, as well as a discussion of the company’s use of computer modeling to test various climate risk scenarios. The company would also disclose its investment risk and related impacts, possibly quantifying them. The company would also describe the relationship between underwriting and investment risks. Underwriting risks are related to the risk that premiums may not be sufficient to cover future losses incurred from climate change, whereas investment risks are related to the possibility that the value of an insurance investment might decline due to a decrease in the value of the underlying assets as a result of catastrophic climate change-related events. In addition, full disclosure would include implications for reinsurance costs, loss reserves, and liquidity needs due to climate change. Finally, the company would disclose litigation risk it could face from concerned shareholders, policyholders, and other third parties that have been impacted by climate change.

With regard to actions to address climate risk, good disclosure by an insurance company would identify opportunities related to climate change for entering new markets and developing new products, and would discuss new product lines that have already been launched. The company would include discussion of enterprise risk management, including a climate change policy with respect to risk management, noting structures in place to manage these risks and an internal climate change team including representatives from both the underwriting and investment sides of the business. Lastly, disclosure would include discussion of loss control from climate change, including measures taken to assist policyholders in loss prevention, identification and description of coverage in geographic areas that are prone to catastrophic climatic events, and steps the company has taken to engage key constituencies on climate change.

Company performance in each of the three disclosure areas—emissions and climate change position disclosure, risk assessment disclosure, and disclosure of actions to address climate risk—is described in a table for each industry in this report. Across the board, disclosure by all 100 companies was lacking; only two companies in the study disclosed more than half of the information requested by the Global Framework. As a result, we have described the companies’ disclosure in each area as “None,” “Poor,”
“Limited,” or “Fair,” with “None” being the lowest quality disclosure and “Fair” indicating the highest quality disclosure found in the report.

These assessments are displayed in tables in each industry section of the report, which show at a glance the levels of each type of disclosure prevailing in the group, and at individual companies. Readers should note, though, that these tables provide an overview of disclosure, and should not be used to precisely rank companies relative to each other. To help readers understand the meaning of the ratings in depth, each section begins with a discussion of climate risks and opportunities facing each sector and proceeds to analyze the industry's disclosure on each topic area.

In addition, Appendix A includes case studies examining climate risk disclosure from one company from each of the sectors examined in this report. These case studies assess and compare disclosures from both voluntary sources and SEC filings for each company, providing some examples of what companies disclose and where they disclose it, and providing insights into how voluntary and mandatory disclosure differ.
Climate risk disclosure for the electric utilities industry is particularly important to investors. Existing fossil fuel-fired power plants are the single largest source category of greenhouse gases in the U.S. and policies to stabilize the climate will need to address these emissions. Further, building new fossil fuel-fired power plants involves high capital costs and long planning horizons (plants may be operational for thirty years or more). Accordingly, useful disclosure for investors could include utilities not only describing potential regulations in SEC filings, but also attempting to quantify regulatory risks and opportunities. Plants in locations vulnerable to increases in extreme weather events will also face physical risk.

Indeed, of all the sectors included in this report, utilities had the most climate risk disclosure in SEC filings. In particular, their disclosure of regulatory risks was the strongest of all five sectors. Many companies discussed pending legislation, as well emissions reductions and renewable energy initiatives.

The utilities sector is already among the most regulated with regard to emissions of various kinds, including greenhouse gases. Regulations require reporting on emissions of nitrogen and sulfur oxides, as well as mercury. Since the mid-1990s, reporting of carbon dioxide emissions has been required at the federal level as well. These requirements have primed utility companies to better disclose their preparedness for increased regulation of GHG emissions.

Existing fossil fuel-fired power plants are the single largest source category of greenhouse gases in the U.S., and a number of states and regions already have policies to reduce emissions from the power sector. The most significant of these is the Regional Greenhouse Gas Initiative, a cap-and-trade program designed to reduce carbon dioxide emissions from power plants in ten states—New York, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, and Vermont. Under the program, emissions will be capped starting in 2009 at current levels, and then reduced to 10 percent below 2009 levels by 2019.

In California, a 2006 law sets a GHG emissions standard for electricity generating units at a rate no higher than that for combined-cycle natural gas baseload generation; Washington enacted a similar standard in 2007. The California law allows for carbon sequestration as a means of emissions reduction. Similarly, Montana has prohibited the approval of new electric generating units that are primarily fueled by coal unless at least half of the resulting carbon emissions are captured and sequestered. Without setting an emissions limit, Iowa has adopted a law requiring utilities to quantify potential GHG emissions as part of their permit applications.

Renewable portfolio standards (RPSs), which require utilities to generate a certain percentage of their electricity from renewable sources, have also been established in 29 states as well as the District of Columbia. These clean energy generation requirements are now in place for states covering 60% of the U.S. population and over 65% of U.S. gross domestic product (GDP).

In addition to laws requiring generation from renewables, all but nine states have net metering programs, which give consumers credit for electricity they generate themselves from renewable sources and return to the grid. In 21 states, net metering has been established statewide. Nearly half of U.S. states manage funds collected through utility contributions or electrical bill charges that support renewable energy or energy efficiency initiatives.
Overall, the large numbers of regional, state, and voluntary initiatives to reduce emissions in this sector, in comparison to other sectors examined in this report, suggest that full disclosure of climate risks and opportunities for utility companies is particularly important for investors.

**Disclosure of Emissions and Climate Change Position**

This study found that few companies in the electric utilities group disclosed information on GHG emissions in SEC filings. AES, National Grid, and Xcel provided the best disclosure on emissions. AES reported its past emissions and provided some industry-level information on GHG emissions. In its Annual Report to shareholders, National Grid disclosed its past emissions and emissions for 2007. The company also stated that climate change is an important issue and it is “fully integrating climate change considerations into [its] business decisions.” Xcel not only disclosed past CO₂ emissions reductions, but also projected future emissions. The company stated that its “current electric generating portfolio includes coal- and gas-fired plants that are projected to emit approximately 67 million tons of CO₂ in 2007 … There has been a combined cumulative reduction of over 18.5 million tons of CO₂ since 2003.” This type of specific information is helpful for investors to understand the context of reduction levels.

**Disclosure of Risk Assessment**

Every electric power company reviewed in this study disclosed some level of regulatory risk in SEC filings, making this the strongest area of disclosure for utilities. However, disclosure usually provided only a general description of risks. Ten out of 26 companies studied (38%) scored in the poor ranking for this category and 13 out of 26 (50%) scored in the limited category. Three out of 26 (12%) received a ranking of fair, the highest level of disclosure found in the study.

Most companies described general impacts of proposed climate change legislation, whereas others included information about the impact of regulation on their business and descriptions of the regulations. This disclosure from Ameren represents a typically general discussion of regulatory risk: “[T]he impact on us of future initiatives related to greenhouse gas emissions and global warming is unknown. Although compliance costs are unlikely in the near future, our costs of complying with any mandated federal or state, where our Non-rate-regulated Generation coal-fired plants are located, greenhouse gas program could have a material impact on our future results of operations, financial position, or liquidity.”

Few companies tried to quantify regulatory impacts, which would give investors more information to make prudent investment decisions. Most companies simply described the future of regulations as “uncertain.” Xcel disclosed key factors for its exposure to regulatory risk, for example stating “[a]n important factor is Xcel Energy’s ability to recover the costs incurred to comply with any [climate change] regulatory requirements that are ultimately imposed.” Only AES and Ameren Corporation quantified their exposure to regulatory risk.

Only five of the 26 electric utilities mentioned any business model or strategic risks resulting from climate change, with the strongest discussions coming from companies with the most comprehensive overall disclosure. Six utilities described risks from climate change litigation.

Finally, only four companies discussed physical risk to their operations resulting from climate change: AES, Xcel, PG&E, and Exelon. AES included a discussion of the possible sources for physical risks related to climate change, as well as the impacts of these risks on its business.

**Disclosure of Actions to Address Climate Risk**

Generally speaking, utilities’ disclosure on actions they are taking to minimize climate risks and take advantage of new opportunities was weak compared to the information outlined in the Global Framework for Climate Risk Disclosure.
Framework for Climate Risk Disclosure. While 11 out of 26 companies (42%) had at least limited disclosure of actions taken, 7 out of 26 companies (27%) omitted any discussion.

Many companies mentioned renewable energy programs, efforts to reduce emissions, or investments in new technologies for generating power. Others, notably PG&E and National Grid, provided some discussion of energy efficiency and demand-side management programs that provide financial incentives and other benefits to participating customers who curtail their peak energy use.

Xcel disclosed that it was investing in research to mitigate climate change impacts, and was looking increasingly to renewable energy to offer customers carbon-free energy. FPL Group discussed its involvement in the U.S. Climate Action Partnership and other voluntary climate change engagement groups such as the Clinton Global Initiative and the EPA Climate Leaders program (through which it sets emissions reduction targets). The company also announced plans to invest up to $1.5 billion in new solar generating facilities in Florida and California by 2014 and to provide enhanced energy management capabilities to its customers.

**Company Rankings**

Three companies in this group—AES, Xcel, and PG&E—had the most extensive overall disclosure of all 100 companies reviewed in the study. AES and Xcel had similar levels of disclosure, except AES quantified its exposure to regulatory risks, while Xcel did not. AES was also one of only two companies (along with Ameren) to quantify regulatory risks in its 10-K. FPL, Calpine, Dominion, Exelon, and Duke all produced disclosure in the top half of this group.

At the other end of the spectrum, DTE Energy had almost no climate change disclosure. The company’s sole mention of climate change was a very general statement that “there may be legislative action” on the issue, and the business impact of such action was impossible to predict.

| Electric Utilities: Quality of Climate Risk Disclosure in Annual SEC Filings (filed in 2008*) |
|--------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Disclosure of Emissions and Climate Change Position | Disclosure of Risk Assessment | Disclosure of Actions to Address Climate Risk |
| AES Corp. | Limited | Fair | Limited |
| Ameren Corporation | Poor | Limited | Limited |
| American Electric Power Company, Inc. | Poor | Limited | Poor |
| Berkshire Hathaway | Poor | Poor | None |
| Calpine Corporation | Limited | Limited | Limited |
| CenterPoint Energy, Inc. | Poor | Poor | None |
| Consolidated Edison, Inc. | Limited | Poor | Poor |
| Constellation Energy Group, Inc. | Poor | Poor | Poor |
| Dominion Resources Inc. | Poor | Limited | Limited |
| DTE Energy Company | None | Poor | None |

continued on next page
Several major commercial and investment banks have adopted the Carbon Principles, a set of guidelines which should address the financial risks associated with investments in new coal-based generation.

Conclusion

The quality of climate risk disclosure by electric power companies was low compared to the Global Framework’s standards. While this industry had three of the highest ranking companies in the entire study, even those companies failed to disclose key pieces of information requested by investors, such as emissions data or a regulatory risk assessment.

Much of the disclosure provided was general in nature, providing an incomplete picture of climate risks and opportunities facing these companies. In the emissions data and climate change position category, no company provided sufficient disclosure to achieve a “fair” rating. Annual emissions data would be a particularly useful metric for investors to help assess and compare utility performance, and the absence of such disclosure was notable.

Only 3 out of 26 companies (12%) achieved a “fair” rating in their disclosure of risk assessment, although all companies provided at least some disclosure. Information on actions to address climate

| Electric Utilities: Quality of Climate Risk Disclosure in Annual SEC Filings (filed in 2008*) |
|-------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| Disclosure of Emissions and Climate Change Position | Disclosure of Risk Assessment | Disclosure of Actions to Address Climate Risk |
| Duke Energy Corporation | Limited | Limited | Limited |
| Edison International | Poor | Limited | Limited |
| Entergy Corporation | Limited | Limited | None |
| Exelon Corporation | Limited | Limited | Limited |
| FirstEnergy Corp. | None | Limited | None |
| FPL Group, Inc. | None | Poor | Fair |
| Integrys Energy Group, Inc. | Poor | Poor | None |
| National Grid | Limited | Poor | Limited |
| Pepco Holdings, Inc. | Poor | Poor | Poor |
| PG&E Corp. | Poor | Fair | Fair |
| Progress Energy, Inc. | Poor | Limited | Poor |
| Public Service Enterprise Group Incorporated | Limited | Limited | Poor |
| Reliant Energy, Inc. | Poor | Limited | Poor |
| Sempra Energy | Poor | Poor | None |
| Southern Company | None | Limited | Poor |
| Xcel Energy | Limited | Fair | Limited |

EVALUATION KEY
None: Climate risk is not mentioned at all in annual filing.
Poor: Climate risk is discussed, but is not analyzed in terms of its impact on the company’s business.
Limited: Annual filing includes limited discussions or analyses of climate risk as it applies to the company’s business.
Fair: Annual filing includes fuller discussions or analyses of the impact of climate risk on the company’s business, but disclosure still does not meet the requirements of the Global Framework for Climate Risk Disclosure.

*For Fiscal Year 2007.
change was inadequate, with only 2 out of 26 companies reviewed (8%) attaining a “fair” rating and 7 out of 26 (27%) providing no information whatsoever.

Climate change presents a wide range of risks and opportunities for the electric utilities sector. While the overwhelming majority of surveyed utilities included some discussion of these issues, few provided additional detail that would help investors identify which utilities are leading and lagging in addressing climate change.
FINDINGS

Coal Industry

This report analyzes SEC annual filings submitted in 2008 from six Coal Extraction and Production companies, including four U.S. and two foreign companies. Extraction, transport and combustion of coal generate extensive volumes of greenhouse gas emissions, as well as causing land, water, and air quality impacts. Coal combustion is the nation’s single largest contributor to greenhouse gas emissions.

Policy-makers are taking a number of steps to address the high emissions from coal-fired electricity generation. National and multi-state policy initiatives would establish a declining cap on global warming pollution that encompasses the emissions from coal-based power. The Regional Greenhouse Gas Initiative, a ten-state cap and trade program to limit emissions from fossil-fuel based electricity generation, is in effect in the Northeastern and Mid-Atlantic United States. States have also established greenhouse gas limits on new coal-fired power plants or have declined to issue construction permits for proposed coal plants that fail to mitigate their global warming pollution.

States are also expanding reliance on low emitting renewable energy resources and energy efficiency as an alternative to reliance on fossil fuels. Over two dozen states have policies to increase renewable energy or energy efficiency. Power companies are also evaluating the range of energy generation resources across their portfolios, retiring fossil fuel-based power and replacing the resources with lower emitting technologies. And electric utilities are spurring the development and deployment of advanced technologies to capture and store carbon dioxide to address the extensive emissions from conventional coal combustion technologies.

Several major commercial and investment banks have adopted the Carbon Principles, a set of guidelines which should provide a consistent approach for evaluating climate risk in financing electric power plants and examining clean energy alternatives, to address the financial risks associated with investments in new coal-based generation.

Because coal is a carbon intensive fuel and is a principal contributor to global warming, the industry faces increasing national, regional and state policy action to limit its greenhouse gas emissions. These policies involve regulatory limits on pollution, as well as incentives for companies that harness innovations to limit emissions through clean energy alternatives and advanced combustion technologies.

Disclosure of Emissions and Climate Change Position

Disclosure levels on emissions and climate change position were low in the coal industry, as one company had no disclosure, and five had disclosure evaluated as poor or limited. Only two companies disclosed GHG emissions data, a significant shortcoming in a sector facing regulatory risks because of its carbon dioxide emissions intensity. Rio Tinto’s disclosure was notably comprehensive, and discussion on GHG emissions was found throughout the company’s filing, including a mention of its past and projected future emissions. Massey Energy disclosed some industry-level emissions information but no emissions data specific to the company. Peabody Energy’s disclosure did not provide any factual information on emissions, and noted only a neutral, broad mention of the occurrence of climate change. Arch Coal and CONSOL Energy both had some climate change disclosure, but the discussion they provided was less comprehensive than Peabody and Massey.
Both companies mentioned that climate change is occurring, but neither disclosed any information regarding its GHG emissions.

**Disclosure of Risk Assessment**

Risk assessment was the strongest area of disclosure for coal companies, with four companies providing limited disclosure, and one providing fair disclosure. However, all companies provided substantially less information and analysis than the practices outlined by investors in the Global Framework.

Rio Tinto did not cite climate change as a risk to its physical operations, but it did state that it could face regulatory risks due to potential legislation on climate change, and that it faces possible strategic risks related to its business model. Massey stated the potential for regulatory risk. Peabody also offered a description of potential climate change-related legislation, but did not provide details on its implications. The company also stated that there could be potential impacts to its physical operations as a result of climate change, but it did not elaborate.

Neither Arch nor CONSOL disclosed potential physical risks to their operations resulting from climate change, but both companies reported possible risks from climate change legislation and litigation, as well as risks to their business models. For example, CONSOL noted that “on February 4, 2008 three of Wall Street’s largest investment banks announced that they had adopted climate change guidelines for lenders to evaluate carbon risks in the financing of utility power plants which may make it more difficult for utilities to obtain financing for coal-fired power plants.”

The extent to which the companies elaborated on potential risks to their businesses varied, which is concerning given the considerable contribution of the coal sector to overall greenhouse gas emissions. For example, Peabody Energy included some background discussion on the findings of the IPCC, and noted that concerns about the changing climate could affect demand for its products. Massey mentioned the possibility of risk to its business model if public concerns about climate change continue to increase, but did not elaborate further.

**Disclosure of Actions to Address Climate Risk**

Disclosure of actions to address climate risk was the weakest area of coal company disclosure, with three out of six companies providing no disclosure. In its annual filing, Rio Tinto mentioned the following actions: exploring new markets for expansion, investing in research and development to address climate change challenges, and developing new product lines. It reported a commitment to being a “leading advocate of, and investor in, the sustainable future uses of coal and uranium.” The company disclosed its emission reduction pledges and some actions to reduce emissions in the future, and stated that it is engaged with some climate-related organizations on how to mitigate its impacts. Notably, Rio Tinto included some information on climate change and GHGs for each segment that it operates in.

Peabody and Massey were the only companies other than Rio Tinto in this group to discuss opportunities related to climate change, mentioning investments in developing advanced coal combustion and carbon capture technologies.

The rest of the companies in this group had no disclosure in the areas of opportunity identification, emissions reductions pledges or efforts to mitigate or manage climate risks, leaving investors in the dark regarding how and whether the companies plan to proactively address climate risks and opportunities.

**Company Rankings**

In general, coal companies in this study had fairly weak disclosure, with U.K.-based mining company Rio Tinto achieving the highest level of climate risk disclosure. Yanzhou Coal Mining Company, based
The latter company’s only reference to climate change in its annual filing was to note that there is potential regulatory risk in the future.

## Conclusion

Coal-fired power generation is a major source of GHG emissions and, as a result, the coal industry faces substantial climate risks. All coal companies surveyed demonstrated some disclosure of climate change issues in their 10-K or similar filings, but only 1 out of 6 achieved a “fair” rating in any of the three disclosure categories: emissions and climate change position, risk assessment, and actions to address climate risk.

Climate disclosure by the coal companies was strongest in the category of risk assessment, where 5 out of the 6 companies (83%) earned a “limited” or “fair” rating. These disclosures typically mentioned regulatory, physical or litigation risks, but included little discussion of the implications of these risks.

Despite the substantial GHG emissions associated with coal production and use, 4 out of 6 companies (67%) disclosed no GHG emissions data. Rio Tinto’s 20-F form did provide valuable information on GHG emissions, including a mention of its past and projected future emissions. More widespread disclosure of such information would help investors compare and assess coal companies’ relative exposures to climate risks and efforts to manage them.
Climate change poses major risks and opportunities for companies whose primary focus is the extraction and production of oil and natural gas. These fuels emit significant amounts of carbon dioxide when burned, and oil and gas production itself causes significant emissions. Many of these companies already operate in countries covered by the Kyoto Protocol, and have therefore begun to experience carbon regulation. As regulatory oversight of carbon dioxide increases, these companies will have to manage their operations to meet emissions reductions targets. As a result, companies in this industry should be taking significant steps to not only describe potential regulations they may face, but also to attempt to quantify their exposure to regulatory risks for investors, to outline efforts to manage these risks, and to disclose new business opportunities.

The climate risk issues facing this industry are intensified because many companies are turning to unconventional sources of oil, including tar sands and oil shale, whose exploitation has a significantly greater climate change impact than traditional drilling. In response to concerns over the lifecycle GHG emissions of fuels derived from these unconventional sources, a number of government entities have begun to take action. For example, California’s Low Carbon Fuel Standard, established by executive order in 2007, requires a declining GHG emissions intensity for the state’s fuel mix going forward, and the U.S. Conference of Mayors resolved in 2008 to create guidelines for the lifecycle emissions of fuels purchased by municipalities. These developments have the potential to materially impact the businesses of companies involved in exploiting these new oil resources.

In addition, oil and gas companies often operate in locations, such as the U.S. Gulf Coast, which are prone to extreme weather events. Last year’s Hurricanes Ike and Gustav, for example, caused about $40 billion in economic losses, demonstrating the vulnerability of coastal resources to one type of extreme weather event that is predicted to intensify with climate change. Companies in these areas should disclose the extent to which extreme weather induced by a changing climate can affect their operations.

**Disclosure of Emissions and Climate Change Position**

Disclosure of greenhouse gas emissions and companies’ climate change position in this sector was very low. In particular, the companies reviewed disclosed minimal data on their emissions, though this information would be particularly valuable for investors given the emissions intensity of this industry. Shell had the highest level of disclosure in this group, reporting its past and current emissions and noting that climate change is occurring and is caused by human activity. None of the other companies in the oil and gas group reported on emissions, while five others mentioned that climate change is occurring but did not mention human activity as a cause of climate change.

**Disclosure of Risk Assessment**

Similar to the Electric Power group, companies in this industry made their strongest disclosures about regulatory risk. However only one company, Canadian Oil Sands Trust, included any
quantification of this risk. The company described the costs it will incur as it contributes to a technology fund in order to meet the targets of the Canadian Regulatory Framework for Air Emissions, disclosing that “Compliance with the new requirements would allow contribution to a technology fund until 2017 at a rate of $15 per tonne from 2010 to 2012, increasing to $20 per tonne and escalating by the rate of GDP growth from 2013 to 2017.” Most oil and gas companies stated the implications of potential climate change regulations in general terms, but did not describe specific bills or the impacts those bills, if passed, could have on the company. Anadarko and ExxonMobil made only a brief mention of climate risk. In a list of potential risks to its business, ExxonMobil cited “laws and regulations related to environmental or energy security matters, including those addressing alternative energy sources and the risks of global climate change.”

Despite the potential for major physical risks to operations for oil and gas companies, no company described these risks. This information would be useful for investors, given the major operations of these companies around the globe in areas that have significant potential to be affected by extreme weather, sea level rise, and other events related to climate change.

Few companies included discussion on business model risks resulting from climate change. Shell noted that increased attention to climate change leads to a number of risks, which in turn could “affect its operational performance and financial position.”

Only one company cited litigation as a potential climate risk. Suncor stated, “[O]ur business could be affected by the potential for lawsuits against greenhouse gas emitters, based on links drawn between greenhouse gas emissions and climate change.”

Disclosure of Actions to Address Climate Risk

 Eleven of the 23 oil and gas companies reviewed disclosed actions to address climate risk. Overall, these companies had low quality disclosure on actions they are taking to address climate change and take advantage of new opportunities, given the climate-related risks and opportunities they face.

Shell had the most comprehensive disclosure, with discussion on new climate-friendly markets it aims to enter, investments and research into alternative energy, and new product lines in low-carbon energy. Shell also disclosed emissions reductions pledges and included a timeframe for meeting reductions targets. The company also described specific actions in place to reduce carbon emissions, and participation in carbon emissions trading programs.

BP, Statoil and Chevron’s disclosure on actions to mitigate climate risk was primarily related to new investments and research on alternative energy and other carbon-reducing technologies as well as new product lines they are offering in alternative energy.

Table 5
Oil and Gas: Quality of Climate Risk Disclosure in Annual SEC Filings (filed in 2008*)

<table>
<thead>
<tr>
<th>Disclosure of Emissions and Climate Change Position</th>
<th>Disclosure of Risk Assessment</th>
<th>Disclosure of Actions to Address Climate Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anadarko Petroleum Corporation</td>
<td>None</td>
<td>Poor</td>
</tr>
<tr>
<td>Apache Corporation</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>BP</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>Canadian Natural Resources Limited</td>
<td>None</td>
<td>Poor</td>
</tr>
</tbody>
</table>

continued on next page
Disclosure levels in this industry were far below what investors require, and the absence of reporting on climate risk related to exploitation of unconventional oil sources was especially striking.

<table>
<thead>
<tr>
<th>Company</th>
<th>Disclosure of Emissions and Climate Change Position</th>
<th>Disclosure of Risk Assessment</th>
<th>Disclosure of Actions to Address Climate Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Oil Sands Trust</td>
<td>None</td>
<td>Limited</td>
<td>Poor</td>
</tr>
<tr>
<td>Chesapeake Energy Corporation</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Chevron Corporation</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>ConocoPhillips</td>
<td>Poor</td>
<td>Limited</td>
<td>None</td>
</tr>
<tr>
<td>Devon Energy Corporation</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>EnCana Corporation</td>
<td>None</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>Exxon Mobil Corporation</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Husky Energy Inc.</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Imperial Oil Limited</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Marathon Oil Corporation</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Nexen Inc.</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Petro-Canada</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>Shell</td>
<td>Limited</td>
<td>Limited</td>
<td>Fair</td>
</tr>
<tr>
<td>Statoil</td>
<td>None</td>
<td>Poor</td>
<td>Limited</td>
</tr>
<tr>
<td>Suncor Energy Inc.</td>
<td>None</td>
<td>Limited</td>
<td>Poor</td>
</tr>
<tr>
<td>Sunoco, Inc.</td>
<td>None</td>
<td>Limited</td>
<td>None</td>
</tr>
<tr>
<td>Tesoro Corporation</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL SA</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>Valero Energy Corporation</td>
<td>None</td>
<td>Poor</td>
<td>None</td>
</tr>
</tbody>
</table>

**EVALUATION KEY**
None: Climate risk is not mentioned at all in annual filing.
Poor: Climate risk is discussed, but is not analyzed in terms of its impact on the company’s business.
Limited: Annual filing includes limited discussions or analyses of climate risk as it applies to the company’s business.
Fair: Annual filing includes fuller discussions or analyses of the impact of climate risk on the company’s business, but disclosure still does not meet the requirements of the Global Framework for Climate Risk Disclosure.

*For Fiscal Year 2007.

**Company Rankings**

Disclosure levels in this industry were far below what investors require, and the absence of reporting on climate risk related to exploitation of unconventional oil sources was especially striking. The top five disclosers in this group were non-U.S. companies.

Exxon Mobil and Anadarko had very little information in their 10-Ks, making very general statements on the potential for risk related to climate change regulations. Apache had no disclosure whatsoever in its 10-K. Shell had by far the most comprehensive climate risk disclosure, followed by BP, Statoil, Canadian Natural Resources, and TOTAL. All but one company disclosed information related to regulatory risk.
Conclusion

In the oil and gas sector, the majority of companies disclosed some information about climate risks, but little to no information in the categories of actions to address climate change, or emissions and climate change position.

In the risk assessment category, a nominal level of disclosure was nearly universal; 22 out of the 23 companies surveyed (96%) had disclosures categorized as “poor” or “limited.” Disclosure in the two other categories was even weaker. Twelve out of 23 companies (52%) disclosed no information about actions to address climate change, and 17 out of 23 companies (74%) had no disclosure about emissions and their climate change position. In particular, few companies discussed emission reduction pledges or new investment strategies to mitigate risks from climate change, and only one oil and gas company disclosed information on its GHG emissions.

The low level of disclosure in this industry leaves investors without crucial pieces of information necessary to gauge oil and gas companies’ preparedness for current and future climate change impacts.
This study reviewed climate risk disclosure from 19 companies involved in transportation. This group includes companies in the automobile manufacturer, heavy truck manufacturer, trucking transportation, auto rental and shipping and logistics subsectors.

Policies are being established to address global warming pollution from motor vehicles. For example, on May 19, 2009, President Obama announced a nation-wide policy aimed at both increasing fuel economy and reducing greenhouse gas pollution for all new cars and trucks sold in the United States.84

Accordingly, climate disclosure that would help investors understand and assess risks and opportunities facing these companies would likely focus on reductions of greenhouse gas emissions and related future regulations, investment in more fuel efficient cars, opportunities for the sale and use of alternative vehicles, and changes in shipping and transportation patterns in a carbon-constrained economy.

Disclosure of Emissions and Climate Change Position

Only five of the 19 companies in this group disclosed their emissions or mentioned a climate change position. Four were automobile manufacturers—Honda, Daimler, General Motors, and Toyota—and the fifth was shipping and logistics company FedEx.

Of this group, General Motors was the only one to disclose its past emissions from operations, stating, “[We] set a 2006 target of an 8% reduction in carbon dioxide (CO₂) emissions from our worldwide facilities compared to 2005 emission levels. By 2006, we had reduced CO₂ emissions from our worldwide facilities by 22% compared to 2000 levels. Several of our facilities are included in the European emissions trading regime, which is being implemented to meet the European Community’s greenhouse gas reduction commitments under the Kyoto Protocol.” Although this is useful information, full disclosure would include emissions data on GM’s cars, a primary area of climate risk for automobile manufacturers.

Disclosure of Risk Assessment

Nine companies in this group had no disclosure of climate risk assessments in their annual filings. The strongest reporting of climate risk assessment was again attributed to the automobile manufacturers, along with FedEx.

None of the companies in the transportation group disclosed any physical risks to their operations resulting from climate change. This is surprising given that many of these companies have significant manufacturing operations that could be exposed to the physical impacts of climate change.

Nine transportation companies disclosed regulatory risks related to climate change. Four mentioned that they could be impacted by regulatory changes, but did not describe any of the potential impacts of regulations. For example, FedEx noted that possible future regulations could impact its business, but did not elaborate. The company stated that, “increased regulation regarding GHG emissions,
especially aircraft or diesel engine emissions, could impose substantial costs on us, especially at FedEx Express.” Additional analysis of the potential impacts of regulations could better inform investors of current and future risks to performance.

Four companies did offer more detailed descriptions of the regulatory landscape, providing both summaries of the proposed regulations and descriptions of the implications for their businesses, but none quantified these impacts. Navistar, Tata, and Ryder System made only passing mention to potential risks from climate change regulations.

Daimler, Ford, FedEx, and Cummins included some description of business risks they face related to climate change. Ford describes “[a]n increase in or acceleration of market shift away from sales of trucks, sport utility vehicles, or other more profitable vehicles, particularly in the United States” as a risk to its business.

Only Daimler, Ford and General Motors disclosed litigation risk related to climate change. In particular, General Motors cited environmental litigation as a risk to its business, and also disclosed a lawsuit in California that was brought by that state’s Attorney General against the company and other automobile manufacturers for damages sought as a result of their vehicles’ GHG emissions.

**Disclosure of Actions to Address Climate Risk**

Thirteen transportation companies disclosed some actions to address climate risk and take advantage of new opportunities, with four companies including some description of efforts to reduce GHG emissions.

In this group, Honda provided notable disclosure about new climate-related opportunities and actions it is taking to address climate risk. Honda discussed new vehicles that it is bringing to market, including a fuel cell vehicle, as well as activities in the solar cell business. The company disclosed its specific emissions reductions targets as a percentage of 2001 emissions per unit produced for its automobiles, motorcycles and power products. However the company did not disclose past, current, or projected future emissions. Toyota also included discussion of alternative vehicles and hybrid engines as actions that it is taking to address climate change. The company stated a commitment to building “environmentally sound” vehicles, and it highlighted its research and development focus on hybrids, fuel cells and clean diesel technology.

Honda mentioned emissions both from the production and use of their vehicles, which is more helpful to investors than disclosure on production alone since vehicle use is a much larger contributor to GHG emissions than vehicle production, and therefore an important opportunity for emissions reductions. Honda’s annual filing stated, “[T]he most important environmental issue is the reduction of CO₂ emissions, which is a means of protecting the natural environment on a global scale. Recognizing this, Honda has proactively announced global CO₂ reduction targets for 2010 for both its products and manufacturing activities.”

