
Environmental Due Diligence— Counting Carbon

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In winter 2006, *Natural Resources & Environment* published an article we wrote entitled “Transactional Environmental Due Diligence: What Diligence is Due?” Our basic thesis was that parties to transactions involving real estate should consider all pertinent environmental factors and not simply apply the Superfund “all appropriate inquiry” standard prescribed by the U. S. Environmental Protection Agency (EPA). 40 C.F.R. pt. 312. Since that time, more and more public attention has been focused on climate change and control of greenhouse gases (GHGs), and our society is becoming “carbon constrained.” With this public attention have come legal developments that make it especially appropriate to consider expanding the scope of environmental due diligence to address assets and liabilities created by carbon constraints.

This article provides background information on the concept of carbon constraints and available options to reduce carbon. It then discusses how carbon constraints create assets and liabilities and makes suggestions as to how to identify those assets and liabilities through due diligence.

In response to climate change concerns, a variety of actors have begun implementing programs to constrain GHGs. Nations have entered into international treaties and developed regional and national regulatory programs. State governments have developed individual and regional GHG initiatives, and public and private entities have undertaken voluntary GHG reductions.

From a regulatory perspective, carbon dioxide (CO₂) is the most important GHG because it is the single-largest anthropogenic contributor to global warming, but there are other significant GHGs. In addition to CO₂, five other GHGs are mentioned in the Kyoto Protocol: methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). The term “CO₂ equivalent” is the standardized measure for expressing emissions of a GHG as a function of its global warming potential compared to CO₂, and the term “carbon” often is used as shorthand not merely for CO₂ and CH₄, but also for all GHGs. The expression “carbon constrained” may be used to refer to legal and societal restrictions on the generation of GHGs.

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The most significant and well-known constraint on GHGs is the Kyoto Protocol, into which all industrialized countries entered, except the United States. 37 I.L.M. 22 (1998), http://unfccc.int/kyoto_protocol/items/2830.php. The Kyoto Protocol provides the basis for a global GHG emission cap-and-trade program. Under such a program, the regulatory authority sets a cap on total mass emissions for a group of sources for a fixed compliance period, e.g., one year. The authority then divides the cap into allowances, each representing an authorization to emit a specific quantity of the pollutants, e.g., 1 ton of CO₂, which are then allocated and/or auctioned off to the various sources in the group.

For a specified compliance period, each source must measure and report its emissions of the subject pollutants. At the end of the compliance period, the sources must surrender their allowances to cover the quantity of the pollutants they emitted. If a source does not have sufficient allowances to cover its emissions, the authority penalizes it, usually by reducing the number of allowances the source will receive in future years.

Because of the economic value of allowances, sources are encouraged to decrease their emissions and either sell the difference, to obtain an economic benefit, or bank it, to obtain future flexibility in emission reductions. The buying and selling of allowances is typically used in conjunction with a regulatory project-based program, which allows sources the ability to acquire offsets from sectors not in the regulatory program, e.g., CO₂ offsets from a project to protect a forest slated for deforestation.

At present, there is no overarching federal program in the United States addressing GHG emission limits. But on March 10, 2009, in accordance with a congressional mandate, EPA proposed a rule providing for mandatory reporting of GHGs above specified thresholds for various sectors of the economy, which is to serve as a basis for future regulation. 74 Fed. Reg. 16,448 (Apr. 10, 2009).

The issue of EPA’s authority to regulate GHG emissions has been the subject of much debate. In *Massachusetts v. EPA*, the U.S. Supreme Court required EPA to make an endangerment determination to decide if regulation of GHGs is required under the federal Clean Air Act (CAA). On July 30, 2008, EPA issued an advanced notice of proposed rulemaking (ANPR), soliciting comments on whether and how CO₂ and other GHGs should be regulated under the CAA. 73 Fed. Reg. 44,354. On April 17, 2009, EPA issued both its pro-

posed “endangerment finding” that GHGs in the atmosphere “endanger the public health and welfare of current and future generations” and its proposed “cause or contribute finding” that certain GHG emissions from motor vehicles are contributing to air pollution endangering public health and welfare. 74 Fed. Reg. 18,886 (Apr. 24, 2009).

