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Authors
Schrock, D.W.
Stoops, J.L.
Meier, A.K.
et al.

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D.W. Schrock, J.L. Stoops, A.K. Meier, E.L. Vine, and B.D. Solomon

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Derek W. Schrock and John L. Stoops, Pacific Northwest Laboratory
Alan K. Meier and Edward L. Vine, Lawrence Berkeley Laborator
Barry D. Solomon, U.S. Environmental Protection Agency

Lawrence Berkeley Laboratory
Energy & Environment Division
University of California
Berkeley, CA 94720

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Developing Energy and Environmental Reporting Protocols

Derek W. Schrock and John L. Stoops, Pacific Northwest Laboratory
Alan K. Meier and Edward L. Vine, Lawrence Berkeley Laboratory
Barry D. Solomon, U.S. Environmental Protection Agency

In this paper, we review the policy differences and associated reporting and verification protocols between three energy and/or environmental reporting programs in the United States, specifically the Conservation Verification Protocols (CVP)—a voluntary set of procedures for reporting acid rain reductions from energy conservation, the Greenhouse Gas Voluntary Reporting Program (GGVRP) to acknowledge greenhouse gas-reducing activities, and a national database on energy efficiency programs (DEEP) an informational database on utility demand-side management (DSM) programs.

The most important lesson learned in developing these reporting programs is that the accuracy of the program for reporting energy savings activities is dependent upon both the estimation and verification protocols used in the program and the mapping procedures used to generate emission impacts from energy savings. Additionally, the types of protocols that may be used in the program depend upon who is participating in the program. The free market can also be a useful tool in determining how much money reporting entities want to spend on energy savings and emissions reductions estimation and verification protocols by placing a dollar value on atmospheric emissions.

After such programs are implemented, the program managers should ensure that an iterative, quality control process is utilized. The reporters of such information must be made aware that their numbers will be reviewed carefully and will be questioned for accuracy. Finally, the accuracy and confidence of the reported information should be reviewed on a periodic basis to ensure that the goals and expectations of the program and the reporting entities are being met.

Introduction

During the 1980's and 90's, the United States government has implemented a mix of reporting programs that attempt to quantify both the reductions in energy use and atmospheric emissions that result from implementing energy reduction measures. The U.S. Environmental Protection Agency (EPA) established the Acid Rain Program to implement Conservation Verification Protocols to domestically control the levels of SO_2 and NO_x emitted into the atmosphere (U.S. EPA 1993). The National Energy Policy Act (EPAct) of 1992 and the Climate Change Action Plan (Clinton and Gore 1993) set goals that the United States will reduce national levels of greenhouse gases. EPAct Section 1605(a) authorized the development of a mandatory reporting program in which electric utilities must report their absolute annual emissions released into the atmosphere as a result of energy production. In contrast, Section 1605(b) established a voluntary reporting program (GGVRP) to demonstrate to both the domestic and international communities the types of greenhouse gas reduction activities that can be accomplished while allowing U.S. reporting entities to be acknowledged, in some manner, for their individual accomplishments.

In this paper, we concentrate on the reporting and verification of energy and emissions *reductions* rather than absolute levels. Absolute emissions levels are collected by the U.S. Department of Energy's (U.S. DOE) Energy Information Administration (EIA) and other agencies, using reporting and verification procedures that are straightforward and build upon previous data collection activities. In contrast, energy savings or reductions cannot be measured directly; instead they must be estimated by subtracting the final energy use from initial energy use. In the meantime, conditions may change, such as economic activity or weather, so that a simple subtraction may yield misleading results. Therefore, estimation, verification, and reporting of energy and emissions savings require considerably more information to ensure that the reductions are due to efficiency improvements rather changes in other conditions. The treatment of this additional information is a major challenge in efforts to report and tabulate energy savings in a consistent manner. This paper identifies several problem areas in reporting programs and some of the mechanisms for dealing with them.

Types of Reporting

All emissions control schemes have a reporting component. While there are several reporting program classifications that can be developed, programs generally can be placed into three broad categories: (1) informational programs, (2) voluntary reporting programs and (3) mandatory reporting programs. In reality however, most reporting programs serve more than one purpose and therefore fall into more than one category. We have attempted to differentiate between these programs based on their primary goal. The primary distinction between voluntary and informational reporting programs is that reporters to informational programs are generally acting on good will alone, while reporters to voluntary programs hope to be recognized for their achievements, such as the Green Lights and GGVRP programs.

