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# INTERPRETATIONS OF ENERGY MODEL RESULTS

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MODULE  
**L3**

Perform parametric  
bracketing to verify  
model sensitivity.

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# INTERPRETATIONS OF ENERGY MODEL RESULTS

Parametric bracketing is a crucial process in building energy modeling (BEM) that helps assess model sensitivity by systematically varying input parameters within defined limits. This technique helps in assessing the robustness of a model's predictions and enhances the reliability of decision-making processes in building design and operation.

# Learning Objectives

- Introduction and Course Outline
- Perform parametric bracketing to verify model sensitivity.
- Analyzing and Comparing Modeling Results
- Economic Analysis
- Sensitivity Analysis
- Exceptional calculation methods
- Building Energy Modeling Project Deliverables
- Interpreting Model Results
- Sample Energy Modeling Report
- Summary and Resources
- BEMP Practice Test V.5.1



## INTRODUCTION

- Parametric bracketing is a crucial process in building energy modeling (BEM) that assesses model sensitivity by systematically varying input parameters.
- It helps in assessing the robustness of a model's predictions and enhances the reliability of decision-making processes in building design and operation.
- The process involves selecting parameters, establishing bracketing limits, running simulations, and analyzing results.
- Parameters like U-values, HVAC efficiency, and internal lighting load can be evaluated using Tornado Diagrams, regression analysis, and elasticity analysis.
- Documenting and reporting findings is essential for transparency and validation purposes.

# PARAMETRIC BRACKETING FOR MODEL SENSITIVITY IN BEM

- Parametric bracketing is a crucial process in building energy modeling (BEM) to verify model sensitivity.
- It helps understand the influence of input parameters on model outputs and enhances the reliability of decision-making processes.

## Definition of Parametric Bracketing

- Parametric bracketing involves systematically varying input parameters within defined limits to observe changes in output variables.
- The premise is that a building energy model's response to changes in parameters provides insights into its sensitivity.



# IMPORTANCE OF SENSITIVITY ANALYSIS



Sensitivity analysis (SA) is pivotal in BEM for several reasons: model calibration, resource allocation, uncertainty quantification, and regulatory compliance.

# METHODOLOGY OF PARAMETRIC BRACKETING

## Step 1: Selection of Parameters

- Parameters include building envelope properties, HVAC system efficiency, internal heat gains, and weather data.

## Step 2: Establishing Bracketing Limits

- Bracketing limits are specified based on realistic scenarios.

## Step 3: Running Simulations

- Simulations are run for each parameter across their defined ranges, resulting in output metrics.
- Results are analyzed to determine sensitivity using various statistical methods.
- Documentation and Reporting
- Documenting the findings is essential for transparency and validation purposes.



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