

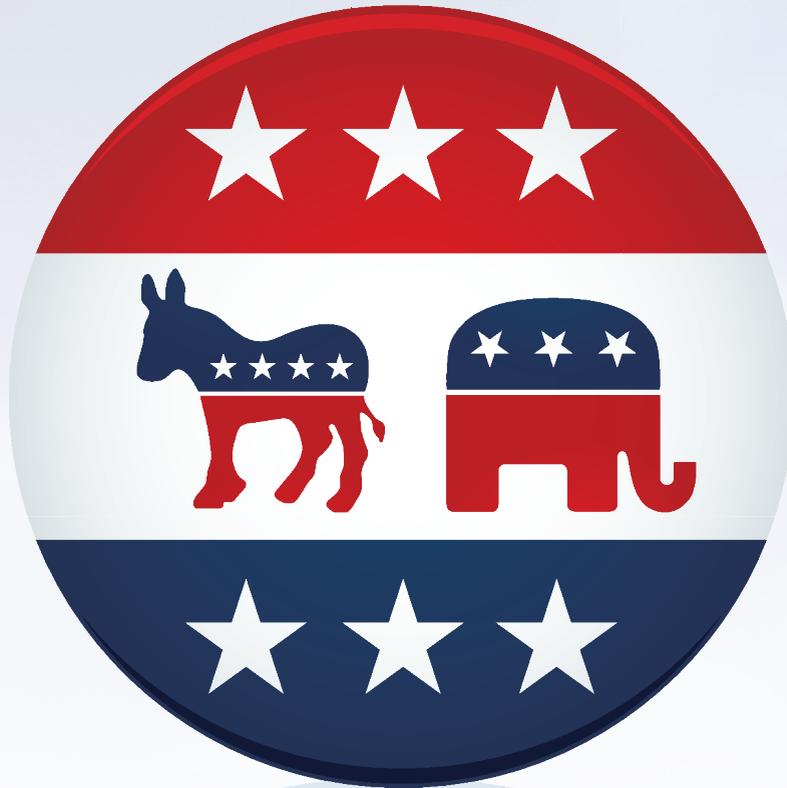


## MANAGING CLIMATE CHANGE

- CARBON CAPTURE AND LONG-TERM LIABILITY
- LEGISLATION IN THE WINGS
- CARBON MARKETS
- SENATOR GEORGE VOINOVICH ON TECHNOLOGY V. BUREAUCRACY

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*In the Wake of Election '08:*  
What Lies Ahead for Climate  
Policy?



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# Managing Climate Risk

The northeastern states will begin auctioning carbon credits later this year as part of their "Regional Greenhouse Gas Initiative." The plaintiffs bar is active, suing companies for allegedly contributing to climatic phenomena such as hurricane Katrina by emitting greenhouse gases. Congress has taken note of these disparate efforts and has slowly begun to formulate a national approach to regulation. This Executive Counsel special section examines how companies can manage climate change risk during this period of transition.

**Presented by  
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# Understanding Carbon Markets

By F. William Brownell and Tauna M. Szymanski

**CARBON MARKETS ARE DRIVEN** by government-imposed caps on greenhouse gas emissions. A facility must hold enough allowances to cover the annual tonnage of greenhouse gases it emits. If its emissions exceed the allowances, it must purchase

additional allowances on the market to meet its compliance target. If its emissions are less than that amount, it may sell its excess allowances on the market. That is emissions trading at its most simple.

Alongside this “compliance market” driven by government-imposed emission caps is a voluntary market for carbon credits. Reasons for participating in this voluntary market are various, from gaining experience prior to a carbon cap, to improving corporate image, to generating revenue. About \$330 million worth of credits was traded globally in the voluntary market in 2007, with projections suggesting rapid expansion.

Most large companies are already affected by the carbon markets in the United States or abroad. This article provides a primer on these markets for the corporate manager.

## **CREDITS V. ALLOWANCES**

An emissions trading market distinguishes between allowances and offset credits. Allowances are what an

emitter is permitted to emit. An allowance typically corresponds to one metric ton of carbon dioxide-equivalent.

There are six generally recognized and controlled anthropogenic greenhouse gases: carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulfur hexafluoride. Each can be measured in multiples of CO<sub>2</sub> because the other five are more intense contributors to the greenhouse effect—between 21 times and 23,900 times more intense.

Allowances may be granted freely or auctioned. Either mechanism serves to allocate allowances to entities that face a cap. The fixed number of allowances that constitutes the cap is reduced over time by the government, to ensure that the system achieves its ultimate goal of reducing emissions.

In some systems, including the Kyoto Protocol and the European Union’s Emissions Trading Scheme (EU ETS), emitters are allowed to purchase and use “offset credits” that have been generated outside the cap system, to help



those subject to the cap meet their compliance targets.