Navistar and Paccar did not disclose any actions to mitigate climate change, but Cummins reported that it is involved in new investments and research on products that are more climate-friendly, such as lower emissions trucks, and clean diesel technologies. In general, trucking transport companies had very little disclosure on actions to address climate change, with Landstar and CH Robinson showing no climate risk disclosure at all. In the only example of its climate risk disclosure, JB Hunt notes, “Increasingly, our customers are seeking energy-efficient transportation solutions to reduce both cost and greenhouse-gas emissions. Our intermodal service addresses both demands. We are also beginning to customize dedicated solutions aimed at minimizing transportation-related carbon emissions.”

**Company Rankings**

The companies in this group with the strongest disclosure were automobile manufacturers. Several of the companies with the strongest disclosure were non-U.S. companies, though GM was the only
company to include data on past GHG emissions from operations. Honda and Daimler had the strongest disclosure in the group, along with General Motors. Five companies in the transportation group had no climate risk disclosure at all, including two rental car companies, Avis and Hertz, truck manufacturer Paccar, and two trucking transport companies, CH Robinson and Landstar.

Ryder made no mention of climate change specifically, but stated, “We have adopted pro-active environmental strategies that have advanced business growth and continued to improve our performance in ways that reduce emission outputs and environmental impact.” The company mentioned its environmental policies and objectives, but did not provide any specifics. Hertz, the auto rental company, stated even less and received no credit for climate risk disclosure in the study. The company only noted, “The use of cars and other vehicles is subject to various governmental requirements designed to limit environmental damage, including those caused by emissions and noise. Generally,
these requirements are met by the manufacturer, except in the case of occasional equipment failure requiring repair by us.”

**Conclusion**

The transportation companies in this report provided very little climate risk disclosure in their financial filings compared to the information required by investors, as outlined in the Global Framework.

Five out of the 19 companies surveyed in this sector (26%) included no disclosure of any climate-related information in their 10-K or similar filings. Emissions associated with vehicle use, a key source of GHG emissions from the transportation sector, were not disclosed by any company, although one company disclosed emissions associated with vehicle production.

A number of companies discussed actions or strategies to address climate change, with 13 out of 19 companies (68%) providing some disclosure in this category. Several filings included valuable descriptions of efforts to increase the fuel efficiency of vehicles or transportation services.
Investors have been seeking information on companies’ underwriting risks and investments risks.... Our review of company filings suggest that U.S. companies have so far provided relatively little disclosure....

The context for climate risk disclosure in the U.S. insurance industry has recently changed dramatically. In March 2009, the National Association of Insurance Commissioners (NAIC) approved a groundbreaking mandatory requirement that insurance companies disclose to regulators the financial risks they face from climate change, as well as actions the companies are taking to respond to those risks.

Under the new regulations, insurance companies with annual premiums over $500 million will be required to fill out an Insurer Climate Risk Disclosure Survey every year, with the first reporting deadline being May 1, 2010. The surveys must be submitted in the state where the insurance company is headquartered and reports its largest volume of insurance premiums, and will be aggregated and disclosed publicly on the NAIC’s website.

The NAIC’s action came after years of engagement with Ceres and institutional investors, who recognize that the insurance industry has a uniquely multifaceted exposure to climate change. On the one hand, many branches of the industry face the risk of increased claims. Property and casualty insurers are already seeing more claims due to severe weather, and may find that entire regions, such as coastal areas, become unprofitable to insure. Health insurers may be eventually be affected by the increased spread of disease resulting from climate change. If climate-related litigation is filed against companies that are arguably responsible for climate change, writers of directors’ and officers’ liability coverage may also be impacted. Reinsurers, meanwhile, are exposed to all of these losses when insurers pass on to them a portion of their risk exposure.

At the same time, insurance companies are exposed to climate risk in their capacities as institutional investors. Insurance companies’ business models rely on investing their customers’ premiums and earning returns large enough to make a profit after paying all claims. If the climate risk embedded in these enormous portfolios decreases returns at the same time that climate-related claims are rising, the spread between investment income and claims payments will shrink, threatening the industry's financial viability.

Along with this two-sided risk exposure, however, the insurance industry may have a greater potential than any other both to benefit from climate change and to mitigate it. For example, if insurers begin to offer policies covering climate litigation risk, they may advise their clients on how to lower their risk (and premium) levels by reducing their climate-damaging activities. Insuring renewable energy facilities may also be both a profitable business line and an essential contribution to the development of that industry.

Given these industry characteristics, investors have been seeking information on companies’ underwriting risks and investment risks, the actions they are taking to reduce both, and their efforts to develop innovative climate-related lines of coverage. Our review of company filings suggests that U.S. companies have so far provided relatively little disclosure of this kind, and that for most of them, compliance with the NAIC regulations will require them to enter uncharted territory.

Disclosure of Emissions and Climate Change Position

Reinsurance companies Swiss Re, Munich Re, and Zurich Financial all disclosed plans to mitigate their operational emissions, and Swiss Re also disclosed its actual emissions data in its annual report. This
information is helpful to investors but was not weighted as heavily as emissions disclosures by companies
in the other four sectors covered by this report, because insurers are not emissions-intensive companies.

Swiss Re, Munich Re, and Zurich Financial also mentioned that climate change is a growing issue of
concern around the globe that needs to be addressed. Munich Re stated, “Climate change represents one
of the greatest risks of change for the insurance industry, but it also opens up many business opportunities.”

**Disclosure of Risk Assessment**

Several companies provided some discussion of underwriting risk. The only U.S. companies to do so were
Allstate and CNA Financial. Allstate disclosed that climate change could “impact the affordability and
availability of homeowners insurance. To the extent that climate change impacts mortality rates and those
changes do not match the long-term mortality assumptions in our product pricing, our Allstate Financial
segment would be impacted.” CNA Financial reported that “longer-term natural catastrophe trends may
be changing and new types of catastrophe losses may be developing due to climate change, a phenomenon
that has been associated with extreme weather events linked to rising temperatures, and includes effects
on global weather patterns, greenhouse gases, sea, land and air temperatures, sea levels, rain, and snow.”

European insurers provided more nuanced discussions of underwriting risk that contained valuable
information for investors. Swiss Re explained that there is “increasing evidence that climate variability
and climate change are affecting the catastrophe perils market.” Munich Re disclosed its approach to
underwriting risk, noting that its “business is inextricably linked with ecological aspects … [and is]
directly affected by environmental impacts, such as the greater frequency and intensity of weather-
related natural catastrophes.” Munich Re also explained that this link is the driver for its approach to
addressing climate change in its business.

Zurich Financial’s disclosure focused on the climate-related risks to its customers and developing
insurance products that meet those needs. Without providing further detail, the company noted that
many of its customers look to Zurich for guidance on risks driven by climate change, and therefore it
aims to address them through research and an internal Climate Office that “will be embedded” in its
underwriting infrastructure.

In contrast to underwriting risk, climate-related investment risk was rarely disclosed. Only CNA Finan-
cial mentioned climate-related investment risks in their annual filing. CNA noted that it faces risks to
its equity positions in the event of an extreme weather catastrophe possibly resulting from climate change.

Chubb, Cincinnati Financial and Hartford only made passing remarks on climate risk. For example, in
reference to its reinsurance program, Cincinnati Financial stated that “we also continue to evaluate informa-
tion provided by our reinsurance broker. These various sources explore and analyze credible scientific
evidence, including the impact of global climate change, which may affect our exposure under insurance
policies.” The company did not elaborate further on how it evaluates climate change as a risk factor.

**Disclosure of Actions to Address Climate Risk**

Swiss Re, Munich Re, and Zurich Financial showed the most widespread discussion of actions they are
taking to address climate risk. All three described research programs on the issue of climate change, efforts
to model risks related to climate change so that they can adapt their pricing models, and possible new
insurance products that would take advantage of opportunities related to climate change. U.S. companies
were substantially behind the European reinsurers in disclosing climate risk evaluation and actions.

In discussing climate-related opportunities, Zurich Financial reported that its “internal Climate
Office … will help to develop risk products and solutions.” Also the company disclosed an applied
research program that advises the company’s management on strategic and operational risks related to
climate change. Swiss Re discussed a number of investments it has made—in areas such as alternative
energy, forestry, and carbon credits—as strategies to benefit from opportunities that climate change
will present. The company also disclosed the launch of a Climate Adaptation Development Programme that is focused on climate change adaptation in emerging markets. Munich Re’s annual filing stated, “Besides analysing and evaluating risks, advising underwriters and clients, and developing new service tools, this centre of competence also addresses all climate-change issues of relevance to Munich Re in its new Corporate Climate Centre.” Another area the company discussed in its report was its Kyoto Multi Risk Policy, which the company noted was developed to address risks in emissions trading.

These companies also discussed some collaborations with climate related organizations, such as the UN’s Environment Programme Finance Initiative, which promotes an understanding of climate change in the finance sector.

**Company Rankings**

In this group, only nine out of 27 had any climate risk disclosure in their annual filings, indicating that investors are rarely receiving the information they need to assess climate risks to insurance companies. The three companies with the best disclosure, Swiss Re, Munich Re, and Zurich Financial, were non-U.S. and had substantially more discussion of climate risk than the U.S. companies. U.S. based CNA Financial had some discussion regarding climate risk, whereas Ace Limited, Allstate Corp., Chubb Corp., Cincinnati Financial and Hartford Financial each had only a brief reference to climate risk.

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Insurance: Quality of Climate Risk Disclosure in Annual SEC Filings (filed in 2008*)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disclosure of Emissions and Climate Change Position</td>
</tr>
<tr>
<td>ACE Limited</td>
<td>None</td>
</tr>
<tr>
<td>Allianz SE</td>
<td>None</td>
</tr>
<tr>
<td>Allstate Corporation</td>
<td>Poor</td>
</tr>
<tr>
<td>American International Group, Inc.</td>
<td>None</td>
</tr>
<tr>
<td>Aon Corporation</td>
<td>None</td>
</tr>
<tr>
<td>AXA</td>
<td>None</td>
</tr>
<tr>
<td>Berkshire Hathaway</td>
<td>None</td>
</tr>
<tr>
<td>China Life Insurance Company</td>
<td>None</td>
</tr>
<tr>
<td>Chubb Corporation</td>
<td>None</td>
</tr>
<tr>
<td>Cincinnati Financial Corporation</td>
<td>None</td>
</tr>
<tr>
<td>CNA Financial Corporation</td>
<td>None</td>
</tr>
<tr>
<td>Everest Re Group, Ltd.</td>
<td>None</td>
</tr>
<tr>
<td>Hartford Financial Services Group, Inc.</td>
<td>None</td>
</tr>
<tr>
<td>Lincoln National</td>
<td>None</td>
</tr>
<tr>
<td>Manulife</td>
<td>None</td>
</tr>
</tbody>
</table>

*continued on next page*
Risk assessment is a key foundation of the insurance industry, but the major risks associated with climate change were largely unexamined and not disclosed by U.S. insurance companies. In March 2009, the National Association of Insurance Commissioners took one step to address this, issuing a mandatory requirement that insurance companies disclose to regulators the financial risks they face from climate change, as well as actions the companies are taking to respond to those risks. The disclosure requirements reflect the climate risks insurers face, and cover topics including insurers’ risk-management and catastrophe-risk modeling, engagement with policymakers and policyholders on the risks of climate change, and changes to their investment strategies.  

Despite the substantial climate risks facing this sector, our report found that climate risk disclosure levels were lower in the insurance sector than in any other sector we examined. Eighteen out of 27 insurance companies surveyed (67%) had no mention of climate change or climate risk anywhere in their annual SEC filing. In all three areas of our assessment, insurance companies reported at a lower level than any of the other sectors analyzed.

These low levels of disclosure indicate that many insurance companies are leaving investors uninformed about basic business decisions related to climate risk, such as whether companies are incorporating climate change projections into catastrophe risk modeling.
Summary of Findings

This report found limited climate risk disclosure in SEC filings in all the sectors we examined. Out of 100 companies covered in this report, 28 had no discussion of risk assessment, 52 described no actions to address climate change, and 59 made no mention of emissions or a climate change position. Many companies in the insurance and transportation sectors provided no disclosure whatsoever of any climate change-related information.

Only two companies in the report disclosed slightly more than half of the information requested by investors in the Global Framework for Climate Risk Disclosure, so the highest levels of disclosure were described as “Fair.” No companies provided “Fair” disclosure of emissions and a climate change position, only 7 companies provided “Fair” disclosure of risk assessment, and only 5 companies ranked “Fair” on their disclosure of actions taken to address climate change.

While some climate risk disclosure was common in the electric power, coal, and oil and gas industries, most filings in these sectors lacked the level of detail that investors require. Disclosure in the insurance sector was especially weak, with two thirds of the companies failing to provide any climate risk disclosure. Performance in the transportation sector was also markedly inadequate, with no companies disclosing GHG emissions associated with vehicle use, a key risk.

Climate change presents a multitude of risks and opportunities, particularly for the sectors evaluated in this report. Despite the clarity of climate science and the host of policies being enacted to combat global warming’s ill effects, our analysis found that disclosure in SEC filings of the implications of climate change for corporate performance still falls short. Investors require standardized, comprehensive climate risk disclosure in SEC filings to adequately assess climate risks and opportunities in their investments. We understand that some companies have taken steps to improve climate risk disclosure in their 2008 annual filings, and we encourage companies to move forward with providing investors with the depth of disclosure as outlined in the Global Framework.

Climate risk disclosure in SEC filings is insufficient to meet investors’ needs largely because the SEC has failed to take actions to highlight its importance. Although pressure from investors has clearly had some effect upon companies’ disclosure practices, companies are unlikely to comprehensively disclose climate risks and opportunities in SEC filings in the absence of clear guidance from the SEC.
Case Studies: Comparisons of Voluntary and Mandatory Disclosure

CASE STUDY/XCEL ENERGY

Annual Filing with the SEC

Xcel Energy had one of the highest levels of 10-K disclosure relative to the Global Framework on Climate Change in this study; however, its disclosure still reported on only about half of the Global Framework criteria. The company also disclosed information on climate risk and opportunity in its response to the Carbon Disclosure Project (CDP) and in its Triple Bottom Line sustainability report.

In September 2007, the New York State Attorney General issued subpoenas under New York State’s Martin Act to several companies seeking information and documents related to climate risk and disclosure, stating that utilities seeking to expand their production of coal-based energy should take steps to inform shareholders about the implications for their investment in the company. The Attorney General specifically cited construction of a new coal-fired power plant by Xcel as an increased risk for the company that is material and should be disclosed to shareholders. According to the Attorney General’s letter to Xcel’s CEO, “The increase in CO₂ emissions from the operation of this unit will subject Xcel to increased financial, regulatory, and litigation risks. We are concerned that Xcel has not adequately disclosed these risks to shareholders, including the New York State Common Retirement Fund, which is a significant holder of Xcel stock.”

In a landmark settlement, Xcel reached an agreement with the Attorney General’s office to expand the discussion of climate risks in its 10-K report. Following the settlement, the company disclosed more information about climate risks than almost all of the companies examined in this report.

Voluntary Disclosure

Xcel also published climate risk information through the Carbon Disclosure Project (CDP). In its CDP response covering year 2007, Xcel Energy included discussion of regulatory risks, weather risks (and thus physical risks), economic risks, and changes in consumer attitudes. The company also discussed a number of opportunities related to climate change, including power generation from renewables (noting that it is the largest utility provider of wind energy), customer conservation programs, and new technologies like integrated gasification combined cycle (IGCC), where CO₂ is captured and stored in the process of power generation from coal.

The company’s CDP response also included a strategy to mitigate climate risks and take advantage of new opportunities that included engagement in the national policy discussion, resource planning, financial forecasting, performance measurement and development of renewable energy. In its
introductory statement, Xcel said “We believe a comprehensive approach is needed to address concerns about climate change, and our company is taking actions today. That includes greatly increasing our use of resources that produce lower or no GHG emissions, increasing energy conservation opportunities for our customers, exploring new generating technologies that could reduce environmental impact, and participating in carbon sequestration research and development.”

The company’s CDP disclosure also included its GHG emissions in a much more detailed manner than its 10-K. This disclosure included data back to the year 2000, as well as discussion of operating costs related to power generation from fossil fuels. This information could be used by investors to forecast exposure to direct and indirect regulatory risks and to assess efforts to manage climate risks.

Xcel Energy also publishes a “Triple Bottom Line” report. The company’s 2007 report followed the voluntary Global Reporting Initiative (GRI) guidelines for reporting on non-financial data. Regarding climate change, the company included in-depth discussion on efforts to reduce carbon emissions, and estimated future emissions. Beyond reporting on emissions, Xcel Energy discussed resource planning and how it is incorporating reductions of carbon dioxide into its plans for expanding capacity for energy production. The company disclosed generation goals related to expansion of renewables, energy efficiency programs, as well as retirement of older coal plants.

Overall

Xcel’s disclosure of climate issues varied depending on the type of document concerned. In its 10-K, the company’s disclosure focused on an explanation of climate risks, in particular those related to regulation and litigation. The company’s response to the CDP questionnaire was focused more on emissions and renewable power generation. Its Triple Bottom Line report was the most narrative example and provided investors with a depth and breadth of climate disclosure that the other reports did not, in particular addressing in greater depth the company’s opportunities related to climate change and emissions reductions.

Xcel’s 10-K report had strong disclosure as compared to the other companies in this study; however, its disclosure still only covered just over half of all Global Framework criteria. The additional information and analysis on emissions and climate opportunities from its voluntary filings would add significantly to the depth of information in Xcel’s 10-K.

CASE STUDY/PEABODY ENERGY

Annual Filing with the SEC

In this study, Peabody Energy’s climate risk disclosure performed poorly overall, providing information on only a small number of Global Framework criteria. However, of the US-based coal companies reviewed, Peabody had the most climate risk disclosure in its SEC filing.

The company’s 10-K disclosure focused on the attention being paid to climate change and the potential regulatory changes in the US. The company stated: “Further developments in connection with legislation, regulations or other limits on greenhouse gas emissions and other environmental impacts from coal combustion, both in the United States and in other countries where we sell coal, could have a material adverse effect on our results of operations, cash flows and financial condition.” The 10-K’s disclosure of regulatory risk also described some of the proposed legislation, and discussed a subpoena it received from the New York Attorney General requesting that the company disclose climate risk information in its public filings to investors. The company also voiced its support for commercialization of advanced coal technologies.

While Peabody’s 10-K did acknowledge that the company faces climate risks, the level of discussion was very general and lacked the specificity needed by investors.
Voluntary Disclosure

For year 2007, Peabody did not fully respond to the Carbon Disclosure Project questionnaire, but instead sent a letter highlighting some of its climate initiatives. In the letter, the company stated that due to rising demand for energy related to population expansion and growth in developing nations, coal use is critical and expected to double in the next 25 years. Accordingly, the company noted that it “is pursuing the ultimate goal of near-zero emissions and carbon management for coal-based energy through a number of voluntary and industry-based initiatives.” Peabody also disclosed its three-step approach of building out new high efficiency coal-fired power plants, commercializing new integrated gasification combined cycle (IGCC) technology that is coupled with carbon capture, and pursuing carbon dioxide sequestration at existing pulverized coal plants. The company explained that governments should support the development of these and other advanced coal technologies as well as support voluntary GHG emissions reductions programs. Peabody’s incomplete response to the questionnaire focused on continued opportunities for coal power and did not include discussion of the implications of climate policy for its performance.

The Public Responsibility section of the company’s Corporate Social Responsibility report also included some discussion focused on greenhouse gas emissions and its advanced coal initiatives by emphasizing the world’s energy needs and the role coal can play in meeting them. Peabody’s report stated: “In the next quarter century, global energy use will increase by more than half and world electricity generation will nearly double, based on forecasts by the International Energy Agency’s World Energy Outlook. Around the world, coal is driving enormous economic development in the largest and fastest-growing population centers.” The company’s report discussed its focus on technology development first, followed by carbon management.

Overall

Peabody’s disclosure focused on the role that coal-fired generation could play with increasing energy demand, but included little information on the impacts of climate change. In light of the coal industry’s major contribution to global warming pollution, Peabody’s discussion in both its SEC and voluntary disclosures gives an incomplete picture of the climate risks that the company faces.

Peabody’s discussion fails to meaningfully examine the risks associated with the greenhouse gas emissions from coal-based power or its business plan for addressing these risks. In addition, the company does not provide investors with sufficient information about the risks it, along with the electric power industry, faces from initiatives like the Carbon Principles, in which several Wall Street banks have committed to “examine financings involving potential new fossil fuel generation through the Enhanced Environmental Diligence Process…to identify potential risks posed by the recognized cost of CO2 emissions.” As a result, while the company’s disclosure performance was stronger than other U.S. coal companies, its performance fell far short of investors’ need for thoughtful, comprehensive disclosure of the risks and opportunities from a changing climate.

CASE STUDY/ROYAL DUTCH SHELL

Annual Filing with the SEC

Royal Dutch Shell’s disclosure of the significant climate risks it faces from its investments, particularly those in non-conventional fuels, did not provide the range of information needed by investors as outlined in the Global Framework. However, the company had the best climate risk disclosure in this study’s review of oil and gas companies, indicating the low level of disclosure in this sector.
A global group of energy and petrochemical companies based in The Netherlands, Shell files an annual form 20-F with the SEC, which was examined for its level of climate risk disclosure. As one of the largest energy companies in the world, Shell has operations in countries as far reaching as Canada and Nigeria, and is involved in upstream exploration and production, as well as downstream refining and marketing. The company also has some divisions that develop renewable energy products. Notably, Shell is also one of the largest operators of tar sands (also known as oil sands) sites in Canada. Tar sands are oil-saturated deposits of sand and clay. In order to extract the oil, tar sands are liquefied by injections of steam. This requires both a large quantity of water and large amounts of natural gas, which is burned to heat the water. The oil obtained then needs to be upgraded before it can be refined—another process requiring large amounts of water and natural gas.

The climate change impacts of this process are multi-faceted and severe. Because of the high energy inputs required, it is three to five times more GHG emissions intensive than conventional oil production. In addition, the water used (about three times the volume of oil produced) cannot be recycled after use, worsening concerns about freshwater scarcity caused by climate change. Furthermore, mining of the tar sands often involves removal of the forest and peat covering them, which act as carbon sinks. Canada’s boreal forest, which is being damaged by tar sands production, is the largest terrestrial carbon storehouse in the world. Tar sands production is a major reason Canada has failed to meet its Kyoto targets for emissions reductions, and has instead seen its carbon emissions increase significantly since 1990.87

Because of the substantial greenhouse gas emissions from tar sands and their contribution to global warming, their development presents a considerable climate risk to Shell and its shareholders. In its 20-F the company stated: “The extent of greenhouse gas legislation in Canada as a whole remains uncertain. However, the current Alberta Provincial Government has introduced, and the federal government intends to introduce, legislation that requires reductions in allowable emissions of CO₂ in relation to oil sands’ production. Reductions in allowable emissions could impact current production and future expansions.”

Shell is also actively engaged in securing government leases in the Western U.S. for development of oil shale, another unconventional oil resource. Oil shale development shares tar sands’ high greenhouse gas intensity, and also requires significant water resources.88 In its 10-K annual filing, Shell did not address how its oil shale investment fits within plans to mitigate global warming pollution.

**Voluntary Disclosure**

Shell published a Sustainability Report covering year 2007 that devoted some discussion to climate change and tar sands development. In a discussion of how Shell reconciles the need for emissions reductions with a strategy that includes a heavier reliance on more CO₂-intensive resources like oil sands, the report stated that it is committed to developing these carbon-intensive resources responsibly, and that “scenarios indicate that a supply crunch for conventional sources could appear around 2015. Greater efficiency, biofuels and other renewables will help, but won’t be enough on their own.” The report acknowledged that public policy will have a role in determining what role all energy sources will play, including oil sands, but did not provide a fully informative discussion of the implications for Shell’s performance.

Shell’s Sustainability Report did include a GHG reduction pledge. The company stated that its oil sands “operation has a greenhouse gas management plan [that was] developed with the help of Shell Canada’s independent Climate Change Advisory Panel that includes an aggressive voluntary target to reduce CO₂ emissions by 50% by 2010.”

In the company’s response to the Carbon Disclosure Project, Shell reported information that was also contained in its Sustainability report, stating that “The Athabasca Oil Sands Project…has a voluntary GHG reduction target: to make the combined CO₂ emissions from producing and using its petrol lower than those for petrol from the imported oil it replaces by 2010. The reductions are being sought in energy efficiency improvements and CO₂ capture and storage at [its] oil sands facilities, and
in mitigation measures outside the project that offset its emissions. [The company is] continuing to improve oil sands technology…It reduces energy and CO₂ emissions from the step in the production process when the oil is separated from the sand, by 10% compared to previous technology.”

Overall

In aggregate, the company’s statements in its three forms of climate risk disclosure (20-F, Sustainability Report, and CDP response) focused on oil sands as an important component of the world’s energy future. In its 20-F, Shell states, “As easy-to-access oil gets rarer, unconventional resources such as Canada’s oil sands will become increasingly important sources of energy.” This disclosure did not fully address the concern that tar sands development will release extensive quantities of greenhouse gases.

Shell did disclose information on how it plans to make oil sands mining compatible with Shell’s emissions reductions efforts; however, the company acknowledged that many of the reductions will have to be implemented as separate projects in the form of offsets for emissions produced at oil sands operations. Shell’s disclosure of information on unconventional fuels failed to provide clear, comprehensive information that investors can use to judge Shell’s exposure to and management of climate risks.

CASE STUDY/HONDA MOTORS

Annual Filing with the SEC

Honda had the highest levels of climate risk disclosure in this study for the Transportation group and some of the highest levels of disclosure in the study overall. However, while the company’s disclosure met some investor needs for understanding climate risk, it missed providing information in a number of categories. For this study, Honda’s 20-F annual filing was reviewed. Given the company’s international focus, the company’s filing contained discussion on regulatory implications of climate change in Japan, Europe, and other regions.

The company did not disclose its past or projected future GHG emissions in its annual filing, but it did lay out worldwide goals for reducing CO₂ emissions. Honda stated that it “believes that the most important environmental issue is the reduction of CO₂ emissions, which is a means of protecting the natural environment on a global scale.” In particular, Honda stated that it aims to reduce automobile CO₂ emissions per unit of production by 10% in 2010, using a baseline of fiscal year 2001 emissions. While these emissions intensity goals are valuable, a focus on the total amount of emissions would be most useful for investors to assess Honda’s exposure to and management of climate risks. Furthermore, without any disclosed data on Honda’s absolute level of emissions, it is difficult for investors to track the company’s performance. Honda also discussed its new products, like its latest hybrid vehicles and a fuel cell vehicle that it anticipated bringing to market in some regions, providing helpful information on Honda’s efforts to take advantage of new climate-related opportunities.

Voluntary Disclosure

The company’s Environmental Report focused on reducing carbon dioxide and contained Honda’s most extensive climate risk disclosure. The report discussed reducing carbon dioxide emissions (both operational and from end product use) and enhancing fuel efficiency. In the report, Honda stressed again that climate change is the most important challenge of the present time, and detailed its strategies for addressing it. The report stated “In the United States, Honda advocates national standards and a national industry policy for mobile sources. Honda has provided Congressional
testimony in support of higher fuel economy standards, set and monitored by the appropriate regulatory bodies. Honda has also advocated selected use of incentives to promote new technologies that improve fuel efficiency and reduce GHG emissions.” Honda disclosed its perspective on the viability of various alternative fuels, and also discussed emissions reductions and other environmental impacts of its operations, products, and supply chain.

In addition, the company participated in the Carbon Disclosure Project, but its response has not been made public. This lack of a public response to CDP makes it impossible for all investors to view Honda’s response to this questionnaire.

**Overall**

The thrust of Honda’s climate risk disclosure focused on the importance of addressing climate change through its lower-emissions vehicles and other motorized products like watercraft, engines, and all-terrain vehicles, as well as operational emissions cuts. For example, Honda’s Environmental Report, noted that “[t]he greatest immediate opportunity to reduce the company’s CO₂ emissions will come by improving the energy efficiency of Honda products and the factories that build them. Together, these factors account for roughly 80 percent of a Honda product’s life-cycle CO₂ emissions. Accordingly, in May 2006, Honda established voluntary targets to further reduce CO₂ emissions from its products and manufacturing activities globally by 2010.” This disclosure provided valuable information to investors about the scope and focus of Honda’s climate risk mitigation efforts.

Honda could further improve its disclosure practices by providing additional information on any physical risks, business model risks, and litigation risks related to climate change, or by disclosing its past or projected future emissions. While it did disclose emissions reductions targets relative to the number of units it produces, the company did not benchmark what relative emissions were in 2001 or what it strives to reach in 2010 in specific measurements of CO₂. These pieces of information would help investors to better judge Honda’s exposure to climate risks, its efforts to manage those risks, and its business opportunities in a changing climate.

**CASE STUDY/ THE HARTFORD FINANCIAL**

The Hartford Financial, a U.S.-based investment and insurance company, offers investment products such as annuities, mutual funds, and college savings plans, as well as life insurance, group and employee benefits, automobile and homeowners’ insurance, and business insurance. The company provided substantial voluntary climate risk disclosure in several formats but included almost no climate risk disclosure in its 10-K filing covering fiscal year 2007.

**Annual Filing with the SEC**

The Hartford Financial’s annual 10-K filing included almost no climate risk disclosure. Similarly, most U.S.-based insurers in this report had very limited or no climate risk disclosure in their 10-Ks. Several foreign reinsurers had significantly more climate risk disclosure in their SEC filings.

**Voluntary Disclosure**

The Hartford’s “Company Statement on Climate Change,” available online, discussed the company’s concerns related to climate change, as well as the risks the company faces. The company’s statement emphasized the growing attention being paid to climate change on the part of scientific experts and
others, and it discussed the forecasted implications of climate change, such as temperature fluctuations, rising sea levels and increased extreme weather events.

In addressing specific risks it faces, the company stated, “The Hartford's general account investment portfolio holds predominately fixed-income assets. Therefore, its primary risks are credit-related: corporate and sovereign debt obligations, commercial real estate mortgage loans, and a variety of asset-backed fixed-income securities. Nonetheless, the global and regional consequences of climate change can play a role in [its] evaluation of the creditworthiness of specific issuers and industries.” This disclosure helps inform investors of The Hartford’s risk assessment practices. Without providing details, the company acknowledged that consumer demand, legislative activity, and technological advancements related to climate change may enhance value for shareholders.

The Hartford also participates in the Carbon Disclosure Project (CDP), where it disclosed a range of useful insights on climate risks and opportunities facing the company. In its CDP response covering year 2007, The Hartford disclosed its GHG emissions and also noted that it follows scientific literature regarding climate change “and, as with all risk factors, works to ensure that climate change is fully taken into account in [its] modeling of catastrophic risk. The potential for increased frequency and severity of weather-related catastrophes represents the most significant climate change-related commercial risk The Hartford faces, though that risk can be mitigated by risk-based pricing as well as by the adoption of effective risk-mitigation techniques.”

The company’s CDP response also highlighted potential opportunities related to climate change, such as an enhanced capacity for The Hartford to match pricing to risk with a better understanding of climate change impacts, and new products that it can bring to market to meet customers’ changing needs in the face of increased extreme weather events. The company noted that it expects “to see more public policy attention paid to such risk mitigation techniques as better land use planning, improved building codes and more rigid enforcement combined with eliminating subsidies and other incentives that promote development in areas most exposed to natural disasters. The Hartford sees an opportunity in establishing itself as a recognized leader in the assessment and management of climate change-related risks.”