The issue of whether CO₂ should be addressed under the CAA also has arisen in the context of air-quality permitting. On November 13, 2008, EPA’s Environmental Appeals Board, in light of *Massachusetts v. EPA*, 549 U.S. 497 (2007), remanded an EPA-issued prevention of significant deterioration (PSD) permit for a coal-fired generating unit proposed on Native American land in Utah by Deseret Power Electric Cooperative. *In re Deseret Power Electric Cooperative (Bonanza)*, PSD 07-03, 14 E.A.D. ____, (Nov. 13, 2008). Although the EAB rejected the petitioner Sierra Club’s argument that the applicant had to demonstrate that the unit satisfied the technological standard of Best Available Control Technology (BACT) for CO₂, it found that EPA had failed to adequately explain why it chose not to require that CO₂ be addressed by the applicant and suggested that EPA might better address this issue on a national level.

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On December 18, 2008, then-EPA Administrator Stephen Johnson responded, issuing an interpretative memorandum that reaffirmed EPA’s view that regulated pollutants, for which BACT must be applied under the federal PSD program, do not include any pollutant, such as CO₂, that is subject only to monitoring and reporting requirements under the CAA. Memo. from EPA Administrator Stephen L. Johnson to EPA Regional Administrators (Dec. 18, 2008); 73 Fed. Reg. 251 (Dec. 31, 2008), www.epa.gov/nsr/documents/psd_interpretive_memo_12.18.08.pdf. The Obama administration has decided to reconsider this interpretation. “EPA Administrator Jackson Orders Review of Key Clean Air Document,” (Feb. 17, 2009), www.epa.gov/newsroom/index.htm (search by press release title).

Many believe that federal GHG legislation, which failed to pass in the last Congress, will and should overtake GHG regulation under the CAA, because the CAA is ill suited to address GHGs and climate change. Unlike traditional air pollutants, which act regionally and produce direct effects, GHGs act globally and produce indirect effects that contribute to the consequences of global warming. Legislative proposals to regulate GHGs have taken a variety of approaches, including

both carbon taxes and cap-and-trade programs. On May 21, 2009, Representatives Edward J. Markey (D-MA) and Henry A. Waxman (D-CA) introduced a comprehensive draft global warming bill, which included a GHG cap-and-trade program, and, on June 26, 2009, the House passed a version of that bill entitled the American Clean Energy and Security Act (ACES), H.R. 2454. ACES also includes provisions encouraging the development of clean energy and energy efficiency.

Many states have decided not to wait for the federal government and have developed their own regional and state GHG cap-and-trade programs. Two of the most notable programs are the Regional Greenhouse Gas Initiative (RGGI), a mandatory, market-based initiative by ten northeastern and Mid-Atlantic states to cap and reduce CO₂ emissions in the power sector (www.rggi.org), and the Western Climate Initiative (WCI), a collaboration among seven western states and four Canadian provinces to lay the foundation for an international, market-based GHG cap-and-trade program between the United States and Canada (www.westernclimateinitiative.org). California’s Global Warming Solutions Act of 2006 (AB-32) created the first enforceable, statewide program in the United States that capped GHG emissions from major industries and reduced GHG emissions. Cal. Health & Safety Code § 38500 (2009).

Driven by a variety of stakeholders, and perhaps in anticipation of upcoming regulation, many sources of GHG emissions have undertaken voluntary measures to reduce CO₂ and other GHGs attributable to their operations. For example, the Walt Disney Company recently released a corporate responsibility report stating its long-term goal of achieving net-zero direct GHG emissions for its office and retail operations, theme parks, and cruise lines. THE WALT DISNEY COMPANY 2008 CORPORATE RESPONSIBILITY REPORT, http://a.media.global.go.com/corporateresponsibility/pdf/Disney_CR_Report_2008.pdf. And more than 200 leading corporations have joined EPA’s Climate Leaders program and pledged GHG reductions. See www.epa.gov/climateleaders.

Despite the ever-changing regulatory and market-driven landscape of the carbon-constrained economy, there are some basic principles regarding how carbon is constrained and how carbon credits may be created.

Accounting for Carbon

The various regulatory programs generally set limits on direct emissions of GHGs from specified stationary sources. But the GHGs attributable to a company include other direct and indirect sources of GHG emissions, which, though generally unregulated, may be counted in voluntary reporting protocols.

There are a number of protocols to account for GHGs. EPA’s proposed rule, which applies to emissions of specified stationary sources, entails a combination of direct measurement using continuous emission monitors and facility-specific calculations, similar to those used by California’s AB-32 and by the Climate Registry, a nonprofit that sets voluntary GHG calculation, verification, and reporting standards. www.

theclimaterestory.org/resources/protocols. Another widely used voluntary reporting methodology is the GHG Protocol developed by the World Business Council for Sustainable Development and the World Resources Institute. *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (rev. ed.) http://pdf.wri.org/ghg_protocol_2004.pdf. The GHG Protocol creates a common measuring standard for corporate-wide emissions for the six Kyoto GHGs. Although the GHG Protocol's focus is on the corporate level, its guidance is useful on the facility level also, and its drafters urge facility-level GHG accounting to facilitate benchmarking and identifying improvements.