Under the EU ETS, emitters may use an average of about 12 percent in credits instead of allowances to satisfy their compliance obligations, depending on the EU nation in which they are located. The limit ensures that most reductions take place within the EU.

## **Companies that are able to reduce their emissions below a business-as-usual baseline may be able to generate verified emission reductions that can then be sold.**

Facilities take advantage of this option when credits trade at a discount to allowances. The policy is designed to lower the costs of compliance and increase options. The price differential between allowances and credits is determined in part by the costs and risks involved in generating credits from facilities in developing countries, where most offset projects take place.

### **VOLUNTARY CARBON TRADING**

Although the United States does not yet have a national cap on greenhouse gas emissions, and therefore no allowances are available to trade, a growing number of companies have begun trading “voluntary carbon.” These are credits generated and traded outside a cap system. Companies that are able to reduce their emissions below a business-as-usual baseline may be able to generate verified emission reductions (VERs) that can then be sold.

Many have heard of the Chicago Climate Exchange and mistakenly think it is the extent of the voluntary carbon market in the United States. In fact it represents only a small fraction of voluntary trades. Most of the voluntary market is traded bilaterally, over the counter, sometimes through brokers like Evolution Markets, ICAP, TFS, CantorCO2e and others. Often buyers and sellers find each other at conferences.

In theory, generating a VER only requires proof that the reduction occurred outside of “business as usual.” In practice, generating marketable VER takes quite a bit more. The critical, most difficult to achieve threshold is proving that the reduction was “additional,” which can be defined in several ways: (1) the reduction was not required by any law or regulation, (2) the project faced technological or institutional barriers, (3) the project is not “common practice” or (4) the project is relying on the VER revenue in order to meet its “hurdle rate” (the internal rate of return that must be demonstrated to make a project viable).

Whether you need to prove all these thresholds, and what else must be demonstrated, depends on the

standard against which the seller chooses to validate and verify the project.

Virtually all buyers in today’s market will demand that VERs be verified by a reputable third-party against a robust standard. Some standards, such as the Kyoto Protocol’s Clean Development Mechanism (CDM) allow only certain approved parties to perform verifications.

There are about ten carbon standards that currently exist in the voluntary market. CDM methodologies are widely respected and often used. The Voluntary Carbon Standard is the most popular in the United States, but there are others, including the California Climate Action Registry protocols and EPA’s Climate Leaders Offset Protocols. Some use electronic registries to demonstrate that a VER has been issued and show whether it has been transferred or retired. This helps to guard against double-counting and provides transparency.

### **PURCHASE AGREEMENTS**

The market also can be differentiated between primary and secondary trades. Primary trades involve the offset project that reduces emissions in the first place. The contract governing this trade is called a Voluntary or Verified Emission Reduction Purchase Agreement (VERPA).

The seller is typically the owner of a landfill, a farmer, or a large industrial facility. The buyer is typically helping to finance the project with its purchase of the resulting VERs, and occasionally with up-front financing.

Primary sellers rarely guarantee delivery of a quantity of VERs. The contracts are typically structured as either full offtake (seller will buy whatever is produced, if anything, with no penalties for failure to generate VERs) or as a partial firm/unit contingent structure (seller will guarantee delivery of 2000 VERs per year, but has a put option to sell any amount over 2000 that is generated).

VERPAs are typically long-term forward contracts, with quarterly or annual delivery obligations.

Secondary trades involve allowances or credits that have already been issued. In the EU ETS, these trades are almost always documented via master agreements. Parties negotiate these agreements and then trade carbon like any other commodity. If parties wish to do a one-off deal and do not wish to undertake the sometimes laborious process of negotiating a master agreement, they may trade using a long form confirmation.

Secondary trades of already issued VERs in the voluntary market trade via secondary VERPAs. The voluntary market has not evolved to the point that industry groups have developed a voluntary carbon annex with standard terms. Although there are efforts to develop a model, VERPAs will continue to be bilaterally negotiated and customized to fit the terms of each unique project and deal.

Over the six months before this issue went to press, VERs in the U.S. market have increased in value from \$2-\$3/ton to \$5-\$7/ton. This seems to be due to the fact

that both major-party presidential candidates have endorsed a mandatory cap-and-trade scheme.

Carbon offsets that “tell a story” or have substantial co-benefits like community development — sometimes called “gourmet” or “charismatic” carbon — fetch a higher price. So do VERs that are verified against the most stringent voluntary carbon standard, using the most reputable verifiers. This type of VER is most likely to be useful in a future U.S. compliance market and stands a good chance of being resold at a higher price.

## A GROWING MARKET

Ecosystem Marketplace and New Carbon Finance issued their second annual State of the Voluntary Carbon Markets report in May 2008. The report finds that the value of global voluntary markets more than tripled from 2006 to 2007, going from \$96.7 million to \$330.8 million. This compares to a \$63 billion value for the compliance markets in 2007.

