

OFFSETS VS. ALLOWANCES

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Prepared for Agriculture's Role in Mitigating Climate Change Workshop
American Farmland Trust/Farm Foundation/USDA Economic Research Service

August 13-14, 2008

Washington, DC



The current crop of bills in Congress for mitigating greenhouse gas (GHG) emissions all have as their centerpiece a national cap-and-trade program. Such a program would typically regulate upstream producers or distributors of fossil fuels and large mid-stream energy users by placing them under an emissions cap. Agricultural producers would not be directly regulated, largely because agriculture is a relatively small source of GHG emissions. However, agriculture can be a source of significant low-cost mitigation options such as soil and biomass sequestration. Two options for recognizing and rewarding agricultural mitigation options in a cap-and-trade program are offset credits and allowance set-asides¹.

Managing Agriculture to Mitigate Greenhouse Gas Emissions

Farmers can mitigate GHG emissions in a number of ways. Adopting conservation tillage and residue management, improving crop rotations and cover crops, eliminating summer fallow, improving nutrient management, using organic manure and byproducts, and improving irrigation management can increase soil sequestration on working lands. Converting cropland to forests, perennial grasses, conservation buffers and wetlands can sequester more carbon per acre than working lands, but at a greater cost. Animal feeding operations can capture and destroy methane emissions by adopting storage technologies such as anaerobic digesters. Fertilizer management can reduce the loss of nitrous oxide to the atmosphere.

A major issue for agriculture as a mitigation source in a cap-and-trade program is the difficulty in measuring the mitigation potential of most types of agricultural projects. The amount of carbon sequestered in agricultural soils is determined by the interaction of soils, climate, land use, crop rotation, fertilizer management and other management practices. Agricultural soil sequestration projects are therefore characterized by uncertainty, which must be addressed in any program that rewards sequestration. The Environmental Protection Agency estimates that as much as 20 percent of all annual U.S. GHG emissions (in terms of carbon equivalents) could be sequestered in soils and forests at a price of about \$15 per ton of CO₂, and generate \$2.5 billion per year in income (U.S. EPA, 2005). The challenge to policymakers is how to incorporate uncapped sectors into the program and still maintain environmental integrity.

Basics of Cap-and-Trade

The basis of a cap-and-trade program is an overall cap that government establishes on emissions of the pollutant in question from all regulated sources covered in the system. A quantity of emissions permits or allowances consistent with this overall discharge limit is issued and either auctioned or given away to regulated sources. Once the program goes into effect, regulated sources must track their emissions and surrender a credit for each unit of discharge. Emissions allowances may be bought, sold and traded among regulated firms, allowing the market for allowances to establish a price. Firms that can reduce emissions at a cost below the market price of an allowance will do so until the marginal abatement cost equals the allowance price. Their excess permits can be sold to high-cost abaters who cannot reduce emissions for a cost lower than the price of an allowance. At equilibrium, all firms have the same marginal cost of abatement, and the cap is achieved at the lowest possible cost.

Offset Credits

Offset credits represent emissions reductions by uncapped sectors, such as agriculture, and are generated only after a measured and verified emissions reduction is achieved. Offset credits can be purchased by regulated firms under a cap-and-trade program to offset their allowance obligations. Agricultural offset credits would be technically equivalent to, and freely

¹ Much of this discussion is based on "The Role of Agriculture in Reducing Greenhouse Gas Emissions: Recommendations for National Cap-and-trade Program", 21st Century Agriculture Project, April, 2008.

interchangeable with, emissions reductions from regulated sectors. Offset credits allow a regulated firm to emit an equivalent amount of GHG above the cap. The result is that the net emissions of GHG to the atmosphere (emissions from regulated sources minus agricultural offsets) are the same as if offsets were not allowed; emissions are no greater than the cap.

Offsets can benefit both regulated firms and farmers. To the extent that carbon sequestration and other agriculture-based emission reductions are cheaper to implement than emissions reductions elsewhere, the availability of offset credits for these activities expands the pool of low-cost compliance options available to capped sources; regulated sources can meet their discharge limits at a lower cost. Agricultural producers benefit by the additional revenue offered by the sale of offset credits.

Allowance Set-Asides

Allowance set-asides offer a different approach to bringing low-cost mitigation options into a cap-and-trade program. Policymakers can provide incentives for agricultural mitigation efforts by setting aside a portion of the total allowances available under the proposed emissions cap. This approach reduces the number of allowances that would otherwise be auctioned or distributed for free to capped sectors, and instead dedicates those allowances to agriculture for eligible projects that reduce GHG emissions. Allowances set aside for agriculture would be transferred to an intermediary authority, such as USDA, which would be responsible for awarding allowances to farmers based on the carbon value of soil sequestration and other GHG-reduction projects². Farmers who are awarded allowances could then sell them on the open market. Regulated firms can purchase these allowances to reduce the amount of abatement they must undertake.

Set-asides provide a greater assurance that the program cap is met than offsets. If the agricultural projects should fail, the emissions cap will still be achieved by the regulated sector alone. If agricultural mitigation projects are successful, net emissions will be less than the cap. Set-aside allowances do not offset industrial emissions increases, but rather supplement industrial emissions reductions.

Issues

While both approaches provide incentives for adopting practices that mitigate GHGs, they may treat farmers differently. Measurement and verification are more important under an offset program, where certain, easily measured industrial reductions are being replaced by uncertain agricultural offsets. In order for the cap on emissions to be achieved, offsets must be as made as certain as possible, and the issues of additionality and permanence addressed. To provide confidence, offset projects could be subject to fairly rigorous measurement and verification standards; the farmer may feel like a regulated source. On the other hand, the use of allowances may not require such rigorous verification, since the cap is achieved by the regulated sector alone. Reliance on set-asides could allow for a less rigorous approach for addressing additionality and permanence, and allow farmers who had previously adopted conservation tillage or other mitigating practices to be rewarded.

The two approaches have different implications for the cost of the cap-and-trade program. To the extent that agricultural offsets are cheaper to implement than emissions reductions elsewhere in the economy, all sectors would benefit from the increased pool of low-cost compliance options. The availability of low-cost offsets lowers allowance prices, improves liquidity in allowance markets and increases compliance flexibility. The availability of offsets

² USDA could instead sell the allowances and use the proceeds to fund agricultural mitigation projects.

would therefore reduce the energy price impacts of the cap-and-trade program. These benefits would be especially valuable in the early years of program implementation, when changes in energy infrastructure, capital stock turnover, and long-term investment patterns are just starting to take hold.

On the other hand, allowance set-asides do not reduce the energy price impacts or provide the flexibility or market liquidity of offsets. Thus, the market price of allowances will continue to reflect the marginal cost of the last ton of emissions reductions implemented to comply with the cap. Industries will likely favor offsets over set-asides.

Some Observations about Markets for Agricultural Credits

Creating a market for GHG mitigation from agriculture presents some challenges. Uncertainty over the number of offsets or allowances agriculture can produce is one issue that has already been touched upon. Some GHG cap-and-trade programs do not consider soil sequestration a source of credits because of uncertainty, as well as the dubious permanence of these credits. The transactions costs of bringing together buyers and sellers in a market for offsets can be high, because of agriculture's heterogeneous nature and the fact that offsets are associated with the land. Markets such as the Chicago Climate Exchange rely on aggregators to facilitate trades. Finally, lack of coordination between conservation programs and markets could affect market function. GHG markets and conservation programs may compete for the same land, driving up the price of offsets. Enrollment in conservation programs may raise the issue of additionality, and whether practices adopted with support from financial assistance can be a source of offsets or allowances.

References

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