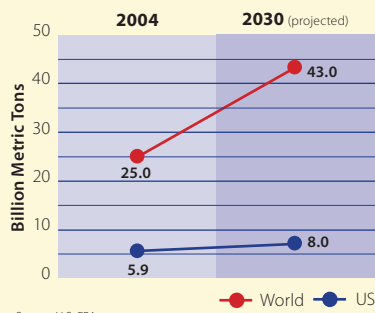


Meeting the Carbon Challenge: The Role of Commercial Real Estate Owners, Users & Managers

Carbon Dioxide Emissions



Historically, issues surrounding property and facility management have focused on the buildings themselves – owners and managers focus on safety, maintenance and energy efficiency to create a welcoming and safe environment for users and reduce operating costs for stakeholders. However, a growing issue facing real estate owners and occupiers of commercial properties today is the increased attention on measurement, containment and reduction of greenhouse gas emissions, the by-product of burning carbon-based fuels. Concerns about global warming have permeated both the public and private domain and consumption of carbon-based fuels by direct emitters, such as utilities, is no longer the sole focus of discussion. Regardless of where you stand on this issue, the reality is that there is increased pressure on businesses across all industries to evaluate how their organizations affect the environment and to take steps that will reduce greenhouse gas emissions.

The Changing Atmosphere

Water vapor, carbon dioxide and other atmospheric gases trap radiant energy and warm the earth's surface. Greenhouse gases within the lower levels of the atmosphere, of which 85 percent are carbon dioxide, trap excess radiation which would otherwise escape into space, resulting in higher surface temperatures on Earth. In 2004, world carbon dioxide emissions were just over 25 billion metric tons. By 2030, the U.S. Environmental Protection Agency estimates that annual world output of CO₂ will exceed 43 billion metric tons. Much of this increase is being driven by economic growth in the developing world, particularly India and

China. The U.S. contribution toward this projected increase is just over 8 billion metric tons annually from approximately 5.9 billion metric tons in 2004.

Although one-third of all U.S. annual emissions result from burning fuels for transportation, nearly one-half of all emissions are attributed to the commercial and industrial sectors of the economy, either through the burning of carbon-based fuels for heating and manufacturing or through the use of electricity. The Pew Center on Global Climate Change estimates that buildings represent approximately 43 percent of U.S.

greenhouse gas emissions. In its February 2007 report, the Intergovernmental Panel on Climate Change, an organization comprising members of the World Meteorological Organization and the United Nations Environment Programme, concluded for the first time that global warming is "unequivocal" and that human activity is the main driver, "very likely" causing most of the rise in temperatures since 1950. While this remains a topic of debate, the argument has led to increased attention on what individuals, businesses and governments can do to stop or reverse the trend.

Understand Your Carbon Footprint

A carbon footprint is a measure of the amount of carbon dioxide emitted through the combustion of fossil fuels. In the case of a business organization, it is the amount of CO₂ emitted either directly or indirectly as a result of its everyday operations. It also might reflect the fossil energy represented in a product or commodity reaching market.

Because heavy industry is one of the most significant sources of greenhouse gas emissions, most business-focused programs responding to the problem to date have emphasized participation by “emitters,” manufacturers and utilities. However, other sectors of the economy, including service-sector companies such as banks, law firms and retailers, which occupy the vast majority of investor-owned real estate in the United States, are recognizing their contributions to this problem and have expressed interest in taking steps to reduce or eliminate their emissions.

The largest global sources of emissions are generation of electricity and heat, followed by transportation. The activities of service-sector companies contribute to these sources through their electricity use, building heating and business travel. They may also contribute to other large global CO₂ emission sources such as land use change, manufacturing and construction. Owners and occupiers of significant amounts of real estate have an opportunity to curb the effects of global climate change by influencing operations, supply chains, customers and employees. This situation challenges real estate managers to be proactive in helping mitigate the increase of greenhouse gas emissions. It also provides an opportunity to establish more efficient building operations and systems that can create long-term cost savings for the owner and occupant alike.

Critics often cite strict regulations, fee structures associated with building design and engineering, electricity pricing practices and the sometimes limited availability of

climate-friendly technologies as obstacles to bringing greenhouse gas emission-reducing technologies into general use. Despite these challenges, numerous builders, corporations and both public and private building owners are driving the implementation of carbon-reducing building practices in new commercial development, and are investigating ways to make improvements in older properties. The industry has witnessed admirable steps taken to optimize energy efficiency in buildings and there are numerous models for others to emulate. Many of the voluntary and mandatory building code measures are focused on the U.S. Green Building Council’s Leadership in Energy and Environmental Design designation. LEED is currently the most widely recognized standard for building climate-friendly structures.