Informational Reporting Programs

One important aspect of informational reporting programs is that once a significant amount of data has been collected, there is greater potential for people to learn lessons from the data. For example, the U.S. DOE has led a group in the development of a North American database on energy efficiency programs (DEEP) that summarizes the results from electric utility programs (Vine, Payne and Weiner 1993). The goal of the DEEP project is to compile and analyze the measured results of energy efficiency programs in a consistent and comprehensive fashion. The DEEP database contains a description of demand-site management (DSM) programs and critical program features: e.g., energy savings, demand savings, participation rates, total eligible customer base, program costs, cost-effectiveness, and measurement evaluation methodologies. Summaries of pertinent data are developed periodically to present the lessons learned for particular types of programs (e.g., new residential, existing commercial, and appliance rebates). As more and more energy efficiency programs are implemented, their experience will be transferred to the database.

The primary benefits of this project are that, if all of this information is in one place, the cost of obtaining such information is considerably reduced, and the potential for comparing programs and synthesizing program experience is facilitated: data on similar programs can be summarized by marketing and delivery approaches, incentive mechanisms, and other program features to identify indicators of successful programs. These analyses can be used to improve program effectiveness and to develop more reliable DSM resource planning estimates. Most importantly, by including a limited amount of information on the characteristics of the implementing utility or government agency, program planners can assess the transferability of the results to their own geographical areas. The DEEP model is also being used as a template for an international database on energy efficiency programs (INDEEP) (Vine 1993).

Informational programs, such as DEEP, illustrate the range of programs that have been undertaken, but don't indicate national progress toward energy savings or emissions targets.

Voluntary Reporting Programs

While there is no apparent motive for institutions to voluntarily report their emissions, there may be several strategic reasons to participate. Some institutions, especially utilities, may suspect that mandatory emissions reductions may supersede the voluntary program. By documenting current levels and savings, a utility may obtain credit, in future regulations, for activities that they are currently implementing. When the Acid Rain Program was implemented, some utilities perceived that they were not given credit for past achievements that other utilities had not implemented and therefore they were being treated unfairly. Other institutions may simply view the reporting as part of being a good citizen or improving a company's image.

The EPA Green Lights Program, a federal voluntary reporting program, is administered by EPA and is a cooperative program with organizations to reduce greenhouse gas emissions by replacing installed lighting technologies with new, energy-efficient lighting technologies. EPA Green Lights Program provides participants with a one-page form on which to report lighting efficiency information. The reporting form also contains electrical demand and energy savings, the percent of energy savings (relative to the base usage), the cost savings in dollars, and the reduction in emissions of CO_2, SO_x, and NO_x. Although no methods of estimation are indicated on the form, a description of who performed the analysis (in-house personnel, energy consulting firm, etc.) is indicated.

This program has proven to be inexpensive to implement and easy for the participants to use. The program should lead to fairly accurate results. The lighting hours per year constitute the largest uncertainty in terms of the variables used to calculate the savings. Systematic verification of the reported energy savings associated with this program is not required.

A second example of a voluntary reporting program is the EPA's Conservation Verification Protocols (CVP), part of the United States' Acid Rain Program (Solomon et al. 1992). The main goal of these protocols is to credit eligible electrical utilities for SO_2 emission reductions as a result of conservation program savings achieved as part of their compliance with EPA's Acid Rain Program. The protocols are flexible in terms of what types of calculations or measurements are performed.

The CVP allows engineering estimates of gross energy savings for seven specific categories. The main philosophy behind the CVP's selection of an estimation technique is that the reporting entities decide how much money they want to spend for a more accurate estimate, which can be translated into emissions trading. If engineering analyses are used instead of monitoring techniques, the net savings results are discounted by 40 percent to determine the net savings, thereby reflecting the lower confidence and accuracy of the results. If estimates are based on end-use submetering or billing analysis, the utilities may use a comparison (or control) group and the reported energy savings must have a statistical confidence of at least 75 percent when applying a one-tailed test.

Mandatory Reporting Programs

Mandatory programs are designed to meet a very specific goal and provide the necessary combination of guidelines and penalties to ensure that the goal is met. Methods used by these programs to ensure higher confidence in reported data include strict definitions and guidelines that reporting entities must follow when filling out forms. Additional requirements can include verification of reported data.

