

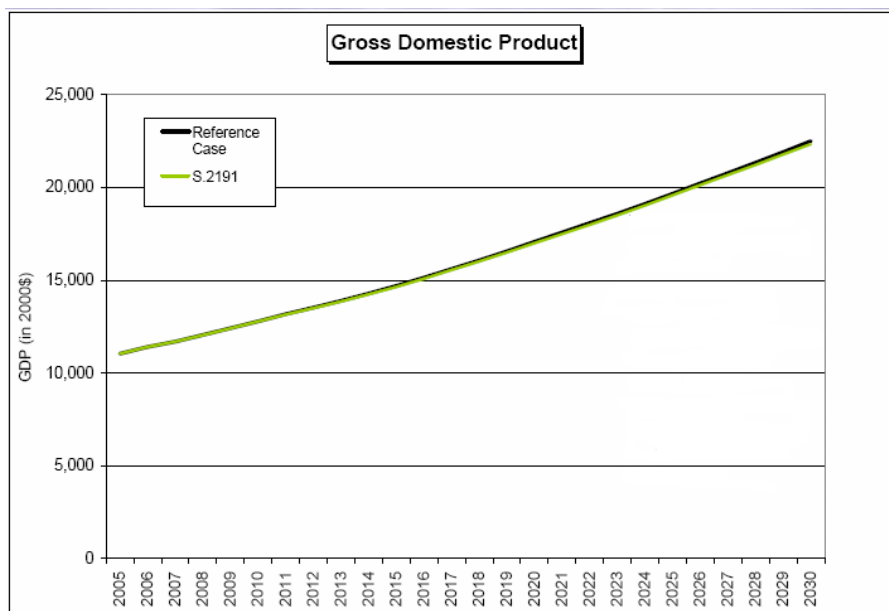


Climate Change Legislation Revenue and Cost Assessment for American Agriculture

President Obama and the Democratic leadership in both the House and Senate overwhelmingly support the creation of a national cap and trade system aimed at reducing greenhouse gas emissions in the United States. Considerable domestic pressure to adopt comprehensive climate change legislation, as well as the upcoming conference in Copenhagen to determine the direction of post-Kyoto Protocol international climate change policies, is pushing this issue high on the United States' legislative agenda.

One important consideration in the design of new legislation is the cost to the economy. A recent study of five nonpartisan academic and governmental economic forecasts concluded that, "the median projected impact of climate policy on U.S. GDP is less than one-half of one percent for the period 2010-2030, and under three-quarters of one percent through the middle of the century."¹

Agricultural offsets are a significant component to reducing the costs of climate change mitigation to the economy at large.



*Source: Clean Air Task Force using National Energy Modeling Systems
http://www.catf.us/publications/presentations/CATF_LWCSA_Short_Hill_Briefing_with_CAFE.pdf/*

¹ Nat Keohane, "What Will it Cost to Protect Ourselves from Global Warming?," 2008.



How offsets facilitate growth for the economy—and farmers

America’s farms **would not** be a regulated sector in a cap and trade system. However, **agriculture would play a vital role in the environmental and economic success of cap and trade.** Farmers could have the opportunity to engage in the cap and trade market through the sale of offset credits for activities, such as:

- Sequestering carbon in agricultural soils;
- Reducing nitrous oxide through nitrogen-use efficiency;
- Reducing methane emissions from animal wastes.

Current modeling suggests the price of a carbon credit would be between \$10 and \$20 per ton of carbon when a national cap on carbon is established. But prices would inevitably rise significantly over time as more credits are removed from the marketplace, further driving up potential agricultural income derived from carbon soil sequestration and other activities.² In the United States, soil carbon sequestration rates can be as much as 1.2 MMT per acre, though .6 MMT is more common.³ At a carbon price of \$20, some farmers sequestering between .6 MMT and 1.2 MMT an acre could anticipate payments of between \$12 to \$24 an acre for carbon sequestration alone. Additional benefits could come from other practices such as precision agriculture which limits nitrous oxide emissions or fuel usage.

Methane revenue, see chart below, is another potential benefit to agriculture:

Farm Type	Herd Size	Manure Waste Generated (gpd)	Estimated Biogas Gen (cf/yr)	Estimated Methane (MT/yr)	Potential Carbon Equivalent	Potential Carbon Revenue @ \$15/ton
Dairy	1100	30,000	21,900,000	199	3,631	\$54,465
Dairy	725	35,000	25,550,000	232	4,236	\$63,540
Dairy	1400	38,000	17,383,333	158	2,882	\$43,230
Dairy	2400	50,000	43,800,000	398	7,262	\$108,930
Dairy	3750	115,000	83,950,000	763	13,919	\$208,785

Varying dairies produce different levels of methane, based on feed and other factors. Potential price projections based on current CCX projects.⁴

² 21st Century Agriculture Policy Project, (2008). *The Role of Agriculture in Reducing Greenhouse Gas Emissions Recommendations for a National Cap-and-Trade Program*, 13.

