

Climate Change Regulation is Coming: How Will It Affect Energy Efficiency?

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Overview

- Greenhouse gas cap-and-trade programs are likely to be in place in the U.S. in the next five years, and they will benefit energy efficiency, but the nature and the magnitude are uncertain.
- 'Additionality' is a key concept, offsets are not likely to be available for electric EE.
- Energy efficiency may benefit indirectly from the auctioning of allowances.
- Energy efficiency is likely to benefit indirectly from the effect of allowance costs on power prices and avoided costs.

The Status of Regulation

- With the ratification of the Kyoto Protocol by Australia in 2007, the U.S. remained as the only developed country not committed to binding reductions in greenhouse gas emissions.
- In the absence of federal commitment, states, corporations, and individuals have taken it upon themselves.
- At the state and regional levels, the Regional Greenhouse Gas Initiative (RGGI) in the Northeast and the California Global Warming Solutions Act of 2006 are the leading efforts, with additional regional efforts underway in the West and Midwest.
- Lieberman-Warner federal legislation has been introduced. Some sort of legislation is expected to be enacted in next two years, with regulation by 2013.
- All major developing or proposed regulation is cap-and-trade.

It is Unlikely That Electric Energy Efficiency Projects Will Qualify as Offsets

- Offset projects must show 'additionality': that the project would not have happened in the absence of the funding that purchased the offset.
- In capped systems, electric energy efficiency will not provide any additional GHG reduction. Offsets are only meaningful when they take place outside a capped system.
- RGGI Model Rule specifies five categories of eligible offset projects. Qualifying EE measures include those that reduce "on-site combustion of natural gas, oil or propane for end-use in an existing or new commercial or residential building . . ."

Energy Efficiency Projects May Benefit Indirectly From Auctioning of Allowances

- An allowance is a right to emit one ton of GHG.
- The cap defines the amount of allowances that will be made available.
- Allowances may be given away or auctioned off.
- Lieberman-Warner bill sets a schedule for the portion of allowances to be auctioned annually, starting at around 20% in 2012 and increasing to over 70% in 2036.
- Revenues from these auctions would be spent on a variety of climate-related public benefit initiatives.

Energy Efficiency Projects May Benefit Indirectly from Auctioning of Allowances

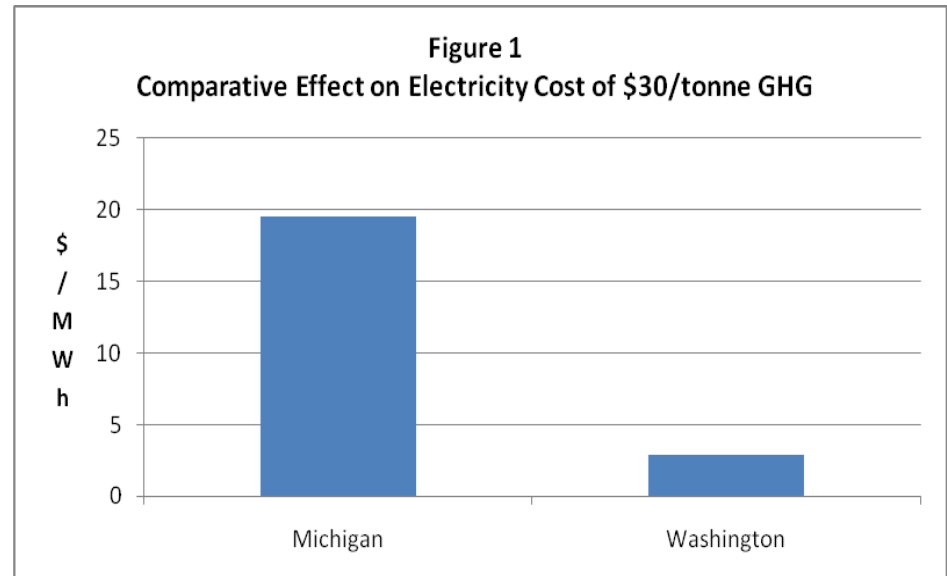
- The bill directs 9% and 2% of auction proceeds to electric and gas load serving entities, respectively, to promote energy efficiency and otherwise mitigate economic impacts for low and middle income customers.
- The EPA estimates these shares of the proceeds to be \$17 billion to \$24 billion by 2015.

How GHG Costs are Reflected in Electricity Prices Depends on the Status of Regulation and Allowance Allocation

- In deregulated markets, costs are likely to be passed through. In Europe, under Phase 1 of the ETS, generators were allocated 100% of baseline emissions, passed through 60 to 100% of the emission costs in prices.
- In states with cost-of-service regulation, if utilities receive allowances, the allowances would offset the emission costs, mitigating price increases, although avoided costs are likely to increase.
- Under policies with allowance auctions, as opposed to freely given, emission costs would be passed through in prices and avoided costs in regulated markets.

How GHG Costs are Reflected in Electricity Prices and Avoided Costs Depends on the Generation Mix

- The effect will vary, depending on the type of generation in a region. To the extent the time-on-the-margin distribution differs, the effect on prices can be quite different.
- Coal-intensive regions will see higher price increases.
- Benefit-cost ratios will improve as avoided costs increase.



Benefits Will Depend on the Type of Measure

- The timing of the savings from the EE measure will have an affect on avoided cost and/or bill reductions.
- The generation mix must be taken into account when evaluating the effect.
- In a market with significant on-peak natural gas generation and significant off-peak coal generation, a measure that primarily reduces on-peak energy, such as commercial lighting, will not benefit as much from GHG regulation as a measure that reduces off-peak usage, such as street light efficiency.

Benefits Will Depend on the Type of Measure

- Demand-response measures will see little or possibly negative benefits from GHG regulation.
- Demand response typically saves little or no energy and may shift energy use from on-peak to off-peak periods.
- Commercial lighting dimming during critical peak periods, for example, saves only small amounts of energy.
- Air conditioning load control reduces use during peak periods which may be offset by increases during off-peak periods.
- To the extent that the offsetting use is met by generation with higher emission rates, the measures could have negative avoided costs related to GHGs.

Conclusion

- The EE industry is likely to benefit from current and coming GHG regulation.
- Nature and extent of the benefit will be determined in coming months and years.
- Concept of additionality is likely to limit the ability for EE to participate in cap-and-trade markets.
- Most of the benefits will likely derive from more favorable project economics resulting from increased avoided energy costs and from potential increased spending on EE incentive programs resulting from allowance auction proceeds.
- The nature of the avoided cost benefit will depend on the policy, status of regulation, generation mix, and the type of EE measures.

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