One example of a mandatory reporting program is DOE's Form EIA-861 (Annual Electric Utility Report: Schedule V—Demand-Side Management Information). The EIA issues Form EIA-861 to each and every electric utility in the United States (approximately 3,200). The Federal Energy Administration Act of 1974 mandates that utilities respond. Form EIA-861 requests data on the annual energy effects (MWh) and potential and actual peak reduction (KW) for the following DSM categories:

- energy efficiency
- interruptible load
- other load management
- other DSM programs
- load building.

Achievements are reported by customer class: residential, commercial, industrial, and other. Over 350 utilities reported DSM programs for reporting year 1992. Some quality control problems were evident when Schedule V was first added, including a lack of understanding of EIA's definitions of annualized program savings versus actual program savings among reporters. The EIA experience demonstrates the crucial need to standardize the definitions and terms early in the program's history.

Reporting and Data Collection Issues

When developing a reporting program, there are two broad ways that the collected data can be utilized: (1) the data can be collected and examined to review the accomplishments of the reporting entity, such as an industrial facility, or (2) the data can be aggregated to examine how the absolute levels of emissions are changing within a region or nation. This section examines some inherent problems in the reporting program implementation that can hinder these goals from being achieved.

Who Should Report?

Two questions that can help focus this issue are (1) whether the program is mandatory or voluntary, and (2) whether it is domestic or international. In general, voluntary programs and international programs will have fewer reporting constraints and provide for a broader range of estimation and verification protocols than mandatory and domestic programs.

While developing the GGVRP, the following reporting entities were considered: electric and natural gas utilities, independent power producers (including cogenerators, etc.), large corporations, large commercial buildings, residential homes, federal, state, or local agencies, manufacturers, trade associations or professional societies and energy consulting firms.

In contrast, the CVP allows only eligible electric utilities and their affiliated power producers to report and DEEP includes data from all utility DSM programs, and will eventually include non-utility (such as municipal and government) conservation programs. Additionally, since the CVP has SO_2 trading, and a monetary value associated with it, the accuracy and verification of results have financial impacts.

Double Counting

Double counting occurs when two reporting entities report savings from the same activity (e.g., the database storing the information claims twice as much savings as actually occurred). Unfortunately, no studies have been done to determine to what extent double counting exists in voluntary and mandatory reporting programs. Even if future studies show that double counting has little impact on the accuracy of the group of data collected, mechanisms may still be implemented to minimize double counting to ensure that public credibility of the data is maintained.

A reporting entity can range in complexity from a corporation which is housed in a single building to a multi-level corporation that has hundreds of franchises (such as a restaurant chain) within the United States and internationally; these multi-location businesses offer multiple opportunities for double counting. Another example of potential double reporters includes manufacturers who wish to report savings from an efficient appliance along with a utility who implements a DSM program using the same appliance. Other parties who may wish to report similar energy (and emission) savings include energy service companies (ESCOs) and household consumers.

What can be done to minimize the double-counting among reporting entities? There are four broad solutions to the double-counting dichotomy: (1) recognize that there could be a problem but choose to ignore it, (2) limit who can report in the program, (3) delegate responsibility to the reporting entities to ensure that they report accurate results organization-wide and in cooperation with other organizations, or (4) assign responsibility to the collecting agency to perform a check and balances at the end of each fiscal year to help ensure that the database is accurate as a whole.

The double-counting issue is closely linked to the issue of who is allowed to report. The CVP avoids the double-counting issue by stating that only electric utilities and affiliated independent power producers can report under its program. On the other hand, the GGVRP was left with only options three or four after it decided that the reporting was open to everyone. The GGVRP chose option three—leaving the issue of double counting up to the individual organizations. In effect, this implies that those organizations that feel they have a potential significant financial stake in ensuring accurate emissions reporting will work within their organization and with other entities to control double counting. Perhaps for political reasons, very few programs appear to have chosen option one, to ignore the problem.

The Reference Case

Energy savings and the associated emissions reductions cannot be directly measured. Rather they must be compared to a pre-existing energy usage and emissions level. An important factor in the confidence of the reported data is how well the reference case or existing condition can be established.

