



# **Evaluation Treatment of Heating Penalties and Negative Savings**



November 13, 2020

# Agenda

**1. Background**

**2. Heating Penalties**

**3. Negative Savings**

# Background: Terms Defined

**“Heating penalties”** = negative interactive effects from a measure.

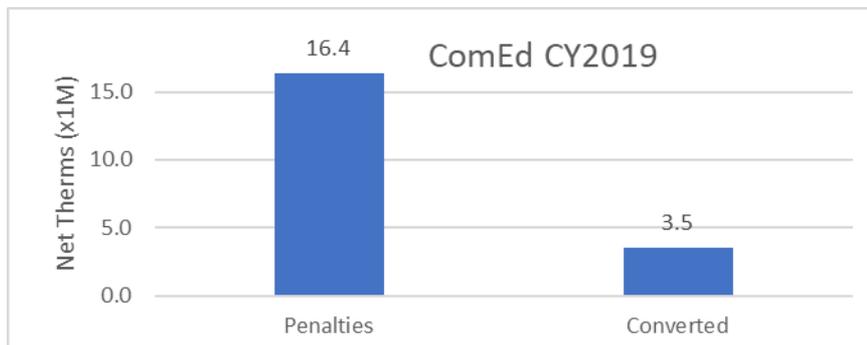
- How should evaluation treat gas heating penalties with respect to goal attainment? Should these be netted out at the project level, program level, portfolio level, or at all?
- How should evaluation treat electric heating penalties with respect to goal attainment? Should they continue to be added to the verified savings?

**“Negative savings”** = savings that incorrectly calculate to a negative value.

- How should evaluation treat projects that result in negative savings due to custom analysis?
- How should evaluation treat projects that result in negative savings due to actions taken to meet code?

# How should evaluation treat gas heating penalties?

- Lighting measures account for 65% of ComEd's portfolio.
- Most programs do not track heating system fuel and the TRM instructs users to assume natural gas heating if the information is not known.



**Traditional Guidehouse Action.** Historically, Guidehouse has not counted gas heating penalties against the electric utility programs' gas savings.

## How should evaluation be handling the negative gas balance of the EE portfolios?

# How should evaluation treat electric heating penalties?

- This scenario is much less common.
- The TRM is inconsistent with the application of electric heating penalties.

## ELECTRIC ENERGY SAVINGS

$$\Delta\text{kWh} = ((\text{Watts}_{\text{base}} - \text{Watts}_{\text{EE}}) / 1000) * \text{Hours} * \text{WHF}_e * \text{ISR}$$

## ELECTRIC ENERGY SAVINGS

$$\Delta\text{kWh} = (((1 / \text{UEF}_{\text{base}}} - 1 / \text{UEF}_{\text{efficient}}) * \text{GPD} * \text{Household} * 365.25 * \gamma_{\text{Water}} * (T_{\text{OUT}} - T_{\text{IN}}) * 1.0) / 3412) + \text{kWh}_{\text{cooling}} - \text{kWh}_{\text{heating}}$$

**Traditional Guidehouse Action.** In these cases, Guidehouse has typically netted these penalties out in the project-level verified savings.

# How should evaluation treat negative savings found in custom analysis?

- For both electric and gas programs, energy management systems (EMS) present the most common source of this scenario.
- It is not uncommon to find that usage has increased after the installation of an EMS project (~1-2 per year).
- Ideally more data would be available
  - ComEd – amount of post-installation data is limiting
  - Gas utilities – also is limited by granularity of usage data (typically monthly)

**Traditional Guidehouse Action.** In these cases, Guidehouse has not counted the negative savings as verified savings, but rather as zero verified savings.

# How should evaluation treat negative savings resulting from code compliance?

- A historic example was the thermostat adjustment measure using the TRM v7 algorithm (the complicated one).
- If a contractor adjusted the fan mode from intermittent to continuous during occupied periods, they simultaneously
  - Increased energy usage
  - Made the facility code-compliant
- A more current example would be an EMS project that involved fixing OA dampers that were stuck closed.

**Traditional Guidehouse Action.** In these cases, Guidehouse has not typically counted the negative savings as verified savings, but rather as zero verified savings.

# Contact

**Randy Gunn**

Partner

[randy.gunn@guidehouse.com](mailto:randy.gunn@guidehouse.com)

(312) 583-5714

---

**Jeff Erickson**

Director

[jeff.erickson@guidehouse.com](mailto:jeff.erickson@guidehouse.com)

(608) 616-4962

---

**Rick Berry**

Managing Consultant

[rick.berry@guidehouse.com](mailto:rick.berry@guidehouse.com)

(262) 312-4400

---

