Harmonization of evaluation methods for energy programs within Europe

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Summary

Since the mid-1990s the European Commission supported projects to harmonize evaluations. In this paper we present the outcome of this process in the European ex-post evaluation guidebook. This guidebook should help evaluators to improve the quality of the evaluation and to harmonize methods over countries. We start with the B/C evaluation study that holds the basic ideas for the European evaluation framework. The main part of this paper deals with the ex-post evaluation guidebook: the drafting of this guidebook, the testing by nine case studies, and the six main sections of the guidebook. These main sections are dealing with purpose of evaluation, overall impact evaluation strategy, evaluation concepts and evaluation strategy for special program types, and survey techniques. We end with the actual situation and give special attention to an IEA initiative to harmonize energy evaluation related to Kyoto protocol targets.

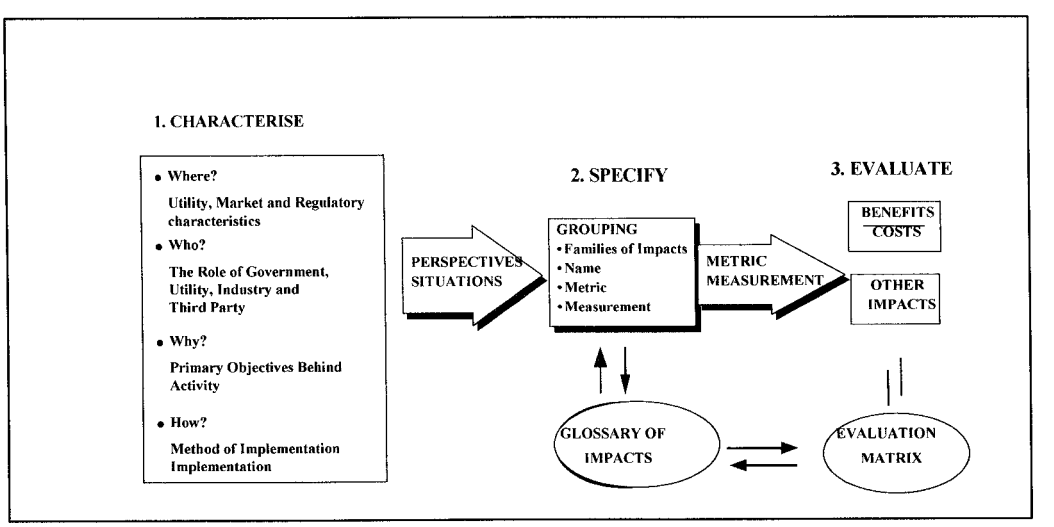
Introduction

In the 1990s, there was a growing interest in evaluation methods for energy programs in the majority of Western European countries. Evaluation studies were done on almost all levels, ranging from small energy-saving projects implemented by energy utilities, to nation-wide programs. But there are only a small number of evaluators in each country, and each uses more or less his or her own method. During the last ten years, the European Commission had supported co-operation projects to improve evaluation knowledge and to move towards more harmonized methods. The main subject of this paper is the outcome of this process in the "European ex-post evaluation guidebook for DSM and EE services programs". The future for European harmonized evaluation methods will also be illustrated using two case studies. The relationship with evaluations needed for the Convention on Climate Change and international co-operation by the International Energy Agency (IEA) is also discussed.

Benefits/Cost (B/C) Evaluation Study: The Starting Point

In the mid-1990s the European Commission supported several studies to harmonize evaluations related to Integrated Resource Planning and cost optimization programs. One of the more integrative studies was "The European B/C Analysis Methodology for DSM and EE Services" (1994-1996) (SRC, 1996). In this study the basic ideas for an European evaluation framework were developed. The methodology needs to be flexible and robust in order to allow the B/C analysis to take place in different European countries and across different types of energy-systems. It consisted of three steps: (1) Characterization of external environment; (2) Specification of impact; (3) Evaluation.
These steps and an overview of the methodology are presented in Figure 1.

Figure 1: Overview of EU B/C Methodology



Step 1: Characterization of external environment
The main outcome of the characterization process is an improved understanding of the situation and the perspectives to be included in the analysis. The framework used in this first step aids the discussion of cost-effectiveness of DSM and energy services (ES) programs. Without a framework, it would be very difficult to perform a meaningful discussion, and results would be of limited value. Four key issues are addressed to allow the assessment and comparison of DSM and EE programs:

- Where: Characterization of the environment in which the DSM and ES program is being implemented. This external framework describes the types of energy market, utility industry structure, and the types of regulation;
- Who: Identification of the role of government, utility industry, and third party involved in the DSM and ES program;
- Why: Identification of the reasons for performing DSM and ES programs. Are programs for example, performed as a part of public policy to achieve a public policy goal, or as part of a utility strategic marketing program to increase market share and profitability?
- How: Determination of the implementation method for the DSM of ES program.

