

# 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

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## 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.

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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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