EPACT 1605(b) calls for the voluntary reporting of greenhouse gas emission reductions relative to the baseline period of 1987-1990. This is a simple national goal but inappropriate at a microeconomic level, especially for an enterprise that didn't exist in 1987. Furthermore, any individual entity reporting its reductions is faced with a fundamental problem of reporting the results of some action relative to a value that may not be accurately representing the effect of their actions. Therefore, a reasonable alternative for reporting emissions reductions is to estimate emissions reductions by comparing the new condition against a reference case that would have existed if no action had been taken. The two methods for examining the change in emissions levels are (1) directly measure the change in emissions levels between the two cases using emissions monitoring or (2) examine the difference in energy use between the two cases and translate those energy savings into emissions reductions.

Confidence in Energy Savings Estimates

If a reporting entity decides to estimate emissions reductions from energy conservation estimates, the accuracy of the estimation technique is paramount. This section describes the estimation techniques allowed by the CVP, GGVRP and DEEP programs.

As presented in Figure 1, the CVP has two generic verification paths: (1) engineering or stipulated estimates and (2) monitored savings. The monitored savings path, which is preferred by the EPA, utilizes monitored energy savings and reference cases to improve the net savings estimates. The stipulated savings path used default gross-to-net factors to estimate net savings from conservation measures. Figure 2, presents the estimation paths from the perspective of the GGVRP: (1) using predefined equations for certain applications or using a wide array of engineering, building simulation and statistical estimation techniques, (2) using monitoring equipment before and after the activity has been installed to estimate energy savings, and (3) using reported savings data from other programs such as Green Lights or utility DSM filings. Since the GHG reporting program is voluntary, it provides a broader range of options for reporting energy and emissions reductions.