**Overall**

The Hartford’s voluntary disclosures include valuable information on the implications of climate risk for the company’s business. Nevertheless, the voluntary disclosure that the company engaged in, while positive, did not go so far as to explore and evaluate the specific underwriting, investment and correlated risks.

Although voluntary climate risk disclosure like The Hartford’s is a step in the right direction and helps provide information to investors, it does not substitute for effective mandatory reporting. As there is no standardized format or objective for voluntary disclosure, nor is there verification by any third party or government entity, voluntary reporting does not help investors to make comparisons between companies, or allow for benchmarking based on common principles.
A group of leading institutional investors and other organizations worldwide, organized by Ceres, released the Global Framework for Climate Risk Disclosure—a statement of investor expectations for comprehensive corporate disclosure—in October 2006. Investors require this information in order to analyze a company’s business risks and opportunities resulting from climate change, as well as the company’s efforts to address those risks and opportunities. The Framework encourages standardized climate risk disclosure to make it easy for companies to provide and for investors to analyze and compare companies.

The investors supporting this Framework urge:

- Companies to use existing disclosure mechanisms to provide information that meets investors’ expectations and serves their analytical needs.
- Securities regulators and governments to ensure that corporate climate risk disclosure in financial statements adheres to the Framework.
- Other investors and financial analysts to insist that corporations disclose the information called for in the Framework and then incorporate this information in their analysis.

The Steering Committee that created the Framework included representatives from:

- California Public Employees’ Retirement System
- California State Controller’s Office
- California State Teachers’ Retirement System
- Carbon Disclosure Project
- Ceres and the Investor Network on Climate Risk (INCR)
- Connecticut State Treasurer’s Office
- Global Reporting Initiative
- Institutional Investors Group on Climate Change
- Investor Group on Climate Change
- United Nations Environment Programme Finance Initiative
- United Nations Foundation
- United Nations Fund for International Partnerships
- Universities Superannuation Scheme

**Global Framework for Climate Risk Disclosure**

While each sector and company may differ in its approach to disclosure, the most successful corporate climate risk disclosure will be transparent and make clear the key assumptions and methods used to
Companies should directly engage investors and securities analysts in disclosing climate risk through both written documents and discussions.

Investors expect climate risk disclosure to allow them to analyze a company’s risks and opportunities and strongly encourage that the disclosure include the following elements:

1. **Emissions.** As an important first step in addressing climate risk, companies should disclose their total greenhouse gas emissions. Investors can use this emissions data to help approximate the risk companies may face from future climate change regulations.

   Specifically, investors strongly encourage companies to disclose:

   - Actual historical direct and indirect emissions since 1990;
   - Current direct and indirect emissions; and
   - Estimated future direct and indirect emissions of greenhouse gases from their operations, purchased electricity, and products/services.

   Investors strongly encourage companies to report absolute emissions using the most widely agreed upon international accounting standard—Corporate Accounting and Reporting Standard (revised edition) of the Greenhouse Gas Protocol, developed by the World Business Council for Sustainable Development and the World Resources Institute. If companies use a different accounting standard, they should specify the standard and the rationale for using it.

2. **Strategic Analysis of Climate Risk and Emissions Management.** Investors are looking for analysis that identifies companies’ future challenges and opportunities associated with climate change. Investors therefore seek management’s strategic analysis of climate risk, including a clear and straightforward statement about implications for competitiveness. Where relevant, the following issues should also be addressed: access to resources, the timeframe that applies to the risk, and the firm’s plan for meeting any strategic challenges posed by climate risk.

   Specifically, investors urge companies to disclose a strategic analysis that includes:

   - **Climate Change Statement.** A statement of the company’s current position on climate change, its responsibility to address climate change, and its engagement with governments and advocacy organizations to affect climate change policy.

   - **Emissions Management.** Explanation of all significant actions the company is taking to minimize its climate risk and to identify opportunities. Specifically, this should include the actions the company is taking to reduce, offset, or limit greenhouse gas emissions. Actions could include establishment of emissions reduction targets, participation in emissions trading schemes, investment in clean energy technologies, and development and design of new products. Descriptions of greenhouse gas reduction activities and mitigation projects should include estimated emission reductions and timelines.

   - **Corporate Governance of Climate Change.** A description of the company’s corporate governance actions, including whether the Board has been engaged on climate change and the executives in charge of addressing climate risk. In addition, companies should disclose whether executive compensation is tied to meeting corporate climate objectives, and if so, a description of how they are linked.
**3 Assessment of Physical Risks of Climate Change.** Climate change is beginning to cause an array of physical effects, many of which can have significant implications for companies and their investors. To help investors analyze these risks, investors encourage companies to analyze and disclose material, physical effects that climate change may have on the company's business and its operations, including their supply chain.

Specifically, investors urge companies to begin by disclosing how climate and weather generally affect their business and its operations, including their supply chain. These effects may include the impact of changed weather patterns, such as increased number and intensity of storms; sea-level rise; water availability and other hydrological effects; changes in temperature; and impacts of health effects, such as heat-related illness or disease, on their workforce. After identifying these risk exposures, companies should describe how they could adapt to the physical risks of climate change and estimate the potential costs of adaptation.

**4 Analysis of Regulatory Risks.** As governments begin to address climate change by adopting new regulations that limit greenhouse gas emissions, companies with direct or indirect emissions may face regulatory risks that could have significant implications. Investors seek to understand these risks and to assess the potential financial impacts of climate change regulations on the company.

Specifically, investors strongly urge companies to disclose:

- Any known trends, events, demands, commitments, and uncertainties stemming from climate change that are reasonably likely to have a material effect on financial condition or operating performance. This analysis should include consideration of secondary effects of regulation such as increased energy and transportation costs. The analysis should incorporate the possibility that consumer demand may shift sharply due to changes in domestic and international energy markets.

- A list of all greenhouse gas regulations that have been imposed in the countries in which the company operates and an assessment of the potential financial impact of those rules.

- The company’s expectations concerning the future cost of carbon resulting from emissions reductions of five, ten, and twenty percent below 2000 levels by 2015. Alternatively, companies could analyze and quantify the effect on the firm and shareowner value of a limited number of plausible greenhouse gas regulatory scenarios. These scenarios should include plausible greenhouse gas regulations that are under discussion by governments in countries where they operate. Companies should use the approach that provides the most meaningful disclosure, while also applying, where possible, a common analytic framework in order to facilitate comparative analyses across companies. Companies should clearly state the methods and assumptions used in their analyses for either alternative.
Endnotes

1 See http://www.ipcc.ch/ipccreports/ar4-wg1.htm 5, 9, 10.
2 Ibid.
5 http://unfccc.int/cop3/fcc/infinfo.indust.htm
6 http://unfccc.int/kyoto_protocol/items/2830.php
7 http://www.cdproject.net/reports.asp
9 DOI: 10.1073/pnas.0812355106. http://www.sciencemag.org/cgi/content/abstract/1136843
10 http://change.gov/newsroom/entry/president_elect_barack_obama_to_deliver_taped_greeting_to_bi_partisan_gover
12 Ibid.
13 Ibid.
14 http://online.wsj.com/article/BT-CO-20090310-718663.html
15 http://change.gov/newsroom/entry/president_elect_barack_obama_to_deliver_taped_greeting_to_bi_partisan_gover
16 www.us-cap.org
17 www.ceres.org/bicep
18 http://energycommerce.house.gov/index.php?option=com_content&task=view&id=1560&Itemid=1
19 http://www.rggi.org/about
20 http://www.westernclimateinitiative.org/
21 http://www.midwesternaccord.org/midwesterngreenhousegasreductionaccord.pdf
22 http://www.pewclimate.org/what_s_being_done/in_the_states/
23 http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm
24 http://www.pewclimate.org/what_s_being_done/in_the_states/emissiontargets_map.cfm
26 http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm
27 http://yosemite.epa.gov/opa/admpress.nsf/d8c6618525a9e9b85257359003f66d451902c77d4ad5852575bbb06d3f9bOpenD
28 http://www.usmayors.org/climateprotection/list.asp
30 http://www.businessinsurance.com/cgi-bin/article.pl?articleId=25395
31 http://ipcc-wg1.ucar.edu/WG1_Report/AR4WG1_Print_Ch10.pdf
ar4-wg2spm.pdf
34 http://www.epa.gov/climatechange/emissions/usiinventoryreport.html
35 See Regional Greenhouse Gas Initiative, available at http://www.rggi.org/home. For descriptions of other state initiatives to address
36 greenhouse gas emissions from power plants, see http://www.pewclimate.org/what_s_being_done/in_the_states/cap_and_offset
37 map.cfm
38 http://carbonprinciples.org/
43 http://www.oag.state.ny.us/bureaus/environmental/feature.html
44 Ibid.
47 http://www.cdproject.net/FAQs.asp
48 Search conducted on http://www.cdproject.net/responding-companies.asp
49 http://www.kpmg.com/Global/IssuesAndInsights/ArticlesAndPublications/Pages/Sustainability-corporate-responsibility-
46 http://www.kpmg.nl/site.asp?id=40378&process_mode=mode_doc&doc_id=44904 11-12 (2007). The reports in the study were issued by FT500 companies that reported using the GRI Guidelines.

47 Ibid. 33.


49 Ibid. 33.

50 Ibid.


53 The National Association of Insurance Commissioners is “the organization of insurance regulators from the 50 states, the District of Columbia and the five U.S. territories” whose mission is to assist state insurance regulators in serving the public interest and achieving fundamental insurance regulatory goals in a responsive, efficient and cost effective manner. “The NAIC provides a forum for the development of uniform policy when uniformity is appropriate.” http://www.naic.org/index_about.htm

54 http://www.naic.org/Releases/2009_docs/climate_change_risk_disclosure_adopted.htm


56 A company that is subject to the SEC’s rules mandating periodic disclosure is not permitted to ask shareholders to vote on any matter, including the election of directors, unless shareholders receive a proxy statement providing information relevant to the voting decision.


58 Ibid.


60 Ibid.


63 Joel Seligman. The Transformation of Wall Street. (2003). (“At its core, the primary policy of the federal securities laws today involves the remediation of information asymmetries.”). 604.

64 Ibid. 621.


67 17 CFR sec. 229.101(c).

68 17 CFR sec. 229.103.


72 Readers will note that although we studied 100 companies, the number of entities analyzed totals 101, because Berkshire Hathaway was examined twice, once for its energy holdings and once for its insurance subsidiary.

73 http://www.epa.gov/climatechange/emissions/usinventoryreport.html

74 Ibid.

75 http://www.rggi.org/home

76 See for example, http://www.xcelenergy.com/Company/Newsroom/News%20Releases/Pages/Xcel_Energy_files_long_range_generation_resource_plan_aligns_efforts_to_meet_Colorado_Climate_Action_Plan_goal.aspx


78 http://carbonprinciples.org/

79 See for example http://www.panda.org/who_we_are/wwf_offices/canada/?uNewsID=142161 (April 2009).


81 In April 2009, the Environmental Protection Agency proposed rules requiring mandatory reporting of greenhouse gas emissions, covering approximately 13,000 facilities accounting for about 85 to 90 percent of greenhouse gases emitted in the U.S. 74 Fed. Reg. 16,448. When the EPA rules are finalized and implemented, covered entities will measure and report information about actual emissions, which registrants could draw from in order to disclose total greenhouse gas emissions in SEC filings.

82 These emissions disclosures correspond with the three “scopes” identified in the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (revised edition) developed by the World Business Council for Sustainable Development and the World Resources Institute. Scope 1 includes a company’s direct greenhouse gas emissions; Scope 2 includes emissions associated with the generation of electricity, heating/cooling, or steam purchased for a company’s own consumption; and Scope 3 includes indirect emissions not covered by Scope 2. More information is available at http://www.ghgprotocol.org

83 Available at http://www.ghgprotocol.org

84 Available at http://www.naic.org/Releases/2009_docs/climate_change_risk_disclosure_adopted.htm

85 Although we studied 100 companies, the number of entities analyzed totals 101; this is because Berkshire Hathaway was included twice, once for its energy holdings and once for its insurance subsidiary.

86 See for example http://www.panda.org/who_we_are/wwf_offices/canada/?uNewsID=142161 (April 2009).

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The research team for this project was led by Beth Young. An attorney who previously coordinated shareholder initiatives for the AFL-CIO Office of Investment, she has specialized at The Corporate Library in shareholder initiatives, proxy contests, and environmental and social governance issues. Her co-authors are Celine Suarez and Kimberly Gladman. Ms. Suarez, whose academic training focused on climate and earth science, has conducted social investment research for Domini Social Investments, Citigroup Asset Management, and other leading firms in the socially responsible investment industry. Kimberly Gladman, the Corporate Library’s Director of Research and Ratings, previously worked in research and advocacy at Domini Social Investments, and holds the Chartered Financial Analyst designation.

About The Corporate Library
The Corporate Library (TCL) is an independent research firm that provides corporate governance information products, research services, ratings and data to a broad variety of clients including institutional investors, corporations, D&O liability insurers, and accounting firms. The Corporate Library is also a leading publisher of corporate governance reports and studies, which its analysts compile using its extensive database of over 3,200 public companies and over 47,000 executives and directors. For more information, please visit www.thecorporatelibrary.com.

About Ceres
Ceres is a national coalition of investors, environmental groups, and other public interest organizations working with companies to address sustainability challenges such as climate change. Ceres also directs the Investor Network on Climate Risk, a group of more than 80 institutional investors from the U.S. and Europe managing approximately $7 trillion of assets. The purpose of INCR is to promote better understanding of the risks of climate change among institutional investors. For more information, please visit www.ceres.org and www.incr.com.

About Environmental Defense Fund
Environmental Defense Fund (EDF) is a leading national nonprofit organization representing more than 500,000 members. Since 1967, EDF has linked science, economics, and law to create innovative, equitable, and cost-effective solutions to society’s most urgent environmental problems. For more information, please visit www.edf.org.

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Global Framework for Climate Risk Disclosure

A statement of investor expectations for comprehensive corporate disclosure
Introduction

A group of leading institutional investors from around the world released the Global Framework for Climate Risk Disclosure—a new statement on disclosure that investors expect from companies—in October 2006. Investors require this information in order to analyze a company’s business risks and opportunities resulting from climate change, as well as the company’s efforts to address those risks and opportunities. The Framework encourages standardized climate risk disclosure to make it easy for companies to provide and for investors to analyze and compare companies.

The Framework consists of four elements of disclosure:

- Total historical, current, and projected greenhouse gas emissions
- Strategic analysis of climate risk and emissions management
- Assessment of physical risks of climate change
- Analysis of risk related to the regulation of greenhouse gas emissions

The investors strongly encourage companies to apply this new Framework through existing reporting mechanisms, including:

- **Mandatory Financial Reports**—The U.S. Securities and Exchange Commission as well as regulatory and industry bodies in other countries require companies to disclose information of financial importance to the company, and many companies now include climate risk information in their standard financial reporting.

- **The Carbon Disclosure Project**—The Carbon Disclosure Project (CDP) represents an efficient process whereby many institutional investors collectively sign a single global request for disclosure of information on climate risk. In 2007, CDP sent this request to over 2,400 companies. Its web site is the largest registry of corporate greenhouse gas emissions in the world. The content of the Framework is consistent with CDP.

- **Global Reporting Initiative**—The Global Reporting Initiative (GRI) is a reporting system closely aligned with CDP that issues Sustainability Reporting Guidelines for comprehensive reporting on the economic, environmental, and social dimensions of corporate activities, products, and services. Using the GRI Guidelines, companies can disclose significant information regarding their climate risk.

- **Other Forms of Disclosure**—Companies disclose forward-looking material information important to investors through various methods, such as analyst briefings and sustainability reports. At the request of investors, many companies have also prepared special reports on climate risk.

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1. See pages 5-8 to view the complete Framework.
The investors and collaborating organizations developed this Framework through a one-year Climate Risk Disclosure Initiative. The investors will continue to discuss activities to enhance climate risk disclosure through the communication networks of existing investor groups focused on climate change—the Institutional Investors Group on Climate Change (IIGCC), the Investor Network on Climate Risk (INCR), and the Investor Group on Climate Change. The investor groups will also continue discussions with two collaborating organizations—the Carbon Disclosure Project and the Global Reporting Initiative—the leading voluntary efforts to standardize climate risk disclosure and reporting worldwide. Climate risk disclosure is a burgeoning field, as companies, investors, governments, and civil society increasingly understand the risks and opportunities that climate change poses for companies and investors. The investor groups and collaborating organizations plan to meet periodically to discuss developments in climate risk disclosure.
Development of the Framework

In May 2005, 14 leading investors and other organizations worldwide launched a new effort to improve corporate disclosure of the risks and opportunities posed by global climate change — the Climate Risk Disclosure Initiative. The CRDI Steering Committee developed a draft Framework for climate risk disclosure, and circulated it for review by investors, companies, financial analysts, and other experts. More than 50 reviewers have commented on the draft. The Steering Committee amended its initial draft substantially as a result of that expert input.

The CRDI Steering Committee included representatives from:

- California Public Employees’ Retirement System
- California State Controller’s Office
- California State Teachers’ Retirement System
- Carbon Disclosure Project
- Ceres and the Investor Network on Climate Risk (INCR)
- Connecticut State Treasurer’s Office
- Global Reporting Initiative
- Institutional Investors Group on Climate Change
- Investor Group on Climate Change
- United Nations Environment Programme Finance Initiative
- United Nations Foundation
- United Nations Fund for International Partnerships
- Universities Superannuation Scheme

Investors created this global Framework in order to clearly communicate investor expectations about the characteristics of successful corporate climate risk disclosure. They invited the CDP and GRI to participate since these initiatives represented the most appropriate voluntary reporting frameworks for disclosing climate risk information.
Climate Risk and Opportunities

Given the sweeping global nature of climate change, climate risk and opportunity is embedded in the operations of all companies. Some companies with significant emissions of greenhouse gases or energy use face current or future regulatory risks, while climate change may pose a range of physical or financial risks to other firms. These risks may include operational risk, market risk, liabilities risk, policy risk, regulatory risk, and reputational risk. In some cases, the risks to companies may be indirect. For example, even if a company is not directly subject to regulations, significant emissions in its value chain may still result in increased costs (upstream) or reduced sales (downstream). Climate change also represents significant opportunities for many firms. Some companies will develop profitable new technologies or markets as governments pursue innovative strategies to address climate change and spur technology development.

The Climate Risk Disclosure Initiative Steering Committee welcomes feedback on the Framework. For additional information on the Framework or to offer feedback, please contact:

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Uses for the Framework

The investors supporting this Framework urge:

- Companies to use existing disclosure mechanisms to provide information that meets investors’ expectations and serves their analytical needs.

- Securities regulators and governments to ensure that corporate climate risk disclosure in financial statements adheres to the Framework.

- Other investors and financial analysts to insist that corporations disclose the information called for in the Framework and then incorporate this information in their analysis.
Global Framework for Climate Risk Disclosure

While each sector and company may differ in its approach to disclosure, the most successful corporate climate risk disclosure will be transparent and make clear the key assumptions and methods used to develop it. Companies should directly engage investors and securities analysts in disclosing climate risk through both written documents and discussions.

Investors expect climate risk disclosure to allow them to analyze a company’s risks and opportunities and strongly encourage that the disclosure include the following elements:

1. **Emissions**—As an important first step in addressing climate risk, companies should disclose their total greenhouse gas emissions. Investors can use this emissions data to help approximate the risk companies may face from future climate change regulations.

   Specifically, investors strongly encourage companies to disclose:
   - Actual historical direct and indirect emissions since 1990;
   - Current direct and indirect emissions; and
   - Estimated future direct and indirect emissions of greenhouse gases from their operations, purchased electricity, and products/services.\(^2\)

   Investors strongly encourage companies to report absolute emissions using the most widely agreed upon international accounting standard—Corporate Accounting and Reporting Standard (revised edition) of the Greenhouse Gas Protocol, developed by the World Business Council for Sustainable Development and the World Resources Institute.\(^3\) If companies use a different accounting standard, they should specify the standard and the rationale for using it.

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2. These emissions disclosures correspond with the three “scopes” identified in the *Greenhouse Gas Protocol Corporate Accounting and Reporting Standard* (revised edition) developed by the World Business Council for Sustainable Development and the World Resources Institute. Scope 1 includes a company’s direct greenhouse gas emissions; Scope 2 includes emissions associated with the generation of electricity, heating/cooling, or steam purchased for a company’s own consumption; and Scope 3 includes indirect emissions not covered by Scope 2. More information is available at http://www.ghgprotocol.org.

Strategic Analysis of Climate Risk and Emissions Management—Investors are looking for analysis that identifies companies’ future challenges and opportunities associated with climate change. Investors therefore seek management’s strategic analysis of climate risk, including a clear and straightforward statement about implications for competitiveness. Where relevant, the following issues should also be addressed: access to resources, the timeframe that applies to the risk, and the firm’s plan for meeting any strategic challenges posed by climate risk.

Specifically, investors urge companies to disclose a strategic analysis that includes:

- **Climate Change Statement**—A statement of the company’s current position on climate change, its responsibility to address climate change, and its engagement with governments and advocacy organizations to affect climate change policy.

- **Emissions Management**—Explanation of all significant actions the company is taking to minimize its climate risk and to identify opportunities. Specifically, this should include the actions the company is taking to reduce, offset, or limit greenhouse gas emissions. Actions could include establishment of emissions reduction targets, participation in emissions trading schemes, investment in clean energy technologies, and development and design of new products. Descriptions of greenhouse gas reduction activities and mitigation projects should include estimated emission reductions and timelines.

- **Corporate Governance of Climate Change**—A description of the company’s corporate governance actions, including whether the Board has been engaged on climate change and the executives in charge of addressing climate risk. In addition, companies should disclose whether executive compensation is tied to meeting corporate climate objectives, and if so, a description of how they are linked.
Assessment of Physical Risks of Climate Change—Climate change is beginning to cause an array of physical effects, many of which can have significant implications for companies and their investors. To help investors analyze these risks, investors encourage companies to analyze and disclose material, physical effects that climate change may have on the company’s business and its operations, including their supply chain.

Specifically, investors urge companies to begin by disclosing how climate and weather generally affect their business and its operations, including their supply chain. These effects may include the impact of changed weather patterns, such as increased number and intensity of storms; sea-level rise; water availability and other hydrological effects; changes in temperature; and impacts of health effects, such as heat-related illness or disease, on their workforce. After identifying these risk exposures, companies should describe how they could adapt to the physical risks of climate change and estimate the potential costs of adaptation.
Analysis of Regulatory Risks—As governments begin to address climate change by adopting new regulations that limit greenhouse gas emissions, companies with direct or indirect emissions may face regulatory risks that could have significant implications. Investors seek to understand these risks and to assess the potential financial impacts of climate change regulations on the company.

Specifically, investors strongly urge companies to disclose:

- Any known trends, events, demands, commitments, and uncertainties stemming from climate change that are reasonably likely to have a material effect on financial condition or operating performance. This analysis should include consideration of secondary effects of regulation such as increased energy and transportation costs. The analysis should incorporate the possibility that consumer demand may shift sharply due to changes in domestic and international energy markets.

- A list of all greenhouse gas regulations that have been imposed in the countries in which the company operates and an assessment of the potential financial impact of those rules.

- The company’s expectations concerning the future cost of carbon resulting from emissions reductions of five, ten, and twenty percent below 2000 levels by 2015. Alternatively, companies could analyze and quantify the effect on the firm and shareowner value of a limited number of plausible greenhouse gas regulatory scenarios. These scenarios should include plausible greenhouse gas regulations that are under discussion by governments in countries where they operate. Companies should use the approach that provides the most meaningful disclosure, while also applying, where possible, a common analytic framework in order to facilitate comparative analyses across companies. Companies should clearly state the methods and assumptions used in their analyses for either alternative.
About Ceres

Ceres is a national coalition of investors, environmental groups, and other public interest organizations working with companies to address sustainability challenges such as climate change. Ceres also directs the Investor Network on Climate Risk, a group of 60 institutional investors managing more than $4 trillion of assets. The purpose of INCR is to promote better understanding of the risks of climate change among institutional investors. For more information, visit www.ceres.org and www.incr.com.

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BEFORE THE UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

California Public Employees' Retirement System
California State Controller,
    John Chiang
California State Teachers’ Retirement System
California State Treasurer,
    Bill Lockyer
Ceres
Environmental Defense
F&C Management
Florida Chief Financial Officer,
    Alex Sink
Friends of the Earth
Kentucky State Treasurer,
    Jonathan Miller
Maine State Treasurer,
    David G. Lemoine
Maryland State Treasurer,
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The Nathan Cummings Foundation
New Jersey State Investment Council,
    Orin Kramer, Chair
New York City Comptroller,
    William C. Thompson, Jr.
New York State Attorney General,
    Andrew M. Cuomo
PETITION FOR INTERPRETIVE GUIDANCE ON CLIMATE RISK DISCLOSURE

The fundamental principle underlying the Commission’s disclosure requirements is that a public corporation must fully and fairly disclose all facts about its performance and operations that would be material to a reasonable shareholder’s investment decision. Efficient markets depend on the availability of information on corporate strategy, performance, and policies to give investors the insights they need to make investment decisions.

Recent scientific, legal, and regulatory developments make it unavoidably clear that the risks and opportunities many corporations face in connection with climate change fall squarely within the category of material information that is required to be analyzed and disclosed in many corporate filings. Yet corporate disclosures of the risks and opportunities created by climate change lag behind these developments, and investors are left with little or in some cases no useful information about corporate exposure to these risks. Investors are responding to this information gap with increasing demand for more and better disclosure on climate risk that will allow them to make informed investment decisions.

This petition respectfully requests that the Commission issue an interpretive release clarifying that material climate-related information must be included in corporate disclosures under existing law. The petitioners include a broad coalition of state officials with regulatory, law enforcement, and fiscal management responsibilities; some of the nation’s largest
in institutional investors; asset management firms; organizations dedicated to fair and effective climate risk disclosure; and conservation organizations dedicated to climate stabilization with hundreds of thousands of members nationwide. A description of each petition signatory is included in Appendix A.
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Introduction: Climate Change Now Has Material Financial Consequences for Many Corporations.

The empirical evidence that human activities are changing the global climate in significant ways, and at an accelerating pace, is now overwhelming. The Fourth Assessment Report released earlier this year by the Intergovernmental Panel on Climate Change (IPCC) reviewed and synthesized the state of knowledge in climate change science. The IPCC concluded that evidence of the warming of the climate system is now “unequivocal” and that “numerous long-term changes in climate have been observed.”

The IPCC’s research also shows how climate change is affecting societies, economies and natural systems in the United States and throughout the world. The findings of the Fourth Assessment Report are described briefly below, and are further discussed in Appendix B to this petition.

A growing recognition that effective measures to reduce greenhouse gas emissions must happen very soon, if the most severe harms associated with climate change are to be averted, has prompted the adoption of comprehensive and mandatory programs to limit greenhouse gas emissions in many other countries. Such policies apply in large and populous regions and states in this country as well as in most of Europe. This enormous body of new law has important implications, even for companies not directly subject to regulation, because these initiatives govern sectors like electric power and transportation, on which entire economies depend. New legal obligations relating to greenhouse gas emissions are described in Part 3a, below, and in Appendices C (state regulation) and D (international regulation). In just the last few months, all three branches of the federal government have taken actions that emphasized the urgency of climate change and its newly central place in public policymaking. See infra Part 3.a (discussing federal administrative policies and Massachusetts v. EPA, 127 S. Ct. 1438 (2007)); Appendix E (enumerating climate legislation pending in Congress).

In response to these developments, many business leaders now recognize the economic and financial risks associated with climate change, the enormous opportunities presented by the shift to a carbon-constrained economy, and the pressing need for a comprehensive national climate change policy. Appendix F compiles a small sampling of the many recent statements

from corporate leaders on the importance of climate change as a market force and the inevitability and need for national greenhouse gas controls.

Climate change has far-reaching implications for business. The term “climate risk” includes effects on a company’s performance and operations that range from physical damage to facilities, to new regulatory costs and incentives, to shifts in the market for products or services. The influence of climate change and greenhouse gas regulation on particular companies varies, but it is increasingly clear these developments have already had material effects on many companies’ performance and operations, and that those impacts will increase as the climate continues to change. The days are long past when climate risk can be treated as a peripheral or hypothetical concern. Companies’ financial condition increasingly depends upon their ability to avoid climate risk and to capitalize on new business opportunities by responding to the changing physical and regulatory environment.

Climate change has now become a significant factor bearing on companies’ financial condition. For many companies, climate risk is material and subject to mandatory disclosure under traditional principles of the securities laws and the Commission’s regulations. To date, however, disclosure of climate risk has been scant and inconsistent. In periodic reports filed pursuant to the Commission’s disclosure regulations, many corporations have taken the position that any risks associated with climate change are too uncertain and remote in time to be material to their performance. The rapidly changing regulatory environment makes clear that this position is no longer sound. Moreover, companies whose assets are expected to last for decades must deal with changes—such as sea-level rise, increasingly severe weather, greater incidence of floods, fires, and droughts, and expanded ranges of disease and pest vectors—that will very likely continue to intensify. The growing body of data about the physical changes associated with climate change similarly shows that significant physical changes, and resulting risks, are no longer remote possibilities, but present realities that are only going to become more consequential.

Investors are looking for the companies best positioned to avoid the financial risks associated with climate change and to capitalize on the new opportunities that greenhouse gas regulation will provide. Interest in climate risk is not limited to investors with a specific moral or policy interest in climate change; it now covers an enormous range of investors whose interest is purely financial—from ordinary individuals whose appreciation for the business significance
of climate change has been quickened by recent scientific and legal developments, to large institutional investors looking for companies best positioned to respond to the very significant long-term financial hazards and opportunities. Investors of all types are aware that climate change, and greenhouse gas regulation, will have enormous implications for long-term capital investments that are being made right now by corporations. They want to know how fully (if at all) companies are taking climate change into account in making those decisions. They want to identify, and invest in, companies that are “out front” in responding to climate risks and opportunities, and to avoid firms that are behind the curve.

Investors’ ability to evaluate climate risk and opportunity, however, depends upon access to the necessary information. To obtain the critical information on companies’ ability to respond to the risks and opportunities of climate change, the investment community is increasingly demanding detailed disclosures about the risks companies face in connection with climate change. See infra Part 4.b. The market’s judgment that climate risk has become a key indicator of corporate performance is further reflected in the briskly growing field of investment products and indices that attempt to capture data about climate risk. See infra Part 4.a.

Climate risk has simply become too important to corporate performance to be left out of mandatory disclosures under the securities laws and the Commission’s rules. The expansive language of the Commission’s existing regulations requires corporations to disclose to investors information that the reasonable investor would find significant to his or her assessment of the corporation’s value. The magnitude of the regulatory consequences and physical changes associated with climate change for many companies brings climate risk within these requirements. In light of the current state of the scientific information on climate change, and the rapid growth of greenhouse gas regulation at all levels from international to municipal, both the physical and legal consequences of climate change have undoubtedly become “known trends” within the meaning of the Commission’s regulatory standards. Particularly for small and individual investors who lack the resources to obtain restricted or for-hire products concerning firms’ climate risks and opportunities, the necessary information will be obtained only through mandatory disclosures to the public at large under the Commission’s rules.
We respectfully urge the Commission to clarify that corporations should assess their climate risk, analyze whether that risk is likely to have a material impact on them, and if so, disclose it to the public as required under the Commission’s rules.

Specifically, we seek a statement from the Commission that companies must consider climate risk in their review of information that may be material and subject to disclosure. As the Commission has explained, registrants’ judgments about what information is material and subject to disclosure obligations depend upon a careful review of all available information. The first step in providing adequate disclosure is ensuring that the company has the base of information necessary to make sound judgments about materiality. Companies’ review of the significance of climate change for their operations and financial condition should include careful attention to the adequacy of their internal procedures for gathering and assessing climate-related information and of any corporate structures relating to climate risk, such as Board committees. Moreover, in order to assess whether they are subject to material risks associated with greenhouse gas regulation, companies will need to calculate their current and projected greenhouse gas emissions.