Only about one-third of voluntary offset credits are created in the United States. Much of the remaining volume stems from CDM projects that did not qualify or have been generated while awaiting the significant backlog in the registration process.

Primary VER sellers may include farmers that control animal methane emissions or change tilling practices, landfills that capture and destroy gas emissions, forestry companies or large landowners that agree to protect or replant forests, or industrial facilities that

have improved internal efficiencies enough that they significantly reduce emissions.

Buyers include aggregators, wholesalers and carbon funds that are buying up what they perceive to be inexpensive carbon that may increase in value, and be used for compliance purposes under a mandatory U.S. regime. End-users include companies and nonprofits (like HSBC, Nike, the G8, the World Cup, Google, and PepsiCo) that have adopted carbon neutral pledges or goals to reduce their emissions.

End-users often include large emitters like electric utilities or energy companies that believe they will be effected by a U.S. cap-and-trade system. Some buyers resell VERs on the retail market to individuals. Retailers include companies like TerraPass, Delta Airlines, PG&E, Dell, and Amtrak.

There is a distinction between renewable energy certificates (RECs) and VERs. There are roughly 26 different state renewable portfolio standards in the United States. Some provide for the trading of RECs as a way to comply. Most states clearly exclude greenhouse gas emission reduction attributes from the definition of a REC, while others are either vague or include all “environmental attributes.” This has created confusion.

Where RECs clearly exclude greenhouse gas emission attributes, a renewable energy project has the potential to generate income through both RECs and VERs. However, the verification of these commodities, and the contracts

**Carbon Markets** *continued on page 55*

## Voluntary Trader Motivated by Revenue and Environmental Benefit

Steve LaLiberty is the president U.S. Energy Biogas Corp., Avon, Ct. He has expertise in the operations of gas collection systems and is involved in the development and construction of the landfill gas to energy projects in USEB's portfolio. Executive Counsel interviewed LaLiberty about his company's involvement in voluntary carbon trading.

**Executive Counsel:** How would you describe the business of U.S. Energy Biogas Corp.?

**Steve LaLiberty:** U.S. Energy Biogas is among the largest developers of landfill gas projects in the United States. Currently, USEB owns and operates 20-plus land fill gas to energy projects with 52 megawatts of generating capacity. Power is sold primarily under long-term contracts to local utilities in eight eastern states. Landfill gas—what we call LFG—is sold at three locations for use in industrial boilers.

**EC:** How are you participating in the carbon markets?

**Steve LaLiberty:** We're an active seller of carbon credits.

**EC:** What are you are selling?

**Steve LaLiberty:** Verified Emission Reductions. VERs are units of CO<sub>2</sub> equivalent emission reductions that constitute a decrease in greenhouse gas concentrations.

**EC:** What benefits do you get?

**Steve LaLiberty:** Number one is the positive contribution to the reduction of greenhouse gas and associated environmental benefits. The revenue benefit may be the catalyst that enables a project to be financially viable.

**EC:** Do you feel there are any risks to selling reductions now as opposed to waiting for a mandatory compliance regime?

**Steve LaLiberty:** The mandatory programs have been slow in coming. Selling credits now has enabled projects to come online and contribute without delay to the environmental benefits.

**EC:** What would you recommend to other companies considering taking advantage of the voluntary carbon markets now?

**Steve LaLiberty:** The key to entering this market is a well-structured operation. Verification due diligence depends on proper support data and adherence to strict maintenance guidelines. Teaming up with a quality verification entity maximizes the opportunity for success.



# Climate Change Legislation Proceeding Slowly

## Both Houses Await the New Administration

By Joseph C. Stanko, Jr., Mark W. Menezes and David J. van Hoogstraten

**AS THE YEAR BEGAN** in Congress, climate change legislation was high on the list of legislative priorities of the Democratic leadership. Over 100 hearings on climate change-related topics were held and 50 separate bills

were introduced to address greenhouse gas emissions.

Despite that unprecedented activity, in June of this year the Lieberman-Warner Climate Security Act, the most visible vehicle for climate change legislation, fell a dozen votes short of the 60 votes required to prevent a Republican filibuster. Senator Barbara Boxer (D-CA), the manager of the debate and Chairwoman of the Environment and Public Works Committee, claimed a victory of sorts by reading statements from six Senators who expressed their support for cloture but were unable to attend the roll call vote.

However, ten Democratic senators, mostly from mid-western and south-eastern “coal” states, wrote to Senator Boxer that while nine of them voted for cloture to end the debate, they could not support final passage in its current form. Thus it appears there is little more consensus within the Senate today on how best to address climate change than there was five years ago when Senators McCain and Lieberman first introduced greenhouse gas emission control legislation.