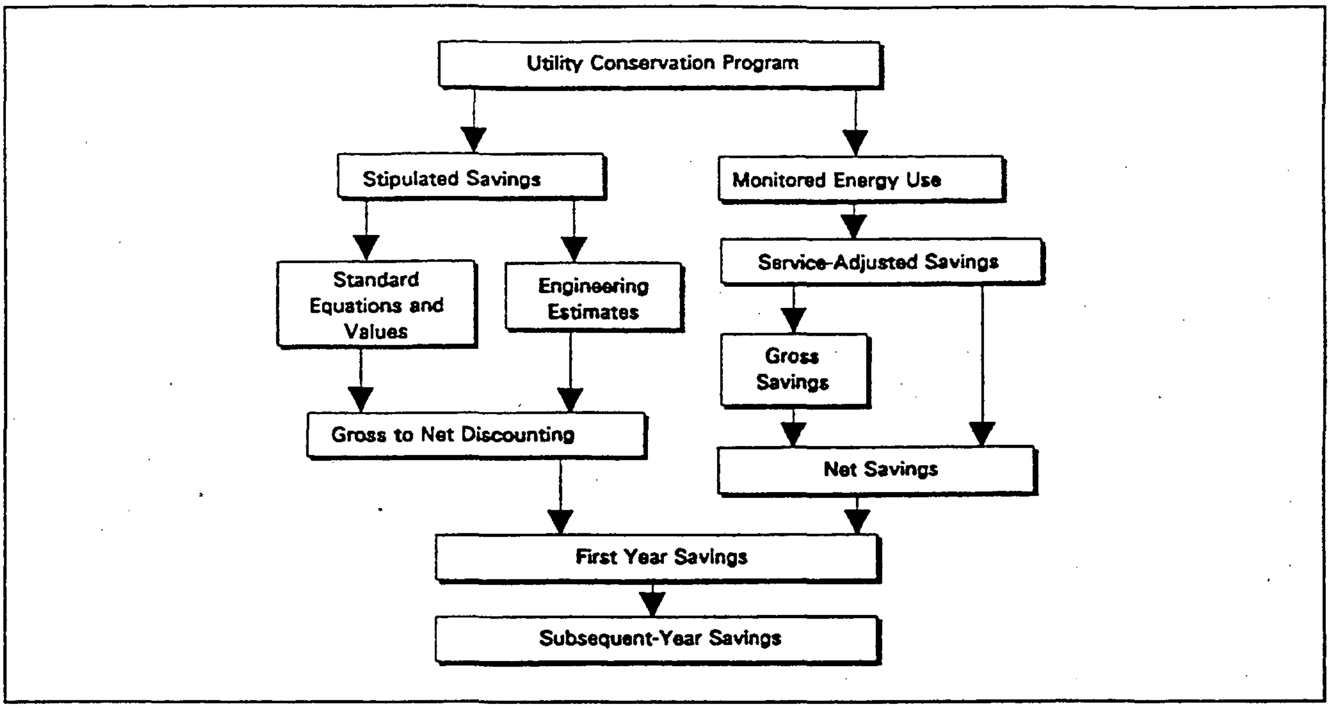

Figure 1. CVP Energy Estimation Paths

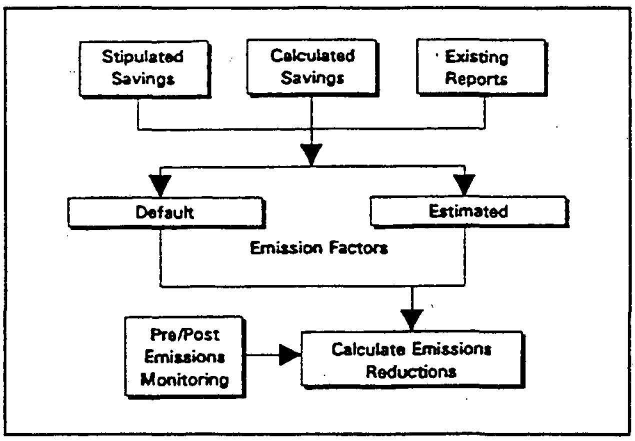

Figure 2. GGVRP Energy Estimation Paths

Estimation Overview

This section will describe the techniques currently in use and discuss some of their strengths and limitations. In general, results obtained by real-time metering (run time meters, end-use meters, etc.) are more accurate, with a higher corresponding confidence, then simple engineering estimation approaches; however, real-time metering is typically more expensive, and the results are less generalizable. Some typical methods are shown in Table 1.

The final category of estimation approaches (hybrid techniques) combines one or more of the above methods to create an even stronger analysis tool. An example of a hybrid technique is the combination of spot metering with engineering analysis. The hours of operation before and after are estimated and the before-and-after efficiency is measured. Statistically adjusted engineering (SAE) analysis is used by many utilities and is a combination of developing estimates using engineering analysis and reconciling the results to metered loads using statistical analysis. While hybrid techniques can provide more accurate results, they typically increase the complexity and expense.

Program Estimation/Verification Approaches

In order to better understand the estimation techniques available to reporting entities, Table 2 was generated during the development of the GGVRP. It is important to realize that the data presented in Table 2 is subjective and is not absolutely applicable in all applications.

Based on the examination of estimation and verification techniques used by existing programs and protocols in conjunction with ensuring that the voluntary reporting program goals were met, four estimation options were presented to GGVRP workshop participants: (1) accept any and all measurement techniques, (2) specify the acceptable techniques, (3) allow all techniques and adjust the savings based on the accuracy of the method used, and (4) accept all reports, but categorize them according to measurement technique, uncertainty, or some other data quality differentiation criteria.

Table 1. Comparison of Estimation Techniques

Estimation Technique	Pros	Cons
Engineering Analysis	Easy to use and understand.	Estimates are not highly accurate.
Building Simulation Models	Allows detailed engineering analysis to be performed.	Difficult and time-consuming to use.
Site-specific Billing History Analysis	Using actual overall changes in site's energy use.	Small changes cannot be ascertained.
Program-Wide Billing History Analysis	Examines patterns of energy usage for several customers.	Other changes in usage can be difficult to ascertain.
Spot Metering	Quick method for determining connected loads and part loading of equipment.	It may be difficult to determine a typical part loading if the equipment routinely undergoes variable loading.
End-Use Metering	Provides detailed information on a single appliance or end-use.	Data intensive and expensive.
Load Research Data Metering	Provides detailed information at the building or meter-level. Most utilities already collect some of this data.	Less accurate than end-use metering.
Flow Meters	Detailed information on flows through pipes.	Data intensive and expensive.
Manufacturer's Estimates	Readily available, energy guide labels are included on most major appliances.	Does not reflect occupant behavior.
Statistical Analysis of Site Characteristics	Allows examination of behavioral and external parameters on energy use. Less expensive than metering.	Requires large sample sizes to work well.
Hybrid Techniques	Uses the best combination of techniques to estimate savings.	Can be expensive and difficult to link techniques.

It is probable that the GGVRP will allow the reporting entity to select their own estimation technique, and the EIA will categorize the results by estimation technique. The GGVRP will also allow reporting entities to use data from other reporting programs (e.g., utilities may use data from DSM evaluations submitted to their respective public utility commissions and other entities may use data from the Green Lights program).