In addition to explaining that climate risk merits careful scrutiny in companies’ assessment of their financial condition, the Commission should clarify that, under existing law, registrants must disclose any and all material information related to climate change. Depending on the particular corporation’s circumstances, this obligation may require disclosure of information on:

- Physical risks associated with climate change that are material to the company’s operations or financial condition;
- Financial risks and opportunities associated with present or probable greenhouse gas regulation; and
- Legal proceedings relating to climate change.

Part 6, below, and Appendix G set forth and discuss these elements in greater detail.

Because of the unevenness and inconsistency of current corporate disclosure of climate risks, investors will benefit from Commission guidance clarifying the application of existing law to the new business realities associated with climate change. However, considering the urgency of the need for improved disclosure, and because we are not proposing a change in substantive
legal standards, we also respectfully ask the Commission to take action now, while it develops such guidance. In a separate letter submitted today, we urge the Commission, through its Division of Corporation Finance, to devote close attention to the adequacy of disclosures concerning climate risk, particularly by registrants in industry sectors that emit high levels of greenhouse gases and those that are subject to regulation of greenhouse gas emissions. When it determines that registrants may not have disclosed material information on climate risk, the Commission should take action to ensure that they meet their obligations under the securities laws and regulations.

1. **What Is Climate Change?**

An overwhelming body of scientific evidence demonstrates that emissions of greenhouse gases, including carbon dioxide, are changing the world’s climate with already extensive, and potentially catastrophic, effects. The scientific consensus on climate change was reiterated by the recent release of the IPCC’s Fourth Assessment Report. This comprehensive survey, prepared by the international body charged with assessing the scientific, technical, and socio-economic information relevant to climate change, synthesized the massive body of scientific literature on climate change, its already observed and potential future impacts, and options for adaptation and mitigation. Appendix B contains a summary of the primary conclusions in the IPCC’s 2007 Assessment, and a list of other widely respected information sources on various aspects of climate change. Petitioners are submitting to the Commission copies of the Fourth Assessment Report’s three Summaries for Policymakers.

The IPCC’s 2007 Assessment concludes that evidence of climate change “is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”

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These conclusions, which are consistent with those of the U.S National Academy of Sciences and many other scientific bodies, are that human-induced increases in greenhouse gases have already caused the Earth’s atmosphere to warm, with very rapid warming occurring over the last three decades.

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2 *See id.* at 5.
3 *See id; see also* Joint Science Academies’ Statement: Global Response to Climate Change (June 2005), available at [http://www.royalsoc.ac.uk/displaypagedoc.asp?id=20742; see also Naomi Oreskes, *The Scientific Consensus on Climate Change*, 306 *SCIENCE* 1686 (2004) (studying 928 scientific studies on]
Climate change has already caused a wide range of impacts. As the IPCC confirmed, “numerous long-term changes in climate have been observed,” including “changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.” Some of the observed evidence and impacts of climate change include:

- Eleven of the last twelve years (1995-2006) rank among the twelve warmest years on record;
- Mountain glaciers and snow cover have declined on average in both hemispheres, and widespread decreases in glaciers and ice caps have contributed to sea level rise;
- Losses from the ice sheets of Greenland and Antarctica have very likely contributed to recent sea level rise;
- The rate of observed global sea level rise has accelerated;
- More intense and longer droughts have been observed since the 1970s;
- Widespread changes in extreme temperatures have been observed over the last 50 years;
- There is observational evidence for an increase in intense tropical cyclone activity in the North Atlantic since 1970, correlated with increases in tropical sea surface temperatures.5

In the short term, further warming is predicted regardless of whether greenhouse gas emissions are reduced. But the amount of further warming later in the century is contingent upon future human actions which will, in part, determine how high concentrations of greenhouse gases climb. While even the amount of warming at the lower end of projections will have significant adverse impacts, the possibility of warming at the higher end would involve very grave risks for human health and safety, for the world economy, and for natural systems.6

4 See IPCC, SPM-1, supra note 1, at 7.
5 See id. at 5-9.
6 Indeed, the distinctive threat posed by climate change was described in a recent report based upon a study by ten retired admirals and generals of the United States Armed Forces. That report concluded that “[p]rojected climate change poses a serious threat to America’s national security,” explaining that:
Warming like that expected under “business as usual” scenarios would fundamentally alter the global environment, with sweeping negative effects for human society.\(^7\)

To avoid severe and potentially catastrophic warming later in the 21\(^{st}\) Century, there is a growing consensus that it will be necessary to reduce emissions very soon.\(^8\) Even with immediate action, stabilizing and then reducing atmospheric greenhouse concentrations will take decades.

The science of climate change is complex. But the fact that technically complex matters affect climate risk does not distinguish climate change from the many other scientific or technical subjects that can affect corporate value, or from the many known trends and uncertainties that Commission regulations require corporations to analyze and disclose. For corporations operating in fields such as biotechnology and pharmaceuticals, or any other high-tech field or area in which research and development is evolving, assessment of value frequently requires assessment of scientific information. It is not the Commission’s responsibility or obligation to provide independent scientific assessment of risks that are beyond its technical expertise. But it is the Commission’s responsibility to make sure corporations disclose material information that will allow investors to make their own assessments. Indeed, the Commission commonly requires disclosure of material risks in areas of technical complexity. Moreover, many of the most important ways in which climate change affects companies’ financial condition are entirely traditional and familiar, such as by changing a company’s costs of regulatory compliance, energy, or insurance.

The Commission’s historic emphasis upon equal public access to material market information serves investors’ interests and supports a robust economy. In the coming years, the

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\(^8\) See IPCC, SPM-2, supra note 7, at 11, 22; CAL. CLIMATE CHANGE CTR., supra note 7, at 3-6.
economy will be called upon to deliver innovation to respond to climate change. No one yet knows exactly what combination of measures will prove necessary for society to avoid the hazardous effects of climate change, nor what new technologies will emerge as critical tools to produce energy with less climate impact. The enormous power of financial markets to deliver innovation will be critical to our ability to meet the challenge of climate change. Ensuring that corporations provide those markets with material climate information is vital, not only to providing investors the information they need, but also to society’s ability to respond to climate change itself.

2. **Current Law Requires Corporations to Disclose Material Information About Climate Risk.**

The Commission’s existing disclosure regulations speak in expansive and flexible terms that reflect the broad range of information investors consider when they assess corporate value. For many companies, climate risk clearly meets the standard of materiality established by the Commission and the courts, and falls directly within several of the specific disclosure requirements of Regulation S-K.

a. **Climate Risk Is Material to Investors’ Decisions.**

The fundamental principle underlying the Commission’s disclosure requirements is that a public corporation must fully and fairly disclose all facts about its performance and operations that would be material to a shareholder’s investment decision. This disclosure obligation springs from the core requirement of the 1933 and 1934 Acts that investors receive financial and other significant information concerning securities offered for public sale. Under both Supreme Court and Commission precedent, the existence of significant investor demand for information helps to guide the determination of whether that information is material and hence required to be disclosed. “A fact is material if there is a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of information made available.”⁹

The Supreme Court has made clear that the determination of whether a fact is material is a holistic inquiry that cannot be reduced to a simple numeric formula. Determinations of

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materiality require “delicate assessments of the inferences that a ‘reasonable investor’ would draw from a given set of facts, and the significance of those inferences to him . . .”

In Staff Accounting Bulletin No. 99, Commission Staff reiterated this principle and rejected the practice of using a simple numeric threshold for determining whether an omission or misstatement in a financial statement is material. Instead, Staff have made clear that the question of what information is material must take into account both quantitative and qualitative factors. This interpretation of materiality is also supported by the Financial Accounting Standards Board, which has stated that:

[M]ateriality judgments can properly be made only by those who have all the facts. The Board’s present position is that no general standards of materiality could be formulated to take into account all the considerations that enter into experienced human judgment.

The steadily growing demand from investors for information about climate risk, described below in Part 4, demonstrates that “reasonable investors” exercising human judgment increasingly consider climate risk part of the total mix of information they assess to make investment decisions. Investors representing $41 trillion in assets participate in the Carbon Disclosure Project and its annual requests for climate risk information from corporations. Members of the Investor Network on Climate Risk, which represents more than $4 trillion in assets, have repeatedly requested SEC action to clarify the need for climate risk disclosure. Further, financial markets are actively addressing the demand for climate risk information in the products and services described below in Part 4. Corporate leaders themselves, as exemplified in Appendix F, have also recognized the critical importance of climate risks, in the form of both regulatory developments and physical risks, to the global economy.

The financial markets have judged that climate risk is important to investors’ ability to assess corporate operations and performance. This judgment, along with the importance of climate risk for many registrants’ financial prospects, compels the conclusion that material climate risk must be disclosed under the Commission’s regulations.

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10 TSC Industries, 426 U.S. at 450.
11 See SEC Staff Accounting Bulletin No. 99, supra note 9.
14 See, e.g., Letter from Bradley Abelow et al. to Chairman Cox (June 14, 2006).
b. **FAS 5 and Regulation S-K Require Registrants to Disclose Climate Risk.**

Because climate change affects different corporations in different ways, there are several portions of a registrant’s periodic reports in which it may be appropriate for a corporation to disclose climate risk.

**FAS 5**

Statement of Financial Accounting Standards No. 5, *Accounting for Contingencies* (FAS 5), sets the standard for disclosure of material contingent liabilities that can be expressed on the balance sheet. FAS 5 requires a company to accrue a charge against current income for the entire amount of a material liability that is probable and reasonably estimable. It allows a contingent liability to be expressed as a range of estimable liabilities. If a material contingent liability is “reasonably possible” but cannot be estimated, FAS 5 requires that liability to be disclosed in the footnotes to the financial statements.

Examples of companies that have likely crossed the FAS 5 threshold for accruing actual dollar values for climate related contingent liabilities include companies that emit significant levels of greenhouse gases and are already subject to direct regulation of those emissions here or abroad, companies considering major capital investments that are affected by new and evolving regulatory treatment of greenhouse gas emissions, and companies whose physical operations are at hazard due to developments such as melting permafrost or storm damage. FAS 5 requires those companies to disclose material climate risks that can be reasonably estimated on their balance sheets now.

**Regulation S-K**

For many other companies, analysis of climate risks may not yet have reached the level of sophistication or certainty that would allow or require disclosure of climate risk as a specific amount or even a range of amounts on the balance sheet. For these companies, as well as for those who have crossed the FAS 5 threshold, the narrative disclosure provisions of Regulation S-K require that they disclose and discuss their material climate risks. Three specific provisions of Regulation S-K require narrative disclosures of climate risks:

**Item 101: Description of Business**

Item 101 requires a description of the “general development of business,”

\[15\] including plan of operation, “any anticipated material acquisition of plant and equipment and the capacity

thereof,” Item 101(c) requires disclosure of “competitive condition in the business.” As described in Part 3, below, both regulatory developments relating to greenhouse gas emissions and the physical risks of climate change pose immediate challenges to the general development of many businesses. Some of these challenges include changes to the cost of energy and transportation, changes to and uncertainty about the cost of capital investments, and contingency planning for climate change-influenced events such as extreme weather or changes in water supply.

Item 101(c)(1)(xii) specifically requires disclosure of the cost of complying with environmental laws:

Appropriate disclosure also shall be made as to the material effects that compliance with Federal, State and local provisions which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, may have upon the capital expenditures, earnings and competitive position of the registrant and its subsidiaries. The registrant shall disclose any material estimated capital expenditures for environmental control facilities for the remainder of its current fiscal year and its succeeding fiscal year and for such further periods as the registrant may deem material.

For those companies operating in any of the United States or overseas jurisdictions that have enacted or adopted greenhouse gas emissions limits, the effects of those limits on capital expenditures, earnings and competitive position must be disclosed whenever they are material.

**Item 103: Legal Proceedings**

Climate change has already generated significant litigation, including suits against private companies that are major emitters of greenhouse gases. Such climate litigation may trigger disclosure requirements under Item 103 of Regulation S-K, which provides in part:

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19 See, e.g., JUSTIN R. PIDOT, GLOBAL WARMING IN THE COURTS: AN OVERVIEW OF CURRENT LITIGATION AND COMMON LEGAL ISSUES (2006) (summarizing litigation in U.S. courts on climate issues), available at http://www.law.georgetown.edu/gelpi/current_research/documents/GWL_Report.pdf. In July 2004, New York, seven other states, and the City of New York filed a lawsuit grounded in the common law of public nuisance against the five power companies that were, at the time, the nation’s largest emitters of carbon dioxide. Although these claims were initially dismissed in the lower court, the states continue to pursue
Describe briefly any material pending legal proceedings, other than ordinary routine litigation incidental to the business, to which the registrant or any of its subsidiaries is a party or of which any of their property is the subject.\textsuperscript{20}

In 1993, the Office of the Chief Accountant addressed the disclosure of environmental litigation liabilities in Staff Accounting Bulletin 92.\textsuperscript{21} In an effort to “elicit more meaningful information concerning environmental matters in filings,” SAB 92 made clear that a company must accrue a charge for environmental liabilities if it is probable that the liability has been incurred, and if it can be reasonably estimated. Recognizing the “significant uncertainties” inherent in determining many environmental liabilities before they are reduced to judgment, Commission Staff nonetheless directed that corporations disclose the reasonably probable results of legal proceedings, which in some cases would be a range of values supported by a narrative discussion of the uncertainties.

\textbf{Item 303: Management’s Discussion and Analysis of Financial Condition and Results of Operations}

Item 303 of Regulation S-K requires the preparation and disclosure of the Management’s Discussion and Analysis of Financial Conditions and Results of Operations (MD&A). The importance of MD&A as a vehicle for disclosing the critical subjects facing corporate management is reflected by the frequency with which the Commission has addressed and clarified this requirement in studies, rulemakings, and releases. Commission Staff has summarized the MD&A requirement as follows:

Item 303 of Regulation S-K requires a company to discuss its financial condition, changes in financial condition and results of operations. A company must include in this section a discussion of its liquidity, capital resources and results of operations. In particular, forward looking information is required where there are known trends, uncertainties or other factors enumerated in the rules that will result in, or that are reasonably likely to result in, a material impact on the company’s liquidity, capital resources, revenues and results of operations, including income from continuing operations. A company must focus on known material events and uncertainties that would cause reported

\textsuperscript{20} 17 C.F.R. § 229.103 (2007). Item 103 also requires disclosure of proceedings that are “known to be contemplated by government entities.” \textit{Id.} (Instruction No. 5).
\textsuperscript{21} SEC Staff Accounting Bulletin No. 92, 56 Fed. Reg. 33,376 (June 14, 1993).
financial information not to be necessarily indicative of future operating results or of future financial condition.\textsuperscript{22}

The Commission’s December 2003 interpretive guidance makes clear that the discussion of the future challenges facing corporate management is central to MD&A: “A good introduction or overview would . . . provide insight into material opportunities, challenges and risks, such as those presented by known material trends and uncertainties, on which the company’s executives are most focused for both the short and long term, as well as the actions they are taking to address these opportunities, challenges and risks.”\textsuperscript{23} As described in Part 4 below, information about the scope of the challenges climate change poses to a specific company, and whether its management is adequately prepared to face those challenges, is precisely the type of information that the market is now demanding about climate risk.

The requirement for companies to address “known trends and uncertainties” in their MD&A is particularly applicable to climate risk. Item 303 requires that publicly traded companies disclose:

[A]ny known trends or uncertainties that have had or that the registrant reasonably expects will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. If the registrant knows of events that will cause a material change in the relationship between costs and revenues (such as known future increases in costs of labor or materials or price increases or inventory adjustments), the change in the relationship shall be disclosed.\textsuperscript{24}

The Division of Corporation Finance Staff has described this obligation as follows:

The requirement to discuss uncertainties in MD&A encompasses both financial and non-financial factors that may influence the business, either directly or indirectly. In many cases, there will be current or immediate accounting implications associated with an uncertainty, as occurs when the likelihood of a loss contingency becomes probable and the amount of loss is reasonably estimable. However, the need to discuss such matters in MD&A will often precede any accounting recognition when the registrant becomes aware of information that creates a reasonable likelihood of a material effect on its financial condition or results of operations, or when such information is

otherwise subject to disclosure in the financial statements, as occurs when the effect of a material loss contingency becomes reasonably possible. If a registrant is unable to estimate the reasonably likely impact, but a range of amounts are determinable based on the facts and circumstances surrounding the contingency, it should disclose those amounts.\footnote{U.S. SEC. & EXCH. COMM’N, DIV. OF CORP. FIN., CURRENT ACCOUNTING AND DISCLOSURE ISSUES IN THE DIVISION OF CORPORATION FINANCE (Nov. 30, 2006), available at http://www.sec.gov/divisions/corpfin/cfacctdisclosureissues.pdf.}

Item 303 specifically deals with the disclosure obligation when a known trend has an uncertain impact on a corporation. The mere fact of uncertainty is not an excuse against disclosure. Item 303 sets forth disclosure requirements for those situations in which a registrant’s reported past and present financial records do not accurately indicate its long-term viability and profitability because of a known trend or change in the business environment. “Item 303(a)(3)(ii) essentially says to a registrant: If there has been an important change in your company’s business or environment that significantly or materially decreases the predictive value of your reported results, explain this change in the prospectus.”\footnote{Oxford Asset Management, Ltd. v. Jarvis, 297 F.3d 1182, 1192 (11th Cir. 2002).} When a company encounters “‘matters that would have an impact on future operations and have not had an impact in the past’” and “‘matters that have had an impact on reported operations and are not expected to have an impact on future operations,’”\footnote{Id.} Item 303 requires disclosure. Determinations of whether a future event requires disclosure are judged according to a negligence standard of objective reasonableness; the assessment is whether the “‘known trend, demand, commitment, event or uncertainty [is] likely to come to fruition.’”\footnote{Id.}

Item 303 does not require unlimited speculation about future possibilities or “forward looking information.”\footnote{17 C.F.R. § 229.303(a) (2007) (Instruction No. 7).} Rather, “known trends and uncertainties” are “understood as referring to those trends discernable from hard information alone.”\footnote{Glassman v. Computervision Corp., 90 F.3d 617, 631 (1st Cir. 1996).} The critical distinction between optional disclosure of “forward looking” analysis and required disclosure of “the future impact of presently known trends” is based on “the nature of the prediction required.”\footnote{Concept Release on Management’s Discussion and Analysis of Financial Condition and Results of Operations, Securities Act Release No. 6711, 52 Fed. Reg. 13,715, 13,717 (Apr. 24, 1987); see also id. (*"Required disclosure is based on currently known trends, events, and uncertainties that are reasonably expected to have material effects, such as: A reduction in the registrant's product prices; erosion in the..."*)
event is “based on currently known trends, events, and uncertainties that are reasonably expected to have material effects,” then disclosure is required.

Further, Item 303 requires disclosure when a known trend reflects “persistent conditions of the particular registrant’s business environment.” Thus, businesses are not obligated to disclose trends that they reasonably believe will have only a short-term impact on the market, but are obligated to report any changes that will have a long-term impact on their business environment. Thus the fact that climate change carries significant to severe long-term risks for many companies places it squarely within Item 303’s disclosure requirements.

For corporations operating in the many jurisdictions in which greenhouse gas-related emission limitations or regulations are now in effect, disclosure of the material effects of those programs on capital expenditures, earnings and competitive position is now required under both Item 101 and Item 303. The trend toward increased greenhouse gas regulation, and the associated uncertainty about the impact of this regulation, must be analyzed to determine if they are material and subject to disclosure under Item 303.

c. Interpretive Guidance Is Needed to Clarify the Application of These Disclosure Requirements to Corporate Climate Risk.

Notwithstanding the plain terms of Regulation S-K, corporate practice on climate risk disclosure is lagging behind the rapidly evolving economic, legal, and scientific developments related to climate change. The low rate of meaningful climate risk disclosure and the inconsistency in how companies are addressing this subject in their filings are denying investors the information they need and demand about climate risk. The Commission’s mission “to protect investors; maintain fair, orderly, and efficient markets; and facilitate capital formation”

registrant’s market share; changes in insurance coverage; or the likely non-renewal of a material contract. In contrast, optional forward-looking disclosure involves anticipating a future trend or event or anticipating a less predictable impact of a known event, trend or uncertainty.”

33 Oxford Asset Management, Ltd. v. Jarvis, 297 F.3d 1182, 1191 (11th Cir. 2002).
34 See Kapps v. Torch Offshore, 379 F.3d 207, 218 (5th Cir. 2004) (holding that Torch Offshore was not obligated to disclose a 60% drop in the price of natural gas over a 5 ½ month period, because “at the time of the IPO, it was not unreasonable to consider the decline in natural gas prices as not yet constituting a trend”).
requires clarification of the application of existing disclosure standards to the critical issue of climate risk.

The remainder of this petition describes those risks in Part 3, the growing demand from investors for information about corporations’ exposure to those risks in Part 4, and the current inconsistent and inadequate state of climate risk disclosure in Part 5. Part 6 sets forth the action we request from the Commission to clarify the application of existing law to the disclosure of climate risks.

3. What Are the Climate-Related Risks to Publicly Traded Corporations?

The far-reaching nature of the climate changes that are underway makes global warming and greenhouse gas regulations important considerations for corporations throughout the economy. For investors, these developments make climate risk a key area of interest concerning corporate performance. In a recent McKinsey survey of over 4,000 international executives, climate change was the third most commonly cited risk to shareholder value in the near term. As explained in a recent report by Marsh, the world’s largest insurance broker:

Climate risk cuts across almost every industry in every corner of the world—energy producers and consumers; transportation providers and those reliant on it; forestry, agriculture, and food producers; construction; chemicals, pharmaceuticals, and the life sciences; real estate; communications and technology; tourism and hospitality; the retail industry, and more. The number of companies publicly addressing the risks and opportunities posed by climate change has increased dramatically over the past several years.

A recent statement joined by 153 companies that are part of the U.N. Global Compact—including DuPont and Pfizer—declared that “[c]limate change poses both risks and opportunities to all parts of the business sector, everywhere.” Similarly, as explained in the disclosure framework adopted by the Investor Network on Climate Risk:

Given the sweeping global nature of climate change, climate risk and opportunity is embedded in the operations of all companies. Some companies with significant emissions of greenhouse gases or energy use face current or future regulatory risks, while climate change may pose a range of physical or financial risks to other firms . . . In some cases, the risks to companies may be indirect. For example, even if a company is not directly subject to regulations, significant emissions in its value chain may still result in increased costs (upstream) or reduced sales (downstream). Climate change also represents significant opportunities for many firms. Some companies will develop profitable new technologies or markets as governments pursue innovative strategies to address climate change and spur technology development.39

Climate change can pose challenges to businesses in numerous ways, but the most significant risks and opportunities tend to flow from two broad developments: (1) the changing regulatory environment for greenhouse gas emissions, and (2) the changing physical environment associated with global warming.


A growing appreciation of the serious consequences likely to occur if warming continues has created an urgency to reduce emissions as soon as possible. Governments at all levels are now undertaking policies to limit greenhouse gas emissions. Individual countries and multi-state coalitions around the globe have enacted binding greenhouse gas regulations (see Appendix D). In 2005, the Kyoto Protocol to the U.N. Framework Convention on Climate Change entered into force, committing the vast majority of industrial nations to reduce their greenhouse gas emissions.40 Although the U.S. and Australia have not ratified the Kyoto Protocol, registrants with the Commission face regulation of their greenhouse gas emissions under the Protocol due to their operations in Europe and other industrialized nations. Almost half of aggregate sales by the Standard & Poor’s 500 corporations were overseas in 2006, with much of those sales in countries that have also enacted laws and regulations limiting greenhouse gas emissions.41

39 CERES, GLOBAL FRAMEWORK FOR CLIMATE RISK DISCLOSURE, supra note 37, at 4; see also Lash & Wellington, supra note 37, at 96 (noting “far-reaching effects of climate change on business” and that financial significance is not limited to “utilities and energy-intensive industries,” but extends to “most industries”).

40 See U.N. Framework Convention on Climate Change (UNFCCC), Essential Background, http://unfccc.int/essential_background/items/2877.php. As of June 6, 2007, 174 countries and one regional economic integration organization (the EU) had ratified or accepted the Kyoto Protocol. The United States and Australia have not ratified the Protocol.

Union has established a cap and trade regime for greenhouse gas emissions, linked to the Kyoto Protocol, known as the European Union Greenhouse Gas Emissions Trading Scheme (EU-ETS). The EU-ETS was launched in early 2005, and created an EU-wide market for trading in greenhouse gas emissions. Due to initiatives like the EU-ETS, the global greenhouse gas emissions trading market increased from involving negligible sums in 2003 to being valued at approximately 18 billion Euros (almost $25 billion at current exchange rates) in 2006. 

Negotiations are underway to develop the next level of limits under the Kyoto agreement, which will go into effect after the first round of limits expires in 2012. The G-8 group of major industrial nations—including the United States and China—recently agreed in principle to a commitment to reduce greenhouse gas emissions by fifty percent by the year 2050.

The United States has yet to adopt a federal program to control greenhouse gas emissions. However, in the absence of federal legislation, state and local regulation of greenhouse gas emissions has already become a significant force in the United States economy. Appendix C summarizes regional initiatives among states, mandatory state regulations on greenhouse gas emissions and emissions reporting requirements, state emissions goals and emissions reduction incentives, and other state actions regarding greenhouse gas emissions. Many of these programs are already in effect, and are affecting corporate performance by changing financial conditions and liabilities and creating new opportunities and markets for both alternative energy and carbon emission credits.

Multi-state regional initiatives to reduce greenhouse gas emissions now apply in territory representing over 58% of the U.S. GDP and 54% of the nation’s population. Renewable

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Michael Tsang & Daniel Hauck, Bulls See Wall Street Gains This Year as Key U.S. Firms Benefit from Growth Overseas, INT’L HERALD TRIB. (Paris), May 7, 2007 (citing S&P’s finding that S&P 500 firms’ sales made 49 percent of their sales outside the United States, up from 30 percent in 2001).

43 GLOBAL REPORTING INITIATIVE & KPMG GLOBAL SUSTAINABILITY SERVS., REPORTING THE BUSINESS IMPLICATIONS OF CLIMATE CHANGE IN SUSTAINABILITY REPORTS 8 (2007) [hereinafter GRI/KPMG STUDY].
45 GRI/KPMG STUDY, supra note 43, at 5 (in study of sustainability reports for 2005 submitted by major companies drawn from FT 500, “a surprising two thirds of companies reported new business opportunities from climate change”).
portfolio standards (RPSs) that require a certain portion of electricity needs to be met by renewable energy sources have been adopted in 25 states which collectively represent over 65% of the nation’s GDP and more than 60% of its population. Several states have further adopted greenhouse gas emissions reduction goals, and three—California, Hawaii and New Jersey—have set mandatory, economy-wide caps on greenhouse gas emissions. These three states together account for 17% of the U.S. GDP and 16% of the country’s population. The geographic reach of these state actions to control greenhouse gas emissions indicates that they have significant economic and competitive consequences already.

Many states have joined together in regional agreements to reduce greenhouse gas emissions. New York has joined with nine other northeastern states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, and Vermont) to form the Regional Greenhouse Gas Initiative (RGGI), which is a mandatory cap-and-trade program to reduce carbon dioxide emissions from power plants. Under the program, emissions will be capped starting in 2009 at then-current levels, and then reduced by 10 percent below 2009 levels by 2019. RGGI member states are now in the process of enacting implementing legislation or regulations.48

Oregon, Utah, and Washington, as well as several Canadian provinces and Indian tribes, entered into the Western Climate Initiative to establish a regional greenhouse gas reduction goal and develop market-based strategies to achieve emissions reductions.\(^49\) In 2007, 34 states—representing over 70% of the population of the United States—joined the Climate Registry, a central repository of greenhouse gas emissions data gathered by states under mandatory and voluntary reporting programs.\(^50\)

California also has enacted a suite of ambitious measures to limit greenhouse gas emissions that are setting the standard for further state action:

- **The Global Warming Solutions Act (Assembly Bill 32) (2006)** establishes a mandatory greenhouse gas emissions cap for the State, based on 1990 emissions, mandates the promulgation of regulations, by 2011, to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gases, and requires reporting of greenhouse gas emissions by 2008.\(^51\)

- **Assembly Bill 1493** limits greenhouse gas emissions from new motor vehicles. Fourteen other states “have adopted or announced their intention to adopt California’s greenhouse gas emission controls” and, “[i]ncluding California, these states account for 44% of the total U.S. population.”\(^52\)

- **Greenhouse gas procurement standards for electricity providers entering long-term power procurement contracts** mandate a performance level of no greater than 1,100 pounds of carbon dioxide per megawatt-hour.\(^53\) This standard affects long-term contracts made with any electricity provider serving the California electricity market, whether in-state or


out-of-state. Washington and Montana also recently adopted requirements for electricity generation units to meet greenhouse gas emissions limitations.  

- Executive Order S-01-07 directs the California Air Resources Board to promulgate regulations to require the state’s petroleum refiners and gasoline sellers to cut by 10 percent the emissions of greenhouse gases associated with the production and use of their products.  

Over 500 of the nation’s Mayors, representing cities containing over 65 million Americans, have signed the U.S. Mayors’ Climate Protection Agreement, under which they commit to greenhouse gas emission reductions that meet or exceed Kyoto agreement targets of seven percent below 1990 levels by 2012. State and local governments have enacted hundreds of other measures to reduce emissions of greenhouse gases, and scores of further proposals are under consideration throughout the country (see Appendix C).

The various programs passed by state and local governments are already exerting their force in the economy and in many cases having material impact on corporate performance. In addition to these measures, federal action to reduce greenhouse gas emissions is widely considered to be inevitable. The Supreme Court’s 2007 decision in Massachusetts v. EPA broadly confirmed EPA’s authority to take regulatory action addressing global warming pollution under the existing terms of the Clean Air Act. In May, President Bush directed EPA and other federal agencies “to take the first steps toward regulations that would cut gasoline consumption and greenhouse gas emissions from motor vehicles” and to complete the regulatory process by the end of 2008.

In addition, Congress is actively considering bills that would establish national systems of greenhouse gas regulation. Appendix E summarizes pending federal legislation relating to

climate change and greenhouse gas emissions.\textsuperscript{58} Although debate continues about the precise mix of measures that should be adopted, enactment of a broad national program of mandatory controls on greenhouse gas emissions appears highly likely in the near term.\textsuperscript{59}

According to the public statements of many business leaders, much of the corporate community has already largely incorporated the inevitability of federal greenhouse gas controls into plans for the future. Indeed, one of the most significant developments over the past five years has been a dramatic shift in the business community toward the recognition that climate change is a real and imminent problem for our economic security, and the increasing advocacy for an effective policy response. Appendix F contains a collection of statements that indicate the degree to which corporate leaders now view climate change as a critical market force, and greenhouse gas controls as both inevitable and necessary.

A long and growing list of corporate leaders has joined the call for mandatory federal limits on greenhouse gas emissions. More than thirty prominent corporations have joined with a coalition of environmental groups to form the United States Climate Action Partnership (USCAP), a group that calls for a strong national policy to reduce U.S. greenhouse gas emissions, including an economy-wide, mandatory cap and trade program limiting greenhouse gas emissions as part of an overall package of policies designed to limit “global atmospheric [greenhouse gas concentrations] to a level that minimizes large-scale adverse climate change impacts to human populations and the natural environment . . . “\textsuperscript{60} USCAP members include Alcoa, Chrysler Group, ConocoPhillips, Duke Energy, DuPont, Ford Motor Company, General

\textsuperscript{58} In addition to those bills already introduced for legislative consideration, Senators Joseph Lieberman and John Warner, both members of the Senate Environment and Public Works Committee, recently released a detailed proposal for a climate bill they will introduce later this Fall. This bipartisan effort will call for an economy-wide reduction in greenhouse gas emissions, to be achieved through the implementation of a cap and trade program coupled with various carbon market monitoring provisions. See Press Release, Office of Senator Joe Lieberman, Lieberman and Warner Unveil Bipartisan Climate Proposal (Aug. 2, 2007); The Lieberman-Warner America’s Climate Security Act of 2007: An Annotated Table of Contents, available at http://lieberman.senate.gov/documents/acsa.pdf.