None of this means that efforts to pass climate leg-



isolation will cease. Senator Boxer said she would immediately begin negotiating with a group of ten lawmakers from states with concerns about her bill. They will be key to passage of any future legislation. But, while additional hearings on climate change may be held this year, a new legislative package is not likely to emerge until after the new president has been sworn in.

A number of key issues were raised by the “group of ten.” These Senators have indicated they will caucus together as a way of forcing changes in future legislation. These ten senators are likely to emerge as a swing contingent whose views must be addressed if legislation is to be successful.

The most important remaining issue identified by these senators is how to construct mechanisms to contain costs to industry as energy prices rise and national economic stresses grow. One mechanism of interest to them is a price safety valve, which would provide relief to the market by setting a maximum price for emission allowances. In such a program, unlimited off-the-books allowances would be offered by the government at a fixed price (e.g., \$15.00 per ton) whenever the market price exceeds that fixed price. Many oppose this approach, however, because it could mean a delay in meeting emission targets.

The ten senators have also called for “a balanced short-term cushion” in the event that new technologies are not available or are more expensive than assumed. This last-minute addition of language to Lieberman-Warner allowing emitters unable to meet short term reduction goals to borrow significant amounts of allowances from future years was viewed as a helpful but insufficient cushion for the transition to new, low-carbon technologies.

As a result, according to these senators, all options for dealing with an escalating carbon price, including a price safety valve, should be on the table.

Given the global nature of climate change, another unresolved issue is how to protect manufacturing jobs and strengthen competitiveness in the event the United

emissions associated with production of the import.

Great uncertainty remains, however, about the effectiveness of such measures and their possible non-compliance with international trade rules. As a result, legislators on both sides of the aisle and several major labor unions are calling for a final bill that includes enhanced safeguards that minimize economic harm, protect jobs, and avoid igniting a trade war that the United States cannot win.

Another major concern is that climate legislation aggressively promote investment in new technologies to transform how we use and produce energy, and that it encourage wide deployment of existing technologies. The group of ten senators has called for mechanisms to accelerate government-sponsored technology R&D programs, as well as incentives to motivate rapid deployment of those technologies without picking winners and losers. Adequate funding of carbon capture and storage and other low carbon technologies is deemed of critical importance.

On July 9 of this year, Sen. Bingaman (D-NM), whose more moderate climate bill had garnered considerable support in 2007, added weight to the positions of the ten by laying out principles that echo much of what they said. Sen. Bingaman stated that climate legislation should:

- Focus exclusively on reducing greenhouse gas emissions, and provide a minimum of carve-outs for states, regions or particular industries.
- Require reauthorization every ten years to force a fresh look at actual needs.
- Set technically achievable and economically viable targets for emissions reductions.
- Contain effective control mechanisms to avoid possibly spiraling costs of a cap-and-trade system.
- Provide for immediate and major investments in new energy technology.
- Settle how any new climate change law will interact with Clean Air Act regulation of greenhouse gases.

Bingaman also called for a single national cap-and-trade system that would take the place of multiple, overlapping systems proposed or already in place within the states.

#### CARBON-STATE REPS HOLD SWAY IN HOUSE

On the House side, many bills have been introduced and hearings held during 2008, but no real action has been taken.

Rep. Ed Markey (D-MA), chair of a specially-created Select Committee on Energy Independence and Global Warming formed last year by Speaker Pelosi (D-CA), has introduced legislation more rigorous than the Lieberman-Warner bill. Given its stringency, the Markey bill is unlikely to serve as the basis for consensus legislation.

Last January, Rep. John Dingell (D-MI), who chairs the House Energy and Commerce Committee (the committee of primary jurisdiction), signaled that rather than

**It appears there is little more consensus within the Senate today on how best to address climate change than there was five years ago.**

States unilaterally imposes greenhouse-gas reduction requirements on itself, unmatched by other major emitting countries. The Lieberman-Warner bill contained a mechanism to protect manufacturers from competitors, such as India and China, that face virtually no domestic carbon constraints, by requiring purchase of special allowances sufficient to offset the greenhouse gas

rush ahead, his committee would engage in a comprehensive review of the issues and aggressive fact-finding. Both he and Rep. Rick Boucher (D-VA) have released a series of white papers outlining issues that will have to be addressed in any successful climate legislation.

Based on this effort, Rep. Boucher is widely expected to release a discussion draft of a bill that will reflect

## Passage of greenhouse gas emissions control legislation during the next two years still seems likely.

what the committee has learned over the past several months. Representatives Dingell and Boucher therefore may end up well-positioned to develop a consensus bill, causing a shift in attention in the climate debate to the House. So far, however, climate hearings in the House continue to raise more issues than they resolve, and no comprehensive climate change legislation appears likely to get to the floor this year.

