



Cap-and-Trade and CO₂: Just the Facts

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Communication By Design

Virtually all buildings, modes of transportation, and industrial activities produce carbon dioxide (CO₂), which is the primary greenhouse gas (GHG) associated with climate change. A company's annual production of CO₂, measured in tons, is its "carbon footprint." Companies, buildings, campuses, industries, individuals, households, cities, states, and nations all have carbon footprints.

Renowned scientists unanimously agree that CO₂ emissions must be reduced. Many corporate leaders have already taken steps to voluntarily reduce their companies' energy consumption and emissions.

"It's inevitable: There will be some system of carbon regulation put in place," said John White, energy management and environmental solutions manager in the Electrical Group of Cleveland-based Eaton Corporation, a diversified power management company and influential player in the energy arena.

Some have mentioned the possibility of regulating CO₂ through taxation, but most discussion today revolves around a cap-and-trade approach.

A Cap-and-Trade Primer

A cap-and-trade market, in which the medium of exchange is carbon credits, will be established if the federal government places an upper limit on the amount of CO₂ that specific industries are allowed to generate. Industry, transport, and the commercial sector, which together produce roughly 75% of all GHG emissions, will likely be subject to regulation.

Under one scenario, the government will auction the carbon credits to participating companies. Under another scenario, a company will receive an allocation of carbon credits, and if the company's emissions are lower than its allocation, then it can sell its excess credits.



Because caps will routinely be lowered to encourage further conservation and innovation, fewer credits will be issued, and they will become more costly. Ultimately, companies will find that conservation is less expensive than buying emission credits. For some companies, the carbon credits will constitute a new revenue stream.

A similar cap-and-trade mechanism worked successfully in the early 1990s, when the U.S. government spurred power plants to reduce emissions of sulfur dioxide, which causes acid rain.

Regional Voluntary Initiatives

While debate on cap-and-trade continues on the federal government level, three multi-state, carbon-trading associations have formed.

The Regional Greenhouse Gas Initiative, comprising 10 northeastern states, conducted its first auction of carbon credits in 2008. Seven Western states and three Canadian provinces have formed the Western Climate Initiative.

The Midwest Greenhouse Gas Reduction Accord (MGGRA), with six states and one Canadian province, is currently setting regional GHG emission reduction targets and developing a multi-sector, cap-and-trade system.

Missouri does not belong to MGGRA, but if regulation is inevitable, as White predicts, the rationale for participation is persuasive: "While the Midwest has



intensive manufacturing and agriculture sectors, making it the most coal-dependent region in North America, it also has world-class renewable energy resources and opportunities to allow it to take a lead role in solving the effects of climate change. The geographic location and ideologically centrist beliefs of the Midwestern region provide its leaders with an ability to push the federal policy debate in a productive direction.”

Sticks and Carrots, Too

The American Recovery and Reinvestment Act of 2009 offers substantial tax incentives to companies that invest in energy efficiency.

Odd though it may sound, utility companies are also incenting their customers to reduce their consumption. But why would any manufacturer urge less consumption of its products?

Pat Justis, senior program manager in Ameren UE’s Energy Efficiency program, explained: “The cost of providing cash incentives to customers to become more energy efficient today is lower than the cost of building new power plants in the future. If utilities cannot curb the growth in demand for electricity, they must buy it from another supplier or build new capacity.”

Voluntary Action by Manufacturers

Motivated by government and utility incentives, spurred by the rising cost of energy, and hungry for higher profits in today’s recessionary economy, many corporations are already voluntarily reducing their consumption of

Below: Sierra Bullets expects a 1.6-year payback on their lighting upgrade from metal halogen (shown on left) to high-efficiency T5s throughout their 55,000-square-foot manufacturing and warehouse facility.



energy and the corresponding emissions, reaping rewards in the form of lower operating expense and favorable media.

Over a two-year period, Sierra Bullets in Sedalia, Missouri, is replacing all of the metal halogen lights in their 20-year-old, 55,000-square-foot manufacturing-warehouse facility with high-efficiency, super-luminous T5s. Pat Daly, Sierra’s vice president of engineering, expects to recoup the investment in just 1.6 years.

“Energy is part of every decision we make,” Daly said, adding that the generous incentives and product options persuaded them to act now. But lighting is just one of Sierra’s energy initiatives. They are replacing 70-year-old motors with high-efficiency equipment, and they routinely capture waste heat from manufacturing processes, routing it to other operations that require heat or ducting it to heat the plant in winter.