The CVP encourages reporting entities to use the techniques that they feel are most applicable, but requires a uniform level of confidence in energy savings.

In its report on commercial lighting programs, the DEEP project used a hybrid of accepting any and all program evaluation reports: all estimation techniques were allowed, but the savings were adjusted to allow for consistent comparisons among programs (Eto et al. 1994). Using post-program evaluations and complete cost information, the total cost and measured performance of commercial and industrial lighting programs could be accurately analyzed.

It is important to realize that the solution to this problem will be largely driven by the purpose and potential rewards behind the reporting program. If the reporting entity is getting credits that have a monetary value associated with them, then accuracy tends to be more important. On the other hand, if the only reward for reporting is an acknowledgment of doing a good deed and social learning

Table 2. Estimation Techniques Useable by Reporting Entities

Primary Reporting Entities	Billing[a] History	Engineering Estimates	Short Term Monitoring	Energy Guide Labels	Statistical[b] Analysis	Building Simulation Models	Hybrid[c] Methods
Utilities	●	●	●	●	●	●	●
Companies\Firms Corporations	●	●	⊕	⊕	○	○	○
Federal Agencies State Agencies	●	●	●	●	●	●	●
Municipalities Municipal Housing Authorities	⊕	●	⊕	●	⊕	○	○
University Systems Individual Universities School Districts Individual Schools	⊕	●	⊕	⊕	⊕	○	○
Building Owners Builders/Developers	○	●	⊕	●	○	⊕	○
Churches	⊕	●	○	⊕		○	○
Multi-Family Complex Owners Home Owner/Renter	○	●	○	●	○	○	○
Trade Organizations Consumer Advocacy Groups	○	●	○	●	○	○	○

Notes:
(a) The Billing History category represents energy analysis performed on a single building or facility.
(b) The Statististical Analysis category represents large-scale analysis and evaluation techniques using several facilities.
(c) Hybrid techniques are a combination of one or more of the other techniques.

LEGEND: ● Most Applicable ⊕ Somewhat Applicable ○ Least Applicable

is also deemed to be critical (as with the U.S.—Climate Change Action Plan), then participation may be more critical. Informational programs need to have results sufficiently categorized so that the data can be analyzed and new information learned. Good program design should include periodic review and analysis of the data, so that updates can be made to the reporting mechanisms and estimation protocols as required—especially when a program is in its infancy.

Converting Energy Savings to Emission Reductions

In general, the simplest (and least expensive) means of estimating emissions levels is to translate the energy savings into associated emission reductions using default United States multipliers, or emission factors. In fact, this is the sole estimation path for the CVP; kWh savings corresponds directly to reductions in atmospheric sulfur. However, the GGVRP also allows non-continuous or Continuous Emissions Monitoring (CEM) of greenhouse gases from individual emitting sources belonging to reporting entities.

The process of translating energy and demand savings (for electrical activities) into emissions reduction characteristics is called mapping. Different generating resources have different greenhouse gas production characteristics. Nuclear power and renewable energy sources (such as hydroelectric, wind, and solar) have essentially zero emissions production, whereas fossil fuel (natural gas, oil, and coal) powered electric generating stations produce significant greenhouse gas emissions (with natural gas typically producing the least and coal the most). However, emissions should be examined over the entire fuel cycle, so that even renewables and nuclear power have some emissions. Since electric utility loads vary with the time-of-day and season, utilities will typically have several plants that they phase in and out of service to meet their loads. These plants are used or dispatched (in industry terms) based on economics. Depending upon availability, the plant producing power at the lowest cost will usually be dispatched first and the most expensive plant last.

The greenhouse gas and acid rain reduction depends on which plant's production is reduced to accommodate the reduced load resulting from the conservation measure. This mapping problem is complicated by time-of-day and magnitude issues. For example, building envelope and heating, ventilation and air conditioning (HVAC) improvements reduce loads depending on the weather, but retrofitting high-efficiency equipment and appliances will cause reduced consumption whenever they are used.

Some DSM programs are implemented solely to improve the utility's load factor and do not reduce load. Rather, they shift the load to another time period. Load-shifting programs can also affect emissions output if the new load profile results in a different proportion of utility-generation with fossil fuels.