### NEW PRESIDENT MAY ACT THROUGH EPA

Over the last few months, key issues that will have to be resolved in any climate legislation have been highlighted by the group of ten and Sen. Bingaman in the Senate, and by Representatives Dingell and Boucher in the House. Nevertheless, no matter the outcome of the national elections, the new President will face a crowded agenda. The level of priority devoted to climate change in the first year of the Administration is therefore uncertain.

Complicating matters, the new Congress will be confronted with competing actions on climate change by federal agencies representing diverse interests, including EPA under the Clean Air Act and the Department of Interior under the Endangered Species Act. Congress will have to address how to coordinate climate legislation with these regulatory activities if legislation is to be effective. The several Congressional committees that could assert jurisdiction over some aspect of the climate change will have to work effectively with each other and the Administration if there is to be progress on a comprehensive bill.

Congress will also need to address how to regulate the market forces that climate legislation will unleash, and how to avoid manipulation of these new markets to the detriment of public interest. At the same time, legislators will have to keep an eye on how domestic legislation melds with the successor agreements to the Kyoto Protocol that the United States will be involved in negotiating.

The expectations of certain constituent groups, which were raised by the Lieberman-Warner bill, are likely to be left unmet by subsequent legislative

proposals. Unmet expectations, as much as anything, could derail climate legislation in a new Congress.

Next year promises to be different in at least one key respect: Both presidential candidates are on record as strongly supporting a mandatory cap-and-trade regime for controlling greenhouse gas emissions. Each might be expected to make climate change a key executive branch priority. Armed with last year's Supreme Court decision in *Massachusetts vs. EPA*, the next president might also use his authority to address climate change as leverage over Congress to negotiate climate change policy. Congress will either work with the new administration, or will try to reach consensus itself while the President moves forward with his policies through EPA.

A final important factor in the climate debate in 2009 will be whether the Administration decides to introduce and campaign for its own climate bill as a means of spurring congressional action, or whether it looks to key members of the House and Senate to broker a compromise.

Given the many forces at work, passage of greenhouse gas emissions control legislation over the course of the next two years still seems likely. The number and complexity of remaining issues point to a lengthy negotiation process and makes it difficult to predict the shape of any future legislation.



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# Capturing and Storing Carbon

A stylized illustration of a landscape. In the foreground, there is a green grassy area with several small green trees and yellow flowers. In the background, there are two blue clouds and a larger green tree on the right side.

## Risks and Liabilities

By Frederick R. Eames and Brent Fewell

**ACHIEVING THE DRAMATIC** reductions in greenhouse gas emissions contemplated by pending legislation will require drastic changes in energy production and consumption. Managing the legal liabilities and risks associated with the development

of new energy technologies will be key to the success of any climate change program. This is illustrated by the debate over carbon capture and storage (CCS).

The United States generates about half of its electricity by burning coal, and it has more than a 100-year supply at projected consumption levels. Because coal emits more carbon dioxide per BTU than other fossil

fuels, many believe that use of CCS technology to separate the CO<sub>2</sub> from coal plant emissions, compress it into a liquid state, and then pump it underground for long-term storage, will be critical to a reliable and affordable supply of electricity. This article explores the legal liabilities and risks that create barriers to the development and deployment of this important technology.



## MAJOR HURDLES

New coal-fired generating plants will be needed to satisfy increasing demand for electricity. There is substantial opposition, however, to building new plants that cannot accommodate CCS technology to prevent carbon dioxide from entering the atmosphere. But, as Duke Energy CEO Jim Rogers observed recently, “CCS as a magical technology that solves the carbon problem for coal plants is oversold ... There is a lot to learn, and it is going to take longer to figure it out than we think.”

The hurdles to commercial use of CCS include technological, cost, regulatory, and liability issues.

The technology exists to capture, compress, transport

and store CO<sub>2</sub> underground, but these processes have never been integrated. For commercial-scale application at a power plant, challenging technological issues exist at each step. For example, simply removing the CO<sub>2</sub> from the gas stream currently requires almost one-third of the plant’s electricity output.

Once captured, the corrosive nature of liquefied CO<sub>2</sub> could require construction of a new pipeline system to transport it to underground injection sites. Storage of CO<sub>2</sub> in deep saline and other suitable formations would be on a scale dwarfing any prior experience in the context of enhanced oil and gas recovery. For comparison, the 2006 federal Toxics Release Inventory reported

236 million pounds of underground injections of all types. By contrast, a single average-sized coal-fired power plant (500 megawatts) will produce some 6 billion pounds of CO<sub>2</sub> annually. The United States has the equivalent of 630 such power plants.

CCS is expensive. Since one-third of a power plant's energy is needed to operate a CCS system with current technology, if CCS were installed universally today, a 16 percent increase in U.S. electricity production would be needed just to break even. Assuring the long-term integrity of underground storage sites will entail additional and largely unknown costs.