Step 2: Specification of impacts
The main outcome of this step-by-step process is an improved understanding of which impacts to include in the B/C evaluation. As support for the B/C specification process, the report provides a glossary of B/C impacts containing the following information:

- Name and definition of B/C impacts;
- Suggested metric unit and measurements;
- Perspectives for which perspectives the impact is relevant;
- How the impact should be included in the B/C equation: as a cost or a benefit;
- Potential for overlap with other benefits;
- Guidance on interpretation of results.

Step 3: Evaluation
This step encompasses a compilation of the impact in a manner that allows a consistent comparison of alternatives. It results in evaluation matrices that are related to the impacts defined in step 2. During the evaluation there is a feedback process between the evaluation results and the specification of impact (see Figure 1). Experience in performing these evaluations has shown that both qualitative and quantitative impacts should be used in the evaluation. The B/C Evaluation Guidebook suggests that for each of six different perspectives costs, benefits, benefit/cost ratio and other impacts be analyzed (see Table 1). Monetized costs and benefits are often given the most weight, as they are easiest to judge, so they are listed individually. Other impacts are sometimes critical to decision-making, and they are included formally in the matrix, so they can be used if desired.

Table 1: Example of a generic EU B/C evaluation matrix

Perspective	Costs	Benefits	B/C Ratio	Other Impacts
Customer				
Distribution Utility				
Wholesale Utility				
Government				
Society				
Other				

Which impacts are relevant depends on the specific program, program context, and the perspective of the valuation. However, as a guideline a generic overview of possible relevant impacts for each perspective is given in Table 2. The evaluation planner may then decide which impacts are irrelevant to the evaluation in question and eliminate these and maybe add others. Impacts can be added or subtracted from this list, as can be seen in the examples. Some perspectives shown in this table may not be used or may not have any meaning in some analyses. Impacts marked with a (*) indicate that they should be included in the primary equation if they are translated into monetary equivalents.

European Union Ex-Post Evaluation Guidebook, 1997- 2001

The B/C guidebook was finalized in a period when the emphasis for the evaluation of DSM and ES program was changing: no longer cost and benefits, but energy savings and the environmental impacts of these savings. In

1997, a project, supervised by the European Commission DG Energy, started. This project integrated evaluation ideas into a methodology and combined this with practical issues. The project was split in two phases. The objective of Phase I was to establish an overview of the existing evaluation practices used, available methods, and what issues the new methodology should incorporate. This phase was finalized in January 1998 (SRC 1998). The objective of Phase II was to test the drafted methodology in various environments in terms of program objective, implementation method, and market structure. Participating organizations were requested to test the drafted methodology on a specific DSM or EE services program. The program could be a program implemented by the participating organization itself or by other organization. The project team provided support and guidance to the participating organizations as they applied the evaluation methodology to their own programs. The purpose was to provide hands-on experience to the participating organizations and obtain valuable feedback on the practicality of the guidebook. In this way the guidebook benefited from real-world experience of organizations carrying out the evaluation. This second phase started at the end of 1999 and was completed in early 2001.