Nevertheless, as we approach the end of the first decade of the 21st century, a continued search for more proactive measures will be essential. Considering the attention the global warming issue has received among public welfare organizations, policymakers and the media, it is now reasonable to expect that building owners and managers should, and may even be required, to implement strategies that reduce their organization’s carbon footprint.

Is ‘Carbon Neutrality’ Good Enough?

Becoming “carbon neutral” means that an enterprise has neutralized the effect of its greenhouse gas emissions, so that its enterprise-wide activities no longer contribute to global warming. An alternative to carbon neutrality is carbon reduction, which describes the effort of an enterprise to reduce its future carbon emissions to an earlier volume – for example, proposing that 2015 emissions equal emission levels of 1995. The most direct way of reducing carbon emissions is by using less carbon-based energy. Any effort to reduce the consumption of carbon-based electricity, natural gas and refined crude oil products (gasoline, heating fuels) contributes directly to carbon reduction.

Actions to Shrink Your Carbon Footprint

- Reduce fossil fuel consumption or switch to a lower carbon fuel
- Reduce electricity consumption
- Purchase “zero carbon” energy such as solar or wind
- Invest in carbon offsets
- Reduce business travel
- Encourage employee use of public transportation or carpools

Carbon offsets are another means of achieving an organization’s carbon reduction goals through more indirect means. For example, planting trees on land which would otherwise have been treeless or supporting the development of a wind turbine which would not have otherwise been installed are considered carbon offsets. There is a global marketplace for carbon offsets and a system of verification which ensures that the offset paid for is really happening and cannot be sold to anyone else.

Through regulation, governments around the world are stimulating development of market mechanisms for those that are capable of reducing their greenhouse gas emissions and those that are not. Known as “cap and trade” structures, emissions trading structures are one of the policy instruments available for reducing greenhouse gases. Stimulated by the Clean Air Act in the 1990’s, the Chicago Climate Exchange opened in 2003 as the world’s first voluntary greenhouse gas reduction and credit trading platform. This was followed by a wave of regional and state-initiated carbon allowance trading platforms. The emergence of these carbon trading and emission offset markets means that in the future CO₂ emissions may be considered both a corporate asset and a corporate liability.

Keeping an Eye on the Regulatory Landscape

Because of increased attention by capital markets and numerous initiatives to reduce greenhouse gas emissions at local, state and regional levels, there's a growing awareness of impending carbon regulation by U.S. business interests. Most often this attention is directed at the sources of direct consumption of carbon-based fuels, such as coal-burning electric utilities, transportation fuel providers and the automobile industry. However, other sources of emission, represented by any business that consumes electricity and burns natural gas, will likely be a target by the time carbon regulation hits its full stride.

A global "first step" toward stabilizing greenhouse gas concentrations in the atmosphere, the Kyoto Protocol is an agreement under which 169 industrialized countries aim to reduce their collective 2012 emissions by more than 5 percent compared to 1990. Although not yet ratified by the United States, the agreement, which takes effect January 2008, will certainly be a factor that multinational corporations take into account as they plan for the future management and operation of their real estate. This effort, combined with a variety of regional initiatives occurring throughout the United States and a push by many lawmakers for comprehensive and consistent regulation, is likely to dramatically impact the efforts of building owners and managers within the next three to five years. Already, the state of California has enacted legislation designed to reduce greenhouse gas emissions 25 percent to 1990 levels by the year 2020, resulting in what may be the first U.S. buildings emission reduction law.

There is a strong likelihood that other regulatory bodies will establish strict reduction guidelines and target dates for achieving them. Therefore, businesses from many industries are taking steps now to educate themselves, evaluate risks and create a plan that allows for gradual improvements across their property portfolio through a variety of programs. Concerned about the cost of managing disparate carbon-reduction

programs that could vary state by state, many U.S. companies familiar with the environmental landscape are demanding the certainty of a national standard that can be implemented cost effectively and with consistency across their operations.

