

# WORLD-GENERATION

## Today's USA Carbon Market

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**By John W. Wadsworth, Esq.**

Twenty years ago, very few people in the utility industry had ever heard of global warming, and if they had, it was hard to take seriously. More pressing environmental issues, such as acid rain, hazardous wastes, and nitrogen or sulfur dioxide, were stealing the headlines, and were all urgent, immense and costly problems. Global warming was considered merely another environmental "disease of the week," and was given little credence.

Climate change issues had a number of other credibility issues with which to contend. Because the sources of greenhouse gases in the air are ubiquitous, and in many cases naturally occurring, it was difficult to envision what industry "owned" the problem. If no one was accountable for the cause, then who should be responsible for the solution?

Perhaps more troublesome was that global warming's very existence was in question. Detractors claimed that global warming was simply propaganda by environmentalists and those who resented the developed world's economic well-being. The scientific community could not provide conclusive data to prove or disprove the existence of climate change.

In the last two decades, the science of global warming has significantly evolved. Today, even those scientists who disputed global warming and the need to limit emissions recognize that the earth is heating up. The current argument centers on whether global warming is the result of the increase in carbon emissions that has occurred in the past 200 years, or is simply a long- or short-term, naturally occurring fluctuation in the environment. Scientists do not dispute, however, that the arctic ice sheet is disappearing much sooner than any of the models predicted, or that weather patterns are shifting dramatically. They merely disagree as to whether reducing man-made carbon emissions will have any measurable impact.

## Today's U.S. Carbon Market

Twenty-first century utility executives need to understand that the

scientific debate has now moved on and there will be significant carbon regulation in the very near future. One carbon regime is already in place in the northeastern United States in the form of the Regional Greenhouse Gas Initiative ("RGGI") which will cap emissions from electric generating plants. California, joined by a number of western states and Canadian provinces, is in line to regulate even more sources of carbon emissions than RGGI. And, regardless of who is elected U.S. President in November, regulation of carbon is said to be a priority on Congress' agenda. Utilities need to understand and appreciate what "regulation of carbon emissions" means to their industry, and how programs are being implemented. Only then can a utility determine how best to respond.

Many utility executives may remember the disputes over the Clean Air Act and the predictions of doom that, in particular, accompanied the debate over controls on sulfur dioxide, nitrogen oxides, and other acid rain pollutants. A "cap and trade" system was developed, where rights to emit a certain number of tons of a pollutant were allocated, and utilities had to make economic choices whether to install pollution control equipment and sell the allowances, or simply pay for the right to pollute. Given that there were technologies available at a known cost that would reduce or eliminate the need to acquire allowances, and given that the future price of allowances was uncertain, many utilities made the decision to install pollution control equipment, even though it may not have made short-term economic sense. As a result, the level of pollution reduction achieved under these cap and trade systems was much greater, at much less cost, than anyone had predicted.

Due to the success of these cap and trade programs, the environmental community has embraced this approach as the best way to implement carbon regulation. The success of earlier cap and trade programs has allowed many to dismiss concerns over costs and technology as simply a repeat of the overhyped "doom and gloom" of the SO<sub>2</sub> and NO<sub>x</sub> era. That said, it is important to note that there are critical differences between carbon and acid rain programs. First of all, there is no technology in existence or development today that will control carbon emissions. There is no piece of equipment that can be placed on a stack that is the equivalent of a scrubber for SO<sub>2</sub> or NO<sub>x</sub>.

Carbon capture and storage is at best in its infancy. An idea of using algae to digest the carbon dioxide in flu gases is being explored, but at best will be a minor player in this field. In other words, if a cap and trade system is put in place, utilities will not have the ability, at least for many years, to make economic choices to either install equipment or buy the right to pollute. For this reason, at least until there are major technological breakthroughs, a carbon cap and trade system will serve mainly as a tax, increasing the cost of carbon intensive sources of electricity, and in particular coal, but also oil and, to a lesser extent, gas. Unfortunately, given the generation mix in the United States, and our dependence on coal power, in order for there to be any meaningful shifting of fuel use that is solely based on the price of carbon, the cost of emitting a ton of carbon will have to become so high that electric

prices for consumers would skyrocket.

### **Are You Ready for RGGI?**

The Regional Greenhouse Gas Initiative, or RGGI, is the one carbon cap and trade system in the United States that is up and almost running. In a nutshell, RGGI establishes a maximum level of carbon dioxide emissions from power plants in the region, creates an “allowance” for each ton that is allowed to be emitted, and then requires every power plant to buy sufficient allowances to match their actual emissions over a three year period.