Some of the different mapping options that can be implemented include (1) having the reporting program provide default national and international emission factors, regional emission factors, or utility-level emission factors for a typical year, (2) having electric utilities provide their own emission factors, or (3) allowing reporting entities to use default emissions factors or provide their own as they see fit. Some reporting entities don't have the capability to generate their own emissions factors, and they should be allowed to use default factors. Other reporting entities have the ability and the desire to calculate emissions reductions using self-generated emissions factors, and they should be allowed to do so, as it leads to increased accuracy.

One approach that reporting entities to the GGVRP can use is to develop their own emissions factors based upon their own energy production (e.g., MWh) and quantity (lbs. or tons) of total emissions data gathered using non-continuous monitoring or CEM. It is expected that most electrical utilities will use the CEM program approach of monitoring emissions constantly, while other reporting entities may use non-continuous monitoring to periodically check their emissions. In addition, the GGVRP will provide default state-level electric emission factors and default national-level non-electric emission factors. The CVP circumvents this problem by stipulating an emission factor for reporting entities to apply to their energy savings.

Emission Trading

Some reporting issues, such as the potential for double-counting and the setting of minimum reportable emissions, arise due to the voluntary nature of the proposed protocols. If a monetary value is assigned to the emissions, either through an emissions allowance system or an emission charge, then the market will sort out many of the problems. Brokers, emissions exchanges, electronic bulletin boards, and clearinghouses will appear to facilitate emissions markets and lower the transaction costs for utilities and other sources to achieve efficient compliance schemes.

While the CVP, for example, is a voluntary reporting program for energy conservation programs, the Acid Rain Program with which it is associated is mandatory for most fossil-fueled power plants in the United States. These utility plants must meet SO_2 reduction requirements beginning in either 1995 or 2000, but can do so through a flexible SO_2 allowance trading program. A utility may buy additional allowances in lieu of meeting its full emission reduction requirements, or conversely may over-control emissions and bank or sell excess allowances to the market. More than 30 allowances are known to have occurred since 1992, plus 326,000 allowances auctioned by EPA and the Chicago Board of Trade in March 1993 and 1994 (Solomon 1994).

The program, as currently structured, excludes utility power plants of 25 MW or less and industrial process sources, who may voluntarily opt-in to the Acid Rain Program. The SO_2 allowance system ensures data accuracy and reliability by linking the trading program with the CEM requirements under the EPA's Acid Rain Program. If a utility wants to use a stream of allowances for Acid Rain compliance, including allowances received through trade, it must report those transactions to the EPA's computer-based Allowance Tracking System (ATS). Every year, an affected utility's allowance holdings will be compared to its monitored SO_2 emissions for the previous year. If emissions exceed allowance holdings for the previous year, the utility must pay a very high ($2,000/Ton) penalty to the EPA and reduce all excess emissions in the subsequent year. Allowance data accuracy is ensured and double-counting eliminated because only EPA issues the SO_2 allowances, and "reallocations" through trade cannot be counted toward compliance unless they are reported to the ATS. In these cases, equivalent allowance and CEM requirements would be imposed by the EPA. If Section 1605(b) GGVRP ever evolves into a market based system for control of greenhouse gas emissions, the SO_2 allowance system can provide valuable insight on how to administer the program (Solomon 1994).

Conclusion

The procedures for reporting and verifying savings are much more complicated than those for reporting absolute levels of energy use, because the difference in energy use may not reflect other changes in activity or conditions. Reporting changes in energy (and, hence, emissions) requires numerous assumptions regarding the way the energy is used and the services that it provides.

There is a spectrum of savings reporting and verification, ranging from detailed compilations of DSM programs to comprehensive, mandatory reporting of all savings. The detailed compilations, such as DEEP, are best suited for demonstrating potential savings and costs of energy savings programs but poorly suited for regulation or region-wide tabulation of energy savings. At the other end, mandatory programs provide clear indicators of progress toward CO_2 reduction programs, but introduce uncertainties related to the reference case, double counting, and savings estimating techniques. The CO_2 voluntary reporting scheme faces the additional dilemma of balancing accuracy in reporting and level of participation. Some of the reporting and verification issues would sort themselves out if a value is assigned to CO_2 emissions.

Among the uncertainties introduced in the reporting and verification procedures, it appears that selection of the reference case is the most critical, followed by the energy estimating procedures, and double counting. The selection of the emissions conversion factor introduces a minor uncertainty when national savings are considered, but can be crucial when reporting savings from a single program.

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LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
TECHNICAL AND ELECTRONIC
INFORMATION DEPARTMENT
BERKELEY, CALIFORNIA 94720