In developing voluntary carbon-reduction programs, companies often focus not only on their stationary source GHG emissions—the ones most likely to be regulated—but also on their entire “carbon footprint.” The term is defined as the total emissions of CO₂, and any other GHGs expressed in terms of CO₂, for a defined system, activity, or product. A facility's carbon footprint turns on what GHG emissions are included. The GHG Protocol establishes three “scopes” for categorizing direct and indirect emissions. A Scope 1 footprint analysis includes direct emissions of a system or activities; a Scope 2, indirect emissions associated with electricity, heat, and steam purchased to support the system or activities; and a Scope 3, indirect emissions resulting from operations that do not originate at sources owned or controlled by the company, e.g., transportation by suppliers or the use of sold products and services.

The first step for a company seeking to reduce its carbon footprint, either to meet regulatory requirements or to address stakeholder pressures, is to consider reducing the emissions it produces. If these reductions are not in response to regulatory requirements, the company may be able to use them to create carbon credits that it can use either to offset its own emissions or to sell.

To reduce its emissions, a company could implement measures to conserve fuel and to become more energy efficient. It also can switch to a cleaner source of energy, such as natural gas as opposed to fuel oil or coal, or use alternative energy sources, such as wind or solar. A company also may impose similar measures on suppliers, to require them to implement their own measures to reduce carbon. Conversely, a company may have such demands imposed upon it by its customers.

To reduce transportation-related carbon, a company could switch to more fuel-efficient vehicles, hybrid vehicles, or alternative fuels or use rail instead. A company also could manage shipments to reduce the airspace in packaging and to otherwise reduce the number of trips. Finally, a company can implement waste-minimization practices, decreasing transportation needs.

For any CO₂ it cannot otherwise reduce, a carbon-intensive company, like an electric utility, theoretically could capture CO₂ and transport it by pipeline for underground storage or reuse, e.g., in enhanced oil recovery or as a raw material for a manufacturing process requiring CO₂. Geologic sequestration of carbon in the subsurface is subject to the Underground

Injection Control (UIC) program of the Safe Drinking Water Act (SDWA) as a Class II well for enhanced oil/gas recovery and as a proposed new type of well, a Class VI well, for storing carbon, 73 Fed. Reg. 43,492 (July 25, 2008). Similarly, a municipal landfill could install equipment to capture methane and burn it to produce energy.

To convert GHG reductions into carbon credits, a company must document and verify them and demonstrate that they are permanent, enforceable, and “additional,” i.e., not otherwise required or driven by profit. Pertinent to that documentation is the establishment of a baseline against which reductions can be measured. Carbon credits may be created under both regulatory and voluntary frameworks. Those generated by voluntary action outside of regulatory frameworks are generally referred to as Voluntary Emissions Reductions (VERs).

In addition to creating its own carbon credits or offsets, a company could purchase them from others through regulatory frameworks or voluntary markets. Regulatory frameworks include the European Union Emissions Trading Scheme, developed to implement the Kyoto Protocol, which trade so-called EU Allowances (EUAs), and domestic regional programs, such as RGGI and California AB-32. Voluntary markets include the Chicago Climate Exchange (CCX), which trade Carbon Financial Instruments (CFIs) generated by member allowances or approved nonmember offsets, and its subsidiary the Chicago Climate Futures Exchange (CCFE), which trades in similar carbon futures and options contracts. The Green Exchange, launched in March 2008 as part of the New York Mercantile Exchange (NYMEX), trades Certified Emission Reductions (CERs) and EUAs as well as non-GHG emissions contracts. In Europe, the European Climate Exchange (ECX) and the Nordic Power Exchange (Nord Pool) also trade EUAs and CERs.

Under Kyoto, carbon credits also may be created utilizing Joint Implementation (JI) and the Clean Development Mechanism (CDM). JI enables entities in industrialized countries (known as Annex I countries) to carry out projects with entities in other developed countries, resulting in the creation of Emission Reduction Units (ERUs). CDM involves investment in sustainable-development projects that reduce carbon in developing countries (known as non-Annex I countries) and results in the creation of CERs credits. 37 I.L.M. 22 (1998).

