

# Challenges in Incentivizing Energy Efficiency Savings through GHG Reduction Programs

## Extended Abstract 59

### Adam Shalapin

CDM, One Cambridge Place, 50 Hampshire St, Cambridge, MA 02114

### Cynthia Hibbard

CDM, One Cambridge Place, 50 Hampshire St, Cambridge, MA 02114

### Asami Tanimoto

CDM, 2295 Gateway Oaks Drive, Suite 240, Sacramento, CA 95833

## INTRODUCTION

Energy efficiency implementation has strategic benefits for the U.S., both in reducing dependence on foreign fossil fuel supplies and also in reducing global greenhouse gas (GHG) emissions. GHG regulatory and incentive programs aimed at encouraging energy efficiency have been varied and have faced implementation challenges. This paper examines the following four programs designed to provide funding for energy efficiency investments that are also related to the management and reductions of GHGs:

- U.S. Department of Energy (DOE) Energy Efficiency Block Grant (EECBG) Program;
- State and proposed Federal Renewable Portfolio Standards (RPS) programs;
- Mandatory and voluntary carbon offset credit markets; and
- U.S. Environmental Protection Agency (EPA) Prevention of Significant Deterioration (PSD)/Title V Tailoring Rule requirements for GHG Best Available Control Technology (BACT).

Energy efficiency projects are not all treated equally and sometimes may need to provide benefits beyond energy consumption and GHG reductions. The paper discusses the successes and obstacles in relating GHG reductions to energy efficiency improvements in each program.

## DISCUSSION

### U.S. DOE EECBG Program

The Energy Efficiency and Conservation Block Grant (EECBG) Program was first authorized in Title V, Subtitle E of the Energy Independence and Security Act (EISA) and signed into law on December 19, 2007. Upon the passage of the American Recovery and Reinvestment Act (Recovery Act) of 2009, the program received funding of \$3.2 billion to assist U.S. cities, counties, states, territories, and Indian tribes to implement energy efficiency and conservation projects. Under the program, the receiving entity is required to submit a quarterly report on financial, job, and impact metrics to the U.S. Department of Energy (DOE) including an annual

estimate of how much each implemented activity will reduce the amount of GHG emissions.<sup>1</sup> The EECBG program has given many communities the necessary funding to not only implement energy efficiency and GHG reduction projects, but to also leverage funds for implementing future projects and developing overall sustainable communities.

While the program's main goal was to reduce total energy use, increase efficiency, and reduce subsequent GHG emissions, the program also emphasized the importance of job creation and other financial metrics. Due to the program's funding resulting from the Recovery act, many federally released funds were under heavy political pressure to create jobs during a time of increased unemployment. When allocating money to particular projects, many entities had to choose between energy efficiency projects that were politically visible and created jobs or less-visible projects that significantly reduced energy use and GHG emissions. Therefore, although the EECBG program sought to reduce GHG emissions through implementing energy efficiency projects, projects that reduced the highest amount of energy use per project dollar were not always included in an entity's plan.

### **Renewable Portfolio Standards Programs**

A Renewable Portfolio Standard (RPS) requires electric utilities and providers to supply a specific percentage of customer load electricity produced from renewable energy sources. The goals of these programs are to reduce GHG emissions and to reduce dependence on foreign oil. Most states employing an RPS use Renewable Energy Certificates (RECs) as a means of tracking the electricity produced from renewable energy sources. Energy suppliers must purchase RECs from renewable energy suppliers and redeem them to prove they have met the requirement of the RPS. Although this system does not guarantee power displacement of non-renewable power sources, it significantly reduces the GHG emissions associated with non-renewable combustion sources.

Currently, 33 states in the U.S. are employing a RPS; however, many of these standards differ according to the sources that can qualify for RECs. Energy efficiency is the most cost-effective means of reducing GHG emissions; however, this is not widely included in state RPS programs.. For example, Texas does not include energy efficiency as a means for achieving RECS, while states such as Connecticut, North Carolina, Nevada, and Oklahoma offer RECS for the implementation of energy efficiency measures or electricity savings from conservation and load management programs. In Oklahoma, 25% of the 15% RPS can be met with energy efficiency measures.<sup>2</sup> While traditional RECs significantly reduce the amount of GHG emissions, the inclusion of implementing energy efficiency measures as a means of achieving RECS to meet a RPS incentivizes the total elimination of associated emissions from the displaced energy of non-renewable combustion sources.

Furthermore, although different, RECs can compete with carbon offsets due to their similar nature. While carbon offsets represent an amount of displaced emissions and RECs represent a

unit of energy produced by renewable sources, RECs can act as ‘indirect offsets’ that displace the use of non-renewable combustion sources. Because carbon offsets can result from implementing energy efficiency measures, they serve as a better means of incentivizing the reduction of GHG emissions through energy efficiency savings. However, this connection is still not without limitations.