Efforts by businesses to stay ahead of the curve have resulted in the formation of a variety of global consortiums aimed at tackling the issues surrounding carbon-reduction strategies. For example, the Carbon Disclosure Project is a collaboration of global investors seeking disclosure of investment-relevant information about corporate greenhouse gas emissions. The group aims to encourage development of a common emissions methodology and to facilitate its integration into general investment analysis to better understand businesses' climate change risks. More than 900 multi-national companies responded to the Carbon Disclosure Project's 2006 questionnaire about their greenhouse gas emission policies, including a significant number of U.S. Standard & Poors 500 firms.

In 2007, a coalition of 10 major companies with operations across the country banded together with environmental groups to call for nationwide limits on carbon-based emissions. Industry giants General Electric, DuPont Corporation and Alcoa Aluminum are leading this coalition, sending a strong

signal that businesses want to get ahead of the political momentum for federal emission controls. The Pew Center for Global Climate Change's Business Environmental Leadership Council, the largest U.S.-based association of corporations focused on addressing the challenges of climate change, has 42 members representing \$2.4 trillion in market capitalization and over 3.3 million employees. A wide range of sectors are represented, including technology, manufacturing, oil and gas, transportation, utilities and chemicals.

The Consequences of Inaction

While most organizations recognize that taking steps to reduce greenhouse gas emissions is the role of a responsible unit of society, there is also concern among U.S. companies that in the future, investors and insurers will include carbon management in their underwriting criteria. At a minimum, costs imposed upon the sources of carbon emission will be passed through to building occupants and/or consumers.

Some of the world's largest financial services firms, including Swiss RE, AIG, Fireman's Fund Insurance Company and Marsh & McLennan are concluding that climate change is a business reality that must be faced, dealt with, mitigated – and perhaps even profited from. Scientists from Lawrence Berkeley National

A Structured Process

- Get buy-in from senior management to make carbon reduction a priority
- Assign dedicated resources to the study and planning of carbon-reduction measures
- Understand the applicable regulations
- Determine your organization's carbon footprint through data collection and analysis
- Set reasonable short and long-term goals
- Develop and execute emission reduction programs
- Report results on an ongoing basis
- Refine process to achieve continuous improvement
- Participate in local and national organizations committed to climate improvement to stay informed about issues that will affect your business
- Choose environmentally conscious partners as service providers

Laboratory have said climate change ultimately threatens to bankrupt even the largest insurers and government-run insurance programs unless steps are taken to reduce warming trends believed to be linked to carbon-based emissions and other greenhouse gases.

According to a report by Ceres, a coalition of investors, environmental organizations and other public interest groups, nearly 200 products or services are now offered by insurers or brokers globally, more than half of them in the United States, that attempt to reduce emissions and energy use. For example, Fireman's Fund has asked regulators to approve its new "green" coverage, including discounted premiums or rate credits for commercial building owners whose buildings are certified as environmentally appropriate, together with discounts for green rebuilds or retrofits of damaged structures.

Looking to the Future

A recent *Harvard Business Review* article stated that "Climate change affects your company's competitive landscape in ways you might not realize. Companies that manage and mitigate their exposure to climate change risks while seeking new opportunities for profit will generate a competitive advantage over rivals in a carbon-constrained future."¹ The article lists regulatory risk, supply chain risk, product and technology risk, litigation risk, reputation risk and physical risk as examples of the far-reaching effects of climate change on business.

Today's forward-thinking companies are beginning to understand these risks and are taking steps to reduce exposure. While this is a responsible reaction to a global issue, it is also a means by which to uncover new business opportunities and cost savings, positioning the organization for future

success. In coming years, commercial real estate investors and managers will be challenged to address new requirements for underwriting investments and operating their portfolios. Rising public awareness, too, will cause stakeholders of all types – tenants, employees, shareholders, investment industry analysts and insurers – to look closely at climate change practices within the real estate industry as the public comes to understand the significant impact that the built environment has on energy consumption and, consequently, greenhouse gas emissions.

Both public perception and investor concern present an opportunity for the real estate industry to showcase social responsibility goals and gain competitive advantage with buildings, policies and programs that help mitigate the potentially dangerous outcome associated with adverse climate change.

¹ "Competitive Advantage on a Warming Planet." *Harvard Business Review*. (March 2007).

References and Resources

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United States National Assessment, <http://www.gcrio.org/NationalAssessment>

Grubb & Ellis and Sieben Energy Associates are qualified to assist in your building analysis and planning efforts. To discuss the issues presented in this paper, or to investigate steps you can take to minimize the impact of greenhouse gases on the environment while increasing operational efficiency within your organization, contact the authors.

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