

Approaches to Integrating Renewable Energy Into Greenhouse Gas Trading Programs

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INTRODUCTION

The Center for Resource Solutions (CRS), a non-profit organization, is convening a Renewable Energy Working Group for the purpose of developing a proposal for the inclusion of renewables into greenhouse gas cap and trade programs. The purpose of this document is to inform the Regional Green House Gas Initiative (RGGI) participants of our existence and preliminary thinking on this subject. The options described here will be discussed and refined more thoroughly during the summer months and a proposal will be presented to RGGI when the RGGI process reconvenes in September.

A supplemental document is attached that explains why maintaining “Voluntary Renewable Energy Markets is Important for Cap and Trade Programs.”

KEY PRINCIPLES GUIDING THE DELIBERATIONS

1. Society needs commercially viable, low-cost options for making GHG emissions reductions.
2. Renewable energy generators can be part of the solution and want to participate in emissions trading programs.
3. Inclusion in emissions trading programs will allow renewable energy sellers to “own” the environmental benefit of their clean technologies and this environmental benefit will have value to investors, buyers and other stakeholders.
4. Renewable energy will therefore help society achieve its climate protection goals by expanding the green power market and creating additional emissions reductions.

PRELIMINARY OPTIONS FOR INCLUDING RENEWABLE ENERGY IN CAP AND TRADE PROGRAMS

Renewable energy facilities, such as wind and solar, have not traditionally been given allowances in the NOx and SO2 trading programs. In these programs, regulators have generally only allocated emission allowances on an "input-based" standard (i.e., formula based on the heat content of the fuels burned by power facilities) or "historical emissions" standard (i.e., formula based on the historical GHG emissions of facilities under the cap). The lack of allowances for renewables becomes particularly acute when designing a C&T Program for GHG (see accompanying document). Without allocations, you exclude renewable energy as a strategy for reducing GHG emissions thus limiting your long-term options. The financial benefits associated with allowances can help feed the transformation to a clean energy future by fostering new investments in renewables. From a very preliminary assessment, the following models could create more favorable outcomes for renewable energy (RE) than the models traditionally used (depending upon other RGGI considerations):

- A. Set-Aside Programs:** If an historical or heat-input model for allowance allocations is used, it can “set aside” some percentage of the total allowances for certain qualifying technologies. Utilities or qualifying RE projects may apply for these allowances, which they can thereafter trade in the market, retire, etc. In the SO2 and NOx programs that have used set-asides, they were limited in number, poorly accessed and poorly utilized.¹ However, there are a number of design features that are important when considering designing set-asides to benefit renewables that can make them more effective than has been the case in the past. The following is a set-aside

¹/ See Wooley, D.R., E.M. Morss, and J.M. Fang, "The Clean Air Act and Renewable Energy: Opportunities, Barriers, and Options", National Renewable Energy Laboratory (2001)

design we believe better supports RE than what has been done with SO_x or NO_x C&T programs in the past. Other design factors such as who participates, property rights, geographic location, double counting, etc. would also need to be determined for an actual recommendation.

Output Based Set-aside Example: States would set aside some ‘public purpose’ allowances to allocate to owners of renewable generation facilities on an output basis, using an emissions rate calculation that will be worked out in the RGGI process. Renewable generators could retire allowances in support of green marketing claims or RPS compliance, or sell them to fossil generators. During the early period of the program, any excess RE allowances could be sold to fossil generators and the revenue allocated to state’s Public Benefits Funds to support new RE. Over time as clean generation increases and polluting generation declines, the set-asides being awarded to RE could increase while the allowances going to polluting resources decrease. Allowances under any type set-aside should be sufficient (and grow fast enough) to cover all anticipated renewable energy needs in the region.

- B. Output-based standards** – If an output-based standard is selected by RGGI, that method could also benefit renewables depending upon design details. In such a standard, the regulator allocates emissions allowances on an "output-basis" (i.e., allowances are allocated to generating facilities under the cap according to a formula based on MWh of electricity generated by the facility).
- C. “Offset” programs:** Offset programs allow participants outside of formal emissions markets to participate by allowing certain types of activities to be recognized for the emissions reductions these projects provide. In this system, RE facilities generate emissions offsets that regulated utilities can purchase to meet their targets. The polluters would buy the least expensive offsets (RE may only be one type of offset project. Offsets may also include land use, transportation or other types of reduction projects, which are not the subject of this paper.) Design decisions will determine if there is an offset market. If an offset program is recognized, it is important that RE receive its full value in offset credits on an output basis.

SUMMARY

These are some preliminary thoughts from the Renewable Energy Working Group. We will be convening stakeholders over the summer months and will present you with a full proposal in September. Policymakers should include renewables if an output-based system is adopted. If a non-output based system is adopted, a well-designed set-aside program or offsets could create benefits for RE that allows them to provide emissions reductions in the region and maintain the momentum for clean energy development fostered by the voluntary clean energy market. We are not at this time making a recommendation for a particular methodology. We do want to be included in whatever C&T Program design is finally adopted.

The RGGI process is extremely important opportunity, not only because of its impact on the region but because it is the first GHG C&T program in the United States. As such, others will replicate the final market design that is adopted by RGGI. We need to be sure that as a society we are taking advantage of all the opportunities available for long-term reductions in green house gases. Excluding renewable energy now will limit our options for climate change reductions in the future. You have many difficult but extremely important decisions to make. We look forward to working with you in crafting solutions that will meet your goals and purpose.