Table 2: Overview of likely relevant benefits and costs by perspective

Perspective	**Included In Primary Equation**	**Otherwise Accounted**
Participating Customer	Consumption of Other Fuels Change in Energy Bill Industrial Productivity Customer Capital Investment Customer O&M Utility Incentives Third Party Incentives Tax Credits Taxes Other Customer Transaction Costs (*) Customer Value (*) Tariff Changes (*)	Proven Performance Ease of Implementation Availability of Capital (Other Customer Transaction Cost (*)) (Customer Value (*)) (Tariff Changes (*))
Non-participating Customer	Tariff Changes (*)	(Tariff Changes (*))
Generation and Transmission Utility	Energy Generation Costs Generation Capacity Cost Transmission Capacity Cost Power Purchase Revenue Wholesale Utility Program Costs Wholesale Utility Incentive Payments Risk and Reliability (*)	Public Image (Risk and Reliability (*))
Distribution and Supply Utility	Power Purchase Cost Utility Revenue Change Distribution Capacity Cost Distribution Utility Program Costs Distribution Utility Incentive Payments Tariff Changes (*)	Market Share Public Image Proven Performance Ease of Implementation Ease of Evaluation Availability of Capital Cash Flow (Tariff Changes(*))
Government	Tax Revenues Government Program Costs Tax Credits Environmental Effects of Supply (*) Environmental Effects of Consumption (*)	Industrial Productivity Regional Employment Public Image Diminishment of Natural Resources Anti-Competitiveness (Environmental Effects of Supply (*)) (Environmental Effects of Consumption. (*))
Society	Energy Generation Costs Generation Capacity Cost Transmission Capacity Cost Distribution Capacity Cost Utility Program Costs Government Program Costs Third Party Program Cost Customer Capital Investment Customer O&M Environmental Effects of Supply (*) Environmental Effects of Consumption (*) Tariff Changes (*) Other Customer Transaction Costs (*) Customer Value (*)	Industrial Productivity Regional Employment Diminishment of Natural Resources Anti-Competitiveness (Environmental Effects of Supply (*)) (Environmental Effects of Consumption (*)) (Tariff Changes (*)) (Other Customer Transaction Costs (*)) (Customer Value (*))

Testing The Draft Evaluation Guidebook

Nine case examples on a great variety of customer target groups and countries all over Europe were used to test the draft evaluation guidebook (see Table 3). In this section, we summarize some of the programs and the results of the evaluations, to illustrate how the draft guidebook was tested and modifications were done.

Table 3: Nine case studies, used to test the draft Evaluation Guidebook

Program name	Target group	Country
Improving the heating system balancing services of buildings	House managers	Finland
Evaluation of the energy efficiency check	Households	Norway
Evaluation of a campaign for lower washing temperatures	Households	Denmark
Energy efficiency standards of performance	Public Electricity Suppliers	United Kingdom
The Clean Fuel Vehicle Program-PowersShift	Car owners	United Kingdom
National energy efficiency program	National Energy Agency	Czech Republic
Protocol for International Performance Measurement and Verification (IPMVP) Guide	Energy distribution company and regional government	Germany
Use of electronic variable speed drives (VSDs) in motors	Industry	Portugal
Energy performance standard in the Dutch building decree	New houses	Holland

Improving the heating system balancing services of buildings, Finland
The target of the program evaluation was to assess the current market situation on heating system balancing after the program and the governmental support was finished. The target was to estimate how many buildings were balanced, and how many persons were trained on the basis of the new balancing system. The methodologies used in the program evaluation were interviews, questionnaires and collection of consumption data in specific buildings from the utility companies. Questionnaires were sent to over 500 house managers, the reply percentage was 25 %. One fourth of potential target group of buildings were renovated, meaning that heating system balancing is still needed. Every house manager was going to continue renovating the heating systems in their buildings. The most important driving force is the pleasant living conditions, not energy savings or environmental aspects. The investments were mostly considered to be beneficial. The reduction in CO2 emissions for the 100 buildings was estimated as 77 500 t/a (out of a potential of 231 000 t/a). The gross primary energy saving was calculated to be 22 400 TJ/a (out of a potential of 67 200 TJ/a).

The energy efficiency check, Norway
The Energy Efficiency Check (EEC) is a standardized Energy-Efficiency audit for households, which was first introduced in a national EE campaign by The Norwegian Water Resources and Energy Directorate (NVE) in 1997. It was sent to 1.26 million households in 1997 and has continued to be an important element in several campaigns both locally and nationally. The evaluation of the EEC included impact assessment, cost-benefit analysis, and customer utility value. A total of 1,200 telephone interviews were completed in September 2000. There is little evidence that the EEC as an independent program has the desired effect based on the main goals of the evaluation. It is still the most energy-efficient households who decide to participate in the program when it is used as a mass campaign. The evaluators could not recommend the EEC as the main element of a mass campaign for households. The risk of providing the wrong customers with the wrong feedback is too large and the benefit is questionable. Indications that the most energy efficient households is the most frequent users of the EEC supports the conclusion that the EEC is unsuited as a service for all houses built before 1980.