A variety of state and federal regulatory regimes complicate construction and operation of CCS facilities. For example, who owns the "pore space" in the deep geologic formations where the CO<sub>2</sub> would be stored, the surface owner or a subsurface owner? Is eminent domain authority available for construction of CO<sub>2</sub> pipelines across private property, and for sub-surface storage rights? Will the lead regulator for CCS-equipped plants, pipelines, and the injection and storage process be state or federal?

The premise for CCS is that CO<sub>2</sub> injected underground will remain there long-term. If it escapes, who is liable for property damage or other impacts? What if CO<sub>2</sub> migrates underground and contaminates water or oil and gas reserves? How does one calculate this liability?

#### TECHNICAL CHALLENGES

When mixed with water, CO<sub>2</sub> forms carbonic acid, which is corrosive and can compromise the integrity of traditional pipeline materials. During the capture and transportation of CO<sub>2</sub> to underground injection sites, the principal risks are pipeline or other technology failure and unanticipated CO<sub>2</sub> release.

If that does occur, the likelihood of harm to human health or the environment is low. The principal liability would be the cost of acquiring CO<sub>2</sub> credits or allowances

### Who owns the "pore space" in the deep geologic formations where the CO<sub>2</sub> would be stored, the surface owner or a subsurface owner?

to cover the unanticipated release. This is a risk that can be allocated through commercial contract terms.

In contrast to the manageable risks of CO<sub>2</sub> capture and transportation, underground storage of massive quantities of CO<sub>2</sub> is an untried concept, raising a host of new issues. When CO<sub>2</sub> is injected into deep saline formations, the pressure differs dramatically depending on

the characteristics of the underground formation. Depending on pressure, injected CO<sub>2</sub> will displace saline waters and minerals.

For example, the plume from 50 years of CO<sub>2</sub> injection from a 1,000 megawatt power plant could stretch 40 to 100 square miles. Some have expressed concern that

### Liability could stretch beyond the capacity of risk management tools currently available in the markets.

migrating CO<sub>2</sub> could foul valuable mineral resources, cause pollution of underground freshwater aquifers by mobilizing metals, or occupy valuable storage space.

This raises a whole host of legal and liability issues regarding impacts on subsurface water and minerals, and who would bear the liability for such impacts. How does a facility operator obtain property rights that address mineral displacements that stretch under perhaps thousands of surface owners?

As another example, consider that carbon dioxide is heavier than air. A CO<sub>2</sub> leak that pools in a low area could result in injury to the environment. Some think that pressure from injections could cause land to heave or subside, or trigger seismic events. Swiss homeowners claimed significant damages from seismic activity induced by injections for a geothermal project in 2006.

Property rights are the traditional province of the states. State law differs in critical respects as to sub-surface ownership, eminent domain, and other property rights, including what standard of liability applies. For example, to the extent that CCS is considered an abnormally or inherently dangerous activity under state law, a strict liability standard would apply in some states, meaning liability for damage associated with CO<sub>2</sub> releases would attach regardless of fault.

Because CCS is a key element of achieving federal climate change goals, the federal government will play an important role in resolving the uncertainties and risks created by state regulation in the future. However, the current federal regulatory structure already creates significant risks and liabilities for CCS technology. The Safe Drinking Water Act requires EPA to develop minimum federal standards for states to protect underground sources of drinking water through the Underground Injection Control program.

In addition, it provides EPA with broad emergency authority under certain circumstances to mitigate the risks of any "contaminant" that may enter an underground source of drinking water and that presents an "imminent and substantial endangerment" to human health. The term "contaminant" includes any physical,

chemical, biological, or radiological substance or matter in water. This could include CO<sub>2</sub>, any materials in the compressed CO<sub>2</sub> gas that is injected, or any subsurface materials that may be displaced by the injection of CO<sub>2</sub>.

The Superfund law (CERCLA) imposes strict, joint, and several liability for “releases” of “hazardous substances.” While CO<sub>2</sub> is not a hazardous substance by current definition, the Supreme Court’s decision in *Massachusetts v. EPA* could lead the EPA to regulate CO<sub>2</sub> emissions under the Clean Air Act, which in turn could lead to liability under CERCLA for CO<sub>2</sub> releases. CERCLA provides for remediation in the case of releases, with cumbersome liability allocation and related litigation.

The storage and disposal of “hazardous wastes” are subject to The Resource Conservation and Recovery Act (RCRA). Although CO<sub>2</sub> is not currently regulated as a hazardous waste, the compressed CO<sub>2</sub> gas that is injected could contain small concentrations of other constituents that are subject to RCRA.

If RCRA is triggered, the government can compel remediation through that law’s corrective action program, and citizens can file suit in situations that “may present an imminent and substantial endangerment to health or the environment.”

The challenge for the federal government in the coming years will be to reconcile and simplify the many and often-conflicting federal and state legal regimes.