\textsuperscript{59} Two Senate climate change bills, the Sanders-Boxer and Kerry-Snowe bills, would require the Commission to improve corporate disclosure of climate risk in securities filings. See S. 309, 110th Cong. § 9 (2007); S. 485, 110th Cong. § 302 (2007). The corporate disclosure provisions in these bills would require the SEC to (1) issue an interim interpretive release clarifying that climate change constitutes a known trend, and (2) within two years, direct public companies to inform investors of risks relating to their financial exposure due to their greenhouse gas emissions, and the potential economic impacts of global warming on the interests of each company.

Electric, General Motors, PepsiCo, PG&E Corporation, Rio Tinto, and Shell, among many other prominent corporations.

The growing list of regulatory controls on greenhouse gas emissions at the local, state, regional and international levels constitutes a “known trend” whose affects should be analyzed and, if material, disclosed under Regulation S-K. Corporate participation in advocacy for federal climate change policy demonstrates the likelihood of federal greenhouse gas laws is “known” as well, and that the uncertainty about the scope and form of federal climate laws is a known uncertainty that has important implications for corporate financial prospects. In spite of this, analysis of and disclosure of the impact of greenhouse gas regulation on corporate performance remains inconsistent, and sometimes nonexistent, to the distinct detriment of investors and the market as a whole.


The alterations to the physical environment observed and expected from climate change already have implications for the operations and financial condition of many companies, and these physical changes will likely affect more companies as the climate continues to change. The physical changes described in Part 1 above and in Appendix B include both the obvious—changing temperatures, rising sea levels, more severe storms—and the more subtle, such as changes in the amount of local precipitation and accelerated snowmelt that will affect water supply, as well as warmer temperatures that may expand the ranges of disease vectors and pests that affect human health and food and fiber production. All of these changes will have economic impacts on businesses, including the continued use of corporate facilities in vulnerable locations and the viability of the other businesses in their supply chain.

Many of the potential impacts from physical risks resulting from climate change are known or predictable, and should be disclosed if material. The overwhelming consensus in the scientific literature establishes that the physical shifts brought by climate change are known


62 See CARBON DISCLOSURE PROJECT, CALVERT & CERES, CLIMATE RISK DISCLOSURE BY THE S&P 500 at 33 (2007), available at http://www.calvert.com/pdf/ceres_calvert_sandp_500.pdf (noting significance of “physical risks . . . from severe weather, sea level rise, ecosystem impairment, and shifting ranges of pests and diseases” and that “[c]ompanies that may believe they face little risk may find that their supply chain is more vulnerable than they expected, or that physical or regulatory factors combine to raise the price of essential factors of production (most notably, energy”).
trends and uncertainties which may have a profound effect on the profitability and performance of a broad range of corporations. Frank analysis of how these changes in the physical environment will affect a corporation will give investors critical information about whether corporate management is truly prepared for the future.

c. The Impact of Climate Change on Businesses.

Until recently, the risks and opportunities associated with climate change have often been viewed as potentially significant at some indefinite point in the future, but as too uncertain to bear on corporate planning and actions in the near term. The emergence of scientific consensus about the existence and seriousness of climate change, the presence of major international climate policies, and the arrival of significant state level greenhouse gas regulation in the United States, have made climate change an immediate economic concern to corporations. Moreover, because of the long-term capital investments required to retool and reinvest for a carbon-constrained regulatory environment, decisions companies make now will determine their financial prospects as existing controls on emissions take effect and new carbon regulations are adopted. As one recent study put it: “[M]anagements and investors cannot assume that there will be time to react to policy when it is approaching implementation, because there are strategic structural factors such as access to resources and technology, or consumer mix, which take longer to shift.”

The costs and opportunities associated with the changing regulatory and physical environments bear directly on the financial condition and operations of many companies. Regulation of greenhouse gas emissions imposes direct costs on major sources of greenhouse gas emissions and indirect costs on the companies that use their products and services. At the same time, these new regulatory developments will offer major opportunities for firms that can reduce emissions, thereby garnering marketable emissions credits or cost advantages over their competition, and for firms offering technologies and services needed to reduce emissions.

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64 See id. (discussing studies of impacts of the European Union’s Emission Trading Scheme on different business sectors).
65 See CERES, GLOBAL FRAMEWORK FOR CLIMATE RISK DISCLOSURE, supra note 37, at 8; see also, ASPEN INSTITUTE & CERES, THE WIRTH CHAIR 2004 LEADERSHIP FORUM: CLIMATE CHANGE RISKS AND THE SEC (Oct. 18, 2004); Lash & Wellington, supra note 37, at 100 (discussing supply chain risk); ALLIANZ GROUP & WORLD WIDE FUND FOR NATURE, supra note 63, at 17-20, 26, 32 (stating that
In addition, firms that are major greenhouse gas emitters and that do not have in place policies for reducing emissions face serious reputational risks. On June 19, 2007, Climate Counts, an environmental non-profit group, released a scorecard detailing the climate related practices of major retail organizations, with the goal of influencing consumer purchasing habits against low scorers like Apple and Sara Lee. The website release was covered in over 100 news articles worldwide in such prominent venues as CNNMoney and Forbes. Conversely, companies with large exposure to the retail market have the potential to build positive images with consumers and gain a competitive edge in their sector if they enact climate friendly policies.

The dramatic hurricane season of 2005 demonstrated the potential physical risk to businesses from the increase in severe weather expected as part of climate change. Forty-three of the 100 largest members of the S&P 500, from a wide range of sectors including infrastructure, financial services, insurance, oil and gas, reported significant impacts from the 2005 hurricane season in their 10-K reports. The insurance industry suffered $80 billion of insured weather-related losses in 2005, and many insurance consumers in at-risk regions have subsequently lost coverage or seen premiums rise as much as 500%. In particular, Hurricanes Katrina and Rita caused damage of unprecedented cost across the Gulf Coast region. The hurricanes destroyed thousands of homes and businesses and damaged 113 offshore oil rigs, which sent shocks though the gasoline markets. Allstate’s 2005 10-Q report stated, “[l]osses in the third quarter of 2005 include estimates of $3.68 billion related to Hurricane Katrina and $850 million, net of reinsurance recoverable of $205 million, related to Hurricane Rita.”

“[c]arbon constraints will have different effects on the earnings of companies, both from sector to sector and within sectors,” and enumerating climate-related risks and opportunities for insurers and the banking industry).

66 See CARBON DISCLOSURE PROJECT, supra note 62; Lash & Wellington, supra note 37, at 100.
69 See CARBON DISCLOSURE PROJECT, supra note 62, at 24, 33-36, 72.
71 See id.
Insurer AXA Group recently stated that, for insurance companies, climate change “is more important than interest rate risk or the foreign exchange risk.”\textsuperscript{73} Insurance industry catastrophe modelers forecast that significantly more costly storms than Katrina are possible and, indeed, inevitable. One analysis by A.M. Best Co. estimated that such storms, with $100 billion in losses, would bankrupt as many as 40 insurers.\textsuperscript{74} Losses from the 2005 hurricane season already amounted to 50 to 100 times the insurers’ typical yearly profit in the affected states. As noted in a 2007 report by the Government Accountability Office, “both major private and federal insurers are exposed to increases in the frequency or severity of weather-related events associated with climate change,” and “many large private insurers are incorporating both near and longer-term elements of climate change into their risk management practices.”\textsuperscript{75}

A recent study of the oil and gas industry illustrates the multiple risks associated with climate change.\textsuperscript{76} Because oil and gas production and consumption accounts for more than half of carbon dioxide emissions in the United States, and because the industry is characterized by long-term capital investment horizons, the industry faces substantial financial risks from regulatory developments including limits on greenhouse gas emissions. These limits pose competitive risks for oil and gas by driving the market toward low-carbon alternatives such as solar and wind power and biofuels. Purveyors of these alternative energy sources, in turn, enjoy opportunities that are the converse of the risks posed to the oil and gas sector.

The physical changes from climate change carry risks for the oil and gas industry as well. The damage to critical infrastructure from the 2005 hurricanes caused “nationwide petroleum shortages,” a surge in gas prices, and supported the consumer trend toward hybrid and fuel efficient vehicles.\textsuperscript{77} Climate change has placed at risk billions of dollars of long-term investments in pipelines and other infrastructure that depends on permafrost in Alaska, Canada, and elsewhere; the rapid thawing of frozen ground due to climate change leaves “[l]ong-term

\textsuperscript{74} See MILLS & LECOMTE, supra note 70, at 4.
\textsuperscript{75} GOV’T ACCOUNTABILITY OFFICE, CLIMATE CHANGE: FINANCIAL RISKS TO FEDERAL AND PRIVATE INSURERS IN COMING DECADES ARE POTENTIALLY SIGNIFICANT, 5, 14, (2004), available at http://www.gao.gov/new.items/d07820t.pdf; see also EVAN MILLS & EUGENE LECOMTE, supra note 70, at 4.
\textsuperscript{77} Id. at 9.
capital investment . . . at risk of literally sinking away.” 78 The CEO of Chesapeake Energy, a major natural gas producer, “declared that global warming is the ‘single largest threat to the natural gas industry’ because of its potential to decimate winter heating demand.” 79

The coal industry similarly demonstrates the risks companies can face from emerging and expected climate regulations. A July 25, 2007, front page Wall Street Journal article highlighted the increasing difficulty of building coal-fired generation, pointing to proposals for new coal-fired power plants in Texas, Florida, North Carolina, Oregon, and Minnesota that have been cancelled because “states [have concluded] that conventional coal plants are too dirty to build.” The article reported that “[t]he rapid shift away from coal shows how quickly and powerfully environmental concerns, and the costs associated with eradicating them, have changed matters for the power industry.” 80 At the same time, a wide range of policies, discussed above in Part 3.a, are designed to create incentives for cleaner power generation, including the statewide caps on greenhouse gas emissions adopted by California, Hawaii and New Jersey; the Regional Greenhouse Gas Initiative; California, Montana and Washington’s emission performance standards for electricity providers; Renewable Portfolio Standards; and emerging Western regional and national cap and trade emission policies. As part of Citigroup’s research services for its investors, Citigroup recently downgraded coal stocks “across the board” and recommended investors switch into other energy markets, in part due to increasing regulatory and reputational risk related to climate change. 81

In response to present and probable state regulations, and in anticipation of comprehensive federal climate policy, many utilities and electric generation companies now incorporate a carbon price in planning decisions. These utilities have pointed to the increasing scientific certainty of climate change and the financial risk from current and future carbon regulations as justification for incorporating cost estimates for carbon abatement into long-term planning. Pacific Gas and Electric, Avista, Portland General Electric, Xcel-PSCCo, Idaho Power, and Pacificorp all now include a range of carbon costs into their long-term planning

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78 Id. at 9.
79 Id. at 9 (citing Chesapeake CEO Says Low Gas Prices Will Eventually Rise, CBSMARKETWATCH.COM (Oct. 3, 2006) (quoting Aubrey McClendon, CEO of Chesapeake Energy)).
calculations. In California, the Public Utility Commission requires the use of carbon risk values for long-term planning or procurement decisions. The failure to adequately address carbon dioxide regulatory risks was part of the reason a proposed new Florida coal plant was recently rejected by the Florida utility commission: many of the cost scenarios that incorporated carbon abatement values showed that the proposed plant was not a cost-effective choice. Electricity generation companies already hedge their decisions in the face of numerous uncertainties, including future fossil fuel prices, construction expenses and consumer demand, among many others; expenses related to carbon abatement have now become another key variable in corporate strategy and planning.

Though they present significant financial risks for many companies, existing and future greenhouse gas regulations can also present significant opportunities for companies to prosper. Companies that capitalize on new opportunities or technologies that will benefit from climate change have the potential to earn substantial income and large returns for investors. For example, companies positioned to take advantage of carbon trading opportunities have the potential to profit enormously. Global carbon trading markets were worth $30 billion in 2006, and some have estimated that the value of a future carbon market could reach as high as $15 trillion. In addition, recent policy efforts to support renewable energy and increasing consumer interest have led to tremendous growth in wind, solar, and biofuel energy markets. Between 1997 and 2005, globally installed wind turbine capacity experienced a compound annual growth rate of 29%, in part due to the implementation of Renewable Portfolio Standards or Renewable

84 Smith, supra note 80, at A1.
85 Even in the absence of a national emissions trading program in the United States, many U.S.-based multinational corporations are involved in GHG emissions trading overseas. See, e.g., GRI/KPMG STUDY, supra note 43, at 17 (noting that nearly half of the companies studied who were based in the United States and Australia—nations that have not ratified the Kyoto Protocol—“still reported on emissions trading” in their sustainability reports, likely because “multinational companies based in USA and Australia often have overseas operations in regions that are involved in emissions trading”). Because of the high likelihood that a program limiting greenhouse emissions will involve emissions trading—as do all the many climate bills currently before Congress—opportunities for American companies are likely to increase.
Energy Targets in at least 18 countries, 25 states, and the District of Columbia.\textsuperscript{86} Emerging state and federal legislation will further support the expansion of these and other low polluting industries.

Even in sectors that are likely to be heavily affected by climate regulations, climate change can present an opportunity to capitalize on changing consumption patterns and new regulatory incentives. Within particular industries, firms’ ability to adjust to the challenges posed by the rapidly changing legal and regulatory environment will provide an important source of competitive advantage; firms that are slower to adapt will face corresponding disadvantages. In particular, the automobile industry demonstrates how companies’ responses to climate change can determine whether global warming will present a risk or an opportunity. Over a decade ago, many automakers began developing hybrid car product lines to prepare for a carbon-constrained economy. Now existing international regulations, rising gas prices, and public concern over greenhouse emissions are leading to strong sales of hybrid and fuel efficient vehicle lines and positive public reputations for corporations that produce fuel efficient vehicles. Low carbon and energy efficiency product lines are proving a significant advantage for forward-thinking firms.

4. \textbf{Climate Risk Is Increasingly Important to Investors.}

The standard by which information’s materiality is judged is whether a reasonable investor would consider the information an important part of his or her assessment of a corporation’s value.\textsuperscript{87} As shown above, climate change can present a wide range of risks and opportunities for a wide range of sectors, leading McKinsey, Marsh, and others to identify climate risk as a major factor in determining shareholder value. As a result, the market is answering the increasingly loud call for climate risk information that enables investors to determine whether and how corporations are prepared to deal with the many regulatory and physical challenges of climate change. The growing availability of these climate risk information services demonstrates investors’ critical need for this type of analysis. However, the private services currently available fail to meet investors’ need for consistent, widely available disclosure of climate risk.

\textsuperscript{86} \textit{See} \textbf{EDWARD M. KERSCHNER \& MICHAEL GERAGHTY, CITIGROUP GLOBAL MARKETS, CLIMATIC CONSEQUENCES} 68 (2007).

a. **Climate-Related Advisory Services, Investment Research, Funds, and Indices.**

Investment firms and consulting agencies have responded to this significant and growing demand for information on climate risk by creating advisory services, investment research, funds and indices that analyze the business implications of climate change. New climate risk advisory services include:

- PriceWaterhouseCoopers’ Climate Change Services Group, which “offers a broad range of advisory, assurance and specialist services that collectively guide clients through the complexities of climate change.”[^88]

- Innovest’s Carbon Finance Practice, including their proprietary Carbon Beta™ analytics platform that analyzes “1. Absolute and relative risk exposures for individual companies. 2. Their capacity to manage these risks. 3. Their ability to identify and capture the upside commercial opportunities being created.”[^89]

- JP Morgan’s Climate Change Investment Research practice, which provides investment research on business risks and opportunities related to climate change.[^90]

Numerous firms have produced detailed research studies on the investment implications of climate change for business in general and for specific sectors. Recent titles include:


  “For investors, the issue is not whether climate change is occurring. Today a variety of entities (governments, regulators, corporations, and individuals) are reacting to the perceived climate change threat, creating a number of near-term opportunities.” Pg. 1


  “In the world of business and finance, climate change has developed from being a fringe concern, focusing on the company’s brand and its Corporate and Social

[^88]: PricewaterhouseCoopers, Climate Change Services, [http://www.pwc.com/extweb/service.nsf/docid/0c334e23eb5d6b3aca2572e9001c5edc](http://www.pwc.com/extweb/service.nsf/docid/0c334e23eb5d6b3aca2572e9001c5edc).


Responsibility, to an increasingly central topic for strategic deliberation and decision-making by executives and investors around the globe. . . . Global warming, we judge, is likely to prove one of those tectonic forces that . . . gradually but powerfully changes the economic landscape in which our clients operate, and one that causes periodic sharp movements in asset prices. And, as the title indicates, we consider that climate change poses many challenges but also presents many business opportunities. Firms that recognize the challenge early, and respond imaginatively and constructively, will create opportunities for themselves and thereby prosper. Others, slower to realize what is going on or electing to ignore it, will likely do markedly less well.” Pg. 1


  “[Greenhouse gas policies] will alter the economics of entire industries. They will affect company share prices, both positively and negatively . . . The most sensitive sectors are either energy-intensive, such as cement, aviation, metals or energy industries such as oil and gas, coal, power utilities; or provide energy-consuming products such as automobiles.” Pg. 5

- Citigroup. 2006. Investing in Solutions to Climate Change.
- Citigroup. 2006. Carbon Limits are Coming.
A variety of market funds and indices are also appearing that allow investors to profit from new climate related opportunities or hedge against the risks of climate change. Recent offerings include:

**Indices**

- UBS’s Global Warming index, a tradable benchmark for weather derivative investments, allows companies to hedge their profits against the uncertainties of climate change. This new index is only one sign of the increasing liquidity of the weather derivatives market.  

- UBS’s index of emissions allowances in global carbon trading markets. Called the UBS-WEMI, the index is a basket of future contracts from the EU Emissions Trading Scheme, weighted between the two main trading platforms, the European Climate Exchange and the Nordic Power Exchange.

- Merrill Lynch’s Energy Efficiency Index, which tracks 40 global companies in the automotive, building materials, capital goods, and semiconductors sectors that stand to benefit from improved energy efficiency. This new index joins with Merrill Lynch’s existing Renewable Energy Index.

- ABN Amro’s equity index that tracks firms that address climate change and other environmental issues. The index is primarily composed of renewables, water, and waste management companies. Boston-based KLD and Milan-based E.Capital Partners have also recently launched similar indices.

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Funds

- Calvert’s Global Alternative Energy Fund was initiated May 31, 2007. As of September 10, 2007, it has $20 million in assets under management.\(^{95}\)

- Allianz RCM Global EcoTrends Fund was initiated January 28, 2007. As of July 31, 2007, it has $126 million in assets under management.\(^{96}\)

- Guinness Atkinson’s Alternative Energy Fund was initiated March 31, 2006.\(^{97}\) As of July 31, 2007, it has over $126 million in assets under management.\(^{98}\)

- Winslow Green Growth Fund was initiated in May 3, 1994. As of July 30, 2007, it has $259 million in assets under management.\(^{99}\)

- New Alternatives Fund was initiated in September 1982.\(^{100}\) As of July 31, 2007, it has almost $232 million in assets under management.\(^{101}\)

While these products are helping to address the market’s demand for climate risk information, the need for access to this information is far greater than can be met by these vehicles. More fundamentally, material information of this importance should not be available only privately and for hire. To the extent that material nonpublic information about climate risks is being disclosed in a selective way, those disclosures would violate Regulation FD, 17 C.F.R. Pt. 243, which requires that material information be publicly disclosed to the entire market. As the Commission noted when it promulgated Regulation FD, selective disclosure threatens the integrity of the market and undermines investor confidence. Furthermore, there is particular peril when analysts are privy to information that is not shared with the market as a whole:

[T]he regulation [FD] likely also will provide benefits to those seeking unbiased analysis. This regulation will place all analysts on equal footing with


respect to competition for access to material information. Thus, it will allow analysts to express their honest opinions without fear of being denied access to valuable corporate information being provided to their competitors. Analysts will continue to be able to use and benefit from superior diligence or acumen, without facing the prospect that other analysts will have a competitive edge solely because they say more favorable things about issuers.102

b. Investor Initiatives to Improve Corporate Climate Risk Disclosure.

Various coalitions of investors and environmental groups have responded to the lack of meaningful corporate climate risk information by educating themselves about climate change, seeking improved disclosure, and developing models for voluntary climate-related disclosures.

- Ceres, the largest coalition of investors, environmental and public interest organizations in North America, has organized the Investor Network on Climate Risk, a coalition representing more than $4 trillion in assets under management.103 Globally, two other investor groups are solely focused on climate risk: the Institutional Investors Group on Climate Change (U.K.) and the Investors Group on Climate Change (Australia/New Zealand).

- The Carbon Disclosure Project is an independent, international, not-for-profit organization aiming to create a lasting relationship between shareholders and corporations regarding the implications for shareholder value and commercial operations presented by climate change. The Carbon Disclosure Project seeks information on the business risks and opportunities presented by climate change and greenhouse gas emissions data from the world’s largest companies on behalf of institutional investors with a combined $41 trillion of assets under management.104 Carbon Disclosure Project members include major financial institutions including ASN Bank, ABN Amro, HSBC, Morgan Stanley, Royal Bank of Scotland Group, and Swiss Reinsurance Company.

- The Global Reporting Initiative is an international program working to make uniform reporting on economic, environmental, and social performance as routine and comparable as financial reporting.105 The Global Reporting Initiative’s Sustainability Reporting Framework, used by over 1,000 organizations worldwide, now includes “financial implications . . . due to climate change” as a core indicator for corporate reporting.106

The Climate Disclosure Standards Board is an international partnership of seven organizations announced at the World Economic Forum in Davos in January, 2007. Founding members include the California Climate Registry, Carbon Disclosure Project, Ceres, The Climate Group, International Emissions Trading Association, World Economic Forum Global Greenhouse Gas Register, and World Resources Institute. This coalition aims to create a reporting standard to ensure that companies “report climate change-related information in a standardized way that facilitates easier comparative analysis by investors, managers and the public.”

Several of these groups have already sought Commission action to clarify existing disclosure obligations regarding climate risk. On March 19, 2007, 65 institutional investors, foundations and companies managing $4 trillion issued a Call to Action asking for strong federal climate legislation. In the Call to Action, investors specifically asked for “[g]uidance from the Securities and Exchange Commission and other financial regulatory bodies to businesses and investors on what material issues related to climate change companies should disclose in their regular financial reporting, so that investors can assess more accurately the effects of climate risk and opportunity in their portfolios.”

Last year, the Investor Network on Climate Risk coordinated a group of 28 large institutional investors that wrote the Commission to request a clarifying statement that publicly traded corporations must disclose the financial risks presented by climate change.

The Investor Network on Climate Risk letter signatories include innovative investment funds such as Trillium in the United States and F&C Asset Management in the UK; state treasurers, controllers, and public employee pension funds from New York, New Jersey, California, Oregon, Vermont, Connecticut, Kentucky and British Columbia; four major unions representing over 3 million workers; and many other investors. Together they asked the Commission to take the following steps to improve corporate disclosure:

- Enforce existing disclosure requirements on material risks such as climate change, which are underreported;

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108 See id.
110 See id. at 1.
• Strengthen current disclosure requirements, for example by providing interpretive guidance on the materiality of risk posed by climate change; and

• Revise or change the Staff’s interpretation of Rule 14a-8’s “ordinary business” exclusion to require a registrant to include in its proxy statement a shareholder proposal asking the registrant to report on financial risks due to climate change.\textsuperscript{111}

Investor groups, including Investor Network on Climate Risk, the Institutional Investors Group on Climate Change, the Investor Group on Climate Change, the Carbon Disclosure Project and the Global Reporting Initiative, all participated in the Climate Risk Disclosure Initiative, an effort to improve corporate disclosure of the risks and opportunities posed by global climate change. That initiative culminated in the October 2006 release of the Global Framework for Climate Risk Disclosure. The framework is a statement of investor expectations for comprehensive corporate disclosure of four types of climate-related information:

1. Emissions: “As an important first step in addressing climate risk, companies should disclose their total greenhouse gas emissions. Investors can use this emissions data to help approximate the risk companies may face from future climate change regulations.”

2. Strategic Analysis of Climate Risk and Emissions Management: “Investors are looking for analysis that identifies companies’ future challenges and opportunities associated with climate change. Investors therefore seek management’s strategic analysis of climate risk, including a clear and straightforward statement about implications for competitiveness. Where relevant, the following issues should be addressed: access to resources, the timeframe that applies to the risk, and the firm’s plan for meeting any strategic challenges posed by climate risk.”

3. Assessment of the Physical Risks of Climate Change: “Climate Change is beginning to cause an array of physical effects, many of which can have significant implications for companies and their investors. To help investors analyze these risks, investors encourage companies to analyze and disclose material, physical effects that climate change may have on the company’s business and its operations, including their supply chain.”

4. Analysis of Regulatory Risks: “As governments begin to address climate change by adopting new regulations that limit greenhouse gas emissions, companies with direct or indirect emissions may face regulatory risks that could have significant

\textsuperscript{111} Petition from Investor Network on Climate Risk to Chairman Cox, Sec. and Exch. Comm’n (June 14, 2006), \textit{available at} http://www.ceres.org/pub/docs/Ceres_INCR_SEC_letter_061406.pdf.
implications. Investors seek to understand these risks and to assess the potential financial impacts of climate change regulations on the company.”

Shareholders are also pressing for disclosure from individual companies. Forty-five shareholder resolutions specifically related to climate change or renewable energy have been filed to date in 2007. These petitions accounted for over ten percent of all shareholder resolutions submitted this year. Shareholder resolutions have been filed by Calvert Asset Management, New York City’s pension funds, the American Federation of State, County, and Municipal Employees, Trillium Asset Management, Service Employees International Union, among many others.

c. International Efforts to Improve Climate Risk Disclosure.

The insistent chorus demanding more information on climate risk in American markets reflects the growing demand for this information around the world. An increasing number of foreign nations are issuing specific guidance on climate risk disclosure through accounting bodies or government agencies.

- In 2005, the Canadian Institute of Chartered Accountants issued the first climate risk disclosure guidance by an accounting body, “MD&A Disclosure about the Financial Impact of Climate Change and Other Environmental Issues.” This guidance provides best practices for climate risk disclosure and outlines existing regulatory requirements that apply to climate and environmental risk disclosure.

- The E.U. Accounts Modernization Directive (2004/109/EC) outlines companies’ needs to disclose environmental Key Performance Indicators (KPIs), where appropriate, including climate change statistics.

- The UK Department for Environment, Food and Rural Affairs has issued guidance that outlines best practices for companies using these KPIs.

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112 CERES, supra note 37, at 8.
114 GRI/KPMG STUDY, supra note 43, at 8 (noting in report issued in July 2007 that “demand for focused and effective reporting on the business implications of climate change has continued to grow over the last two years”).
environmental data, including climate related data and greenhouse gas emissions, should be measured and reported, helping companies to meet the narrative reporting requirements outlines in the Company Law Reform Bill.

Clarification of the need to disclose material climate risks under U.S. law would be consistent with the Commission’s increasing emphasis on harmonizing disclosure requirements with international standards. As the Commission recognized in its recent concept release on this subject, U.S.-listed firms benefit from “comparability of information across national borders.”118 If American firms do not provide the same level of climate-related disclosure as their international counterparts, there is a risk that they will find themselves at a disadvantage in a global financial market in which investors are aggressively seeking to identify those firms best prepared to take advantage of the new opportunities, and avoid the risks, of a carbon-constrained business environment.

d. Climate Risk Disclosure Is Needed to Allow Investors to Fulfill Their Fiduciary Duties.

For the many investors who invest on behalf of others, demanding better disclosure of companies’ climate-related risks is consistent with their fiduciary duties. The standard of prudence to which investing fiduciaries are held is rooted in common law and further defined by the Restatement (Third) of Trusts and the Uniform Prudent Investor Act (UPIA) drafted by the National Conference of Commissioners on Uniform State Laws.119 Forty-four states and the District of Columbia have adopted a prudent investor rule based upon these two sources to govern and guide a trustee’s actions.120 Investment advisors have been held to similar standard of conduct.121 And federal regulation of pension trusts has absorbed the prudent-investor rule by way of the Employee Retirement Income Security Act (ERISA), 29 U.S.C. § 1001 et seq., which

120 See id. at 526 nn.4-5.
incorporates the principle in section 1104(a).\textsuperscript{122} Corporate directors have a fiduciary duty of care to shareholders that mirrors the prudent-investor standard.\textsuperscript{123}

UPIA and the Restatements (Third) of Trusts reiterate the traditional requirement that the prudent investor must consider the surrounding economic circumstances relevant to an investment.\textsuperscript{124} For many companies, the climate-related risks described in this petition are part of those economic circumstances. Long investment horizons, like those of pension funds, sharpen the need to consider climate-related risks in making investment decisions, as the physical effects of climate change, even in the best-case scenario, and the proliferation of greenhouse gas regulation, will be influencing businesses and development for the next century and beyond.

The modern prudent-investor rule also includes a duty to diversify,\textsuperscript{125} and to consider the investment portfolio as a whole rather than a set of isolated investments.\textsuperscript{126} The risks presented to companies by global climate change may well tie investments together in ways not before considered. For example, a portfolio with heavy investment in a single geographical region, though spread across several industrial sectors, may not be sufficiently diverse if that region is vulnerable to physical effects of climate change such as increasing storm frequency and intensity, rising sea levels, or potential water shortage.

The “prudent investor,” who provides the standard for fiduciary duty, would be concerned about various forms of climate risk affecting many companies. The current state of scattered and inconsistent disclosures concerning climate risks, described in the following section, hinders investors’ ability to fulfill this duty.

\textsuperscript{123} See, e.g., Jackson v. Ludeling, 88 U.S. 616, 616 (1874) (“The managers and officers of a company where capital is contributed in shares, are in a very legitimate sense trustees, alike for its stockholders and its creditors, though they may not be trustees technically and in form”); Loft, Inc. v. Guth, 2 A.2d 225, 238 (Del. Ch. 1938) (“[T]he directors of a corporation stand in a fiduciary relation to the corporation and its stockholders. Their acts are subject to be tested by the familiar rules that govern the relations of a trustee to his cestui que trust”).
\textsuperscript{124} See, e.g., Harvard College v. Amory, 26 Mass. (9 Pick.) 446, 461 (1830) (stating that investors of prudence consider the “probable income, as well as the probable safety of the capital to be invested”).
\textsuperscript{125} See UNIF. PRUDENT INVESTOR ACT § 3; RESTATEMENT (THIRD) OF TRUSTS § 227(b).
\textsuperscript{126} See UNIF. PRUDENT INVESTOR ACT § 2(b); RESTATEMENT (THIRD) OF TRUSTS § 227(a).
5. **Climate Risk Is Not Being Adequately Disclosed.**

Despite growing investor demands, many companies currently release little information about their exposure to climate risk and their preparedness to address those risks. Even in industries characterized by very high greenhouse gas emissions, and in those subject to direct regulation of those emissions, registrants’ 10-K reports often contain only cursory descriptions of climate risks, if they contain any description at all. Among those companies that are currently disclosing information about climate risks, there is very little consistency in the format or level of detail of information presented. Lack of consistency in disclosures makes it difficult or impossible for investors to compare different corporations’ respective exposures to and preparedness for climate change in order to make informed investment decisions. Voluntary disclosures of climate risks by a handful of corporations, through such means as “sustainability reports,” have proven somewhat more revealing than 10-K reports. But these voluntary efforts do not meet the market’s need for consistent and uniform information that will allow investors to compare and evaluate corporations’ exposure to climate risk.

a. **SEC Filings.**

Current corporate practices on climate disclosures in SEC filings vary widely from complete silence to detailed discussions of emissions, risks and plans. The most systematic review of disclosure practices now available is contained in annual surveys prepared by Michelle Chan-Fishel for Friends of the Earth for the years 2001 through 2006. Friends of the Earth reviewed the 10-K reports of corporations in the automobile, insurance, oil and gas, petrochemical, and utilities sectors in each of those years.