The Clean Fuel Vehicle Program-PowersShift, United Kingdom
The PowerShift program started in 1996 and promotes three clean fuels: LGP, NG and electricity. PowerShift aims to transform the market for clean fuel vehicles in the UK by breaking down the barriers to their development. At the end of 2000 the main emphasis with regard to the evaluation of the program has been monitoring the program results as well as some analysis of cost effectiveness. As the program has grown, this methodology has continuously evolved in order to meet the requirements of Government. Consequently a new evaluation methodology is currently under development. The evaluation currently employs a number of key criteria as performance indicators. The program has directly funded about 10,000 vehicles since 1996, and stimulated the growth of the CFV market to over 32,000 vehicles resulting in annual carbon savings of 8,3000tC/a

Energy performance standard in the Dutch building decree, Holland
At the end of 1995, an Energy Performance Standard (EPS) was introduced in the Building Decree. The aim of this legal instrument was to reduce the energy use in new houses, but gives freedom to architects, developers, and house owners regarding how they prefer to reach the required performance level. Over the years this level was lowered. The evaluation was based on a small sample and the conclusions were stated to be indicative.

These conclusions were that the real average gas use in new houses is in line with the estimated gas use of a standard single-family house, but that the variation in the gas use within the housing categories is high.

During several meetings the evaluators discussed their experiences in the evaluation conducted and the outline, user friendliness and evaluation strategies in the evaluation guidebook. The quality of the Norwegian evaluation was raised using the draft guidebook. On the other hand, a lot of feedback became available, as the choice of the strategy was based on the draft European Ex-post Evaluation Guidebook. It has proved useful as an introduction to the evaluation of EE programs as it provides a description of various evaluation methods. The guidebook is used in the evaluation of the PowerShift program as a tool for developing a new evaluation method, especially for the baseline discussion the use of indicators. The German evaluators concluded that the monitoring and verification method based on the IPMVP proved reliable in the sense that it produced consistent and reliable results for the energy savings that were achieved, with moderate M&V effort.

The European Ex-Post Evaluation Guidebook

The final version of the guidebook on ex-post evaluation (SRC, January 2001) holds six major items: (1) the purpose of evaluation; (2) Evaluation planning; (3) Overall impact evaluation strategies; (4) Key impact evaluation concepts; (5) Selecting impact evaluation strategies for special program types; (6) Survey techniques. Evaluators should overview all these elements in his evaluation process.

(1) The purpose of evaluation: why should the evaluation be done and how should practical questions be judged?

There are three main objectives for evaluating energy efficiency programs: impacts, process, and contractual requirements. The guidebook holds examples for practical evaluation questions and gives answers on awareness and how the evaluation process should be organized. Here we only present the main elements.

Evaluation starts with determining the framework for the evaluation: why was the energy-efficiency program implemented and what is the interest in evaluating the program? Most important program impacts need to be estimated, including:

- Energy demand related impacts (e.g., energy use, capacity demand, greenhouse gas emissions, or market barriers).
- Business-related impacts (e.g., impact on customer retention rates, profit margins, or overall profitability).
- Market reactions to the program (e.g., profiles of market segments participating and not participating, effects on equipment manufacturers, suppliers and market channels, and participant satisfaction with the program.

Not only what is realized should be evaluated, but also how. This generates information on how to judge the impacts of the program, but also to determine how the process of the programs could be improved. This process evaluation includes:

- Efficiency of program procedures, program outreach and information processing.
- Methods for streamlining the program and improving cost-effectiveness.
- Effectiveness of marketing strategies and promotional materials.
- Explanations behind program impact estimates (i.e., how and why the program's impacts were what they were).