Sierra’s heat regeneration is a small-scale example of combined heat and power. “CHP systems capture wasted heat and typically achieve efficiencies of 60 to 80%,” explained Renew Missouri’s Erin Noble. “The recovered energy is used to satisfy an existing thermal demand, such as the heating the building or water supply. In large CHP systems, the electricity produced can provide a portion of the electrical load or be sold to the grid.” Missouri has 20 CHP sites with 212 MW installed, including the University of Missouri–Columbia, Anheuser-Busch, and Columbia Regional Wastewater Treatment.

Midwest Energy and Climate Policy Conference

The technologies that Sierra and other manufacturers have implemented will be discussed during the fourth annual Midwest Energy and Climate Policy Conference in St. Louis June 8-10.

Co-sponsors include Ameren UE, Laclede Gas, the Missouri Public Utility Alliance, Missouri Energy Development Association, Missouri Energy Initiative, Missouri Chamber of Commerce and Industry, St. Louis Regional Chamber and Growth Association, Greater Kansas City Chamber of Commerce, Regulatory Environmental Group for Missouri, and U.S. Green Building Council-St. Louis Regional Chapter.

The roster of presenters is quite broad—from Boeing, Enterprise Holdings, and Peabody Energy to NASA, the

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Missouri Department of Economic Development, and the University of Missouri.

Green Buildings Reduce Energy Demand

Buildings account for 39% of CO₂ emissions, more than either the transportation sector (33%) or industry (29%), according to the U.S. Green Building Council, which established the pre-eminent green building standard in the U.S. today: LEED (Leadership in Energy and Environmental Design).

JoAnn Brookes, senior project architect with St. Louis-based architectural firm HOK, reported, “Almost three-fourths of all electricity used in the U.S. is used in buildings. Compared to conventional buildings, the average LEED-certified building uses 24% less electricity, and over the course of a year reduces CO₂ emissions by 13.86 million metric tons. That’s just one building for one year.”

In April 2010, there were 342 LEED-registered and LEED-certified projects in Missouri, representing every sector, including industrial and commercial. Legislation is pending that would require certain state-owned properties in Missouri to achieve LEED-certification.

Green Products Gaining Favor

Not only buildings, but also products, can be certified as “green.” The SMaRT certification system, developed by the Institute for Market Transformation to Sustainability, relies on an approach called Life Cycle Assessment, which Forbo Flooring succinctly describes in their Corporate Sustainability Report: “The term ‘life cycle’ refers to the fundamental understanding that a fair, holistic assessment requires the analysis of all process elements, inclusive of raw material extraction, processing, manufacturing, distribution, use, and end of life outcome, including all intervening transportation steps. This is the life cycle of the product.”

It sounds like a lot of work, but there can be significant payoffs. For manufacturers who sell to the federal government, the U.S. General Services Administration (GSA), the primary federal procurement agency, gives preference to green-certified products.

But there’s an even more compelling reason to learn

more about green product certification: It can increase a manufacturer’s profitability. According to a report published by the Capital Markets Partnership, Forbo Flooring’s SMaRT-certified products achieved EBIT (earning before interest and taxes) performance double that of traditional products and 25% better than any of their competitors.

Certification will be addressed at the Sustainable Product Summit, a free seminar hosted by the GSA on June 3 in St. Louis: <http://usgbc-stl.org/wp-content/uploads/2010/04/SustainableProductEvent-June3.pdf>.

Get Ready

The American Clean Energy and Security Act, which included provisions to limit CO₂ emissions and establish an emissions trading market, passed the U.S. House last summer.

In April, Senators Lindsey Graham, John Kerry, and Joseph Lieberman developed a scaled-back version of the House bill that reportedly proposed carbon trading for utility companies only at first, with manufacturers added later, but only to facilities with annual emissions above 25,000 tons. It reportedly included incentives for “clean coal” and nuclear energy and earned the support of Duke Energy, Exelon, ConocoPhillips, General Electric, and others.

As this issue of “Missouri Environmental Insider” goes to press, the fate of the Kerry-Graham- Lieberman proposal is uncertain, and White’s carbon regulation forecast may not be fulfilled in the near term.

There can be no question, though, about the bottom-line benefits of voluntarily reducing one’s energy consumption and emissions. Just ask Pat Daly at Sierra Bullets.

ABOUT THE AUTHOR

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