### **Carbon Regulatory Markets**

Carbon regulatory markets also allow offset credits to be generated from GHG offset projects by non-regulated entities. Those offset credits can be sold to regulated entities to aid in meeting their compliance obligation. There is still a great degree of disagreement in how to determine what should be allowed as an offset. Some stakeholders involved in developing regulatory carbon programs are questioning whether to allow energy efficiency offset projects because those projects are not viewed as “high quality offsets.” Entities considering energy efficiency offset projects must also consider jurisdictional limitations (i.e., in which states offset projects may be generated), GHG inventory reporting requirements, and financial viability (that is, whether it is a cost effective measure to implement).

The most common issue raised with respect to energy efficiency projects is that of additionality. If a financial additionality test is used, then the project would have been financially viable without offset revenues. If an offset program adopts a standardized approach that evaluates particular technology types that are considered additional beyond “business-as-usual,” the same project might be considered additional, and therefore eligible as an offset.

In the Regional Greenhouse Gas Initiative (RGGI), only fossil fuel-fired electric power plants in participating states that have a capacity of 25 MW or greater are regulated. RGGI allows projects that reduce CO<sub>2</sub> emissions through end-use energy efficiency measures in buildings as a type of offset project. For example, improvements in space heating or water heating combustion equipment efficiency and installation of energy management systems are eligible offset projects. The efficiency improvements only count as offsets if they reduce energy/fuel consumption on-site and do not include reductions in purchased electricity consumption.<sup>3</sup> RGGI projects are also limited to participating RGGI states or those that enter into a Memorandum of Understanding (MOU) with a participating state. Other regulatory programs like the California or Western Climate Initiative (WCI) markets do not allow energy efficiency projects for generating offset credits.<sup>4</sup>

Similar to the regulatory programs described above, voluntary programs like the Climate Action Reserve (CAR) have established that ownership of the emission reductions falls to the point of emission. In the case of electricity efficiency, this means that improvements and reductions to electricity consumption result in a reduction of emissions at the power generation facilities, which results in a reduction of their overall emissions. To avoid double counting of emission reduction at power facilities and end users, energy efficiency projects that reduce consumption of

grid electricity are not recognized by CAR.<sup>5</sup> CAR has evaluated boiler efficiency improvements as potential project types and may develop a standardized protocol in the future.<sup>6</sup>

Although energy efficiency programs have limitations towards being considered an offset program, many programs have announced that a portion of proceeds from cap-and-trade markets will be set aside to fund energy efficiency programs.

### **U.S. EPA PSD/Title V Tailoring Rule Requirements for GHG BACT**

In March 2011, EPA issued a guidance document to address prevention of significant deterioration (PSD) and Title V permitting requirements for GHGs. Under the Clean Air Act (CAA), new major stationary sources and major modifications to existing major sources are required to obtain a PSD permit prior to construction or modification. A major source is defined as a stationary source that has a potential to emit a certain amount of air pollutant (100 tons per year (tpy) if the source is one of the 28 listed source categories or 250 tpy if it is not listed). A major modification is a physical change or change in the operation of a major stationary source that results in a significant emissions increase of a regulated pollutant. For those facilities that meet the PSD applicability requirement, one of the components of the permit application is to review and determine the best available control technology (BACT), or the most effective control technology that is technically feasible, has limited or no additional energy and environmental impacts, and is cost effective.<sup>7</sup>

Emission control technology for GHGs is limited, so a good BACT option is to improve the energy efficiency of the source which may also reduce emissions of other regulated pollutants. There are two types of energy efficiency measures that can be considered BACT. Energy efficiency may be achieved by choosing a process or design that is more efficient or reducing the demand of onsite generated thermal energy and electricity. To evaluate energy efficiency options, EPA recommends researching resources for benchmarking facilities, such as the Energy Performance Indicators (EPIs) developed by the ENERGY STAR program.

The EPA has identified energy efficiency as the top GHG emissions control option that is currently technically and economically feasible for combustion sources. Although EPA's guidance states that carbon capture and storage (CSS) may be a feasible BACT for some facilities, it emphasizes reducing emissions at the source. The guidance is limited, however, to major sources and modifications, as defined earlier.

### **SUMMARY**

Although programs exist that promote both energy efficiency and the reduction of GHG emissions, these programs often have obstacles in relating GHG reductions to energy efficiency improvements. For DOE's EECBG program, energy efficiency measures must balance potential GHG reductions with other community development metrics such as the creation of jobs. Renewable Portfolio Standards function similarly to GHG Cap & Trade Programs to buy and sell

RECs; however, few state programs offer RECs for energy efficiency measures and RECs can often compete with carbon offset credits. Types of eligible energy efficiency projects can also be limited, such as the carbon offsets eligible for RGGI.

In conclusion, the recently issued GHG BACT guidance from the EPA provides the best linkage and incentives of the programs discussed for achieving credit for GHG reductions through the implementation of energy efficiency measures. In addition, EPA's new Boiler Maximum Achievable Control Technology (MACT) and Generally Available Control Technology (GACT) rules require energy efficiency audits as a GHG control measure.<sup>8</sup> Although the ultimate success of these programs has still not been determined due to their recent inception, the framework of the BACT guidance has the potential to make a significant link between energy efficiency and the reduction of GHG emissions for new major sources.

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