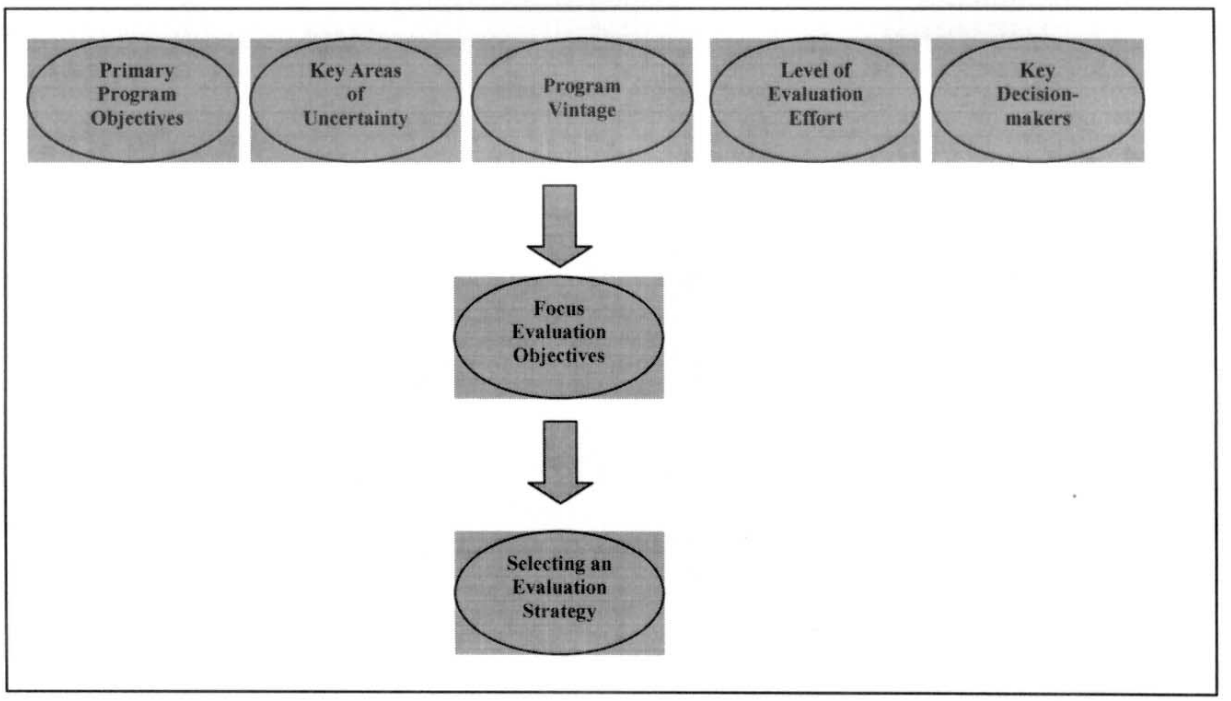
The third element is to meet contractual requirements. Some energy services companies engage in performance contracting work, in which at least some portion of payment for services provided is based on the performance of the installed energy-efficient equipment. Evaluation (monitoring and verification) requirements are typically written into such contracts, and specify the item to be measured, the way in which the measurement will occur, the duration of the measurement, and the frequency of the measurement.

Historically, most evaluations have had as their central objective the reduction of energy use or CO_2 emissions. Consequently, impact evaluations have received the most attention. For energy efficiency projects implemented by energy service companies in the private market, this is the sole objective. As program objectives have shifted to transforming markets and overcoming market barriers to energy efficiency, the focus of the impact evaluation has shifted to a more approximate estimate of energy use and CO_2 impacts and a more detailed estimate of market-related impacts, supported by market evaluation data on key market indicators

(2) Evaluation planning: the planning process, program vintage, and the level of effort for the evaluation and key decision-makers

Prior to selecting an appropriate evaluation strategy for an energy efficiency program, the evaluation guidebook suggests that one should consider seven issues. These issues are presented with their relations in Figure 2. We will illustrate from those: the evaluation planning for the primary program objectives, the program vintage, and the level of effort and key decision-makers.

Figure 2: Key elements in the planning process



Primary program objectives

In Table 4 the primary evaluation objectives for two basic categories of primary objectives are presented. The guidebook holds two basic categories that determine the objectives of the evaluation effort: A: Environmental/energy resource objectives; B: Business profitability objectives

Typically, the purpose of the evaluation is to quantify, to the extent possible, how well the program is accomplishing its primary objective. This quantification is somewhat easier for emissions, energy use, energy load, and business profitability objectives, for which there are widely accepted metrics and processes/measurement techniques, are available for assessing that metrics.

It is somewhat more difficult to quantify success in achieving market change objectives, for three reasons:

- Markets involve the complex interaction of numerous forces, making causes of market change very difficult to establish;
- There is often no generally accepted and available metrics that indicates that a specific market has changed.
- Market change tends to happen very slowly, making it more challenging for evaluation to help guide program implementation and to assess how well programs are performing. The extended time frame for change also reduces certainty about exactly what is causing observed market changes, as more and more factors have time to influence the market.

As a result of the difficulties quantifying success in achieving market change objectives, evaluators typically collect data on a range of market indicators that provide evidence that a market is changing.

Additional to these primary objectives, relevant details of the program should be identified, including such features as:

- What constitutes a participant?
- Exactly how the program is marketed, including who is involved and when.
- How the participation process is supposed to flow, from customer contact through measure implementation (or incentive payment, final inspection, if appropriate).
- The energy savings engineering algorithms and the assumptions and supporting data behind them.