RGGI began in 2003 when former Governor of New York, George Pataki, sent a letter to the governors of other northeastern and mid-Atlantic states seeking a voluntary, cooperative effort to fight global warming. Over the next several years, the states developed a series of proposals for capping greenhouse gas emissions which were embodied in a Memorandum of Understanding and developed model rules to implement this program. Each of the participating states is now in the process, or has adopted, these model rules in whatever form is appropriate for that state. At this point, 10 states have agreed to be part of the RGGI program (Massachusetts, New York, Connecticut, Rhode Island, Vermont, Maine, New Hampshire, Maryland, New Jersey and Delaware), and each of these states are in various stages of adopting statutes or regulations to allow full participation.

### **How RGGI Works**

RGGI is designed to be a first step in controlling carbon emissions, impacting limited sources, with the hope that the experience gained from this program will allow for further expansion going forward. RGGI focuses only on power plants larger than 25 megawatts, excluding biomass facilities (such as wood waste, energy-from-waste, and other such facilities). In developing this program, the RGGI participating states first established a “cap” on carbon emissions, and agreed to a level of carbon dioxide emissions that will be allowed in each state. This cap was initially set at a level roughly equal to the actual average tons of carbon dioxide emitted annually from these plants during 2000 through 2004 over the region as a whole, and the number of tons allowed to be emitted in each state was set so as not to exceed this regional cap.

The RGGI program then sought to tie the tons allowed to be emitted each year into a cap and trade program by creating the concept of an “allowance”. Each allowance grants the right to emit a ton of carbon dioxide. Each participating state will be assigned its fixed number of emission allowances as allocated by the states. The number of allowances granted to each state remains the same through 2014, and then is reduced each year by 2.5% until a level that is 10% below the initial emissions cap is reached in 2018.

Each state has flexibility to determine how to allocate its assigned allowances. The RGGI Memorandum of Understanding only stipulates that at least 25% of the allowances have to be utilized for a “public

benefit”, which involves such things as promoting energy efficiency, reducing impacts on consumers, funding the RGGI program and other similar goals. Many of the states have determined to auction most if not all of their allowances, requiring that power plants needing the allowances must pay a market rate for all of them. (Originally, the MOU envisioned that up to 75% of the allowances could be allocated for free to regulated power plants; however, economic models showed that power plants would likely increase the price of electricity to reflect the value of even “free” allowances, and therefore the states determined that they, and not the power plants, ought to reap any benefit.) Some states have determined to set aside allowances for certain public benefits or to cap prices in certain cases. States have also, in most cases, determined various uses of the funds generated from the auction of RGGI allowances, which in most cases far exceed the 25% requirement for public benefits.

The RGGI states have jointly developed an auction mechanism to distribute these allowances. The first auction was held in late September 2008, the second in December, 2008 and subsequent auctions are to take place approximately every four months thereafter. Approximately 25% of the annual allowances will be available in each auction; however, for at least the initial auction, some states had not adopted regulations or legislation, and therefore, their allowances were not available. In the September 25, 2008 auction, approximately 12 million allowances were available (only a portion of the number that should be available in future auctions) and 59 bidders submitted bids for four times the number of allowances available, and all allowances were sold at a clearing price of \$3.07 per allowance.

### **RGGI Auction**

The RGGI auction process requires that potential bidders register and establish an account which also includes the posting of financial assurance. Bidding is done through an internet portal, and bidders must bid for allowances in minimum lots of 1,000. Many parties may participate in the first auction, including power plants, environmental groups, and financial institutions, although the RGGI states have the option of restricting participation. The RGGI states have also agreed to establish a minimum “reserve” price of \$1.86 per allowance, which can escalate depending upon the future market price of RGGI allowances.

The first RGGI auction was a single round, uniform-price, sealed-bid format. In other words, bidders input the price they are willing to pay for a specific number of allowances (and can submit multiple bids, up to a maximum of 25% of available allowances); however, all bidders will pay the clearing price; that is, the price of the highest rejected bid is the price all bidders will pay.

