



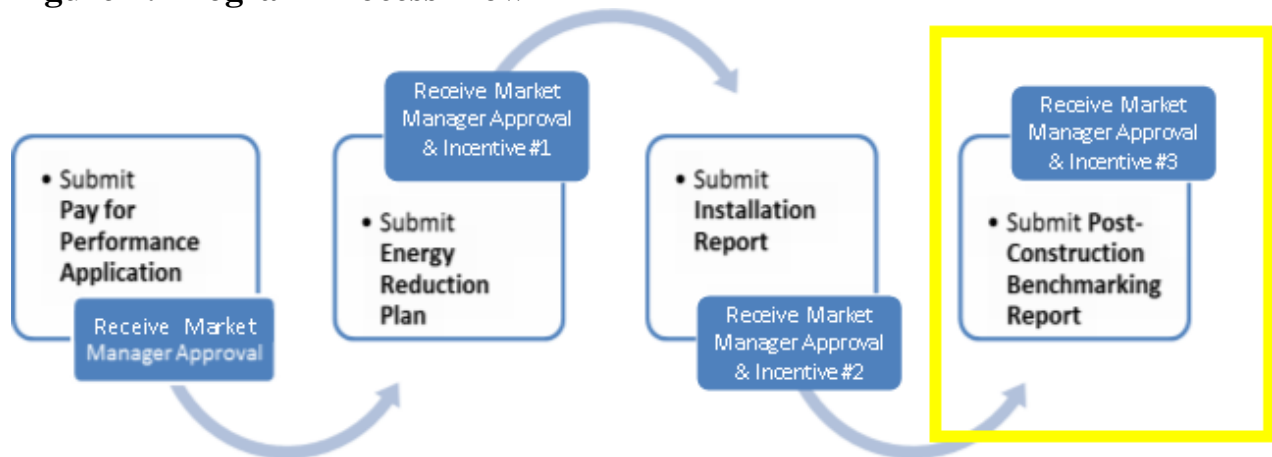
Pay for Performance- EB Technical Tip

Estimating Partial Year Savings Using P4P Savings Verification Tool (SVT)

Background

Pay for Performance (P4P) Existing Buildings (EB) Incentive #3 is determined based on the Post-construction Benchmarking Report that documents the actual savings achieved by projects during the twelve months following retrofit installation.

Figure 1: Program Process Flow



Incentives #2 and #3 are designed as a single performance incentive that is split to provide up-front financial assistance in implementing the project. Incentive #3 is “trued-up” based on actual achieved savings so that the total performance incentive (i.e. #2 and #3) is in compliance with the Program’s incentive structure. Failure to meet the 15% (or 4% for eligible high energy-intensity users) minimum threshold for the total source energy savings by any margin will result in forfeiture of Incentive #3. Additionally, actual savings significantly lower than estimated may also not yield any third Incentive.

The minimum monitoring period is twelve months from Installation Report approval date, with extensions available to make any equipment adjustments needed to reach the savings target. See Section 6 of the Program Guidelines for the complete post-construction benchmarking requirements.

Tracking Partial Year Savings Using P4P Savings Verification Tool (SVT)

Even though the program does not require “progress” submittals for Incentive #3, Partners are **strongly encouraged** to not wait until the end of one year post-retrofit period to begin tracking

