

European ex-post evaluation guidebook for DSM and EE services programmes

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1. SYNOPSIS

The paper discusses the experience from a SAVE II supported project on writing and testing a "European Ex-post Evaluation Guidebook for DSM and EE Services Programmes".

This paper is based on the result of the second phase of a project which purpose was to develop a European ex-post evaluation guidebook.

The project tested in 2000 the validity of a draft guidebook developed during the first phase in 1997. Nine European electricity organisations provide feedback on the relevance of the evaluation techniques presented in the draft Guidebook after having used the guidebook for evaluation of completed DSM (demand side management) programmes. This input is used for a revision of the Guidebook that will be published in Spring 2001.

The guidebook attempts to be a hands-on document, addressing evaluation needs in both network companies and competitive energy business markets, e.g. supply companies and ESCOs. It describes available evaluation methods, their possible application, and a detailed and step-wise description of how to plan and implement them.

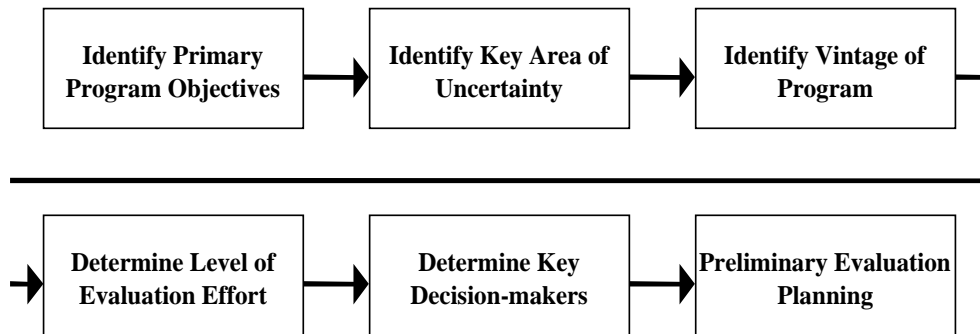
The report concentrates on drawing attention to the issues and planning steps, which the evaluator must address to achieve a successful evaluation. Also, a clarification of the link between programme objectives and evaluation needs is provided. For example, are the evaluation needs of a customer retention programme different from those of a market transformation programme?

Evaluation starts with determining the framework for the evaluation, namely establishing why the energy efficiency programme was implemented and why the interest in evaluating the programme. Choosing not to evaluate a programme involves risks but evaluation also involves costs, which should be carefully weighted against the likely benefits.

There are four main objectives for evaluating DSM and energy efficiency services programmes, namely 1) impact, 2) process, 3) market, and 4) contractual requirements. Ex-post evaluation can address practical questions but also provide guidelines for ongoing and future programmes helpful to the decision-makers. Care should be taken to present the evaluation results so that they are immediately useful to the intended user.

The choice of method will depend on a multitude of factors including experience, time, available means, users of the evaluation results, and programme specific circumstances.

To develop an appropriate evaluation strategy one may use a step-by-step approach spanning from definition of objectives to preliminary evaluation planning, as presented in Exhibit 1.

Exhibit 1. Steps for development of an evaluation strategy.

The evaluator may employ primary and secondary data sources to establish the answers to the programme impact evaluation. Primary data includes programme tracking data, surveys, energy billing data, and metered end-use data while examples of secondary data sources are previous studies from, for example government offices, equipment manufacturers, and research institutions.

Evaluators have two basic types of evaluation techniques at their disposal: engineering methods and statistical methods. Engineering methods are based on defining the basic physical relationships that exist between the change in energy use and the factors that determine that change, based on engineering principles. Statistical methods use recorded consumption data, and compare changes in the level of energy consumption for two populations (e.g., programme participants and a control/comparison group) to isolate the energy impacts of the adoption of the specific energy efficiency measures promoted by a programme. The two techniques can also be combined, the so-called hybrid technique.

All programme impact evaluations involve comparing what happened in the context of the programme to what would have happened in the absence of the programme. In ideal circumstances, this involves comparing a *treatment group* (those exposed to the programme) to a control group (those not exposed to the programme) with regard to the characteristic of interest.

In the context of energy efficiency programmes, net-to-gross estimation is often used to estimate the difference between total changes in energy use (gross impacts), on the one hand, and only those changes that were specifically caused by the programme (net impacts), on the other. The difference between the two is made up by a number of factors including free-ridership, spill-over, rebound and persistence.

The evaluation strategy varies depending on programme type. In relation to targeted information programmes the major task is to determine which measures were implemented due to the programme. Information programmes attempt to influence measure implementation decisions but the implementation itself is one step removed from the programme. Programmes with unknown participants (as opposed to for example training programmes) may be treated similarly to market transformation programmes. For programmes with known participant strategies combining surveys with reported actual savings are suitable.

Market transformation programmes target the removal or lowering of specific market barriers to higher efficiency. In this case both the direct and indirect savings are of interest to the evaluation. The indirect savings (i.e. those resulting from transformation of the market) are the most challenging to estimate since the market is not at a steady state but keeps changing even without the programme.

Evaluations of targeted transmission and distribution DSM programmes are relatively straightforward. However, as with most evaluations, their accuracy depends largely on the accuracy of the estimates of baseline conditions.

The objective of load management programmes is to avoid costly additional production and purchase of energy during peak load periods when energy costs are highest. For this type of programme, end-use metering is typically needed to assess the impact of the programme.

The central objective of energy efficiency programmes operated for customer retention purposes is profitability. Energy impacts are secondary to the primary objective of retaining customers (or attracting new ones). In case evaluation of the energy impacts is carried out, it is typically done to obtain public relations benefits. Evaluation

of the energy impacts associated with individual projects is primarily done to satisfy the customer's need for assurance that the projected benefits actually are achieved.

In the context of energy efficiency projects performed by energy service companies (ESCOs), evaluation serves a monitoring and verification (M&V) function. The nature, methods and costs of this M&V effort are defined in the contract between the ESCO and that provider's customer, with the M&V activity serving as a basis for payments from the customer to the ESCO.

Apart from evaluation of the energy impacts of a particular programme, evaluation of the project process and the resulting market change of the programme can provide valuable information to the programme planner, which for example can be used to improve the project's cost-effectiveness.