The use of offsets or credits often cannot be a company's entire solution to carbon constraints. Under RGGI, for example, offset allowances may only be used to satisfy a limited portion of the source's compliance obligations. During RGGI's initial three-year control period, a power plant's use of CO₂ offset allowances is limited to 3.3 percent of its total compliance obligation, although it may expand this percentage if certain CO₂-allowance price thresholds are reached.

To ensure that the offsets are real, additional, verifiable, enforceable, and permanent, RGGI offsets are limited to five project categories: (1) landfill methane capture and destruction; (2) reduction in sulfur hexafluoride in the electric power sector; (3) sequestration of carbon due to afforestation; (4) reduction or avoidance of CO₂ emissions from natural gas,

oil, or propane end-use combustion due to end-use energy efficiency in the building sector; and (5) avoided methane emissions from agricultural-manure management operations. These offset types are typical, but not all-encompassing, of the offsets derived in other offset verification programs, such as the Voluntary Carbon Standard, Kyoto Protocol JI/CDM, and the California Climate Action Registry.

Creation of Carbon-Related Assets and Liabilities

With the uncertainty regarding the potential structure of a federal regulatory program and the panoply of foreign, regional, and statewide regulatory programs as well as voluntary programs, it is difficult to evaluate the impact of carbon constraints on a company's financial well-being. But it is easy to conclude that carbon emissions may result in both positive and negative economic value. Understanding whether the target company's carbon is an asset or a liability is critical to due diligence.

As a general rule, a company that already has taken steps to manage carbon is in a better position with regard to future liabilities than one that has not. To the extent new regulation requires further carbon reductions, the greater the company's carbon emissions, the greater its liabilities in terms of time and costs to comply, and the greater its prior carbon reductions, the less its liabilities.

The structure of a regulatory program for GHG emissions determines how carbon is valued. For example, the structure will decide whether a cap-and-trade program provides for the allocation of emissions allowances to existing carbon generators, for auctioning off of those allowances, or for a combination of both. If carbon is to be allocated without charge according to prior baseline emissions, the more emissions a company has, the better. It then can sell off credits, subject to regulatory constraints, to the extent it is able to reduce its emissions beyond regulatory limits. Conversely, if the carbon is to be auctioned off, the more emissions the company has, the more emission credits it will need to purchase to offset those emissions. Similar considerations apply to both a carbon tax and a carbon auction. In both cases, the generation of carbon results in a liability.

As noted, even in the absence of regulation, many companies have generated carbon credits. These credits may be traded and hence valued on regulatory markets, such as EU ETS and RGGI, and on private voluntary markets, such as the CCX. Customarily, the value of these credits turns on their performance, their permanence, and whether they are "additional," i.e., not otherwise required by regulation or driven by profit. And, of course, if these reductions are generated from actions that are later mandated through regulation, they lose the attributes of additionality and hence could lose their value. Additionally, the new legislation likely will address whether and to what extent precompliance reductions and credits will be recognized.

A promising avenue for both creating carbon-related assets

and reducing potential liabilities is through the green design, construction, renovation, and operation of buildings. Reducing GHG emissions by improving the energy efficiency of new and existing buildings has been called the "low-hanging fruit" of GHG emissions reductions because of the amount of emissions attributable to buildings and the energy-savings potential of retrofitting them with readily available, off-the-shelf technology. Although most existing cap-and-trade programs have yet to recognize offsets or credits for reducing electricity consumption in buildings, the U.S. Green Building Council is set to revise its Leadership in Energy and Environmental Design (LEED) rating system in 2009 to enhance its focus on carbon issues, and companies that have invested in green building retrofitting and design have a step up in both marketing and regulatory compliance if and when green design is recognized by the arbiters of carbon credits.

Carbon Due Diligence

Given these competing considerations, performing due diligence becomes a complex task, and the degree of complexity depends upon the nature of the target company's carbon emissions and the steps it has taken to address them. But some general principles can be applied to create a meaningful due diligence protocol.

The value and quantifiability of carbon-management initiatives will depend not only on how much carbon the company has reduced, but also on the nature of the steps taken to effect those reductions, as well as the precise method of the emissions calculation. Pertinent questions include whether the company has reduced its direct and indirect emissions and purchased carbon credits.

A primary consideration in due diligence must be to identify and ensure that the target company complies with any mandatory regulations regarding GHG emissions. In the absence of comprehensive legislation at the federal level and with a patchwork of regional, state, and local programs, determining which current regulations apply turns on the corporation's facility locations and activities. Because the focus of regulators has remained on direct, stationary source emissions, ensuring current compliance involves analyzing and "accounting" for the company's direct GHG emissions, as well as any regulatorily recognized offsets. Direct GHG emissions can be measured and verified by comparing against regulatory criteria, if there are any, or generally accepted protocols, if not.