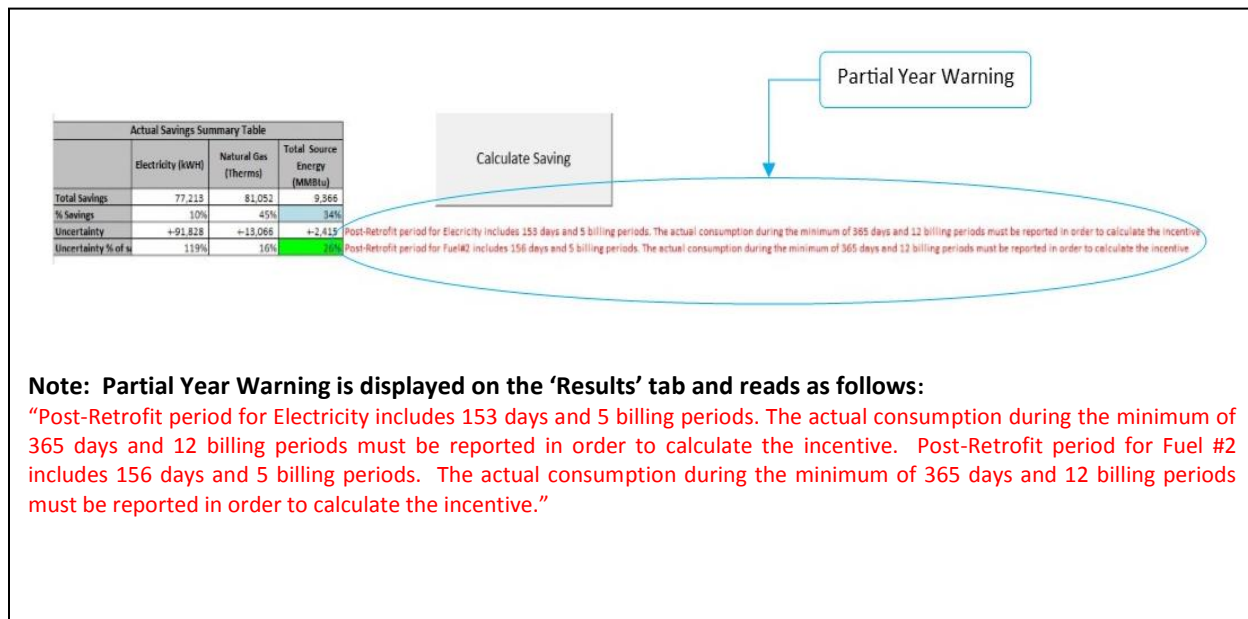
Partial Year Savings Projections Using the SVT

the achieved savings. Post-retrofit bills should be **continuously monitored** to ensure that project is on track to realize projected savings, and to allow for an opportunity to troubleshoot and fix possible issues that may lead to under-performance early in the verification period.

In previous years, a new version of the SVT was distributed quarterly in order to update the weather data contained within the tool. This hindered continuous tracking of achieved savings, since project information, including utility bills, had to be transferred to the latest SVT spreadsheet in order to get access to more recent weather data. Starting with SVT version 1.10, the weather data is included in a separate file which is updated monthly and is posted on Partner Portal.

Billing data should be entered into SVT and analyzed on a continuous basis as monthly bills arrive. SVT can calculate weather-normalized savings for a partial year, and will show a warning to stress preliminary nature of the results, as shown in Figure 2. Utility bills for all fuels must be entered - for example, if project uses electricity and gas, and analysis covers a period from May to September, both electric and gas bills from May to September must be entered into SVT.

Figure 2: Partial Year Warning



Note: Partial Year Warning is displayed on the 'Results' tab and reads as follows:

“Post-Retrofit period for Electricity includes 153 days and 5 billing periods. The actual consumption during the minimum of 365 days and 12 billing periods must be reported in order to calculate the incentive. Post-Retrofit period for Fuel #2 includes 156 days and 5 billing periods. The actual consumption during the minimum of 365 days and 12 billing periods must be reported in order to calculate the incentive.”