Although auctions began this past September, RGGI actually does not launch until 2009. Beginning in 2009, every affected power plant will be required to have in its account one RGGI allowance for every ton of carbon dioxide emitted. The reporting period under RGGI is three years. Consequently, at the end of the first three-year compliance period (i.e.

the three year period from the beginning of 2009 until the end of 2011) a facility must accumulate RGGI allowances to equal its total emissions of carbon dioxide during that period. (The reporting date is three months after the end of this three year period, and allowances can be bought or sold during the entire period so that a facility's account is balanced.) Protocols have been developed for measuring CO2 emissions from each of the affected facilities, which will be part of the emission monitoring already required by the EPA under the Clean Air Act. Allowances purchased in one compliance period can be "banked" and used in subsequent compliance periods, so if excess allowances are purchased, their value does not fall to zero at the end of any reporting period.

### **Defining Offset Projects**

While the total number of allowances allocated to each state constitutes the "cap" under the RGGI program, a limited number of additional allowances can be created by means of "offset" projects. Offsets are a limited universe of projects which capture and reduce direct emissions of CO2 into the atmosphere. Once these reductions in CO2 emissions can be verified and measured, additional allowances can be created which are then fully fungible with allowances initially allocated to the states.

Qualified offset projects specifically authorized under the RGGI MOU include: methane capture at landfills; certain methane capture at farming operations; limited reforestation projects; limited energy efficiency in building construction; and the capture of greenhouse gases in connection with natural gas distribution and electric transmission networks. The availability of these offset projects is further limited through "additionality" requirements (e.g., the undertaking of a carbon reduction project cannot be required by law and cannot be an activity which the producer would have undertaken in the absence of the offset program), and projects creating offsets cannot also avail themselves of renewable energy credits or similar benefits. Furthermore, a regulated power plant cannot utilize more than a small percentage of allowances generated from offset projects to meet its requirements.

An important point to note is that renewable energy projects are not offset projects. Other than possibly a landfill gas project, renewable energy projects do not result in the direct elimination of carbon emissions, and therefore do not qualify. For example, operation of a wind turbine does not in and of itself capture and reduce carbon emissions, and under the RGGI program, is not an offset project. While it is possible that a renewable energy project that does not need to purchase any RGGI allowances will result in a price advantage for the renewable energy generator, RGGI alone has no direct connection with renewable energy, and will only indirectly promote renewable energy.

### **Potential Problems under RGGI**

Because RGGI is a regional initiative, certain problems are inherent and may greatly reduce its potential effectiveness. A critical issue involves a concept called "leakage". Leakage is the recognition that the movement

of electricity, and its purchase by end users, does not recognize state boundaries. Generators in non-RGGI states, such as Pennsylvania, can easily sell electricity into the RGGI region. This power will be less expensive because producers in those states do not have to pay for carbon allowances. However, in many cases power generated in these non-RGGI states will be generated from coal, and the effect of RGGI, at least on bordering regions, may simply be to penalize generators in the RGGI state, while increasing emissions from out of state carbon sources, at least partially negating the benefits of RGGI.

Another additional concern that has been raised is that RGGI is “over allocated”; that there may be more RGGI allowances available than are needed for companies to meet their requirements. Over-allocation is probably real in the early years, and is due to the fact that there has been a gradual switch in fuel usage by generators, in large part because of the high price of oil (i.e., coal use has remained about the same, but oil usage has reduced while gas use has risen) and therefore, the amount of CO<sub>2</sub> actually emitted by the region’s power plants is currently averaging less than the RGGI cap. However, many commentators who believe that this scenario might doom the RGGI program do not understand the fact that these carbon allowances will not be “allocated” to any facilities. Fossil fuel generators will all still need to acquire one RGGI allowance for every ton of carbon emitted, and even at a minimum price of \$1.86 per ton, the cost will be substantial. Over allocation is really only an issue if allowances were being allocated free of charge. Since 100% of a facility’s allowances will need to be purchased and there is a minimum price for each allowance, the program will still have most of its intended affect.

As stated above, the RGGI program is billed as a cap and trade system. The cap is clearly established, as the number of RGGI allowances allocated to each state. However, given that the states are auctioning 100% of the allowances, the “trade” aspect is somewhat illusory. Allowances will only be “traded” if a facility buys too many. Under other cap and trade systems, such as the SO<sub>2</sub> program, allowances are allocated in limited quantities to facilities, and the facility could then determine whether to utilize the allowances to offset emissions, or utilize funds generated from selling the allowances to pay for pollution control equipment that reduces the need for the allowances. In fact, the potential allocation of future allowances can be used as a financing mechanism to cover the cost of pollution control equipment. However, under RGGI, since 100% of a facility’s allowances must be purchased (either initially from a state or an offset provider), that feature of a traditional cap and trade program is likely not to be an important factor. This may not matter, since there is currently no viable equipment for reducing a facility’s carbon emissions.