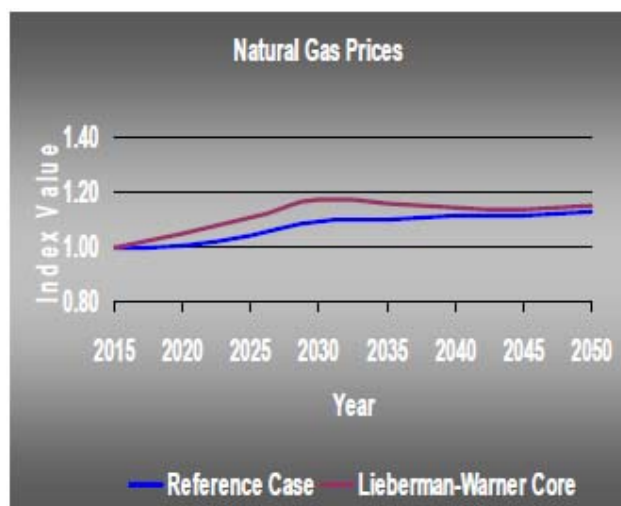
³ Food and Agriculture Organization of the United Nations and Conservation Technology Information Center, Conservation Agriculture Carbon Offset Consultation, 28-30 Oct 2008, Beck Agricultural Center, West Lafayette, IN.

⁴ Delta Institute.



The 2007 Climate Security Act, also known as the Lieberman-Warner Bill, allowed for up to 15% of available credits in the marketplace to be created from U.S. agricultural and forestry offsets. Agricultural and forestry offsets are generally less expensive than allowances and would therefore lower the overall cost of compliance for capped sectors. Allowing offsets also provides incentive to America’s farmers to aggressively pursue economically viable and environmentally sustainable offset projects to reduce the cost of compliance for upstream emitters, while at the same time making significant economic gain. The Lieberman-Warner Bill estimated the potential offsets market at \$330 billion over eighteen years, which would be in addition to \$110 billion raised from the sale of allowance credits to be distributed to the agricultural and forestry sectors for investment in emission reduction projects. Combined, offsets and allowances would provide on average \$24.4 billion in additional annual income from 2012 to 2030.⁵ In the same modeling, EPA found that if the 30% limit on the use of offsets is lifted (creating an unlimited offset market,) the allowance price would fall by 35% in every year. **If offsets are not allowed, the allowance price would increase by over 150% in all years.**⁶

Farm-related costs: Stabilizing natural gas and fertilizer costs



While diesel and gasoline prices would rise because of a cap and trade system, natural gas prices would only see slight changes due to other factors, including global demand, which plays a much more significant role in price projections than compliance with carbon reductions.

Recent modeling of the 2007 Lieberman-Warner Bill, by Duke University’s Nicholas Institute, indicates stability in natural gas prices (chart at left), an essential input in fertilizer production, under a cap and trade system.⁷

As other efficiencies emerge, the production price of natural gas may actually decrease under cap and trade.

⁵ 21st Century Agriculture Policy Project, (2008). *The Role of Agriculture in Reducing Greenhouse Gas Emissions Recommendations for a National Cap-and-Trade Program*, 15.

⁶ U.S. Environmental Protection Agency, “EPA Analysis of the Lieberman-Warner Climate Security Act of 2008,” http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf.

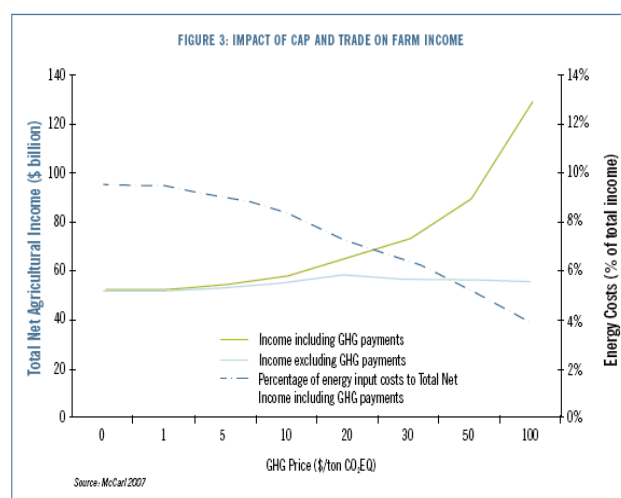
⁷ Nicholas Institute for Environmental Policy Solutions, “The Lieberman-Warner America’s Climate Security Act: A Preliminary Assessment of Potential Economic Impacts,” <http://www.nicholas.duke.edu/institute/econsummary.pdf>



What is the total revenue analysis for American agriculture?

Recent private modeling has suggested cap and trade would have a higher cost per acre to the nation's farmers than would be generated by agricultural offsets. Long standing models conducted by Texas A&M, the University of Tennessee and the Clean Air Task Force (using Department of Energy models) indicate a different picture.

This graph, developed by Texas A&M Agricultural Economist Bruce McCarl, indicates a significant overall benefit to farm income when offsets are included in a nationwide cap and trade system.⁸ The reduction in percentage of energy input costs for farmers and ranchers, when GHG payments are included in net income, begins almost immediately and makes a significant difference even on the low end of projected carbon offset costs of \$10/ton CO₂.



Bottom Line: Like other Americans, farmers will likely be faced with slightly increased energy input costs, such as gasoline for machinery operation and transport of goods, from climate change legislation. However, a cap and trade market with offsets would lower the cost of compliance and generate additional revenue to agricultural producers. Therefore, potential participation in US offset markets is critical to reducing the overall cost of a cap and trade system to the economy at large.



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⁸ McCarl, Bruce, *Analysis of the Impacts of a Carbon Cap on Net Farm Income*, a modeling analysis prepared for the 21st Century Agriculture Policy Project, February 2007.