Analyzing Partial Year Savings

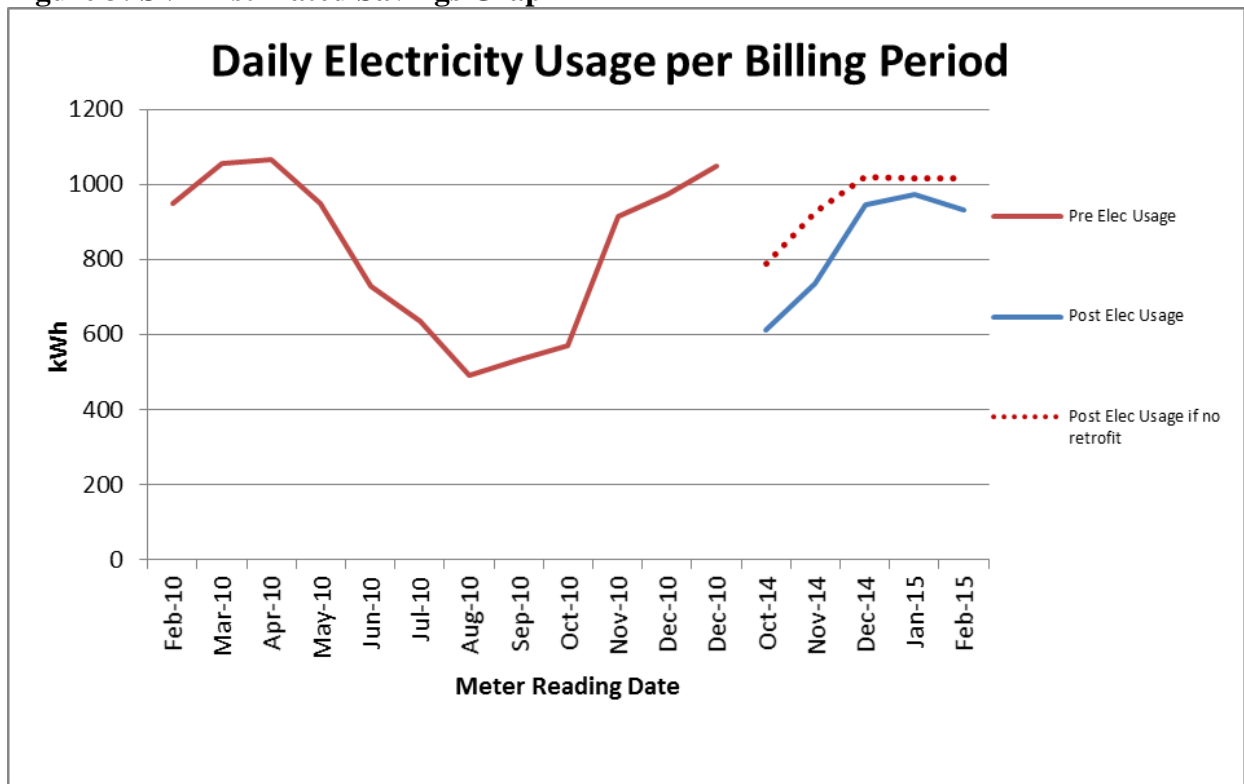
Partial year savings projected by SVT must be interpreted keeping in mind the scope of Energy Conservation Measures (ECMs) included in the ERP, as illustrated in the following examples:

Example 1:

Q: Project uses gas for space and Service Water Heating (SWH). ERP included installation of low flow showerheads and envelope improvements in addition to other measures, and projected annual gas savings of 18%. Verification period started in May 2014, and partner entered gas

Partial Year Savings Projections Using the SVT

Figure 3: SVT Estimated Savings Graph



A: Achieved electricity savings dropped between November 2014 and December 2014 and continued to drop into January 2015, with the actual post-retrofit electricity usage (blue line in Figure 3) approaching the estimated electricity usage at post-retrofit weather conditions if retrofit hasn't been performed (red dotted line in Figure 3). This conflicts with the modeled electricity savings, which were higher during winter months due to increased lighting runtime (and savings), and additional heating season savings due to space heating pump improvements.

To refine the analysis of achieved savings, a % Improvement column is added to the table in SVT, with the monthly savings percentage calculated as the ratio of Achieved Savings to Projected Pre-Retrofit Total Load (Table 3). Savings decreased from 22% in October to 4% in January, which likely indicate that there are penalties during heating season that cancel some lighting savings.

For example, the penalties may be associated with higher than expected parasitic loads from condensing boilers or new controls, or increased use of supplemental electric heating with new thermostats.

Partial Year Savings Projections Using the SVT

Table 3: Monthly Savings

Electricity					
Post-Retrofit Bill Read Data	Post Retrofit Average Temperature (°F)	Projected Pre- Retrofit Total Load (kWh)	Actual Post- Retrofit Load (kWh)	Achieved Savings (kWh)	% Improvement
7-Oct-14	63.71	22042.51	17091.00	4951.51	22%
6-Nov-14	56.17	27808.47	22062.00	5746.47	21%
8-Dec-14	42.19	32637.83	30218.50	2419.33	7%
8-Jan-15	37.00	31548.64	30218.50	1330.14	4%
9-Feb-15	30.66	32478.92	29837.00	2641.92	8%

Analyzing month-to-month performance provides clues for trouble-shooting potential issues, and reduces the impact of the issues on Incentive #3, since the problems can be fixed early in the post-retrofit period minimizing their impact on the annual realized savings.