North American SEM Collaborative's (NASEMC)

Negative Savings Focus Group

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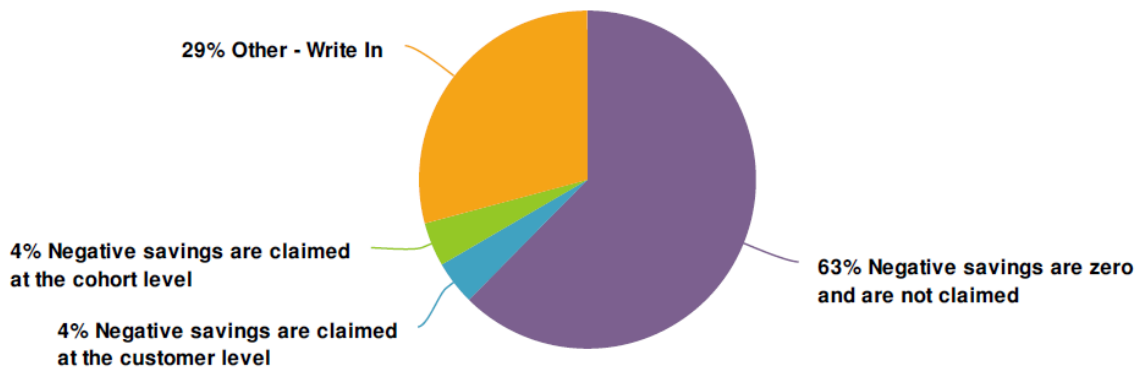Dustin Schneider (Dustin.Schneider@leidos.com)

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We completed an interview with **24 program administrator and implementers** (from 14 states) to understand how negative savings is normally handled. Our results were **fairly split** with **some zeroing out the savings**, and others accounting for the **negative savings at the customer or program level**.

Additional highlights from the survey:

- Only 3 of the customers handled year two savings differently than year one

- **Measure life** varied greatly from **1 to 10 years**

29% Other - Write In

4% Negative savings are claimed at the cohort level

4% Negative savings are claimed at the customer level

63% Negative savings are zero and are not claimed

Negative Savings Problem statement

Historical data suggest that SEM participation nearly universally does not cause an increase in facility energy intensity. However, when non-routine events are not identified nor accurately captured, the energy model shows an increase in energy use. Utilities and implementers report this information in **inconsistent ways** (sometimes zeroing them out and sometimes including the negative savings at the customer or portfolio level).

Impact of Non-SEM measures

Non SEM activities must be carefully accounted for in order to not **"double count" savings**. Usually **ex ante program savings for other projects** completed at the site is taken out of the results of the SEM claimed savings.

Sometime this **ex ante savings is inaccurate** resulting in the difference being capture in the SEM model. Some IC's and utilities have used SEM model as a continuous commission tool calculating the impact of measure being installed at the site in real time.

Other times these **measures may have time sensitive issues**. They may be **reversed or not properly commissioned** resulting in strange behavior in the SEM model.

This can often be accounted for by **carefully understanding the other measures** installed at the site.

Energy Savings Estimation
Figure 7.4a: CUSUM of Residual Energy
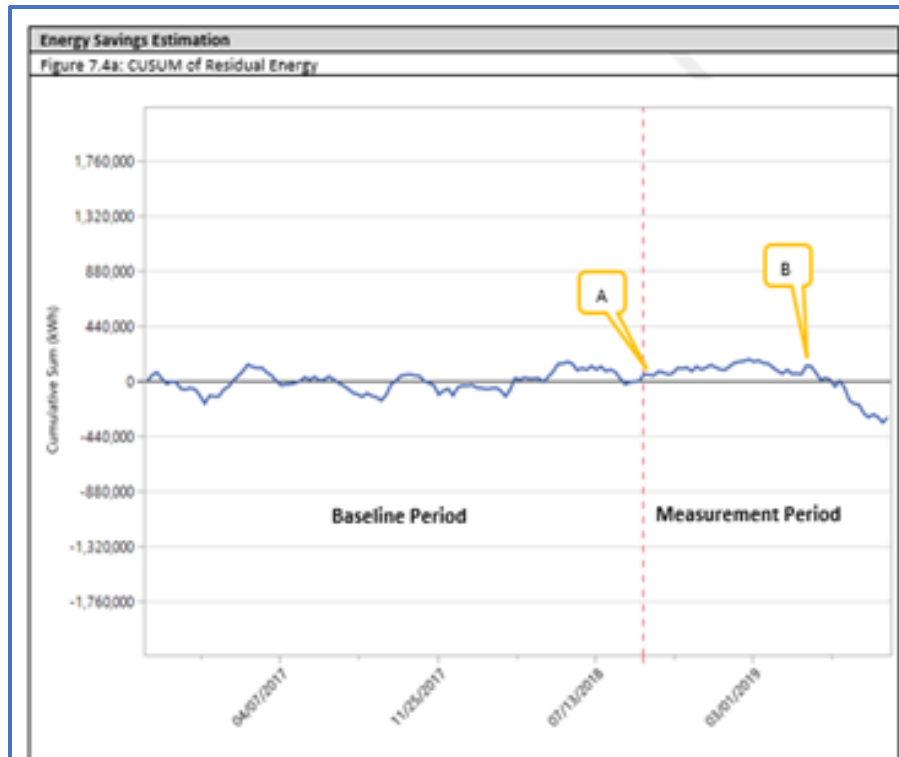
Process/Operation changes

The SEM model is designed to **compare historic operational data** to current operation. If **current operation is very different** than historic operation the **model may no longer be accurate** at estimating energy savings. This could be due to issues such as new products, much higher flow, new machinery or other site wide operational changes.