WHY VOLUNTARY RENEWABLE ENERGY MARKETS ARE IMPORTANT FOR CAP & TRADE PROGRAMS

Q: What are voluntary renewable energy (RE) markets?

A: Voluntary renewable energy markets include: *renewable energy* sold directly to retail customers in restructured electricity markets, renewable energy *certificates* sold to retail customers in both restructured and monopoly markets, renewable energy that is sold to consumers through *utility green pricing programs*, and renewable energy *certificates* that are translated into pounds of carbon equivalents and sold in voluntary *carbon markets*. It is estimated that in 2003, 4.5 million MWh² of renewable energy was sold in voluntary markets in the United States. This equates to approximately 4 million tons of carbon displacement.³

A key quality of renewable power is that it is pollution-free (solar, low-impact hydro, and wind) or low in pollution (biomass and geothermal). Under the current regulatory structure:

- Renewables do reduce carbon dioxide emissions, according to a convention that assumes that a megawatt hour (MWh) of renewable power delivered to the grid replaces a MWh of average (or marginal) system power that otherwise would have been put on the grid.
- The calculation of carbon reduction is derived by a simple formula:
One renewable MWh = average (or marginal) pounds of carbon/MWh for the system where the facility is located.

In several markets, notably PJM and the Pacific Northwest, voluntary markets have been the key driver in the development of new renewable facilities.⁴ These markets operate without government subsidies, so the environmental benefit of a renewable market is in addition to any benefit that governmental action produces.

Renewable markets are only in their infancy, but early indications demonstrate their promise in supporting substantial renewable development. Voluntary renewable power markets are growing rapidly in many regions, and are expected to be a larger driver for new renewable energy additions in the future. These markets in 2003 were approximately twice as large as in 2002 and we anticipate they will double again in 2004.

Q: Why do consumers voluntarily purchase renewable energy?

A: Renewable energy and renewable energy certificates are purchased in voluntary green power markets both to reduce greenhouse gas (GHG) associated with an electricity purchase and to offset GHG produced by commercial, industrial, institutional and residential activities. The non-residential sector is growing rapidly and is the sector that is especially interested in the carbon offset benefits of renewables. Renewables are used to offset carbon produced by manufacturing/fabrication, food processing, carbon resulting from travel (including air travel), various natural gas usage, etc. They can also be used to offset smaller fossil-fueled self-generation (not included in the electricity carbon cap). Finally, the renewables can also offset carbon produced by electricity production in areas without a Cap & Trade (C&T) program. This carbon is all produced outside the electricity sector where the carbon C&T program is located.

² / Based on power pool regional average emission rates.

³ / These numbers do not include renewables sold in regulated electricity markets or renewables used to meet utility compliance with renewable energy mandates such as Renewable Portfolio Standards (RPS).

⁴ / “New” refers to facilities that have been built since the restructuring of an electricity market or as part of a renewable “green-power” program.

Q: Why is this important?

A: If renewable energy receives carbon allowances and sells them to consumers or GHG emitters that are not included under the cap, this has the effect of reducing the cap (i.e. you are reducing the number of allowances available for purchase by electricity generators that emit GHG). As a result, polluting generators must do something else to reduce their GHG emissions such as adding control technologies or cutting back operation. That means there are more real carbon reductions in the electricity sector than anticipated through the establishment of the cap alone.

Q: What if there are insufficient set-asides for renewable generators in a carbon C & T program?

A: If there are insufficient set-asides/allowances for the output from RE generators, you remove an incentive to build renewable energy and reduce accordingly the C&T program's benefits: The ability to reduce GHG emissions outside the electricity sector and to more rapidly reduce GHG emissions from within the electricity sector. Not granting renewable energy allowances under new GHG C&T regimes would reduce the flexibility of the C&T regime and limit long-term reductions:

- The lack of allowances would remove the incentive to reduce GHG emissions outside the fossil fuel electricity sector,
- Would remove the ability of green power customers to reduce GHG emissions with their purchases;
- Thereby missing opportunities to reduce real GHG emissions within the sector.
- In addition, not granting allowances would set up a system that actually inhibits the development of clean power.

Q: Won't the higher cost of electricity from the Cap & Trade program encourage renewable development even without renewable energy GHG allocations?

A: Even though a GHG C&T program will increase slightly the cost of fossil fueled power, that increase will not be sufficient to enable favored new forms of renewable power (wind and solar) to compete on price alone. If you look at SO_x and NO_x C&T, though those programs may have raised the cost of electricity slightly, it was so gradual that it has had little effect on bringing cleaner power options into the sector.

- Excluding clean power from programs to clean up emissions from power plants unnecessarily limits society's options for pollution reduction while damaging an important industry.
- Establishing a rule that forces renewables to compete on price alone robs renewables of their environmental value.
- Consequently, this exclusion would undermine important voluntary renewable energy markets, eliminating one of the key reasons that individual consumers and business customers choose to purchase renewable energy – to contribute to GHG reductions.

In Summary: Renewable energy, if allocated GHG allowances that are subsequently retired both by consumers inside and outside the electricity C&T, offers a credible mechanism to reduce actual carbon emissions below the C&T cap. In addition, by providing GHG allocations for RE generation now, you pave the way for clean generation options to replace polluting ones in the long-term as well as stimulate the market for clean resources in the short-term. Without GHG allocations for renewable generation, C&T programs can reduce emissions from polluters but will do little for long-term reductions and the transformation of the electricity sector. In the end, renewable energy can be a valuable tool for air regulators that want to achieve climate change reductions as rapidly as possible -- or renewable energy can be a lost opportunity. We urge you not to lose this opportunity.