Table 4: Overview of the relationship between program objectives and primary evaluation objectives

Primary Program Objective	Primary Evaluation Objective
A. Environmental/ energy resource objectives	
Reduce CO_2 emissions	Change in CO_2 emissions/change in amount of energy used
Meet future energy capacity needs and/or reduce energy imports	Change in energy use: - Amount of energy use (e.g., kWh) - Capacity of energy use (e.g., kW)
Transform markets/overcome market barriers	Change in market indicators — percentage of retailers stocking the energy efficient product, percentages of consumers and businesses aware of the product, product penetration, percentage of businesses engaging in the efficient practice, etc.
Promote general economic improvement	Change in market indicators — number of new business starts, level of retail sales for discretionary products, housing starts, etc.
Develop a strong energy efficiency services industry	Change in market indicators — number of ESCOs, annual revenues for ESCOs, percentage of businesses aware of ESCOs, percentage of businesses likely to contact an ESCO in the next year, etc.
B. Business profitability objectives	
Generate profits for sponsors/investors	Change in sales and profit margins
Retain customers	Change in retention rate, change in per-customer margin
Generate positive public relations	Change in market indicators — Awareness of firm among targeted customers, number of mentions in various media, percentage of positive mentions in various media, etc.

Program Vintage

Evaluation needs change as programs mature. New programs tend to need more exploratory research, while more mature ones require only very targeted studies about outstanding unresolved issues. As a rule of thumb, an overview of the main evaluation needs by program vintage is presented in Table 5.

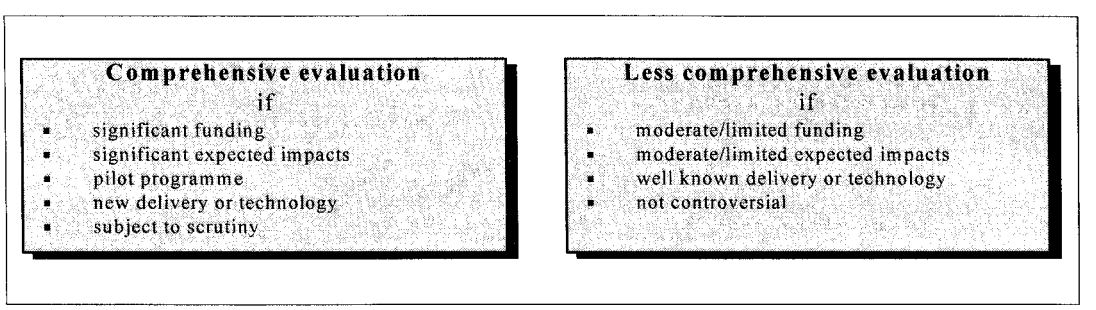
Table 5: Rule of thumb for evaluation related tot program vintage

First Year Programs	Second & Third Year and Pilot Programs	Mature Programs
Review Tracking & Monitoring System	(Review Tracking & Monitoring System)	Brief Interviews
Conduct Interviews	(Conduct Interviews)	Review & Update Program Documents
Document Actual Operation	(Document Actual Operation)	Comprehensive Review of Tracking System
Determine Site to Meter and Install Meters	(Determine Site to Meter and Install Meters)	Limited Research to Remove Uncertainties
	Comprehensive Review of Tracking System	Estimate Program Impact and Cost-effectiveness
	Comprehensive Impact Evaluation	Review Evaluation Results with Planners
	Process & Market Evaluation	

Appropriate level of effort for the evaluation

It is usually not feasible or cost-effective for every program to receive the same level of analysis each year. At the same time, it is not possible to indicate which share the evaluation cost should make of the total program cost. In Figure 3 guidelines are offered as a rationale for determining the general level of effort for an evaluation of a specific program. Each element of these guidelines is described more in detail in the guidebook.

Figure 5: Rules of thumbs regarding level of effort for the evaluation



Key decision-makers regarding the program

The individuals and organizations needing to make decisions about the program help determine both the relative importance of various aspects of the evaluation and the level of rigor with which the evaluation must be performed. The evaluator must determine: (a) Who must make decisions about the program? and (b) What aspects of the program will affect those decisions?

The guidebooks illustrates four type of key decision-makers that are important for this process:

1. Managers of public policy programs;
2. Other decision-makers associated with public policy programs;
3. Decision-makers in energy services projects;
4. Decision-makers in utilities operating load management programs.

Typically, the closer the decision-maker to the individuals charged with program implementation, the more discretion the decision-maker has regarding evaluation requirements and the more variability there is in the focus of evaluation activities. If the impetus for the program has come from within the organization, this perspective may not be challenged for some time. The manager must merely convince upper management that the program is achieving its objectives and, failing strong evidence to the contrary, upper management may not ask detailed enough questions or have sufficient technical/industry knowledge to become concerned that the manager's claims are not rigorously supported.