This longitudinal study provides a telling perspective on the progress of climate change disclosure practices. Copies of the fifth and most recent Friends of the Earth report, *Fifth Survey of Climate Change Disclosure in SEC Filings of Automobile, Insurance, Oil & Gas, Petrochemical, and Utilities Companies*, October 2006 (hereinafter Fifth Survey), are being submitted with this petition.\(^\text{127}\) The Fifth Survey reviewed both the rate at which 112 publicly traded companies in five industrial sectors included any mention of climate risk—even if only

fragmentary—in their required disclosures, and the quality of those disclosures. The following excerpt summarizes some of its key findings:

Reporting Rates

The overall climate reporting rate is 49 percent (2005 SEC filings), compared with 26 percent in 2000. However, reporting rates between the various sectors vary substantially. Over the past five years, dramatic improvement has occurred among the oil and gas sector, which now has an impressive reporting rate of 78 percent today, compared with 37 percent five years ago. Notably, the electric utilities sector achieved complete reporting rate with 100 percent of the utilities surveyed providing climate risk; five years ago only half of the electric utilities offered climate reporting to shareholders.

Unfortunately, disclosure rates in other sectors are holding steady and remain much lower, with significant underreporting among insurance and petrochemicals sectors. Only 19 percent of insurers and 28 percent of petrochemicals companies provided climate reporting, and these rates have remained relatively flat over the past few years. Reporting rates are also low and flat among the auto industry; 26 percent of auto manufacturers, including most of the auto majors, provide climate reporting. Finally, the report finds that with the exception of the utilities industry, European companies continued to report at much higher rates than their U.S. counterparts, reflecting the advances in climate policies outside the U.S.

Quality of Reporting

The quality of climate reporting has generally improved, although it still varies widely between companies. The most common types of climate reporting include discussion of the Kyoto Protocol and other climate legislation/regulations, the financial impact of these policies on the company’s sector and business, and the firm’s response to these policies. Companies are also increasingly disclosing carbon dioxide emissions, and highlighting climate issues by dedicating discrete sections to this topic in SEC filings, or listing climate change as a Key Risk or Risk Factor. In addition, a few companies now provide governance-related information on how they are managing climate risk.

The survey also finds that companies differ in their assessment of financial risks posed by climate change. While about 16 percent of reporting companies avoided the “bottom line” question, the remainder of climate reporters tried to address how climate policies could impact them: 9 percent of reporting companies addressed this question by simply saying that it was impossible to predict the financial impact of climate risks. 49 percent of climate reporters admitted that climate-related risks could indeed pose a material adverse impact on the firm or create significant new costs, even though these costs were often difficult to estimate. 15 percent of companies
said that climate risks would have mixed results on their firm, while 11 percent concluded that global warming would pose little or no impact.

Fifth Survey, Executive Summary.

The Appendices to the Fifth Survey contain excerpts of corporate disclosures that illustrate the broad variety in the level of information disclosed. Among those companies that addressed climate change in 10-K reports, various disclosures included general descriptions of existing laws on greenhouse gases, actual emissions data, conclusory statements about the impossibility of determining the cost of potential regulations, and, in some cases, company-specific assessment of impact of greenhouse gas limitations. This inconsistent patchwork of disclosure is just the type of problem that led the major accounting firms to petition the Commission in December 2001 for clarification of the MD&A requirements. Then, the accounting firms noted that “[w]hile many registrants provide high quality, transparent disclosures, many other public companies provide boilerplate or very high-level disclosures that provide little or no meaningful information.”128 Just as the SEC responded to this request in its various Sarbanes-Oxley interpretive releases, we call on the Commission to provide guidance to clarify that companies must file meaningful, transparent disclosures on climate risk that will allow investors to make informed decisions.

The inconsistent and inadequate state of current climate risk disclosure documented in the Fifth Survey reflects corporate disclosure of environmental risks in general. In 2004, Senators Jeffords, Corzine and Lieberman requested that the Government Accountability Office review the state of environmental disclosures in SEC filings. The resulting report, Environmental Disclosure: SEC Should Explore Ways to Improve Tracking and Transparency of Information,129 made the following observations about the difficulty of assessing environmental disclosures:

Assessing companies’ disclosure of environmental information is difficult, primarily because researchers have no way of knowing what environmental information is (1) potentially subject to disclosure and (2) material in the context of a company’s specific circumstances, and therefore required to be reported. Because company records are generally not publicly available, it is virtually impossible for an external party to know what information companies should be disclosing.130

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129 GOV’T ACCOUNTABILITY OFFICE, supra note 75.
130 Id. at 13.
The GAO further noted the limitations of environmental reporting:

One of the consequences of disclosure requirements that are subject to interpretation—and of not having direct access to company records—is the difficulty of determining with any certainty whether a low level of disclosure indicates that the company does not have existing or potential environmental liabilities, has determined that such liabilities are not material, or is not adequately complying with disclosure requirements. The varying formats used for disclosure pose another problem for researchers. Much of the environmental information that is subject to disclosure can be reported in a number of different sections of the 10-K filing, including the financial statements, related footnotes, and various narrative sections of the report. In addition, the information may be stated in general or specific terms and companies often use different terminology to describe similar issues.131

Current practices on environmental disclosure all too often leave investors in the dark about the financial implications of environmental issues and liabilities. Without a clear statement from the Commission on the need to disclose climate risks, this existing, inadequate model of environmental liability disclosure provides the model for climate risk disclosures as well. This model is simply too limited to accurately reflect the financial issues raised by climate change or to provide investors the information they need to make sound investment decisions.

b. Voluntary Climate Disclosures.

In the absence of consistent reporting of climate risks in required SEC filings, investor and environmental groups have resorted to asking companies directly about their climate risks. Many of the consortiums described above in Part 4 have made requests for voluntary disclosure of climate information. Most recently, Ceres and Calvert issued a January 2007 report on the results of a questionnaire based on the Carbon Disclosure Project sent to all S&P 500 companies in 2006. The report, Climate Risk Disclosure by the S&P 500,132 made the following key findings about companies’ voluntary disclosures in response to this survey:

- **Poor Response Compared to Overseas Companies:** U.S. companies lag well behind their foreign competitors in climate risk disclosure. Only 47 percent of the S&P 500 companies answered the Carbon

131 Id. at 17. The GAO recommended that the SEC implement new practices to aid the public in evaluating deficiencies in environmental disclosures such as producing a database of SEC comment letters and company responses. The GAO also advised the SEC to coordinate more effectively with EPA on data sharing relevant to environmental disclosure. Id. at 36-37.

132 See CARBON DISCLOSURE PROJECT, supra note 62, at 1-2.
Disclosure Project questionnaire, as opposed to 72 percent among the FT 500. The companies who are likely to have received the questionnaire in past years had a higher response rate—67 percent—than the companies that received the questionnaire for the first time in 2006, 31 percent of which responded. Low response rates among U.S. companies make company-to-company comparisons—both domestically and globally—very difficult for investors evaluating climate risk.

- **Ignoring Investors’ Right to Know**: Seventy companies that responded to the questionnaire—nearly a third of the respondents—did not allow their responses to be made public. As a result, only the 225 signatories to the CDP have access to those responses. Given that climate change poses risks to all investors, it would be greatly preferable for companies to make their disclosures public.

- **Poor GHG Emissions Management**: Eighty percent of the companies that responded (182 companies) addressed the need to reduce greenhouse gas emissions, but only a quarter (59 companies) disclosed measurable emissions reductions targets and specific time frames for reduction.

- **Physical Impacts Not on Radar Screen**: Nearly 75 percent of the responding companies (171 companies) acknowledged bottom-line risks associated with extreme weather events such as hurricanes, fires and floods. However, very few companies link more extreme weather to climate change and fewer still—only four percent—disclosed strategies for mitigating and adapting to the growing physical impacts from climate change.

- **Healthcare, Banks, Telecoms, and Others Ignoring Climate Change**: Companies in the highest greenhouse gas emitting sectors such as the electric power and oil industries showed the highest quality disclosure, while most companies in sectors with lower emissions, such as healthcare, retailers, and banks, have been largely unresponsive to the financial risks they face from climate change.

- **Responses Inadequate Relative to the Global Framework**: When compared with the Global Framework for Climate Risk Disclosure, S&P 500 companies that responded to the questionnaire provided only about one quarter of the information investors are looking for. Companies provided more information about qualitative measures such as corporate governance than they did about quantitative measures such as emission reduction goals or the impact of regulations that would impose a cost of carbon.
Some companies that have not included any information on climate risks in their SEC filings have responded to requests for voluntary disclosure with substantive information. For example, Friends of the Earth reports that Chevron did not mention climate change in its 2005 SEC filings, but responded to a Carbon Disclosure Project survey that year with “a fourfold action plan that is now in its fourth year.”

Other companies follow this same pattern of leaving climate risks out of SEC filings but responding to specific requests for climate information. While we applaud those companies that participate in voluntary reporting and that respond to information requests on climate risks, these venues by themselves will not meet the market’s demand for standardized, transparent information that is freely available to all investors.

Some companies have chosen to include climate risk in voluntary sustainability reports or more general corporate responsibility reports, often filed in response to shareholder activism. These outlets for informal disclosure often include additional information on environmental trends and business strategies. Sustainability reports often have a public relations cast, and are primarily directed towards an audience of environmental interest groups and the general public, rather than investors. These reports more often acknowledge the science of climate change and discuss efforts to build awareness rather than presenting the specific effects of climate change on their performance and operations. A recent study found that “while almost all companies reported on climate change in their sustainability reports, on closer examination companies reported far more on potential opportunities rather than financial risks for their companies from climate change.”

Moreover, these forms of disclosure have no standardized format or repository to allow investors to make comprehensive, rigorous judgments to support their investment decisions.

Like the cooperative voluntary efforts to standardize the format and content of climate risk disclosure, sustainability reports provide a solid foundation on which the companies can base the disclosures required under the Commission’s existing reporting requirements. But in order to provide the information investors require, reporting must be consistent and must support comparisons among companies. The 10-K report is and will remain the gold standard for reporting information to investors, and investors need to know that material information relating

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133 FIFTH SURVEY, supra note 127, at 36.
134 GRI/KPMG STUDY, supra note 43, at 5.
to companies’ performance and operations will be in those required reports. Given the significance of climate risks for many corporations’ financial position and competitive prospects in a new, carbon-constrained environment, reporting on climate issues is no longer a mere virtue, but a legal obligation and a necessity for investors.

6. The Commission Should Clarify Corporate Obligations to Disclose Climate Risk.
   a. The Commission Should Issue an Interpretive Release Clarifying the Application of Existing Law to Climate Risks and Setting Forth the Elements of Climate Risk Disclosure.

   The Commission has on many occasions issued guidance to explain its disclosure rules, and to ensure that corporate disclosure practices comply with statutory and regulatory standards and take account of new legal and other developments. We join past petitioners who have requested an interpretive release affirming the obligation to disclose material climate-related information.

   As described above, the current state of climate risk disclosure is inconsistent and inadequate. There is apparently little consensus among reporting corporations, their auditors and lawyers about what is required in climate disclosures. As a result, investors are being deprived

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of the information critical to their ability to assess firms’ preparedness to adjust to the regulatory and physical implications of climate change and to make informed investment decisions. The current disarray in climate disclosures merits Commission action beyond a simple statement that climate risk is, for instance, a known trend or uncertainty that must be addressed in MD&A (although the state of disclosure suggests that even that limited statement would provide some guidance). We urge the Commission to go further and to set forth the elements of disclosure appropriate for those companies that determine that climate risk has a material impact on their performance and operations.

Specifically, we respectfully request the Commission issue an interpretive release clarifying that registrants, in preparing their periodic mandatory public disclosures, must carefully review the implications of climate change for their financial condition and operations, and must disclose climate risks that are material. As in other areas, the nature of the disclosures that are required will depend upon the circumstances. For some registrants, climate risks may qualify as material contingent liabilities that must be disclosed on the balance sheet or in notes to financial statements. In other instances, registrants will be obligated to discuss climate risks in their disclosures under Items 101, 103, or 303 to Regulation S-K, particularly as part of MD&A disclosures.

The growing empirical evidence and understanding of global warming and the rapid growth of greenhouse gas regulation at all levels of government in recent years mean that no registrant—including those in sectors with relatively low direct emissions that are subject to fewer obvious climate-related risks in the short term—can brush climate change aside as, categorically, too remote or uncertain to have material consequences that must be disclosed to investors. Thus, the Commission’s guidance should explain that all registrants should review the adequacy of their internal mechanisms for gathering information about, and assessing, climate risk, and should establish institutional mechanisms necessary to ensure careful and well-informed review of potential climate risks. As the Commission has explained, the assessment of materiality requires thorough consideration of all relevant information, whether or not that information itself meets the materiality standard.136

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To identify and evaluate climate risks related to greenhouse gas regulation, a registrant must be informed about the magnitude of its greenhouse gas emissions. Registrants will therefore need, as part of their examination of potentially material climate risks, to determine the current and projected greenhouse gas emissions associated with their facilities and operations. Because one of the ways in which greenhouse gas regulation may affect a firm is by increasing costs of purchases or distribution, registrants should review greenhouse gas emissions associated with their entire production cycle. Registrants should also review the requirements of any international, national, state, or local greenhouse gas regulations that are in place, or probable, in the jurisdictions in which they operate, and assess the impact of those regulations, in light of their greenhouse gas emissions, upon their financial condition and operations. An understanding both of current and projected greenhouse gas emissions levels, and of present and probable regulations concerning greenhouse emissions, is a necessary prerequisite for the registrant to determine whether it faces “material opportunities, challenges and risks” relating to climate change, and to inform the analysis in its disclosures.

The Commission should clarify that, after performing a close and well-informed review of the full range of relevant information concerning potential climate risks, registrants must disclose any such risks that are found to be material, including:

- Physical risks associated with climate change;
- Financial risks and opportunities associated with present or probable greenhouse gas regulation; and
- Legal proceedings relating to climate change.

The guidance we propose is similar in form to guidance the Commission and its staff have previously provided concerning various issues relating to required disclosures under the securities laws and regulations. It is vitally important, in light of the inadequate state of climate disclosure to date and the recent developments underlining the importance of climate risk for many companies, that the Commission clarify for registrants that climate risk demands the same careful attention given to other forms of risk. Further discussion of the guidance we request is set forth in Appendix G.
b. **Complying with Climate Risk Disclosure Requirements Will Not Be Unduly Burdensome.**

Requiring companies to disclose climate-related information in their mandatory reports in accordance with long-settled legal principles will not impose an undue burden. The inherent flexibility of the Commission’s disclosure regulations and the materiality standard allows firms to tailor disclosure to their particular circumstances. As Commission Staff has stated, “[c]ompanies must determine, based on their own particular facts and circumstances, whether disclosure of a particular matter is required in MD&A.”

Disclosure of climate risks requires, as a first step, assembling the relevant information—including current and projected emissions levels, applicable regulatory requirements, and information about climate-related physical and market risks that may affect the company—and a careful review of the implications of that information for the company’s operations and financial condition.

Tabulating the company’s greenhouse gas emissions is a straightforward exercise that is an indispensable preliminary step toward a meaningful assessment of whether climate change poses risks to a corporation. The Greenhouse Gas Protocol, a peer-reviewed mechanism developed by the World Business Council for Sustainable Development and the World Resources Institute, with input from hundreds of experts from business, government, and accounting, contains detailed procedures for calculating a company’s greenhouse emissions. This protocol has been adopted by the International Standards Organization and used by hundreds of companies and industry groups to measure their greenhouse gas emissions.

Several states already require that some companies calculate and report their greenhouse gas emissions or have passed laws that will impose such requirements on various sources of

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137 Id.


140 Some trade associations, including the International Aluminum Institute and the International Council of Forest and Paper Associations, have used the Protocol to develop industry-specific calculation tools.
greenhouse gas emissions within their borders.\textsuperscript{141} Thirty-five states have joined the Climate Registry and committed to encourage emissions sources within their boundaries to report and verify their greenhouse gas emissions to the registry.\textsuperscript{142} Under the acid rain program created by the Clean Air Act Amendments of 1990, owners and operators of electrical generating units above 25 megawatts are already required to collect and report to the Environmental Protection Agency carbon dioxide emissions data.\textsuperscript{143} Tabulation and reporting of greenhouse gas emissions will invariably be required under any federal greenhouse gas legislation. The high percentage of companies that already calculate their greenhouse gas emissions demonstrates that this is an entirely feasible and not burdensome task for corporations to undertake. According to the Carbon Disclosure Project, 73 percent of the 360 companies in the FT500 that responded to the CDP survey reported that they already disclose their greenhouse gas emissions in some forum.\textsuperscript{144}

As noted, registrants must have this basic information concerning current and projected greenhouse gas emissions in order to assess their risks and opportunities in the new physical and legal climate.

Assessment of whether the registrant faces material risks requiring public disclosure does not impose any legal obligations beyond those long required under the securities laws and the Commission’s regulations and guidance. The assessment of materiality of climate related risks is the same process that registrants have undertaken with respect to other risks. These are risks that responsible managers would surely examine even in the absence of regulatory requirements: potential physical threats to assets and regulatory and market developments that are likely to have material effects on the company’s financial condition and operations.

Climate risk is in this way no different from other known trends and uncertainties that the Commission requires companies to address, as set forth in past interpretive releases and the precedents discussed above in Section 2: “[A] disclosure duty exists where a trend, demand, commitment, event or uncertainty is both presently known to management and reasonably likely

\textsuperscript{141} See Appendix B.
\textsuperscript{143} See 40 C.F.R. § 75.10 (2007).
to have material effects on the registrant’s financial condition or results of operation.” The fact that some companies have been disclosing climate risk in their SEC filings, in voluntary survey responses, and in sustainability reports, demonstrates that climate disclosure is not beyond the reach of registrants.


For investors, this moment in the economy’s response to climate change is critical. Policies and practices companies adopt, and strategic business decisions they make now, will greatly affect their position as greenhouse gas regulations and the physical impacts of climate change become more pervasive. Companies that take steps now to minimize climate risk and exploit new opportunities afforded by climate change will be far better positioned than those that are slow coming to terms with climate issues. As with other major new developments with broad impacts for the entire business world—such as the transformation in information technology or rising health care costs—investors need to identify firms that are leading and those that are trailing their competitors. Inconsistent and incomplete disclosure of climate risk prevents investors from fully evaluating and comparing among investments. Every earnings season that passes without consistent disclosure of climate risk harms investors.

As explained above, the relief we seek consists of clarification of existing regulatory standards rather than new substantive law. Such clarification could consist simply of a clear affirmation that (1) in light of recent developments, registrants must give close and well informed attention to potential climate risks that may affect them, and (2) registrants must, consistent with established law, disclose material information relating to the impacts of climate change and greenhouse gas regulation upon their financial condition and operations. We believe that the guidance we seek, and the prompt action we call for, would not entail an undue burden for the Commission or its staff, particularly when measured against the large benefits this guidance would have for investors and markets in need of information on climate risk.

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Respectfully submitted,

California Public Employees' Retirement System

John Chiang
California State Controller

California State Teachers’ Retirement System

Bill Lockyer
California State Treasurer

Mindy Lubber
President
Ceres
    Counsel for Ceres
    Jim Coburn

Fred Krupp
President
Environmental Defense
    Counsel for Environmental Defense
    Sean H. Donahue
    Nancy Spencer
    Vickie Patton

Karina Litvack
Director, Head of Governance & Sustainable Investment
F&C Management

Alex Sink
Chief Financial Officer
State of Florida

Michelle Chan-Fishel
Friends of the Earth

Jonathan Miller
Kentucky State Treasurer

David G. Lemoine
Maine State Treasurer

Nancy K. Kopp
Maryland State Treasurer
Lance E. Lindblom
President, CEO & Trustee
The Nathan Cummings Foundation

Orin Kramer
Chair
New Jersey State Investment Council

William C. Thompson, Jr.
New York City Comptroller

Andrew M. Cuomo
Attorney General
State of New York

Thomas P. DiNapoli
New York State Comptroller
New York State Common Retirement Fund

Richard Moore
Treasurer
State of North Carolina

Randall Edwards
Treasurer
State of Oregon

Julie Gorte
Senior Vice President for Sustainable Investing
Pax World Management Corporation

Frank T. Caprio
General Treasurer
State of Rhode Island

Jeb Spaulding
Treasurer
State of Vermont

DATE:  September 18, 2007
PETITION SIGNATORIES

California State Controller, John Chiang

The Controller serves as the independent Chief Fiscal Officer of California, the eighth largest economy in the world. As the state's fiscal watchdog, the Controller provides sound fiscal control over more than $100 billion in annual receipts and disbursements of public funds, uses audit authority to uncover fraud and abuse of taxpayer dollars, and provides fiscal guidance to local governments. The Controller presides over the Franchise Tax Board, and is a trustee of the California Public Employees' Retirement System (CalPERS) Board and the California State Teachers' Retirement System (CalSTRS) Board, the nation's first and second largest public pension funds with a combined portfolio of $400 billion. The Controller serves on a total of 76 state boards and commissions that significantly impact the state's economic health in areas such as development, employment, housing and the environment.

California Public Employees' Retirement System

CalPERS is the nation's largest public pension fund with more than $245 billion in assets. It provides retirement and health benefits to approximately 1.5 million California State, local agency and schools employees and their families. For more about CalPERS, visit www.calpers.ca.gov.

California State Teachers’ Retirement System

With a $170 billion investment portfolio, the California State Teachers’ Retirement System is the second-largest public pension fund in the United States. It administers retirement, disability and survivor benefits for California's 795,000 public school educators and their families from the state's 1,400 school districts, county offices of education and community college districts.

California State Treasurer, Bill Lockyer

The Treasurer serves on the boards of the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS). With more than $390 billion in combined assets, CalPERS and CalSTRS rank among the world's
largest institutional investors. As such, they hold substantial stakes in the U.S. and global economies, and in the risk profiles of the corporations in which they invest. As a member of both funds’ governing boards, the Treasurer shares their interests. The Treasurer's Office also manages the State's Pooled Money Investment Account (PMIA), which has $65.6 billion in taxpayer funds on hand at the end of June 2007. The PMIA invests monies on behalf of state government and more than 2,606 local jurisdictions. Additionally, the Treasurer chairs the governing board of California's 529 college savings plan, called ScholarShare. Currently, ScholarShare has a portfolio of 190,000 accounts and $2.6 billion in assets.

Ceres

Founded in 1989, Ceres is a leading network of investors, environmental groups and other public interest organizations working with companies to address sustainability challenges. Ceres also directs the Investor Network on Climate Risk, comprised of more than 50 institutional investors who collectively manage $4 trillion in assets.

Environmental Defense

Environmental Defense is a leading national nonprofit organization representing more than 500,000 members. Since 1967, we have linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. Environmental Defense is dedicated to protecting the environmental rights of all people, including future generations. Among these rights are access to clean air and water, healthy and nourishing food, and a flourishing ecosystem. Guided by science, Environmental Defense evaluates environmental problems and works to create and advocate solutions that win lasting political, economic and social support because they are nonpartisan, cost-efficient and fair. Environmental Defense is committed to achieving climate stabilization.

F&C Management

F&C Management is a United Kingdom-based active manager with just over $200 billion in assets under management (as of June 30, 2007). With headquarters in London, F&C has substantial holdings in US corporations. In addition, F&C has a Boston office from which it directs all proxy voting and corporate governance activity for its US holdings. As part of its
standard investment process, F&C has a team of analysts that actively considers the risks and opportunities that companies face from climate change and other environmental and social issues that are material to long-term shareholder value.

**Florida Chief Financial Officer, Alex Sink**

Elected in November 2006, Chief Financial Officer Alex Sink is responsible for monitoring the state’s fiscal health and manages more than $74 billion in tax revenue coming in and out of state government annually. The former President of the Bank of America for Florida, Sink’s professional experience and community service have molded her into a champion for fiscal responsibility and accountability. CFO Sink administers the Department of Financial Services, which assists hundreds of thousands of consumers annually with financial service issues, including banking, securities and insurance. As the Chief Financial Officer, Sink serves as a member of the Florida Cabinet, which oversees insurance and banking regulation, the management and acquisition of state lands and 14 state agencies. A member of INCR since early 2007, CFO Sink is also one of three members of the Board of Trustees who directs the State Board of Administration. The SBA manages 30 investment funds, comprising over $184 billion in assets.

**Friends of the Earth**

Friends of the Earth is the U.S. voice of an influential, international network of grassroots groups in 70 countries. Founded in San Francisco in 1969 by David Brower, Friends of the Earth has for decades been at the forefront of high-profile efforts to create a more healthy, just world. Our members were the founders of what is now the world's largest federation of democratically elected environmental groups, Friends of the Earth International. Friends of the Earth is a leading expert on the issue of climate risk reporting in SEC filings, having produced five studies on the topic from 2001-2006.

**Kentucky State Treasurer, Jonathan Miller**

The Kentucky Treasurer’s Office was created in 1792 in the state’s Constitution. The Treasury Office is responsible for acting in the best interest of taxpayers and investing in the future of the state. The Treasury Office records, monitors and reconciles all transactions in the
state’s depository and checking accounts, assists constituents in locating unclaimed property, makes deposits of incoming revenues, and records, verifies, and pays all federal, state and local withholding taxes for employees of the Commonwealth.

**Maine State Treasurer, David G. Lemoine**

The Treasurer manages cash and debt for the State of Maine, forecasts revenues for cash pool interest income, and manages the State's Unclaimed Property program. The Treasurer also provides investment oversight for NextGen, Maine's College Investing Plan and serves on the boards of the Maine Municipal Bond Bank, Maine State Housing Authority, Maine State Retirement System, Finance Authority of Maine, Adaptive Equipment Loan Program, Maine Health and Higher Education Facilities Authority, Maine Governmental Facilities Authority, Northern Maine Transmission Corporation, Maine Education Loan Authority, the Maine Public Utility Financing Bank, and the Lifelong Learning Accounts Board.

**Maryland State Treasurer, Nancy K. Kopp**

The State Treasurer is responsible for the management and protection of State funds and property. In this capacity, the Treasurer selects and manages the depository facilities for State funds, issues or authorizes agents to issue payments of State funds, invests excess funds, safekeeps all State securities and investments, and provides insurance protection against sudden and unanticipated damage to State property or liability of State employees. The State Treasurer plans, prepares, and advertises State of Maryland General Obligation bond issues and, through the Capital Debt Affordability Committee, reviews on a continuing basis the size and condition of State tax-supported debt and other debt of State units. The State Treasurer annually reviews the total amount of State debt that prudently may be authorized for the next fiscal year.

**The Nathan Cummings Foundation**

The Nathan Cummings Foundation is a private grant-making foundation committed to democratic values and the creation of a socially and economically just society. Through its endowment, currently valued at approximately $550 million, the Foundation holds shares in a broad swath of American corporations. NCF believes that the way in which these corporations approach major public policy issues can have important implications for long-term shareholder
value. The Foundation actively votes its proxies and, over the last five years, has successfully used non-binding shareholder resolutions to focus corporate attention on a number of environmental and social issues.

**New Jersey State Investment Council, Orin Kramer, Chair**

New Jersey's Division of Investment is one of the 10 largest public pension funds in the nation, with pension assets of $80 billion, invested to provide retirement benefits for more than 700,000 current and future retirees from public sectors across the state. The New Jersey Investment Council is the 13-member board charged with oversight and establishing policies and procedures for the Division of Investment.

**New York City Comptroller, William C. Thompson, Jr.**

The New York City Comptroller, an independently elected official, is the Chief Financial Officer of the City of New York; the investment adviser to the five New York City pension funds, with collective assets of $111 billion; and a trustee of four of the five funds. The mission of the office includes ensuring the financial health of New York City by advising the Mayor, the City Council, and the public of the City's financial condition. The Comptroller also makes recommendations on City programs and operations, fiscal policies, and financial transactions; performs budgetary analysis; audits City agencies; registers proposed contracts; oversees budget authorization; determines credit needs, terms, and conditions; prepares warrants for payment; and issues and sells City obligations.

**New York State Attorney General, Andrew M. Cuomo**

The New York State Attorney General is the State’s chief law officer and is charged with enforcing environmental, investor protection, consumer, and other laws to protect the health and safety of New York’s citizens, the environment they live in, and the economy of the State that contains the world’s most important financial center. To carry out these responsibilities, the Attorney General conducts investigations, litigates in various courts and before regulatory and administrative agencies, and participates in rulemaking proceedings before governmental agencies.
New York State Comptroller and New York State Common Retirement Fund, Thomas P. DiNapoli

The New York State Comptroller is the sole Trustee of the New York State Common Retirement Fund ("Fund") serving over 1 million pensioners, beneficiaries and their families. The Comptroller is responsible for managing, preserving and growing the Fund and does so by investing in a number of asset classes to maximize returns, including bonds and stocks of publicly traded companies. The Fund’s investment portfolio has assets totaling $154 billion making it the third largest public pension fund in the United States.

North Carolina State Treasurer, Richard Moore

Now in his second term as State Treasurer, Richard Moore is sole fiduciary for more than $75 billion in public monies and state investments, oversees the pension funds for more than 780,000 public sector employees, and manages the debt of state and local governments. The Wall Street Journal and credit-rating agency Standard & Poor’s recently named North Carolina as having the second-best funded public pension system in the United States, a testament to Moore’s responsible management. In 2004, he was honored as a Top Public Official of the Year by Governing Magazine for his national leadership and guidance of the state’s pension fund. The Treasurer also serves on many boards and commissions, including the State Banking Commission, which he chairs, and the state boards of Education and Community Colleges.

Oregon State Treasurer, Randall Edwards

The Office of the Oregon State Treasurer is a highly sophisticated organization with a wide range of financial responsibilities, including managing the investment of state funds, issuing all state bonds, serving as the central bank for state agencies, and administering the Oregon 529 College Savings Network. The Oregon State Treasurer’s Office is managed like a business, striving to save taxpayers money and earn the highest possible return on investments. State Treasurer Randall Edwards is a constitutional officer and a statewide elected official. He serves as the chief financial officer for the State and is responsible for the prudent financial management of more than $79 billion. Edwards, who took office in January 2001, is serving his second four-year term; the office is limited to two terms.
Pax World Management Corporation

Pax World, based in Portsmouth, New Hampshire, seek to invest in forward-thinking companies with sustainable business models. To identify those companies, Pax combines rigorous financial analysis with equally rigorous environmental, social and governance analysis. The result, it believes, is an increased level of scrutiny that helps it identify better-managed companies that are leaders in their industries; that meet positive standards of corporate responsibility; and that focus on the long term. Pax World avoids investing in companies that are significantly involved in the manufacture of weapons or weapons-related products, manufacture tobacco products, are involved in gambling as a main line of business, or engage in unethical business practices. Pax World's primary goal is to produce competitive returns for its investors. By integrating environmental, social and governance criteria - what it calls "sustainability" criteria - into its investment approach, the funds also seek to promote peace, protect the environment, advance equality and foster sustainable development.

Rhode Island General Treasurer, Frank T. Caprio

The General Treasurer receives and disburses all state funds, issues general obligation notes and bonds, manages the investment of state funds and oversees the retirement system for state employees, teachers and some municipal employees. He is also responsible for the management of the Unclaimed Property Division, the Crime Victim Compensation Program and the state-sponsored 529 college savings plan, the CollegeBoundfund.

