



## Technical Interpretation

**Standard:** [BPI-2400-S-2015 v.2 Standard Practice for Standardized Qualification of Whole-House Energy Savings Predictions by Calibration to Energy Use History](#)

**Edition:** 2015 v.2

**Paragraph/Figure/Table:** Sections 3.2.3.A. and 3.3.2.E

**Subject:** Handling Undefined Results due to Division by Zero

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### Disclaimer

This Technical Interpretation represents the consensus response of the responsible committee and is issued in accordance with the organization's approved procedures for interpretations. This Interpretation is intended solely to clarify the meaning or intent of the referenced provisions of the standard as written.

This Interpretation does not constitute a revision, amendment, or modification to the standard and shall not be construed as permitting or requiring any design, installation, manufacturing, or operational practice not otherwise permitted by the standard.

This Interpretation is not a substitute for professional judgment and shall not be considered as providing engineering, design, legal, or other professional services.

DM-STC technical interpretation regarding division by zero in calculation of bias error

Sections 3.2.3.A. and 3.3.2.E of the BPI-2400 standard require the calculation of Bias Error for each end use represented by equations 3.2.3.A.i and 3.3.2.A.i. These equations include a quotient and therefore can produce an undefined result when the denominator is zero. When the numerator and denominator of the quotient are both zero, then a value of zero shall be used for the quotient. When the numerator is non-zero and the denominator is zero, then a value of 1 shall be used for the quotient and the final value calculation for the bias error shall be 100. The HPXML BPI-2400 Bias Error fields use fractional values, so a Bias Error of 100 should be represented as 1 for users of BPI-2100 Home Performance Related Data Transfer (the HPXML standard).

$$BE = \frac{(x_i - \hat{x}_i)}{NAC} \times 100 \text{ Eqn 3.2.3.A.i}$$

$$BE = \frac{(NAXU - \hat{x}_i)}{NAXU} \times 100 \text{ Eqn 3.3.2.A.i}$$