On the other hand, decision-makers other than the program manager may affect the nature of the evaluation. To give some examples. Perhaps the organization is faced with a need to dramatically reduce costs and all possible cost-cutting opportunities are examined. Perhaps some in upper management require strong documentation as a matter of policy or style. Perhaps the program's impetus comes from an overseeing external source, which is either paying the program manager's organization to implement the program or requiring it to do so. Perhaps the other decision-makers, themselves, are hostile to the organization. Perhaps a government agency required the program (or programs like it) to be implemented with the intent of showing the rest of the international community that it is meeting its commitments to reduce greenhouse gas emissions.

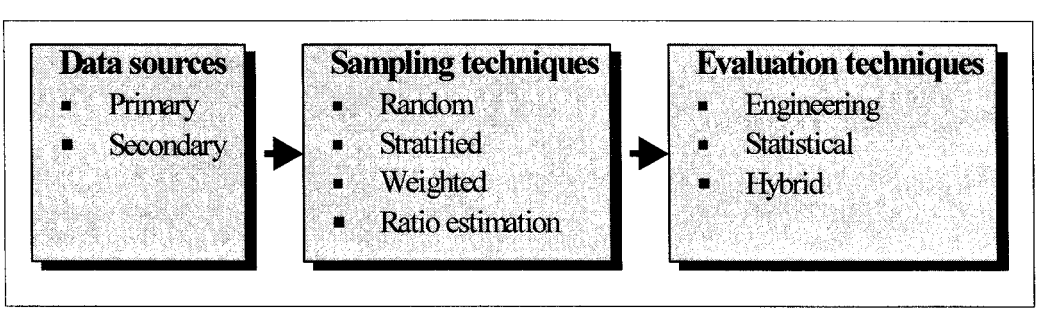
In the case of an energy services project there are two main decision-makers. The ESCO's management seeks a specific profit margin on the project and will price the project and any related evaluation (i.e., monitoring and verification) accordingly. Evaluation becomes a tool for increasing client comfort with the project. The client's management is likely to want to spend as little as possible to reap the financial rewards of the energy efficiency project, and knows that the evaluation (i.e., monitoring and verification) represents a cost that must be subtracted from the financial benefits it will receive.

For a load management program, more than any other, decision-makers are likely to require compelling, easy-to-understand evidence of program impacts, because the reliability of portions of the T&D system is at stake. The central issue is whether the program has delayed the need for the planned upgrades and, if so, for how long. Answering this question implies a careful analysis of the assumptions and analysis used by those planning the upgrades. The evaluation will need to assemble strong evidence, with conservative assumptions, to support claims of any real energy savings.

(3) Overall impact evaluation strategies: evaluation techniques and data sources, choosing methods and impact and economic evaluation

The guidebook holds three groups of elements that should be judged to choose an impact evaluation strategy (see Figure 4). In this paper, we concentrate on the process for choosing between simple and more complex evaluation methods.

Figure 4: Impact evaluation strategy



For choosing between simple and more complex methods the guidebooks follows the four main categories of energy efficiency measures (as in NARUC (1997). The first is a distinction between a constant energy-efficiency

or variable and both can be combined with a constant load or variable one. So a basis rule of thumb for selecting impact evaluation techniques is formulated:

> *"As measures move from constant efficiency and constant load to variable efficiency and variable load, the analytic approach and data requirements become more challenging*

One of the central reasons for performing evaluation research may be to determine the cost-effectiveness of the program. Do the program benefits outweigh costs? For this several benefit/cost analysis methods, quantitative as well as qualitative, are available, but also the economics surrounding the evaluation must be considered. Some highlights are illustrated in the guidebook, following the Swedish Evaluation Guidebook (NUTEK et. al., 1993):

- The approach used to carry out the ex-post evaluation must be similar to that applied before initiation of the project to allow easy comparison.
- Project cost accounting enables inclusion of all project related costs at market value and should be used for evaluation of most energy services. Care should be made to include all "sunk" program costs (e.g. that costs associated with the work done to identify the project opportunity).
- It is recommended net-present-value calculations to be used for taking the time factor into account (occurrence in time of payments and disbursements), especially for projects intended at achieving long-term impacts. The important point is to take into account the long-term consequences of the project and the cost of capital (exclusive of tax).
- Only variable costs should be included, i.e. costs incurred as a result of the project. Fixed costs, such as non-project related administration costs, should be omitted.
- No generally accepted norm exists for adjusting for inflation, which is why most companies refrain from doing so. In this situation the costs are underestimated; inflation, in most cases, affects revenues faster than costs.
- Corporate goals and the conception of profitability shape the economic evaluation.
- When evaluating the project, evaluations of the consequences of alternatives are also relevant.