Vermont State Treasurer, Jeb Spaulding

The Vermont State Treasurer’s Office is responsible for the State’s cash management and banking functions, investment of short-term and trust funds, bond issuance and debt management, administration of three public retirement systems and pension funds, operation of the State’s unclaimed property program, and improving the financial literacy of Vermonters. In addition, the State Treasurer serves ex-officio on a variety of boards for quasi-public agencies and authorities, and also advises State policymakers on fiscal and economic issues.
THE SCIENCE OF CLIMATE CHANGE

The Basics of Climate Change Science

Climate change refers to a long-term rise in global average temperature. More specifically, it refers to the ongoing rise in temperature that started a century ago and is believed to be caused mainly by greenhouse gas pollution. ‘Greenhouse gases’ trap heat from the sun at the Earth’s surface. Human activities are rapidly increasing the amount of greenhouse gases in the atmosphere, causing more heat to be trapped and increasing global temperatures. Rising temperatures have already resulted in an increase in extreme weather events, loss of sea ice and glaciers, rising sea level, and harm to wildlife. But it is not too late to avoid the most severe consequences of climate change: a sharp reduction of greenhouse gas pollution would significantly slow global warming and reduce the likelihood of dangerous and irreversible impacts.

Scientific Consensus on the Impacts of Climate Change

The recently released Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, a comprehensive review of the state-of-the-knowledge on climate change, highlights the overwhelming scientific consensus that human activities are contributing to changes in the climate system. This report reinforces the conclusions outlined in existing consensus statements by respected scientific organizations, such as the statement on climate change from 11 different national scientific academies, including the United States, the official position statement by the American Geophysical Union, and the official position statement by the American Meteorological Society.

The IPCC's Summaries for Policymakers from each of its three working groups outline the scientific aspects of climate change, the ongoing and predicted impacts, and opportunities for mitigation and adaptation. These summaries state that:

- "Warming of the climate system is unequivocal, as is now evident from observation of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level."\(^{149}\)

- "Most of the observed increase in global average temperatures since the mid-20\(^{th}\) century is very likely due to the observed increase in anthropogenic [human-produced] greenhouse gas concentrations."\(^{150}\)

- "At continental, regional, and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones."\(^{151}\)

- "Impacts of climate change will vary regionally but, aggregated and discounted to the present, they are very likely to impose net annual costs which will increase over time as global temperatures increase."\(^{152}\)

- "The most vulnerable industries, settlements and societies are generally those in coastal river flood plains, those whose economies are closely linked with climate-sensitive


\(^{150}\) Id. at 10. According to the Summary for Policymakers: "…the following terms have been used to indicate the assessed likelihood, using expert judgment, of an outcome or result…Very likely >90%, Likely >66%." Id. at 3 n.6.

\(^{151}\) Id. at 7.

resources, and those in areas prone to extreme weather events, especially where rapid urbanization is occurring.\textsuperscript{153}

- "Both bottom-up and top-down studies indicate that there is substantial economic potential for the mitigation of global GHG emissions over the coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels."\textsuperscript{154}

The IPCC is "the leading body for the assessment of climate change, established by the United Nations to provide the world with a clear, balanced view of the present state of understanding of climate change."\textsuperscript{155} IPCC reports are written by teams of authors nominated by governments and international organizations. Over 800 contributing authors and 450 lead authors were involved in the writing of the Fourth Assessment, and more than 2,500 scientific expert reviewers were involved in the review process. Each Summary for Policymakers is approved line by line by relevant experts and government officials.\textsuperscript{156}

**Other resources**

In addition to the attached IPCC reports, excellent and accessible summaries of the science of climate change can be found from the following resources:

- NASA’s Earth Observatory website on Global Warming gives a basic overview of climate change science and findings:
  http://earthobservatory.nasa.gov/Library/GlobalWarmingUpdate/

- The National Center for Atmospheric Research maintains a website that explains the basics of weather and climate science: http://www.eo.ucar.edu/basics/index.html

\textsuperscript{153}Id. at 12.
\textsuperscript{156}Id.
• The IPCC has published a pdf of Frequently Asked Questions that cover a number of climate science topics: http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf

• Spencer R. Weart’s Discovery of Global Warming materials, published by the of the American Institute of Physics, give a thorough history of climate change research and science: http://www.aip.org/history/climate/
REGIONAL AND STATE REGULATORY ACTIONS CONCERNING GREENHOUSE GAS EMISSIONS

This appendix illustrates the extensive geographic and programmatic diversity of state actions to reduce greenhouse gas emissions and the considerable reach of regulatory actions that currently affect business and investment decisions. It is by no means an exhaustive list of state-level climate change policies or programs.

Regional Initiatives

- **Regional Greenhouse Gas Initiative** [≈ 18.9% U.S. GDP; 16.4% U.S. population]
- **Western Climate Initiative** [≈ 19.6% U.S. GDP; 18.6% U.S. pop]
- **WGA Clean and Diversified Energy Initiative** [≈ 34.7% U.S. GDP; 33.2% pop]
- **Powering the Plains** [≈ 4.9% U.S. GDP; 5.1% U.S. population]

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Regional Greenhouse Gas Initiative (RGGI): A consortium of nine states working toward the implementation of a cap-and-trade program aimed at reducing the CO_2 emissions from Northeastern power plants (it may be extended to cover other emissions sources in the future). The first mandatory compliance period, which requires annual emissions reporting, begins in 2009; a full evaluation of power plant performance is to be done in 2012. Compliance with the emissions cap set by the initiative will be enforced by the state environmental agencies. Participants in RGGI currently include Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, and Vermont. The District of Columbia, Massachusetts, Pennsylvania, Rhode Island, the Eastern Canadian Provinces, and New Brunswick are observers in the process.

Western Climate Initiative (WCI): A collaboration between western states and provinces (established in February, 2007) to set regional greenhouse gas emissions goals, develop a multi-sector market-based mechanism to support targeted emissions reductions, and participate in a greenhouse gas emissions registry to enable tracking, management, and crediting to reduce greenhouse gas emissions. The initiative has an aggregate emissions reduction goal of 15% below 2005 levels by 2020. Members of WCI also either have adopted or are committed to adopting clean tailpipe standards for the regulation of automobile emissions. Arizona, California, New Mexico, Oregon, Utah, Washington, and the Canadian provinces of British Columbia and Manitoba are members of the Initiative. Colorado, Kansas, Nevada, and

Wyoming are currently participating as observers in the WCI, as well as the Canadian provinces of Ontario, Saskatchewan, and Quebec, and the Mexican state of Sonora.165

**Other Regional Initiatives:** Several other regional initiatives help coordinate the greenhouse gas emissions reduction efforts of multiple states. Some of these are listed here:

- **Powering the Plains:** A roadmap and policy directive aimed at enabling states of the upper Midwest to transition to a carbon-neutral energy infrastructure by 2055. Primarily involves Iowa, Manitoba, Minnesota, North Dakota, South Dakota, and Wisconsin.166

- **Western Governors’ Association Clean and Diversified Energy Initiative:** The Western Governor’s Association initiative to support expansive development of energy efficiency, renewable energy resources, and advanced coal systems, including the management and reporting of progress toward outlined goals.167

- **U.S. Mayors Climate Protection Agreement:** An agreement between municipalities to reduce carbon emissions and support energy conservation and efficiency programs. Currently participating are over 530 mayors from all 50 states and the District of Columbia, representing more than 66 million people.168

**Mandatory State Statutes and Regulations Regarding Greenhouse Gas Emissions**

California’s Global Warming Solutions Act of 2006 (AB 32):169 The primary purposes of the bill are two-fold: (1) to establish a statewide greenhouse gas emissions cap of 1990 levels by 2020, and (2) to require the development of mandatory emissions reporting rules—to be implemented by January 1, 2008—in order to facilitate the management of emissions reduction

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programs, including market-based mechanisms. Any mechanisms employed in order to reduce emissions are to be consistent and able to be integrated with other state or regional initiatives. This means, among other things, that the cap-and-trade system that is developed under AB 32 and by Executive Order of the governor must be able to be tied to the RGGI trading system.

**Hawaii’s Statewide Greenhouse Gas Emissions Cap** (H.B. 226, 2007). This law establishes a statewide cap on greenhouse gas emission providing that the emissions be reduced to 1990 levels or lower by 2020 and providing for implementing regulatory authority to achieve the goal.


**Power Sector Regulation:** Several states have policies to reduce greenhouse gas emissions from the power sector. A few examples follow:

- **California:** SB 1368, *signed into law* on September 29, 2006, codified rulemaking processes under way in California to establish a greenhouse gas emissions performance standard for electric generating units at a rate that is no higher than the rate of emissions of greenhouse gases for combined-cycle natural gas baseload generation. Regulatory agencies implementing this law have recently established a limit of 1100 pounds of carbon dioxide per MW-hour. The standard applies to any long-term contract for baseload power of five years or more. Carbon dioxide injected in geologic formations so as to prevent the release into the atmosphere shall not be counted as emissions of the power plant and thus does constitute emissions reductions in determining compliance with the standard. These rules took effect February 1, 2007 for investment-owned utilities and very recently for municipal utilities.
Appendix C

- **Washington**: S.B. 6001, signed into law on May 3, 2007, enacts an emissions performance standard for baseload generation similar to California's S.B. 1368. Under the standard, all baseload generation for which utilities enter into long-term contracts must meet a greenhouse gas emissions standard of 1,100 pounds CO₂ per megawatt-hour, beginning on July 1, 2008.

- **Montana**: H.B. 25 creates a CO₂ emissions performance standard for electric generating units constructed after January 1, 2007. H.B. 25 prohibits the state Public Utility Commission from approving electric generating units primarily fueled by coal unless a minimum of 50% of the CO₂ produced by the facility is captured and sequestered.


- **Massachusetts**: Newly established emissions performance standard for the state’s power plants [310 MASS. CODE REGS. 7.29 (2007)]

States also provide for greenhouse gas emissions reductions in the power sector through other means, such as the following:

- **Public Benefit Funds**: Nearly half of states manage funds collected through utility contributions or electrical bill charges that support renewable energy or energy efficiency development and implementation.¹⁷⁰

- **Net Metering Programs**: Net metering provisions charge electricity consumers for the difference between on-site generation and offsite consumption from the grid. All but nine states have some form of net metering program, and 21 have statewide net metering.¹⁷¹

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¹⁷⁰ Pew Ctr. on Global Climate Change, States with Public Benefit Funds, http://www.pewclimate.org/what_s_being_done/in_the_states/public_benefit_funds.cfm.

¹⁷¹ Pew Ctr. on Global Climate Change, States with Net Metering Programs, http://www.pewclimate.org/what_s_being_done/in_the_states/net_metering_map.cfm.
State Greenhouse Gas Emissions Standards for Motor Vehicles: 172

California adopted AB 1493 (Pavley) in 2002, directing the California Air Resources Board (CARB) to “develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles” (Sec. 3). 173 CARB promulgated rules pursuant to this directive in 2004. Since then, 14 states have moved to adopt California’s motor vehicle greenhouse gas emission regulations (colored here in blue): Arizona, Connecticut, Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington. 174 Collectively, these states and California account for over 40% of the U.S. GDP, 175 and 40% of the U.S. population. 176

Mandatory Emissions Reporting:

- Iowa – passed legislation requiring mandatory greenhouse gas reporting and inventory which will be voluntarily tied to a greenhouse gas registry [S.F. 485, 82d Gen. Ass’y, 1st Sess. (2007) (enacted)]

- Maine – Rules are currently in development that would append greenhouse gas emissions to required reporting under Chapter 137, the state’s Emissions Statements provisions.

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172 Section adapted from Pew Ctr. on Global Climate Change, States Poised to Adopt California Vehicle GHG Standards, http://www.pewclimate.org/what_s_being_done/in_the_states/vehicle_ggh_standard.cfm.

173 The text of the bill is available from the California Air Resources Board, http://www.arb.ca.gov/cc/ab1493.pdf.


• New Jersey – The New Jersey Division of Air Quality expanded its Emissions Statement Program in 2003 to require reporting of CO\textsubscript{2} and methane from stationary emissions sources [http://www.nj.gov/dep/aqm/ESadoption.pdf].

• Wisconsin – The state’s Department of Natural Resources requires CO\textsubscript{2} emissions reporting beyond the threshold level of 100,000 tons per year [NR 438.03 (2005)].

Renewable Portfolio Standards: \textsuperscript{177}

Renewable portfolio standards (RPSs) require electrical utilities within a jurisdiction to generate a certain percentage of their electricity from renewable sources by a given deadline. To date, twenty-five states as well as the District of Columbia have adopted some form of RPS. RPSs have been adopted by states covering over 65\% of the U.S. GDP and 60\% of its population.

\textsuperscript{177} Section adapted from Pew Ctr. on Global Climate Change, States with Renewable Portfolio Standards, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm.
Statewide Emissions Reduction Goals

AZ: 2000 levels by 2020; 50% below 2000 levels by 2040.

CA: 2000 levels by 2010; 1990 levels by 2020; 80% below 1990 levels by 2050.

CT: 1990 levels by 2010; 10% below 1990 levels by 2020; long term reduction goal of 75% below 1990 levels.

FL: 2000 levels by 2017; 1990 levels by 2025; 80% reduction of 1990 levels by 2050.

HI: 1990 levels by 2020.

IL: 1990 levels by 2020; 60% below 1990 levels by 2050.

ME: 1990 levels by 2010; 10% below 1990 levels by 2020; long-term goal of 75-80% below 2003 levels.


MN: 15% below 2005 levels by 2015; 30% below 2005 by 2025; 80% below 2005 by 2050.

NH: 1990 levels by 2010; 10% below 1990 by 2020; 75-85% below 2001 long-term.

NJ: 1990 levels by 2020; 80% below 2006 levels by 2050.

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178 Adapted from Pew Ctr. on Global Climate Change, A Look at Emissions Targets: United States – State & Regional, http://www.pewclimate.org/what_s_being_done/targets.


180 Exec. Order No. S-03-05.


182 Exec. Order No. 07-127.


187 S.F. No. 145, 2d Engrossment, 85th Legis. Sess. (Minn. 2007).


**NM:** 2000 levels by 2012; 10% below 2000 by 2020; 75% below 2000 by 2050.  
**NY:** 5% below 1990 by 2010; 10% below 1990 levels by 2020.  
**OR:** Stabilize by 2010; 10% below 1990 levels by 2020; 75% below 1990 levels by 2050.  
**RI:** 1990 levels by 2010; 10% below 1990 levels by 2020.  
**VT:** 1990 levels by 2010; 10% below 1990 by 2020; 75-85% below 2001 levels long-term.  
**WA:** 1990 levels by 2020; 25% below 1990 levels by 2035; 50% below 1990 levels by 2050.

**Statewide Financial Incentives**

Nearly every state in the nation has implemented some set of financial incentives to support the development and installation of renewable energy, and several have adopted incentives for energy efficiency measures. These incentives bolster the economic viability of products and services that emit fewer greenhouse gases than their traditional counterparts. These measures, ranging from taxes to grants, are outlined in the tables below.

Overview of Financial Incentives for Renewable Energy

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190 Exec. Order No. 05-033.  
195 Exec. Order No. 07-02.  
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*S = State/Territory   L = Local   U = Utility   P = Private*
Overview of Financial Incentives for Energy Efficiency

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<th>State/Territory</th>
<th>Personal Tax</th>
<th>Corporate Tax</th>
<th>Sales Tax</th>
<th>Property Tax</th>
<th>Rebates</th>
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S = State/Territory    U = Utility


Additional State Policies to Reduce Greenhouse Gas Emissions

**Climate Action Plans:**¹⁹⁸ Climate action plans provide technical and policy analysis to inform development of state greenhouse gas emissions reduction plans. Each state (colored here in blue) investigates emissions, climate liabilities and policies to develop state-specific strategies for moving forward with regulatory measures and incentives.

**Greenhouse Gas Inventories:**¹⁹⁹ To date, all but eight states—Alaska, Idaho, North Dakota, South Dakota, Nebraska, Wyoming, Arkansas, South Carolina—have commissioned or completed greenhouse gas inventories in order to characterize state emissions and major source categories.

**Other State Actions:** The sections above capture only some of the state actions concerning mitigation of greenhouse gas emissions. The table below outlines additional state level climate policies to further illustrate the diversity of these measures:

<table>
<thead>
<tr>
<th>State</th>
<th>Greenhouse Gas Emissions Reduction/Climate Change Mitigation Measure</th>
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<tbody>
<tr>
<td>Alaska</td>
<td>• New legislation directed the establishment of the Alaska Climate Impact Assessment Commission to evaluate the risks and costs associated with global</td>
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<tr>
<th>State</th>
<th>Key Action(s)</th>
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<tbody>
<tr>
<td>Arizona</td>
<td>• A recent executive order dedicated the state to achieving 2000-level greenhouse gas emissions by 2020, and work with other western states to establish an emissions registry and reporting mechanisms. Further requires state agencies to only purchase low-emission vehicles. [Exec. Order No. 2006-13]</td>
</tr>
<tr>
<td>California</td>
<td>• SB 1771 &amp; 527 establish the California Climate Action Registry to help registrants establish emissions baselines in order to comply with present and future emissions regulations.</td>
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</table>
| Colorado  | • Executive Order D011 07: directs state facilities to reduce their energy consumption 20%, and state agencies to achieve a 25% volumetric reduction in petroleum consumption, by 2012.  
  • Colorado Climate Change Markets Act (COLO. REV. STAT. § 25-1-1301 et. seq.): commissioning reports and establishing financial incentives for renewable energy technology research.  
  • Law requiring electrical utilities to submit plans for installing transmission lines to untapped, high wind-capacity regions of the state. |
<p>| Connecticut| • CONN. GEN. STAT. § 22a-200 to -201c (2007) – sets a statewide emissions goal of 1990 levels by 2010, orders the establishment of a greenhouse gas registry that would integrate with other states in the region; § 22a-200b(b) compels operators of any facility that is required to report air emissions data under Title V of the Federal Clean Air Act to also submit greenhouse gas emissions information to a registry; establishes a greenhouse gas labeling system for new cars; adds a “greenhouse gas reduction fee” to auto registration costs; and directs a steering committee to review vehicle emissions regulations in light of emissions reductions goals. |
| Delaware  | • Global Warming Response Act, now awaiting approval from the Governor, sets stringent emissions reduction goals. |</p>
<table>
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<th>State</th>
<th>Key Actions</th>
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<tr>
<td>Idaho</td>
<td>Exec. Or. 2007-05: provides for the establishment of a greenhouse gas inventory and calls for recommendations on emissions reductions.</td>
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</table>
| Illinois  | Member of Chicago Climate Exchange with target of reducing emissions from government activities 6% by 2010.  
Exec. Or. No. 11-2006: Establishes the Illinois Climate Change Advisory Group, orders the annual inventory of state greenhouse gases. |
| Maine     | 38 M.R.S. § 575 et. seq.: mandates a statewide emissions inventory and registry; sets out state emissions reduction goals.  
35-A M.R.S. § 4711 (2006): requires natural gas utilities servicing over 5,000 residential customers to sponsor ‘cost-effective conservation programs.’ |
| Maryland  | Exec. Or. 01.01.2007.07: Establishes a Climate Change Commission to address the drivers and causes of climate change including an impact assessment and the development of emissions reduction goals. |
| Oregon    | H.B. 3543 establishes stringent, statewide greenhouse gas emissions goals and directs the Oregon Global Warming Commission to develop policy recommendations to support the achievement of those goals including the |
possible creation of a statewide cap-and-trade program.

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<tr>
<th>State</th>
<th>Action</th>
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<tr>
<td>South Carolina</td>
<td>Established the Governor’s Climate, Energy, and Commerce Advisory Committee to develop greenhouse gas emissions reduction strategies and other policy avenues that would provide the state with economic opportunities.</td>
</tr>
<tr>
<td>West Virginia</td>
<td>S.B. 337 (W. VA. CODE R. § 22-5-19) concerning a greenhouse gas emissions inventory.</td>
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<tr>
<td>Wisconsin</td>
<td>Office of Energy Independence established to bolster the biofuels industry and support energy efficiency and energy independence initiatives.</td>
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Other Resources

The compilation of state actions presented above is in no way exhaustive. It is merely illustrative of the numerous, far-reaching state actions to reduce greenhouse gas emissions. A number of frequently updated online resources further describe state-level climate policies:

- The Database of State Incentives for Renewables & Efficiency (DSIRE), published by the Interstate Renewable Energy Council, provides information on incentive programs to bolster the use of energy efficiency and renewable energy. See http://www.dsireusa.org/.
- The State Environmental Resource Center acts a clearing house for state action measures, publishing both overviews and analyses. See http://www.serconline.org/.
- National Caucus of Environmental Legislators (NCEL), http://www.ncel.net/.
International Agreements on Greenhouse Gas Emissions Reduction

Kyoto Protocol: A broadly ratified treaty developed under the United Nations Framework Convention on Climate Change which establishes legally binding targets and mechanisms for effecting global reductions in greenhouse gas emissions. The Protocol achieves its goals through three mechanisms that allow for the international trade of emissions credits, grant industrialized countries emissions credits by financing projects in developed “transition economies” like those of eastern Europe, and structure financing mechanisms for emissions-avoidance or emissions-reduction projects in developing countries.

Kyoto Protocol Ratification Status (as of December 2006)

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The Kyoto Protocol places responsibility on individual countries to mitigate greenhouse gas emissions proportional to their respective historical emissions. As such, industrialized countries with mature economies have more stringent emissions reduction requirements than do countries with transition economies. Developing countries are not required to achieve reductions in greenhouse gas emissions. The Kyoto Protocol entered into force in February of 2005.

European Union Emissions Trading Scheme (EU ETS): Established in order to achieve Kyoto-established emissions reduction goals, the EU ETS is a downstream, company level, greenhouse gas emissions trading system organized under the auspices of the European Union. It currently covers nearly 12,000 installations in 25 countries and across six major industrial sectors. Countries participating in the trading scheme are responsible for allocating and regulating those GHG emissions allowances granted them by the Kyoto Protocol. Emissions permits traded on the EU ETS are granted only if satisfactory monitoring and reporting mechanisms are in place.

Asia-Pacific Partnership on Clean Development and Climate (AP6): The six partner countries—Australia, China, India, Japan, Republic of Korea, and the United States—represent about half of the world’s economy, population, and energy use. The Partnership strives to expand investment and trade in clean energy technologies, goods, and services, focusing on key market sectors. The Partnership is without legally binding commitments for greenhouse gas emissions reductions. It provides a multinational forum for advancing technology development. Canada has expressed interest in joining the partnership, and that country’s membership is currently under consideration.

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203 Id. at 16-17.
205 See id at 35.
207 See Toshio Aritake, Meeting of Asia-Pacific Climate Partnership Considers Pilot Projects; Canada May Join, 30 INT’L ENV’T REP. (BNA) at 584 (July. 25, 2007).
There are several other international partnerships that focus on mitigating global warming pollution by encouraging the development of specific technology markets and changes in energy infrastructure. Like the AP6, these partnerships do not include binding goals. However, they do indicate national interest on the part of their member states to effect emissions reductions and facilitate the development of new business opportunities over carbon-intensive products and services.

208 See Keating et al., supra note 202, at 21-25.
Other International Climate-Related Partnerships and Market Efforts

- **Methane to Markets**: A partnership of twenty countries to encourage the development and implementation of methane capture technologies for energy production and climate change mitigation. [www.methanetomarkets.org]

- **Carbon Sequestration Leadership Forum (CSL Forum)**: An international climate change initiative focused on the development of cost-effective means for the capture and long-term sequestration of CO₂ emissions. CSL Forum has twenty-one member states along with the European Commission. [www.cslforum.org]

- **International Partnership for the Hydrogen Economy (IPHE)**: A partnership established in 2003 of sixteen countries committed to accelerating the development of hydrogen and fuel cell technologies. [www.iphe.net]
Renewable Energy and Energy Efficiency Partnership (REEEP): With a membership of 36 governments as well as NGO and multinational businesses, REEEP is a prominent partnership that funds projects and analyzes policy mechanisms to encourage renewable energy and energy efficiency. [www.reeep.org]

International Dialogues on Climate Change

- 
  **Vienna Climate Change Talks**, August 27-31, 2007 – This conference was held under the auspices of the U.N. Framework Convention on Climate Change and attended by over 900 delegates of the Parties to the Convention. The conference addressed how a global post-Kyoto climate policy will be negotiated and reached "agreement on key elements for an effective international response to climate change."  

- 
  **Heiligendamm Summit**, June 7-8, 2007 – A G8 summit that included the world’s five largest developing economies (Brazil, China, India, Mexico, and South Africa) in discussions concerning post-2012 international climate change policy. The summit reiterated the participating countries’ dedication to mitigating climate change and outlined commitments to cooperate in certain fields including cross-border development, research and development, energy infrastructure revision, and sustainable development, especially in Africa. The group committed to consideration of an emissions reduction goal of halving current emissions by 2050.

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210 See Joint Statement by the German G8 Presidency and the Heads of State and/or Government of Brazil, China, India, Mexico and South Africa on the Occasion of the G8 Summit in Heiligendamm, Germany, 8 June 2007, available at http://www.g-8.de/Content/EN/Artikel/__g8-summit/anlagen/o5-erklarung-en.property=publicationFile.pdf.  

• *United Nations Climate Change Conference*, Nairobi, Nov. 6-17, 2006 – This conference assessed progress of the implementation of the Kyoto Protocol, and hosted the twelfth session of the Conference of the Parties to the Climate Change Convention.\textsuperscript{212}

• *Climate Dialogue at Pocantico*, September 2005 – A convening of senior policymakers and stakeholders from 15 countries to develop options and recommendations for policy approaches to mitigate global climate change.\textsuperscript{213}

• *Gleneagles Summit*, July 6-8, 2005 – A G8 summit focusing on climate change, clean energy, and sustainable development. The adopted plan of action identified several methods to promote renewable energy and energy efficiency. These include, *inter alia*, reviewing building codes and vehicle standards to identify best practices, adopt market-based policy frameworks to finance the transition to cleaner energy sources, and encourage multilateral development banks to consider a project’s greenhouse gas intensity.\textsuperscript{214}

**Foreign Greenhouse Gas Emissions Regulations and Climate Change Mitigation Schemes**

Included below are brief overviews of the steps some countries are taking to mitigate global climate change. This summary compilation is provided to illustrate the extensive diversity and number of such legislative and other regulatory measures internationally.

**Australia:** On June 3, 2007, Australia’s Prime Minister announced that the country would be implementing an emissions reduction and trading system that will have broad coverage


\textsuperscript{213} See Pew Ctr. on Global Climate Change, Climate Dialogue at Porcantico, http://pewclimate.org/pocantico.cfm.

of greenhouse gas emissions sources and the capability to be tied to other national or international trading programs. Trading is set to begin no later than 2012.215

**Brazil:** In conjunction with the World Bank and a Japanese bank, Brazil will be launching a carbon exchange in September 2007 to auction off carbon emissions credits obtained under the Clean Development Mechanism of the Kyoto Protocol.216

**Canada:** John Baird, Canadian Environment Minister, formally proposed a greenhouse gas emissions reduction plan in April of 2007, setting its sights on a 20% reduction from current levels by 2020. The plan includes a regulatory framework and enforcement mechanisms to ensure reduction goals are met.217 Additionally, the province of Quebec will implement a tax on carbon dioxide emissions in October of 2007.218

**China:** In June of 2007, China issued a national plan to reduce the nation’s greenhouse gas emissions. The plan does not include mandatory caps, but discusses future adoption of tax incentives and low-interest loans to encourage clean development.219 Further, China announced in February of 2007 that it would launch the developing world’s first carbon credit exchange in collaboration with the United Nation’s Development Program.220

**Germany:** In May of 2007, Environment Minister Sigmar Gabriel unveiled an eight-point plan for reducing Germany’s greenhouse gas emissions 40% from 1990 levels by 2020. The plan includes efforts to increase the efficiency of cogeneration power plants and motor vehicles,

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as well as boost the percentage of renewable energy in the nation’s overall use from 12 to 20%.\textsuperscript{221}

\textbf{Japan:} The Japanese government announced plans in February of 2007 to establish mandatory emissions-reduction targets for industry and develop a trading platform for greenhouse gas emissions credits.\textsuperscript{222} Japan has also unveiled a program to promote energy efficiency to be jointly implemented by the government and industry. The program will focus on the utilization of cutting edge technology in several sectors to capture energy from existing industrial process, and retrofit energy-intensive processes.\textsuperscript{223} Additionally, the Tokyo municipal government will soon impose compulsory CO\textsubscript{2} emissions reduction targets on large sources within the city, including factories and office buildings. The program involves tax breaks for companies meeting the reduction goals and penalties for those exceeding the targets. It will later be expanded to cover smaller emissions sources.\textsuperscript{224} Finally, Japan has announced that the global environment and climate change will be at the center of next year’s Group of Eight summit.\textsuperscript{225}

\textbf{New Zealand:} New Zealand has announced its goal to be a carbon neutral nation.\textsuperscript{226} To this end, the government has released a number of proposals for public comment, including energy efficiency and conservation strategies, sustainable land management measures, and transitional strategies to move toward low-emissions electricity production. As Jim Anderton, New Zealand Minister for Agriculture and Forestry, noted: “Climate change presents a very real threat not only to the way we use our land, but to our international markets . . . . Already there is talk in Europe of border taxes on goods from countries that aren't taking effective action to

\begin{footnotesize}
\begin{enumerate}
\item See Niels Sorrells, \textit{German Environment Minister Unveils Plan to Cut Carbon Emissions 40 Percent by 2020}, 30 \textsc{Int’l Env’t Rep.} (BNA) at 324, May 2, 2007.
\item See \textit{Japan Plans to Launch Emissions Trading Platform}, 30 \textsc{Int’l Env’t Rep.} (BNA) at 204, Mar. 7, 2007.
\item See \textit{Japan Plans to Promote Energy Efficient Technology}, 29 \textsc{Int’l Env’t Rep.} (BNA) at 742, Oct. 4, 2006.
\item See Toshio Aritake, \textit{Tokyo Considers Mandatory Limits for Large Carbon Dioxide Emitters}, 30 \textsc{Int’l Env’t Rep.} (BNA) at 474, June 13, 2007.
\item See Nancy Ognanovich & Stephen Gardner, \textit{Japan Plans to Make Environment Focus of Next Year’s G-8 Summit}, 30 \textsc{Int’l Env’t Rep.} (BNA) at 483, June 13, 2007.
\item See Eduard Goldberg, \textit{New Zealand Prime Minister Announces Plans to Make Country ‘Carbon Neutral’}, 30 \textsc{Int’l Env’t Rep.} (BNA) at 166, Feb 21, 2007.
\end{enumerate}
\end{footnotesize}
address climate change. It's in our economic interest to be part of the global response to climate change. We need to take action to reduce the risks.”

**Norway:** In April of 2007, Norwegian Prime Minister Jens Stoltenberg outlined his government’s plans to make the country entirely greenhouse gas neutral by 2050. He further expressed a desire to lead the way in developing a new, binding, and truly global treaty for the reduction of greenhouse gas emissions to succeed the Kyoto Protocol. The country has also implemented a sales tax on passenger vehicles which is calculated relative to the car’s carbon dioxide emissions.

**Switzerland:** Switzerland announced it will impose a tax on certain fossil fuels starting in 2008 in order to help achieve greenhouse gas emissions reduction goals. The tax will be levied on imported heating oil and natural gas.

**United Kingdom:** The United Kingdom has developed a National Allocation Program in accordance with the EU ETS Directive. These regulations cover installations involved in energy activities, the production and processing of ferrous materials, mineral processing, and paper and wood pulp production. To this end, the Government has published a code of best practice for trading emissions credits. Further, the U.K.’s Climate Change Bill, proposed in March of 2007, is currently under consideration. It would, if implemented, require future UK governments to commit to greenhouse gas emissions reductions by establishing rolling, 5-year term emissions reduction targets. The U.K. has also adopted an Energy Efficiency Commitment Program

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231 See KEATING ET AL., supra note 202, at 19.
which encourages energy companies to implement efficiency measures utilizing market influences, a program highly praised by the International Energy Agency.\textsuperscript{234} Additionally, the Mayor of London introduced a plan to cut the city’s CO\textsubscript{2} emissions 60% by 2050 by using a suite of financial incentives.\textsuperscript{235}

**Other Resources**

- The Energy & Environmental Security Initiative has compiled a database of thousands of bilateral and multinational agreements concerning energy and the environment, with many of these focused on the development and installation of renewable energy technologies and conservation measures. *See* http://lawweb.colorado.edu/eesi/.

