

Categories and Types of Evaluation

There are two main categories of evaluation, *formative* and *outcomes*. (See Figure 1.)

Formative evaluation is used to develop or improve program designs, and includes three subtypes: (1) *market assessment*, which includes *market characterization* and *baseline studies*. Market assessment and characterization are similar to market research and shed light on market workings to aid in program design and evaluation. These studies look at “how a market operates, the key information points, information hubs, and how products flow” (California Public Utilities Commission 2004:30). Baseline studies may be more narrowly focused on a program and often appear as the first part of an impact evaluation for a program relying primarily on direct effects. (2) *Potential studies*, which are “studies conducted to assess market baselines and savings potentials for different technologies and consumer markets. Potential is typically defined in terms of technical potential, market potential, and economic potential” (National Action Plan for Energy Efficiency 2007:B-4) Potential studies may feed into baseline studies. (3) *Process evaluation*, which is “A systematic assessment of an energy efficiency program for the purposes of documenting program operations at the time of the examination, and identifying and recommending improvements to increase the program’s efficiency or effectiveness for acquiring energy resources while maintaining high levels of participant satisfaction” (National Action Plan for Energy Efficiency 2007:B-4).

Outcomes evaluation helps in determining program results, and includes four subtypes: (4) *impact evaluation*, which is “an evaluation of the program-specific, directly induced changes (e.g., energy and/or demand usage) attributable to an energy efficiency program” (National Action Plan for Energy Efficiency 2007:B-2). It involves estimating how much energy was saved due to program efforts (“direct effects”), and often also other program impacts, including “non-energy effects” such as avoided emissions, improved health or comfort, dollars saved by households, etc. Statistical analysis, preferably including economic and behavioral data, should be part of impact evaluation. Statistical analysis also often includes billing data,¹ data collected from measurement and verification (M&V)² activities (which are conducted at the facility or project level, not at the program level) and deemed savings data.³ The second subtype of outcomes evaluation is (5) *market effects evaluation*. This is “an evaluation of the change in the structure or functioning of a market, or the behavior of participants in a market, that results from one or more program efforts. Typically the resultant market or behavior change leads to an

¹ Statistical analysis may also be called “billing analysis.” Billing analysis refers to “statistical analyses . . . conducted on the energy usage data (typically collected from the meter data reported on utility bills) for all or most of the [program] participants and possibly non-participants in the program” (National Action Plan for Energy Efficiency 2007:3-5).

² M&V refers to “data collection, monitoring, and analysis associated with the calculation of gross energy and demand savings from individual sites or projects” (National Action Plan for Energy Efficiency 2007:B-3).

³ Deemed savings refers to “an estimate of an energy savings or energy-demand savings outcome (gross savings) for a single unit of an installed energy efficiency measure that (a) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose and (b) is applicable to the situation being evaluated” (National Action Plan for Energy Efficiency 2007:B-2).

increase in the adoption of energy-efficient products, services, or practices” (National Action Plan for Energy Efficiency 2007:B-3). Strategies that lead to market effects are considered indirect because energy savings result from them indirectly. Market effects evaluation encompasses evaluation of education and training program, which are also indirect strategies to achieve energy savings. Evaluation of education and training programs focuses on “documenting the degree to which the programs are achieving their desired effects within the markets targeted by the program, which is educating and training people on energy efficiency” (National Action Plan for Energy Efficiency 2007:C-6). Finally, (6) *cost-effectiveness evaluation*, sometimes known as cost-benefit evaluation or analysis, quantifies the cost of program implementation and compares this with program benefits to determine whether the energy efficiency program is cost-effective compared to other options (National Action Plan for Energy Efficiency 2007). Cost-effectiveness evaluation is usually not stand-alone, relying on the results of other types of evaluation to develop inputs for in the analysis.

Figure 1. Categories and Types of Energy Efficiency Program Evaluation

Evaluation Category	Phase at which Implemented	Evaluation Type	Assessment Level	Comments
Formative	Pre-program planning phase (a priori)	1. Market assessment (includes market characterization, baseline studies)	Market and/or Program	Market assessment/market characterization studies are typically stand-alone research & work products. Baseline studies may be more narrowly focused, often as the first part of an impact evaluation for a program relying primarily on direct effects. Baseline studies for direct program approaches may focus on the project or even equipment level.
		2. Potential or feasibility studies	Market and/or Program	Frequently these studies feed into baselines for impact evaluation or market effects evaluation. Not always considered part of evaluation.
	Implementation phase (post-hoc)	3. Process evaluation	Program	Often occurs in conjunction with the following: impact, market effects, marketing evaluation.
Outcomes	Implementation phase (post-hoc) and/or post-implementation (ex-post)	4. Impact evaluation	Program	Impact evaluation is appropriate for measuring direct program effects. Statistical analysis, preferably including economic & behavioral data, should be part of impact evaluation. Statistical analysis can also include data collected from M&V activities (conducted at the facility [project] level, and not at the program level) and deemed savings data. Impact evaluation of direct effects can occur in conjunction with evaluation of indirect effects as well as process evaluation.
		5. Market effects evaluation	Program & Market	Considered both impact and process evaluation. "Impact" must be imputed. Market effects measurement focuses on indirect program effects, but may be included in evaluations that otherwise focus on direct effects, where it is sometimes called spillover. Includes evaluation of marketing, general education, and education & training programs.
		6. Cost-effectiveness evaluation	Program or Portfolio	Determines whether the energy efficiency program is a cost-effective investment as compared to other programs and energy supply resources. Results of various types of outcomes evaluation feed into it. Also known as cost-benefit evaluation or analysis.

References

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California Public Utilities Commission. 2004. *The California Evaluation Framework*. Project Number: K2033910. June. http://www.tecmarket.net/ca_eval_framework.htm