#### POST-CLOSURE LIABILITY

Since injection of CO<sub>2</sub> is to be permanent, CCS project proponents are interested in knowing who will be liable after closure of the CO<sub>2</sub> injection well, both in the initial post-operation closure period—10 to 30 years—and in the longer term, potentially hundreds of years. The uncertainty surrounding these liabilities has been rated by utility executives, financiers, and project developers as among the top current impediments to building a coal plant with CCS.

With proper site evaluation and engineering, the risk of a catastrophic event associated with operation of a carbon storage facility should be low. Furthermore, risks associated with underground injection of CO<sub>2</sub> will decline over time, as the CO<sub>2</sub> plume settles and mineralizes underground. But the market’s appetite for covering the risk also will decline with longer periods of exposure. Private institutions will not set aside reserves over geologic time. Should a catastrophic event occur, liability could stretch beyond the capacity of risk management tools currently available in the markets, such as insurance and bonds.

In comparable situations where the market could not absorb enough risk to encourage private parties to undertake socially desirable activity, the government itself has stepped in, either by limiting liability or agreeing to cover the liability itself, as in the case of the Terrorism Risk Insurance Act. In order to promote financing of CCS projects, some have proposed two layers of

government intervention, such as a modest charge on fossil fuels or energy output to capitalize a fund to cover potential CCS liabilities in the initial post-closure period, and a federal liability limitation to address catastrophic events over the longer term. Until there is a track record of safe storage of CO<sub>2</sub> in deep saline formations, the government may need to play a role to induce investment in CCS technology.

### **The market’s appetite for covering the risk will decline with longer periods of exposure. Private institutions will not set aside reserves over geologic time.**

How to finance and encourage development and deployment of CCS technology is an important issue in the legislative debate over climate legislation. Most proposals would divert a significant amount of the revenues derived from the auction of CO<sub>2</sub> allowances to fund CCS development and deployment.

But with respect to risk mitigation, the proposals are much more varied. Some would create authority for a federal agency to reconcile conflicting regulatory mandates, while others would authorize special insurance funds or liability caps to address long-term liabilities. Until both financing and critical risk and liability issues are resolved comprehensively, the promise of CCS technology will not be realized.



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# Promote Technology, Avoid Bureaucracy

## Q & A with Senator George Voinovich

George Voinovich is a Republican who has served as mayor of Cleveland, governor of Ohio, and since 1998 as a U.S. Senator from Ohio. He is a strong supporter of the coal industry and advocates domestic drilling, including offshore and in ANWR, to address future energy needs. Executive Counsel interviewed him about the current prospects for climate change legislation.

**Executive Counsel:** What do you think it would take for a climate bill to gain broad support from both Republicans and Democrats?

**Senator Voinovich:** We need to balance our environmental goals with the nation's economic and energy needs to reach consensus. This can be done by placing emphasis on the development and deployment of new technologies. Technology alone may not be enough, but it's where we should start. Breakthroughs in technology will be what makes it possible to reduce emissions cost-effectively, so climate change legislation should provide a direct link between the existence of appropriate technology and the onset of compliance obligations. If the limits proceed without reference to what technology can do, the net effect will be tremendous harm to our econ-

omy without significant environmental improvement. Above all, our approach to climate change needs to avoid entangling individuals and businesses in new, unnecessary layers of government bureaucracy.

what happened with the legislation? What should our expectations be as Congress attempts to move forward?

**Senator Voinovich:** Addressing climate change should be a policy exercise, not a political one. Even before the first floor vote, the framework needs to be supported by a broad, bipartisan set of stakeholders. That requires hard work on both sides of the aisle, starting with far more discussion on the impacts of a cap-and-trade system on the economy and government bureaucracy. We should not, as some proposals have contemplated, create entirely new agencies, boards, and offices with layers upon layers of regulation. We can't lose sight of the consequences this can have on businesses, particularly small businesses.

**EC:** What is the current state of available technology—that is, technology that has been successfully demonstrated and isn't so costly that it can't be deployed at a commercial scale?

**Senator Voinovich:** My state of Ohio, with its reliance on coal for much of its energy needs and its strong manufacturing presence, is particularly vulnerable to overly aggressive and poorly calibrated emissions reduction requirements. But there are technologies in development that will allow us to reduce emissions while utilizing our abundant natural resources, enhancing our energy security and protecting the economy.

We need to do more for carbon capture and storage and other promising technologies. When you look at where we are now and where we need to go, it becomes clear that we're not going to meet our goals without significant breakthroughs in technology. We need to invest in our nation's innovation infrastructure, providing broader support for research and development, training more engineers, scientists, and other technical workers.