If this is a **short term issue,** the period of time when this change occurred **may be removed** and the savings could be re-annualized. If this is a **long term issue,** a **new model** may be needed or a different calculation approach may be needed.

Energy Savings Estimation
Figure 9.4a: CUSUM of Residual Energy
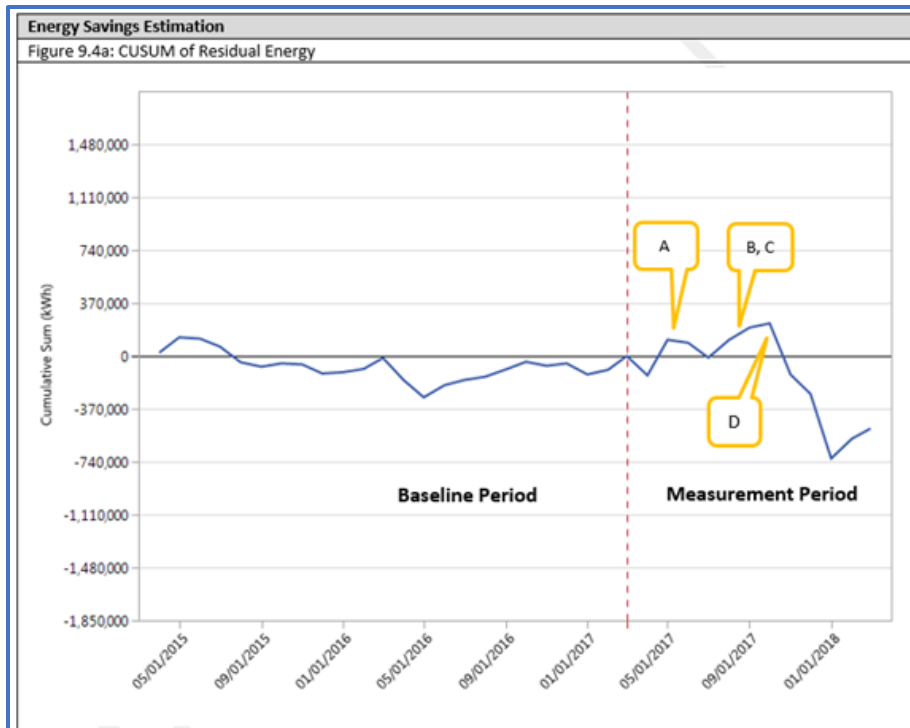
Behavior same as base Non-Engage

Some customers will **not engage in the SEM** program. Although they attend training or have an audit they choose **not to put recommendation into action**. In this case the model will reflect this lack of change and show a **post period behavior that is very similar** to the pre case as show here.

Energy Savings Estimation
Figure 9.4a: CUSUM of Residual Energy
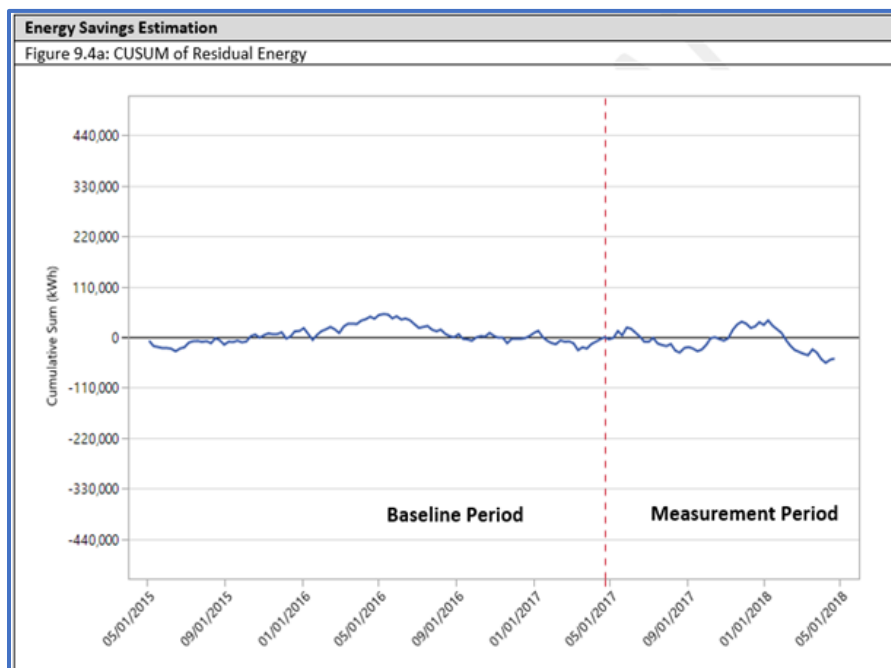
Recommendations from the focus group

- The SEM industry should consider the definition of Negative Savings as when an **increase in energy intensity** is seen in the statistically robust energy model *after* the program has **accounted for all identified externalities**.

- If negative savings are experienced in the **first year** (after accounting for known externalities), the assumption should be that **unknown externalities caused the negative savings** unless the negative performance can be linked to actions taken by the energy team. **Zero savings should be claimed.**

    - *We believe this recommendation does not bias claimed savings, based on the assumption that SEM activities do not cause an increase in energy intensity.*

- An **incremental loss of savings in <u>future years</u>** compared to claimed positive SEM savings in prior years <u>within the measure life</u> **should be recorded and claimed as negative customer savings**, while the top down modeling remains statistically robust and the program has accounted for all identified externalities. Negative savings should not be reported for energy intensity increases above and beyond baseline, unless the negative performance can be linked to actions taken by the energy team, due to the same assumption that SEM activities do not cause increased energy intensity.

- Our survey provided insight into varying degrees of persistence levels for SEM savings, and the group realizes that **persistence is interrelated** with whether or not to claim negative savings. **This should be studied further** to make any recommendations.