In many ways, the RGGI program will operate as a tax. Like a tax, it increases the cost of an electric generation source in proportion to the amount of carbon dioxide that the source emits. However, the level of the tax is set by the market, not the regulators.

One of the most lasting effects of RGGI may be the discovery of the huge revenue potential of such a cap and trade system. "Cap and trade" normally assumes that a major portion of allowances would be allocated free of charge or below cost – that way emitters could have something of value if they chose to reduce emissions through some technological or creative mechanism. However, the fact that this could also mean that polluters could realize a financial benefit resulted in a push to auction 100% of the allowances. Initial proposals assume that if such a process were followed, most of the allowance proceeds should be rebated to consumers so that the cost would, for the most part, be borne by the carbon emitters.

Instead, the states have realized that hundreds of millions of dollars would be generated, and now in most states these revenues will flow through the state, albeit in many cases for energy efficiency and other similar programs. On the federal level, the sale of allowances can generate trillions of dollars over the course of the next decades, and given the financial condition of our economy and the deficits run up even before the current meltdown, a feeding frenzy is likely to develop as these trillions are carved up.

### **Other Carbon Programs**

Other regions are currently considering ways to regulate carbon emissions. Notably, California and many of its neighbors are considering a much broader cap and trade program, which would regulate industrial and transportation sources of carbon emissions along with power plants. However, implementing a "cap and trade" system that covers every driver, industrial source and power plant, is daunting.

In addition, numerous bills were introduced in Congress last year. Many of these included aspects of a cap and trade system, and most regulated sources beyond power plants. The bill which moved the farthest, and actually reached the floor of the Senate for a vote (but failed to obtain enough votes to prevent a filibuster) was referred to as Lieberman/Warner, referring to the bill's original sponsors. Under this proposal, the requirement to purchase carbon allowances would be imposed not on individual power plants (except for coal plants), buildings, industrial sources, drivers, etc., but would rather be for the most part imposed on the fuels themselves. Oil and natural gas refiners and distributors would be required to purchase carbon allowances based on the carbon content of their fuels, although coal burning power plants would be regulated at the plant level, and coal power plants would be required to purchase allowances individually.

One concern that is raised in the RGGI region is how a federal program will affect RGGI. Will the federal program preempt (i.e. negate) RGGI, or will states be allowed to have an additional level of regulation? In the first case, preemption could mean that huge expenditures of money by generators buying allowances will now have been wasted unless RGGI allowances are merged into a federal cap and trade program. In the second scenario, if RGGI is allowed to continue as an additional regulation, the economic impact borne by the RGGI states could be

substantial.

While no one can predict what the next Congress will do, some of the proposals from the last session considered providing funds (derived from the federal government's sale of carbon allowances) to the RGGI states to offset expenditures for allowances. These funds would likely go to the states, with the anticipation that they will be refunded to customers, not to the companies who purchase the allowance, under the assumption that the companies that purchase the allowances will have passed on the cost to consumers, and therefore it is the consumers who should receive any rebate. Whether in fact companies are made whole by this sort of proposal is open to debate.

Finally, the Kyoto Protocol has been in place for a number of years and in Europe, a cap and trade system has been in place and functioning for several years. Power plants and industrial sources are covered and all must obtain allowances equal to their emissions. Each country has its own cap and can distribute allowances, and in the initial period which ended in 2007, strict limits were placed on any auctions. Allowances could not be "banked" (that is, carried over to the next compliance period). At this point, the Kyoto participants are negotiating the structure and coverage for the round of limits that would be imposed beginning in 2013. Carbon credits under the European system are readily tradable, and many more industrial sources are regulated. Numerous developing countries are not required to cap emissions, and the European system has a much more robust offset program (called Clean Development Mechanism, or CDM) that has been widely utilized.

### **The Future Has Finally Arrived**

Legislatures and regulators in the United States appear to have accepted the notion that global warming requires a regulatory response. Some sort of cap and trade program of allowances permitting emission of carbon appears to be the favored vehicle to implement these regulations. The Regional Greenhouse Gas Initiative is an ambitious first step in determining whether such a program is viable for regulating carbon emissions. It remains to be seen how it will inform and influence the coming regulations of carbon emissions by Congress or other states.

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