- The Pew Center on Global Climate Change has several analytic reports and policy overviews on international dialogues surrounding GHG emissions and climate change mitigation. *See* http://pewclimate.org/what_s_being_done/in_the_world.


Appendix E

Federal Legislation Related to Climate Change Pending in the 110th Congress

— In the Senate —

S. 280 Climate Stewardship and Innovation Act of 2007 (McCain-Lieberman)

- Covers electric power, industrial, and commercial sectors of U.S. economy.
- Establishes a program for reduction of greenhouse gases (GHGs) in covered entities through a market system of tradable allowances. One tradable allowance is necessary for each metric ton of emissions.
- Declining cap for GHG emissions beginning in 2012:
  - 2012: cap at 2004 levels
  - 2020: cap at 1990 levels
  - 2030: cap at 20% below 1990 levels
  - 2050: cap at 60% below 1990 levels
- Allowances can be sold, exchanged, purchased, banked (saved for future years), borrowed (against emissions reductions of up to 5 years), or offset (up to 30%).
- EPA distributes allowances to companies directly or to Climate Change Credit Corporation, which publicly auctions allowances. Funds generated from CCCC used for first generation technology implementation, assistance for low income communities, and adaptation strategies.

S. 485 Global Warming Reduction Act of 2007 (Kerry)

- Creates a market-based emissions cap on global warming emissions, with a progressive declining cap beginning in 2012.
- Requires the EPA to reset passenger vehicle emission levels every 5 years.
- Requires the Secretary of Agriculture to set standards for carbon sequestration and biological offsets.
- Sets benchmarks for increasing percentages of renewable fuel in gasoline, and creates tax incentives for use of hybrid and electric vehicles.
S. 6 National Energy and Environmental Security Act of 2007 (Reid)

- Expresses the sense of Congress that the President should (a) require reduction in GHG emissions; (b) expand the use of clean energy; (c) reduce the burden on consumers of rising energy costs; (d) eliminate tax giveaways to oil industries; (e) prevent price manipulation of oil.

S. 309 Global Warming Pollution Reduction Act (Sanders)

- Directs EPA to set aggressive milestones in aggregate net levels of emissions & authorizes the EPA to create a market-based program to achieve reduction in emissions.
- Requires each fleet of automobiles by every manufacturer to meet emissions standards by 2016.
- Requires electric generating units to meet standards comparable to new natural gas generation units and requires such units to devote a percentage of electricity produced for sale from low-carbon generation.
- Establishes low-carbon generation trading program.
- Increases research into low carbon technology by 100% every year for 10 years.
- Requires raising the percentage of renewable fuel in commercial gasoline.

S. 317 Electric Utility Cap and Trade Act of 2007 (Feinstein)

- Covers all Electric Generation Units (EGUs) that (a) have a nameplate capacity greater than 25 megawatts; (b) emit GHG; (c) generate electricity for sale.
- Creates a cap for all such emissions for 2011-2020, and creates a market-system to distribute emission allowances under the Climate Action Trust Fund.
- Funds generated by the CATF are used for: (a) adaptation assistance for communities adversely affected by the act; (b) mitigating the impacts of climate change on fish and wildlife.
- Requires EPA to create regulations concerning early reduction credits for GHG reduction or sequestration from 2000 to 2010.
S. 357 Ten-in-Ten Fuel Economy Act (Feinstein) (see also H.R. 349)

- Requires fuel economy labeling standards to include greenhouse gas emissions information.
- Revises Corporate Average Fuel Economy (CAFE) standards for passenger cars and light trucks to gradually increase to 35 mpg by 2019.

S. Res. 30 Sense of the Senate of the need to address global warming through international agreements (Biden)

- Expresses the sense of the Senate that the U.S. should participate in negotiations under the U.N. Framework Convention on Climate Change that will establish commitments from all countries that are major contributors of greenhouse gas emissions.

— In the House of Representatives —

H.R. 6 Renewable Fuels, Consumer Protection and Energy Efficiency Act of 2007 (to be submitted to conference committee)

- This energy legislation, versions of which have passed both Houses of Congress, would establish a wide variety of requirements and incentives to increase use of renewable fuels, decrease use of fossil fuels, and promote energy conservation.

H.R. 182 Team up for Energy Independence Act (Lofgren)

- Creates a national sales tax for automobiles, rising to 80% in 2011. Automobiles that use alternative fuels are exempted from the tax.


- Extends tax credits for fuel cell technology, solar technology and residential energy efficient property expenditures.

H.R. 791 Increase Renewable Fuel Content of Gas Sold in the United States (Weller)

- Increases the percentage of renewable fuels in commercial gasoline beginning in 2013.
H.R. 620 Climate Stewardship Act of 2007 (Olver-Gilchrist)

- Requires companies in electric power, industrial, and commercial sectors of U.S. economy to participate in allowance scheme with a declining cap beginning in 2012. Companies are required to purchase 1 allowance per metric ton of GHG emitted.
- Allowances can be sold, traded, retired, borrowed, or offset.
- Companies may offset emissions reductions in verifiable international reductions.
- Funds generated by the sale of allowances are used for: (1) development of clean technology; (2) incentives for carbon sequestration; (3) restoration of habitat for fish and wildlife.
- Requires states to develop climate change impact mitigation plans.

H.R. 670 DRIVE Act (see also S. 339 – DRIVE Act)

- Directs the White House Office of Management and Budget to set an oil savings target and action plan to reduce dependence on foreign oil.
- Directs Secretary of Transportation to create a fuel efficiency program for passenger car and light trucks.
- Requires an increasing percentage of vehicles to be alternative fuel vehicles, redirects IRS policy to encourage alternative fuel vehicles.
- Requires Secretary of Energy to reduce federal fleet consumption of petroleum by 20%, encourage the development of plug in hybrid vehicles.

H.R. 969 Public Utility Regulatory Policies Act Amendments of 2007 (Udall, Tom)

- Requires electric utilities to increase power generated from renewable sources from 1% in 2010 to 20% in 2020.

H.R. 1300 Program for Real Energy Security Act (Hoyer)

- Requires increasing use of biofuels and alternative fuel vehicles.
Other Resources


Pew Ctr.on Global Climate Change, Policy Analyses,
http://www.pewclimate.org/policy_center/analyses.
BUSINESS LEADERS’ COMMENTS ON CLIMATE CHANGE REGULATION AND DISCLOSURE

Business leaders increasingly recognize that regulation of greenhouse gas emissions is both necessary and inevitable. 90 percent of business leaders believe that government regulation in this area is imminent, and 67 percent believe it will take place within the next eight years. Additionally, 93 percent consider climate change related risks when making investment decisions. In another recent study, 28 percent of executives cited environmental concerns, including climate change, as one of the issues likely to have the greatest impact on shareholder value in the next five years, and 87 percent of global companies indicated that global warming represents commercial risks and/or opportunities.

I. Investment Advisors on the Impact of Climate Change on Performance

- “Global warming is likely to prove (to be) one of those tectonic forces that — like globalization or the aging of populations — gradually but powerfully changes the economic landscape.”
  – John Llewellyn, Senior Economic Policy Advisor, Lehman Brothers

- “Energy security and climate change issues will not be resolved in the foreseeable future; instead these issues will only intensify going forward. . . . These changing dynamics present investment opportunities in companies that are better positioned around the regulations or offer competitive technology solutions. For investors, solutions to these challenges present a compelling investment opportunity.”
  – Merrill Lynch Report, *Energy Security and Climate Change*

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237 Id. at 55.
• “The pace of a firm’s adaptation to climate change and related policy is thus likely to prove to be another of the forces that will influence whether, over the next several years, any given firm survives and prospers; or withers and, quite possibly, dies.”
  – Lehman Brothers Report, The Business of Climate Change

• “[E]nvironmental regulation will play an increasingly larger role in business in the coming years . . . . [C]ompanies that are knowledgeable about the issues, and, therefore, well-prepared, will find it easier to maintain profitability as they will be in a much better position to bid for new projects and sustain their business under the new legislation. In turn, these companies may also be able to gain market share from businesses that are less prepared and compliant.”
  – J.P. Morgan Report, Air Pollution: Business Risk or Competitive Advantage

• “Climate change is widely recognized as the most significant environmental issue facing the global economy . . . . Investors need to understand how their investments are contributing to the problem, and also how they could be impacted by a changing climate.”
  – Henderson Global Investors Report, The Carbon 100

• “(Global warming) started out as an environmental issue, but it crossed over to become a quite fundamental financial and economic issue.”
  – Nick Robbins, Head of Socially Responsible Investment Funds, Henderson Global Investors

• “We see a number of catalysts that will create investment opportunities related to reducing greenhouse gases and mitigating exposure to climate change risk.”
  – Peter Suozzo, Director of Sustainable Investment Research for North America, Citigroup

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• “Any insurance company that is not focusing on climate change and related possible damage is not being realistic in looking at their future profitability. As an investor, a lack of disclosure always troubles me.”
  – Richard Moore, North Carolina State Treasurer

• “Shareholders must understand actions taken to manage GHG and climate risks.”
  – Bob Page, Vice President of Sustainable Development, TransAlta

• “[C]limate change is on the agenda for governments, regulators, consumers and businesses and this is creating some major risks, but also opportunities.”
  –Mike Scott, Financial Services – Banking on Climate Change’s Consequences

II. Climate Change Is a Business Reality

<table>
<thead>
<tr>
<th>“Companies should take action now to define their global climate-related strategy, set GHG reduction goals and implement GHG reduction activities, not just for environmental reasons, but also for competitive advantage.”</th>
<th>“Companies are becoming increasingly aware that climate is closely tied to profits.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Ron Meissen, Senior Director of Environment, Health and Safety Engineering at Baxter International</td>
<td>– Felix Carabello, Director of Alternative Investment Products, Chicago Mercantile Exchange</td>
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</table>

• “To me, [climate change] is the defining business issue of our generation.”

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247 Pews CTR. ON GLOBAL CLIMATE CHANGE, supra note 236, at 55.


249 Pew CTR. ON GLOBAL CLIMATE CHANGE, supra note 236, at 6.

250 Shell & Krantz, supra note 239.
– David Crane, Chief Executive Officer, NGR Energy

• “[A]s many companies have already learned, acting on [climate change] is simply good business. Reducing our use of energy reduces costs. Inviting our employees to be active on this issue helps us recruit and retain the world's best. For us, as a media company-- this is a chance to deepen our relationships with our viewers, readers, and web users. The [climate] initiative we are launching today will involve every business, every function. It's not only for our facilities managers or our fleet directors-- it's about how we recruit new employees, how we develop relationships with advertisers and how we design movie sets. This is about changing the DNA of our business to re-imagine how we look at energy.”
– Rupert Murdoch, Chairman and CEO, News Corporation

• “By conserving energy, we not only help the environment, but also our bottom line, as greater energy efficiency means lower costs. By investing in renewable energy, we displace some of our electricity demand during the times of day when it is most expensive, while helping green industries grow and reducing the cost of these emerging technologies. And by creating web-based products and services, we connect individuals like you with information that helps raise environmental awareness or avoids the need for you taking that trip to the store or sending that paper in the mail.”
– Google statement on climate change

• “Climate change is shaping global markets and global consumer attitudes. There will be winners and losers. Companies who seize the opportunities, who adopt environmental, social and governance policies and who evolve, innovate and respond to these challenges are likely to be the pioneers and industry leaders of the 21st century.”
– Achim Steiner, Executive Director, UNEP


“As a major global reinsurer, Swiss Re is committed to taking a leading role in the climate debate. We identified climate change as an emerging risk some 20 years ago, and the concern has since evolved into an important component of the company’s long-term risk management strategy. Our actions are based on the premise that it is in the interest of our shareholders, clients and employees, the wider stakeholder community and society in general to tackle this issue . . . . Climate change has been designated a Swiss Re Top Topic, which means that it is recognized as an issue of Group-wide strategic importance.”
– Swiss Re statement on climate change

“Climate change is probably one of the best examples of where long-term risk planning is essential to mitigate some potentially irreversible long-term effects.”
– Brian Storms, CEO, Marsh, Inc.

“Our shareholders wanted to better understand the opportunities and risks that the climate change issue represented to their investment in Exelon, so we added a Global Climate Change Section to our 2004 10-K.”
– Helen Howes, Vice President of Environment, Health and Safety, Exelon

“We have long identified climate change as a serious environmental issue, and shareholders are increasingly asking about the risks as well as the opportunities associated with it.”
– Bill Ford, Chairman and CEO, Ford Motor Company

“The larger challenge that we face is, are we somehow in a period in which global warming is for real and we never have a cold January again. That's the single biggest risk to our industry.”
– Aubrey McClendon, CEO, Chesapeake Energy

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255 Swiss Re, Our Position and Objectives, http://www.swissre.com/pws/about%20us/knowledge_expertise/top%20topics/our%20position%20and%20objectives.html?contentIDR=c21767004561734fb900fb2ee2bd2155&useDefaultText=0&useDefaultDesc=0.
257 PEW CTR. ON GLOBAL CLIMATE CHANGE, supra note 236, at 54.
• “Shell was one of the first energy companies to acknowledge the threat of climate change and
to call for action by governments, industries and energy users . . . .”
  – John Hofmeister, U.S. Country Chair and President, Shell Oil Company

III. Legislation to Mitigate Climate Change Is Inevitable

| “The dam is broken . . . . It’s inevitable that the federal government will have to come out and set a level playing field throughout the country.” | “The growing consensus is that national domestic regulation is a matter of when, not if.” |
| – Chris Walker, Head of Greenhouse Gas Risk Solutions Unit, Swiss Re | – Paul Hanrahan, President and CEO, AES Corporation |

• “[G]overnment mandates will be required.”
  – Yolanda Pagano, Director of Climate Strategy and Programs, Exelon

• “Congress has changed, people realize something is coming down the pike in terms of federal legislation . . . .”
  – Douglas Fisher, utilities analyst, AG Edwards & Sons

• “[W]e must include all voices to ensure that energy policies lower emissions and sustain global economic development.”
  – Jim Owens, Chairman and CEO, Caterpillar Inc.

261 Nat’l Envtl. Trust, supra note 258.
265 USCAP, supra note 260.
• “We see a global system of emissions trading as inevitable.”
  – Steve Lennon, Chair, Environment and Energy Commission, International Chamber of Commerce\textsuperscript{266}

• “Technologies will emerge when CO\textsubscript{2} has a price signal, and that market signal will be
  created by regulation.”
  – Kevin Leahy, Managing Director of Climate Policy, Cinergy\textsuperscript{267}

IV. Climate Change Must Be Addressed

<table>
<thead>
<tr>
<th>“We know we must address climate change . . . . [T]here is no other option.”</th>
<th>“Climate change is a serious issue that has to be addressed through concrete action.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Alain Belda, Chairman and CEO, Alcoa\textsuperscript{268}</td>
<td>– Chad Holliday, Chairman and CEO, DuPont\textsuperscript{270}</td>
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<tr>
<td>“The unique challenge of climate change is that it requires action now . . . .”</td>
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</tr>
<tr>
<td>– Jeffry Sterba, Chairman, President and CEO, PNM Resources\textsuperscript{269}</td>
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</tbody>
</table>

• “It is critical that business, government and non-governmental organizations come together to
develop efficient and effective approaches to addressing environmental impacts of greenhouse
gas emissions and our mutual energy future.”
  – Indra K. Nooyi, Chairman and CEO, PepsiCo\textsuperscript{271}

• “[C]limate change is a serious problem that must be addressed.”
  – Martin Sullivan, President and CEO, AIG\textsuperscript{272}

\textsuperscript{266} Nat’l Envtl. Trust, supra note 258.
\textsuperscript{267} PEW CTR. ON GLOBAL CLIMATE CHANGE, supra note 236, at 47.
\textsuperscript{268} USCAP, supra note 260.
\textsuperscript{269} Id.
\textsuperscript{270} Id.
\textsuperscript{271} Id.
\textsuperscript{272} Id.
• “GM is very pleased to join USCAP in proactively addressing the concerns posed by climate change.”
  – Rick Wagoner, Chairman and CEO, General Motors Corp.273

• “Climate change is real and the most urgent environmental issue our society faces.”
  – Andrew Liveris, Chairman and CEO, The Dow Chemical Company274

• “We support the goal of reducing greenhouse gas emissions to mitigate the expected adverse effects of climate change.”
  – William C. Weldon, Chairman and CEO, Johnson & Johnson275

• “[A]ction to address these emissions sooner rather than later will lower the costs and difficulties of mitigation and innovation.”
  – Robert Lane, Chairman and CEO, Deere & Company276

• “[T]he sooner we act the better it will be for our environment, customers and the economy.”
  – Jim Rogers, Chairman, President and CEO, Duke Energy277

• “[W]e are committed to tackling the challenge of global climate change.”
  – George Nolen, President and CEO, Siemens Corporation.278

• “We believe climate change is one of the most significant environmental challenges of the 21st century . . . . [V]oluntary action alone cannot solve the climate change problem.”
  – Goldman Sachs Environmental Policy Framework279

• “No other country bears a greater responsibility – or possesses a greater capacity – to lead the global response on this issue.”
  – Peter A. Darbee, Chairman of the Board, CEO and President, PG&E Corporation280

273 Id.
274 Id.
275 Id.
276 Id.
277 Id.
278 Id.
279 Goldman Sachs, Goldman Sachs Environmental Policy Framework 1 (undated), available at
280 USCAP, supra note 260.
• “We don’t have a lot more time to deal with climate change . . . .”
  – Henry Paulson, then-Chairman, Goldman Sachs\textsuperscript{281}

• “BHP Billiton has recognized that our company, as well as society generally, must make real
  behavioral changes and accelerate technological progress if we are to achieve a meaningful
  reduction in energy use and greenhouse gas emissions.”
  – Chip Goodyear, CEO, BHP Billiton\textsuperscript{282}

• “We have to deal with greenhouse gases. From Shell's point of view, the debate is over.
  When 98 percent of scientists agree, who is Shell to say, ‘Let’s debate the science’?”
  – John Hofmeister, President, Shell Oil Co.\textsuperscript{283}

• “We support urgent but informed action to stabilize greenhouse gas (GHG) concentrations by
  achieving sustainable long-term emission reductions at the lowest possible cost.”
  – BP P.L.C. position on climate change\textsuperscript{284}

• “Climate change poses clear, catastrophic threats. We may not agree on the extent, but we
  certainly can’t afford the risk of inaction.”
  – Rupert Murdoch, Chairman and Chief Executive Officer, News Corporation\textsuperscript{285}

• “In the distribution of possible future outcomes of global warming, there is a significant tail
  representing very serious consequences. It is the prudent approach – a common practice in
  insurance and issues of financial stability – which requires us to take action today to mitigate
  global warming and to adapt to its consequences.”
  – Jacques Aigrain, Chief Executive Office, Swiss Re\textsuperscript{286}

\textsuperscript{281} Envtl. & Energy Study Institute, \textit{First Meeting of Parties to Kyoto Protocol Underway in Montreal,}
\textit{CLIMATE CHANGE NEWS, Dec. 2, 2005,}
h\texttt{t}\texttt{tp}://\texttt{www.eesi.org/publications/Newsletters/CCNews/12.2.05\%20CCNews.htm.}
\textsuperscript{282} BHP Billiton, Ltd., \textit{BHP Billiton Launches Revised Climate Change Policy,} CSR\textit{WIRE, June 19, 2007,}
available at \texttt{http://www.csrwire.com/News/8939.html.}
\textsuperscript{283} Steven Mufson & Juliet Eilperin, \textit{Energy Firms Come to Terms with Climate Change,} WASH. POST,
Nov. 25, 2006, \texttt{a}\texttt{v}a\texttt{i}l\texttt{a}\texttt{b}\texttt{e} at \texttt{h}\texttt{t}\texttt{tp}://\texttt{www.washingtonpost.com/wp-dyn/content/article/2006/11/24/AR2006112401361.html.}
\textsuperscript{284} BP, Climate Change - Our Position,
http://\texttt{www.bp.com/sectiongenericarticle.do?categoryId=9015582&contentId=7028604.}
\textsuperscript{285} Murdoch, \textit{supra} note 252.
\textsuperscript{286} Swiss Re, \textit{supra} note 255.
V. Federal Legislation Concerning Climate Change Is Desirable

Thirty-three U.S. businesses and environmental groups have joined together to form the U.S. Climate Action Partnership, that have come together “to call on the federal government to enact legislation requiring significant reductions of greenhouse gas emissions.” The joint statement pledges that the corporations will “work with the President, the Congress and all other stakeholders to enact an environmentally effective, economically sustainable, and fair climate change program consistent with our principles at the earliest practicable date” and recommends “mandatory” regulations “to reduce greenhouse gas emissions.”

| “[T]he time has come to act – to take steps as a nation to reduce the carbon intensity of our economy . . . any actions must be mandatory, economy-wide and federal in scope.” | “We need a uniform and predictable system. . . . It needs to be a federal system.” |
| – Paul Anderson, CEO, Duke Energy Corp. | – Ken Cohen, Vice-President of Public Affairs, Exxon Mobil |

• “[State level regulation] would be a huge misdirection of resources and much less would be achieved if we are subjected to a balkanized set of standards from 50 different sources.”
  – Tom Catania, Vice President of Government Relations, Whirlpool

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289 USCAP, supra note 260.

290 Nat’l Envtl. Trust, supra note 258.


292 PEW CTR. ON GLOBAL CLIMATE CHANGE, supra note 236, at 50.
• “[W]e support [the] goal of a mandatory national regulatory framework.”
  – James J. Mulva, Chairman and CEO, ConocoPhillips

• “We must . . . create energy policy that is integrated, coherent and clear. . . .”
  – Jeffrey Immelt, Chairman of the Board and CEO, General Electric

• “It is in the interest of society and business to reduce the uncertainty and increase the
  predictability of policy frameworks and market conditions around the issue of climate
  change.”
  – Bill Ford, CEO, Ford Motor Co.

• “Alcan is . . . committed to bringing about legislative action on climate change.”
  – Richard B. Evans, President and CEO, Alcan, Inc.

• “The sooner we act, the more options we have for solutions, the less costly they will be and
  the fewer uncertainties we will face with the climate.”
  – Peter A. Darbee, Chairman of the Board, CEO and President, PG&E Corporation

• “Give us a date, tell us how much we need to cut, give us the flexibility to meet the goals, and
  we’ll get it done.”
  – Wayne H. Brunetti, CEO and Chairman, Xcel Energy

• “[W]e will campaign for public policies designed to cut emissions to the levels required to
  keep our climate system stable. We support energy efficiency standards that accelerate the
  deployment of energy-efficient technologies throughout the world, specific targets to increase
  renewable energy supplies on the grid, public support for research and development aimed at
  developing and commercializing low-carbon technologies, and mandatory emissions limits
  that put a price on carbon.”
  – Google statement on climate change

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293 USCAP, supra note 260.
294 Id.
295 Id.
296 Id.
297 David R. Baker & Zachary Coile, Lobbying Effort Signals Corporate Climate Change, S. F. CHRON.,
298 PEW CTR. ON GLOBAL CLIMATE CHANGE, supra note 256, at 7.
299 Google, supra note 253.
The Commission should issue an interpretive release clarifying registrants’ obligation under existing law and regulations to assess the risks they face in connection with climate change and to disclose those risks that are material. This guidance should set forth the process by which a registrant should make this assessment and the types of information most likely to be relevant to the assessment, and should direct registrants to disclose the following risks if they are material:

1. Physical risks associated with climate change;
2. Financial risks associated with present or probable regulation of greenhouse gas emissions; and
3. Legal proceedings relating to climate change.

**Basis for Interpretive Release**

As explained in our petition, climate change has become increasingly important to the operations and financial condition of many registrants. Developments associated with global warming, including physical changes associated with a warming climate and regulatory measures adopted to mitigate greenhouse gas emissions, can affect companies in a variety of ways, such as by posing risks to physical assets of the registrant or its customers or suppliers, introducing new regulatory compliance costs and obligations, increasing the costs of important inputs, and opening up opportunities for new products and services. Many investors are now seeking information concerning companies’ response to the physical changes, regulatory developments, and new opportunities associated with climate change.

While some registrants have been providing information on the impacts of climate change in their periodic filings, disclosures remain inconsistent and in many cases incomplete. In particular, corporate disclosure of the risks posed by climate change is lacking, even for companies that do address the impact of climate change and their own emissions. The uneven state of disclosure of climate information, the pervasive emergence of global warming as a significant influence upon the economy, the numerous and complex ways in which it may bear materially on registrants’ financial condition, and the widespread adoption of greenhouse gas
regulations in recent years, all indicate a need for guidance concerning registrants’ disclosure obligations with respect to climate issues.

Climate-related risks that constitute material contingent liabilities must be expressed on a company’s balance sheet or in footnotes to financial statements. See Statement of Financial Accounting Standards No. 5, Accounting for Contingencies. Our petition sets forth examples of climate risk that may require such treatment. See Petition Part 3.

Whether or not climate risk can be estimated with a degree of certainty warranting its classification as a material contingent liability, registrants have obligations under various provisions of Regulation S-K to disclose in narrative form material information regarding the physical risks associated with climate change and with governmental regulations intended to limit emissions of greenhouse gases. Registrants should carefully examine the potential implications of climate change and present or probable regulation of greenhouse gas emissions for their own operations and financial condition. Whether disclosure is required will depend, as in other areas, upon an informed judgment about whether the information is material. In addressing that question, companies should not limit their consideration merely to particular projects and sites, but should also consider whether the overall degree of risk posed by climate change is material to the corporation’s long-term ability to create and maintain value for shareholders.

Several provisions of Regulation S-K have particular importance when considering the impact of climate change and related developments. As part of the narrative description of its business under Item 101, a registrant must disclose any material effects of compliance with Federal, State and local laws regulating the discharge of materials into the environment or otherwise relating to the protection of the environment may have upon the registrant’s capital expenditures, earnings and competitive position. 17 C.F.R. § 229.101(c)(xii). Item 103 requires disclosures concerning certain judicial or administrative proceedings arising under laws intended to protect the environment. 17 C.F.R. § 229.103 & Instruction 5. Under Item 303, Management’s Discussion and Analysis of Financial Condition and Results of Operations must include discussions of factors bearing materially on the company’s financial condition and business operations, including an identification of known trends or uncertainties expected to have a material impact on the registrant’s liquidity, capital resources, net sales or revenues or income from continuing operations. 17 C.F.R. § 229.303(a).
As the Commission noted in its recent guidance on MD&A disclosure, companies now have “access to and use substantially more detailed and timely information about their financial conditions and operating performance than they did when our MD&A requirements initially were introduced . . . . Some of this information is itself non-financial in nature, but bears on companies’ financial condition and operating performance.” Information bearing on the consequences of climate change and greenhouse gas regulation for a registrant’s operations and financial condition is an important part of that expanding body of information, and registrants should review it carefully and make disclosures where appropriate.

As the MD&A release observed, “in identifying, discussing and analyzing known material trends and uncertainties, companies are expected to consider all relevant information, even if that information is not required to be disclosed.” In assessing the impact of climate change and greenhouse gas regulation on their financial condition and operations, registrants should examine any corporate policies or governance structures that have been established to address climate issues, and review the company’s institutional mechanisms for assembling and analyzing information about the various ways in which climate change can affect the company. Where the company has not established internal mechanisms for assembling and assessing climate information, it may need to do so in order to exercise informed judgments concerning the nature and materiality of climate-related risk.

**Process for Assessment of Material Climate Risks**

To assess potential financial risks associated with present and probable regulatory requirements concerning greenhouse gases, registrants should determine their current and projected emissions levels. Companies should tabulate their current greenhouse gas emissions, including direct emissions from their own operations and emissions from purchased electricity and purchased products and services. They should estimate their past greenhouse gas emissions to the extent necessary to assess significant trends in their emissions levels, and should also project their future greenhouse gas emissions, as necessary to evaluate the costs they are likely to face from greenhouse gas regulation.

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301 *Id.*
Well established tools such as the Greenhouse Gas Protocol exist to aid in the calculation of greenhouse gas emissions.

**Factors to Evaluate in Assessing the Materiality of Climate Risks**

While disclosure obligations will depend upon individual registrants’ particular circumstances, and assessment of the materiality of climate risks, the following kinds of information should be considered and may be subject to disclosure obligations under existing Commission regulations.

**Physical Risks Associated with Climate Change**

A registrant should review and evaluate the consequences that physical risks and effects associated with climate change may have for the registrant's business and operations, including its personnel, physical assets, supply chain, and distribution chain, and must disclose information on those consequences when they are material to corporate performance.

Examples of such physical effects may include the impact of changes in weather patterns, such as increases in the storm intensity, sea-level rise, melting of permafrost, and temperature extremes, on facilities or operations; effects of climate change upon land, water availability or quality, or other natural resources on which the registrant’s business depends; damage to facilities or decreased efficiency of equipment; or effects of changes in temperature on the health of the workforce.

For some registrants, financial risks associated with climate change may arise from physical risks to entities other than the registrant itself. For example, climate change-related physical changes and hazards to coastal property may pose a material credit risks for banks whose borrowers are located in at-risk areas. Climate change may also affect a registrant’s supply chain in a variety of ways: climatic changes may diminish supplies of important inputs, physical damage to suppliers’ infrastructure may cause costly interruptions in deliveries, and physical changes associated with climate change may decrease consumer demand for products or services. Registrants should evaluate whether they are subject to such risks and disclose any material information related to them. Physical impacts associated with climate change will vary widely depending upon companies’ location and the nature of their facilities and operations, but
all registrants should review their exposure to such risks and, where the risks are material, must disclose them.

**Financial Risks Associated with Greenhouse Gas Regulation**

For many registrants, present or probable greenhouse gas regulation has material effects warranting disclosure. When compliance with any international, federal, state, or local laws and regulations concerning climate, including laws regulating greenhouse gas emissions, may have a material effect on the capital expenditures, earnings, and competitive position of the registrant and its subsidiaries, such laws should be identified and their effect discussed.

In conformity with Item 303 of Regulation S-K, registrants must describe any known trends or uncertainties in connection with the impact of climate change or greenhouse gas regulation that they reasonably expect will have a material favorable or unfavorable impact on net sales or revenues or income from continuing operations. When costs associated with compliance with such laws, or penalties for noncompliance, are material to a registrant's financial condition or operations, the registrant's disclosures must include an analysis of any such material effects, including a discussion of the financial risks and opportunities afforded by such regulations.

When a registrant concludes that legislative and regulatory proposals, although not yet enacted into law, are reasonably likely to be enacted and that such proposals, if adopted, would have a material effect on the company’s financial condition or operations, the registrant should identify and discuss the proposals. The registrant should describe and evaluate realistic alternative regulatory scenarios.

Greenhouse gas regulation may have a material effect upon a registrant that is not itself directly subject to the regulation, for example by increasing the costs or decreasing the supply of some product or service on which the registrant's business depends, or increasing or decreasing demand for the registrant's products or services. Where material, such indirect effects should be identified and analyzed.
Legal Proceedings Relating to Climate Change

Under Item 103, registrants must describe any pending judicial or administrative proceeding other than routine business litigation, arising under any Federal, State or local laws, if the proceeding is considered material to the business or financial condition of the registrant; or involves a claim for damages exceeding 10 percent of the assets of the registrant and its subsidiaries on a consolidated basis; or a government authority is a party to such proceeding(s) and the proceeding(s) involves potential monetary sanctions above $100,000. Registrants must disclose any proceedings arising under laws relating to climate change, including those regulating emissions of greenhouse gases, when the proceedings meet the Item 103 criteria.