**Our approach to climate change needs to avoid entangling individuals and businesses in new, unnecessary layers of government bureaucracy.**



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**EC:** With the debate on the Lieberman-Warner Climate Security Act recently concluded, what did you learn from

**EC:** Al Gore said recently that this nation should commit to using nothing but renewable energy in ten years. Considering that climate change legislation under discussion extends out to 2050, how would you explain the U.S. Congress's support for an energy strategy that includes coal, as well as nuclear and renewable energy?

**Senator Voinovich:** When you look at the different sources that provide our energy today, and when you consider our projected demand for energy in this country, it becomes clear that we're going to have to work hard just to keep the lights on. If you add in a program to address climate change, the challenge becomes even greater.

Of course, over the next ten years, we're going to have more renewable energy than we've ever had. We're going to start building new nuclear plants for the first time in more than 30 years. But the realities of energy demand and base load electric generation mean that we can't turn our back on coal without the cost of energy going through the roof. With promising new technologies, such as carbon capture and storage, we can continue to rely on coal for affordable energy while still addressing climate change.

**EC:** Outside of a comprehensive federal climate change program, what are other ways Congress can help spur the development of new technologies? What's worked so far, and what else is worth trying?

**Senator Voinovich:** The energy bills Congress passed in 2005 and 2007 provided numerous incentives and funding for new technology, but there's more we could do in advance of a comprehensive climate program. It may make sense for Congress to pass stand-alone legislation that promotes rapid advancement of technologies to reduce emissions and provide energy security.

**EC:** What is the significance of an international agreement on climate change?

**Senator Voinovich:** Economically and environmentally, the United States just can't afford to act alone on climate. It is worth noting that U.S. greenhouse gas emissions have declined slightly in recent years, while emissions in China, India, and other developing countries have skyrocketed. China just passed the United States to become the world's largest emitter and is showing no signs of slowing down.

This means that even drastic reductions in U.S. emissions won't solve the global climate problem, so long as emissions from developing countries continue to grow. In addition, capping U.S. emissions while letting China's continue to grow will send U.S. jobs abroad. We can't afford to act alone. **EC**

**Carbon Markets** *continued from page 41*

documenting their sale, must be carefully drafted so that there is no "double-counting" and no question that the additionality requirement has been met.

Buyers have different rationales for entering the carbon market now instead of waiting until they have to. Some are doing it to gain expertise. Others seek to meet social responsibility goals. Some companies have adopted a carbon reduction target or a carbon neutrality goal. Others do so to respond to or preempt shareholder resolutions.

Among companies that have reductions to sell, some conclude it makes sense to sell now when there is demand for VERs, because there is no guarantee that the U.S. Congress will adopt a trading regime that grants credit for these reductions. The tradeoff is between knowing you can get \$2 to \$7 a ton for your VER now as opposed to getting nothing under a compliance regime, or possibly getting a much higher price under a more favorable market.

Even if Congress does adopt a trading regime, there is no guarantee it will give credit for early action or that any credit given will acknowledge the type of reduction that has been made. Sellers are making money off these deals now—sometimes several million dollars at a time. Just as there is an active voluntary carbon market in the parts of the world covered by the Kyoto Protocol, there is likely to remain some room for VER transactions even if the United States does adopt a cap-and-trade system.

If you decide to enter the carbon market before you are forced to, be sure to consult experienced advisors and verifiers to ensure that the trade is done correctly, and to minimize the risks in a private, unregulated market. Parties are well-advised to keep in mind that there are no guarantees that VERs will either increase in value or will comply with a future law.

While there are many reasons to undertake VER deals now, parties should enter into these transactions with their eyes wide open.



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The Hunton & Williams LLP global Climate Change Law and Policy Practice assists clients with challenges and opportunities emerging from regulatory and corporate responses to climate change. In this multi-faceted practice, we assist clients with carbon reduction projects and trading globally, support the development of corporate institutional climate policies and strategies, and litigate climate change-related matters in the United States. The practice's strong government relations group closely tracks legislative and regulatory developments at state, federal and international levels and advises clients in the US, the EU and elsewhere on climate policy issues. We also advise public companies on the disclosure of climate-related risks as part of their obligations under relevant rules.

Areas of law implicated in the regulation and reduction of greenhouse gas (GHG) emissions include tax, capital markets, trade, corporate, property, administrative, tort, criminal, finance and environmental. As a full-service firm, Hunton & Williams is experienced in all these areas and possesses the strategic, policy development, political, technical and financial skills to implement the best course of action for a company contemplating a GHG reduction strategy.

Chambers Global described the firm's Climate Team as "making a big splash," and "part of an elite club of US firms with offices in Europe and Asia, and . . . a frequent choice for clients and in-house counsel seeking climate change expertise." Chambers Global also points to interviewees' descriptions of the firm as having "the pre-eminent Clean Air Act practice," with this expertise dovetail[ing] nicely with climate change work," as well as identifying the "distinguishing factor" of Hunton & Williams to be its 'prompt and practical advice on a whole variety of climate change issues.'

