

Memorandum: Response to Advisor Questions Pertaining to Free-Ridership Methods

Prepared for:
Entergy New Orleans

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A. Response to Advisor Questions

Entergy New Orleans (ENO) forwarded to ADM Associates (ADM) questions raised by the City Council Advisors (the Advisors) pertaining to the free-ridership methodologies used in the evaluation of Energy Smart programs. This is Item #6 in the questions detailed below:

“To finalize the PY 7 budget and program plan and to provide a more appropriate basis for Energy Smart programs in 2018 and 2019, the October 2017 Energy Smart Implementation filing⁵ should include the following: (1) an updated cost effectiveness analysis for PY 7-9; (2) the results from the initial program implementation of 2017 to date; (3) updated calculations reflecting the measure-level data provided in the completed NO TRM, including updates to measure metrics based on previous Energy Smart Programs and the IRP; (4) the NO TRM methodology; (5) a detailed definition of ENO’s term “evaluated results” and how and when such evaluated results will be used to adjust the planned energy savings of certain measures/programs; (6) a demonstration of how free-ridership results will be determined through an evaluation; and (7) feedback from PY6 program evaluations and application of post-program year results.”

This memo summarizes the free-ridership methodologies proposed by ADM.

A.1. Key Definitions

Two key definitions in this discussion are “gross savings” and “net savings.”

Gross savings are defined as:

The savings that result from the installation of equipment and/or behavioral changes resulting from Energy Smart programs, without accounting for free-ridership effects.

In our past evaluations of Energy Smart programs (and in the current PY7 evaluation) we define free-ridership as follows:

A program participant that installs an eligible project who would have completed the same project without the influence of the program.

In resource acquisition programs such as those in the Energy Smart portfolio, “influence” is typically characterized by the effects of the program incentives on customer decision-making. We expand this to include other potential sources of program influence, such as a program-funded audit identifying energy efficiency measures that the participant then installs without an incentive.

Once free-ridership estimates have been calculated, ADM then develops the net-to-gross-ratio (NTGR). This is defined as:

$NTGR = (1 - \text{Free-ridership } \%)$

A.2. Free-Ridership Methods

There are three approaches to free-ridership that will be taken by ADM, depending on the type of program evaluated.

A.2.1. Survey Self-Reports

The primary approach used in most Energy Smart programs is the use of self-reported survey data to evaluate free ridership. The survey addresses multiple factors which may contribute to the potential designation of a program participant as a free-rider (though this list is not exhaustive as some programs may require other unique considerations):

- The timing of when the participant decided to install the specified equipment versus the timing of learning about program incentives;
- Whether the program provided information that affected the participant's choice of equipment;
- The payback period required for financial approval of a capital project (C&I only), followed by an analysis of project payback with and without the program incentive;
- Prior history of installing similar equipment without a program incentive; and
- The participant's financial ability to purchase efficient equipment without assistance from the program.

A.2.2. Control Group Analysis

For some programs, the M&V approach entails an analysis of billing data for program participants (treatment group) and a group of matched non-participants (control group). This statistical analysis yields results that are by definition net of free-riders, because the analytical model incorporates the behaviors of customers that were not affected by the program. This is most typical of educational programs, where one group of customers is sent information designed to encourage energy conservation while the control group does not receive this information.

In these instances, we are unable to report the "gross" savings; there isn't a counterfactual that allows ADM to estimate what behavioral participants would have conserved without the program. However, the net savings effects are captured with a high degree of certainty.

A.2.3. Stipulated Free-Ridership

There is a small subset of programs for which free-ridership is stipulated to be 0% (i.e., the net-to-gross ratio is 100%). This is done for low-income program participants (due to their being categorically unable to engage in Energy Smart programs unless the services are provided without requiring a customer co-pay) and load control programs (since the reductions are triggered by a signal sent by the program, and are compared to baseline days for which there was no control signal sent).

A.2.4. Revenue-Neutral Sales Model

The Revenue-Neutral Sales Model (RNSM) is an approach applied specifically to retail-markdown programs. The logic of the RNSM is that retailers will not participate unless they feel they can do so without reducing revenue. The model relies on this assumption to calculate the number of bulbs sold under normal retail pricing required to meet the same level of revenues the retailers have implicitly agreed to by participating in the program. As such, the estimate of free ridership represents a maximum free ridership value. It relies on the idea that retailers are concerned with top-line sales for each discounted lamp, and that they are able to accurately forecast sales under program and non-program conditions. The sales required to meet the same level of revenues as are expected through program sales sets the baseline sales condition for what would have been sold in the absence of the program.

Under this model free ridership is equal to:

$$FR = \frac{\text{Quantity without Program}}{\text{Quantity with Program}} \leq \frac{\text{Price with Program}}{\text{Price without Program}}$$

The quantity without the program is estimated by dividing the total revenue for the program-discounted product by the sales price without the program discount.

A.3. Assignment of Free-Ridership Methods

The table below details the free-ridership methods that would be applied by ADM to the Energy Smart programs.

<i>Program</i>	<i>Free-Ridership Method</i>
Home Performance with ENERGY STAR	Survey Self-Report
Assisted Home Performance with ENERGY STAR	Stipulated 100%
Consumer Products – Markdown Lighting	Revenue-Neutral Sales Model
Consumer Products – Appliances	Survey Self-Report
Residential Heating & Cooling	Survey Self-Report
Greenlight Direct Install	Survey Self-Report
Energy Smart School Kits	Survey Self-Report
Direct Load Control	Stipulated 100%
Small Business	Survey Self-Report
Large C&I	Survey Self-Report
NEST Thermostat Pilot	Control Group Analysis
Behavioral Pilot	Control Group Analysis