(4) Key impact evaluation concepts: gross and net program impact estimation, net-to-gross adjustment factors

After selecting an evaluation strategy, one needs to select what concepts will be used during the evaluation. Each concept has associated effort and cost requirements that the evaluator has to fulfil. The evaluation provides an estimate of what the real baseline energy use is (energy use that would have occurred in the absence of the program), based on the results of evaluation research performed during and after the program. It also develops an estimate of the energy use level resulting from the program. The difference between these two values is the program's "net impact." If the planners are correct in their estimate of these two values, the program's gross impact will be the same as the program's net impact. If decision-makers could count on planning estimates and evaluation estimates being the same, they would not need evaluation activities, to know how the program affected energy use (though evaluation could contribute to an understanding of customer satisfaction, how to improve program cost-effectiveness, and how the program is affecting the market). Of course, this is rarely the case, and sometimes the difference between these two impact estimates is quite large.

The guidebook gives the users advice and examples on the following net-to-gross adjustment factors (a) Free-ridership; (b) Spillover; (c) rebound; (d) persistence of savings.

(5) Selecting impact evaluation strategies for special program types: information -, market transformation-, load management, customer retention and energy services programs

An evaluation should take into account the type of program. The nature of a program itself gives special opportunities. For this reason, the European guidebook helps the evaluator to check whether these specific elements are to be included (or not). Relevant types of programs are:

1. Information programs
2. Market transformation programs
3. Transmission & distribution DSM programs
4. Load management programs
5. Customer retention programs
6. Energy service company projects

(6) Survey techniques and their use for process and market evaluation

Much has been written about the techniques used in process and market evaluations, because they are in large part identical to those used in market research. Their use in the evaluation of energy-efficiency programs is different primarily with regard to the content of the research questions addressed, but not in how the methods are implemented or how the results are analyzed. The final chapter of the guidebook briefly describes the techniques

used, some of the key issues that must be addressed, and refers the reader to the primary evaluation research references documented in an appendix. For this reason that section is short in the guidebook, but attention is given to performance indicators.
The usefulness of the results of many process and market evaluations has been hindered due to poor timing. Thorough research has been conducted, sometimes resulting in important discoveries about ways in which programs should be refined, but the results have been presented after key decisions have been made about the next year of the program. This has meant that program changes based on the evaluation of the first year of a program sometimes could not be made until the third year of the program. One way to avoid this time lag is to tie specific evaluation activities to performance indicators. Rather than wait until the end of a program year to conduct the research, it is conducted throughout the year, in short spurts. Program implementation staff therefore receives rapid feedback so that they can alter program components in time to affect program performance in the same year. Performance indicators are thus a form of program monitoring designed to enhance program performance *in a timely manner*, focus the efforts of program implementers, minimize the cost of process/market evaluations, and maximize their usefulness to decision-makers.

The Next Steps: how to implement (within Europe) and international harmonization as an option?

In September 2000, the first meeting of European experts in energy evaluation was organized by the Swedish National Energy Administration (STEM), and experiences were exchanged. Among others two evaluations were presented, relevant for the implementation of the guidebook: the evaluation of the French Energy Efficiency Policy 1973-1993 (Cabinet Committee, 1998) and the evaluation of the European Energy Label for cold appliances (University of Oxford, 1998). Both evaluations showed a complete different method and proved the need for a framework.
One of the options discussed at this workshop was harmonize methods by enlarging an evaluation guidebook. This guidebook would not only use European experiences, but also those from the USA and the Latin American and Pacific regions. It would concentrate on the relation between energy efficiency and the Kyoto protocol targets. To assist developing countries, co-operation within the IEA should be promoted. For this matter, the IEA Implementing Agreement for DSM is discussing a new task. This project may start in 2001 and would during the first two years concentrate on:

1 Developing a common framework;
2 Clarify the function of scenarios and measurements for evaluation guidelines;
3 Compile a draft international evaluation guidebook for energy efficiency programs, focussed on GHG mitigation;
4 Communicate and promote the guidebook.

It would result in a draft evaluation guidebook by early 2003 that fit with the UNFCCC guidelines (once developed) and facilitate the process of reporting on the effects of energy policies and measures.

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