California Public Utilities Commission

June 19, 2014

Ex Ante Review Fact Sheet #1

Estimating Cost Effectiveness

HOW DOES THE CPUC DETERMINE THE COST EFFECTIVENESS OF A MEASURE?

Definition of Cost Effectiveness:

- The CPUC is obligated by statute[1] to ensure that the Commission-approved ratepayer-funded energy efficiency program expenditures are cost-effective. (Program administrators may include measures that are not yet cost-effective in their portfolios, but the total portfolio of measures must be cost-effective.)
- The CPUC's cost-effectiveness estimate divides the supply-side benefits of the EE measures by the cost of the measure (along with the program overhead costs).[2]
- For estimating the cost-effectiveness at the program or portfolio level, the savings benefits and equipment costs are reduced to reflect the estimated portion of program participants who would have adopted the measure even without the program (referred to as "free riders"), but participated in the program "because it was there."

Replace on Burnout Cost Effectiveness:

- When a piece of equipment has stopped working and is being replaced (referred to as "replace on burnout"), the benefits are calculated as the cost of the energy saved by using the efficient measure as compared with the energy that would have been used by an off the shelf (less efficient) "stock" version of the measure.
- When replacing a piece of equipment that has stopped working, the savings associated with an energy efficient replacement is NOT strictly a "before versus after" comparison of energy use – the estimate needs to "back out" the savings associated with any efficiency gains that would have resulted from replacing the

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[1] California Public Utilities Code (PUC) Sections 381, 399, 399.4, 454.5(b)(9)C), 454.55. 454.56, 701.1(b), and 890

[2] There are a variety of cost-effectiveness tests that depend on the perspective of the test. Many of the descriptions in this fact sheet apply to most of the tests, but for definitions in which differences exist, the "total resource cost" perspective is provided, since the results of this test are typically 'controlling' in the Commission's evaluation and authorization of the IOUs' efficiency portfolios.

burned out equipment with a stock version, since there typically will have been some efficiency gains from technological advances even in the stock equipment since the time at which the previously installed equipment was purchased.

- The cost of the measure is calculated as the incremental cost of the efficient version of measure above the cost of the equivalent "stock" measure for replace on burnout measures.

Early Retirement Cost Effectiveness:

- If equipment that is still functioning is being replaced early because of being program induced and energy savings benefits (referred to as "early retirement"), then the remaining life of the existing equipment is estimated and adjustments are made to the benefits and the costs.
- For the benefits adjustment, the savings estimate for the portion of the estimated life of operation of the new equipment that overlap with the remaining useful life of the existing equipment are increased from the replace on burnout estimate, by calculating them as a straight "before versus after" comparison of energy use.
- The costs are also increased to reflect the "time value of money," since early retirement results in the customer purchasing new equipment earlier than waiting until the existing equipment burned out.

HOW DO CODES AND STANDARDS AND "INDUSTRY STANDARD PRACTICE" FIT INTO COST-EFFECTIVENESS ESTIMATES?

Codes and Standards and Industry Standard Practice:

- Because of the statutory cost-effectiveness obligation – and also in light of the fact that efficiency programs essentially use funds from customers who do not participate in programs to help pay for the efficiency measures of customers who do participate (by virtue of choosing to install the efficient equipment instead of stock equipment), to help participating customers pay down the cost of their efficiency measure (and program overhead) – the general CPUC policy is to use efficiency program funds only to pay for voluntary measures that exceed codes and standards or "industry standard practice" (essentially, the code or standard practice represents the "stock equipment" referenced in the cost-effectiveness discussion).
- In general, CPUC policy is not intended to take money from some customers and give it to other customers to help them pay for equipment that is legally required (i.e., needed by the customer to meet building code or an air quality requirement) or that is determined to be in use as a "standard practice" in the relevant industry.
- The savings estimates for efficiency measures are typically calculated as the "above code" or "above standard practice" portion of the savings from energy

efficiency measures. (Again, this is really just an extension of the estimation of savings above stock equipment described in the cost-effectiveness discussion.)

Pilots and Exceptions:

- The Commission has determined that in a limited number of cases, and on a pilot basis, it is appropriate to include the savings up to code as a benefit, either because the program is inducing measure adoption in existing buildings that are not required to come up to code unless triggered by a renovation (as is the case for the Energy Upgrade California program) or because data has indicated that standard practice is far below the legally required code (as is the case for residential HVAC, in which case the Commission is proposing that low compliance rates to permit requirements is an indicator of below-code installations).