When looking at the company's GHG emissions, diligence requires determining whether the current or future regulatory framework will make those emissions liabilities for the company or assets that can be managed to gain a strategic advantage over competitors. The manner in which emissions are allocated in future federal regulation will make all the difference. As noted, if emissions allowances are initially distributed without charge based on historic emissions data, these "grandfathered" allowances would make a company's current emissions more akin to an asset. But if instead all allowances are auctioned off

to the highest bidder, current emissions are more of a liability that must be mitigated through the purchase of credits at auction. ACES presently contemplates a majority of the allowances will be allocated rather than auctioned off.

The same rough calculus applies to the preregulatory reductions made by corporations in anticipation of overarching federal legislation. Some corporations that made voluntary reductions well in advance of regulation might see the value of those reductions shortchanged by a possible initial allowance distribution that does not properly compensate the company for work already done. In response to this potential pitfall, prior drafts of federal legislation have included “early-action” credits to compensate and reward companies that were early leaders in assessing and reducing their carbon footprints.

In addition to evaluating carbon regulatory requirements, due diligence should carefully evaluate whether the company has obligated itself to make GHG emission reductions through voluntary commitments. Many companies have undertaken emission-reduction obligations contractually through agreements with customers or other third parties. To the extent a target company operates under carbon constraints because of a business relationship, such contracts should be reviewed to understand both the extent of the obligation and who owns the resulting emission reductions.

Some corporations have monetized the potential of their green activities by selling carbon offsets on a regulatory or voluntary market. These actions may result in the imposition of additional carbon constraints on the company outside of a formal regulatory framework, and hence limit their carbon flexibility—and possibly their operational flexibility—going forward.

Due diligence also should identify, quantify, and verify a company’s green marketing claims that tout the company’s “green” or “carbon-neutral” credentials to shareholders or the general public, including the validity of the assumptions upon which those claims are based. To the extent those assumptions are unsupported, some evaluation should be made of both the costs necessary to make those assumptions and corresponding claims accurate and the exposure to liability for those claims being inaccurate in the interim.

If the target company has purchased credits to meet regulatory or voluntary obligations, diligence may include reviewing the value and validity of the offsets. Methodology and requirements for credits or offsets vary, but the general requirements are that the activity that generated the credits, whether it was a reduction of a company’s emissions or the creation of credits through a third-party project, be additional, verifiable, enforceable, and permanent. Due diligence should ensure the credits are recognized by the appropriate regulatory entity, if applicable, and are accurately valued in any transaction. If the relevant credits were endorsed by a third party, diligence would include investigating the third party and verifying the accuracy and value of their verification in light of future regulatory intervention. A purchasing company may also need to ensure the credits remain additional, i.e., that new regulations do not require the action

that generated the credits.

If a company plans to buy credits directly from another corporation, due diligence should include an evaluation of indemnification provisions in the event the seller is unable to deliver all or part of the contracted credit in a timely manner. Conversely, when the corporation is the seller, the company should investigate the likelihood it will default on its delivery obligations and any penalties in the event of default.

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Finally, GHG due diligence should factor in the business plan underlying a proposed deal. For example, the profitability of a target company and the economic feasibility of the acquirer’s business plan could be heavily impacted by the emissions regime in place. If the business model will significantly alter the emissions of the target (e.g., by increasing the number of shifts at a manufacturing plant), the likely GHG consequences of the change should be fully investigated prior to acquisition. While poor planning could result in acquiring more emissions, and hence liability, than previously anticipated, proper diligence with a focus on carbon constraints could make the combined entity even more valuable. For instance, the combination of the acquirer and target corporations might permit better emissions management through the same carbon-reduction options discussed above because combined facilities and infrastructure might make carbon capture or similar reduction options more attractive. To the extent the combination makes revisiting these ideas feasible, it could add considerable value to the transaction.

With the increase in public attention on climate change and the control of GHGs, expressed in terms of “carbon,” our society is becoming “carbon constrained.” These constraints, which take the form of foreign, regional, and statewide GHG regulatory programs and impending federal regulation, as well as stakeholder-driven, public, and private voluntary initiatives, affect a company’s bottom line. Therefore, prospective purchasers of companies should consider expanding their environmental due diligence to address assets and liabilities created by carbon constraints. Although there is no established methodology for counting carbon in connection with a corporate acquisition, one can apply the general principles discussed above to create a meaningful due diligence protocol. 🌱