



*welcome to*  
**BEYOND SMART CITIES**

# INTERPRETATIONS OF ENERGY

# MODEL RESULTS

ONLINE PROFESSIONAL COURSES LED BY  
THE WORLD'S TOP SPECIALISTS

ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C), GSAS CGP, GCP, ISO 14001

[LEARN.BEYONDSMARTCITIES.IN](http://LEARN.BEYONDSMARTCITIES.IN)

**BEYOND**  
SMART CITIES

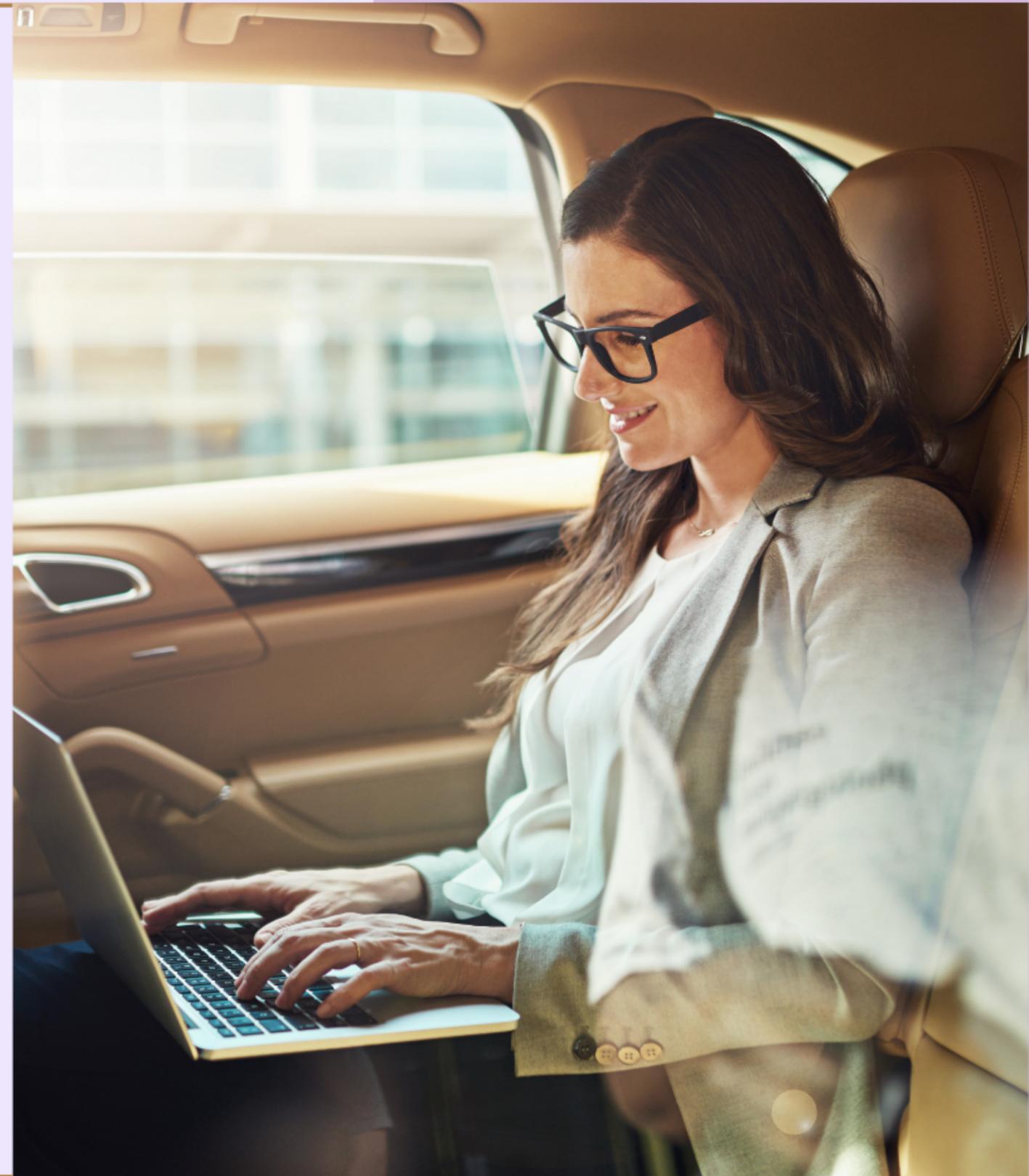
MODULE  
**L11**

# Perform a Sensitivity Analysis on Modeling Assumptions.

KRISHNAJI PAWAR - CEO & FOUNDER

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

[WWW.BEYONDSMARTCITIES.IN](http://WWW.BEYONDSMARTCITIES.IN)





# INTERPRETATIONS OF ENERGY MODEL RESULTS

Sensitivity analysis is an indispensable tool in building energy modeling, providing a systematic approach to understanding the implications of various assumptions on energy performance. By illuminating key drivers and uncertainties, sensitivity analysis empowers architects, engineers, and decision-makers to make informed choices that can lead to enhanced energy efficiency and reduced operational costs.

# Learning Objectives

- Introduction and Course Outline
- Verification and Fixing of Simulation Results
- Analyzing and Comparing Modeling Results
- Economic Analysis
- Perform a Sensitivity Analysis on Modeling Assumptions.
- 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

- Defines model and objectives: Establishes specific energy model and aims to minimize energy use, optimize comfort conditions, or assess cost implications.
- Selects key inputs: Chooses parameters to be varied, such as building envelope properties, HVAC system efficiencies, internal loads, and weather data.
- Establishes a baseline model: Runs initial simulation using nominal values for all input parameters.
- Varys inputs systematically: Uses structured approaches like one-at-a-time or factorial designs to modify input parameters.
- Analyzes outputs: Record outcomes from each simulation run, focusing on KPIs like total energy consumption, peak demand, and thermal comfort metrics.
- Serves as a foundational tool for evaluating design choices and operational strategies.

# PERFORMING SENSITIVITY ANALYSIS ON MODELING ASSUMPTIONS

- Sensitivity analysis is a quantitative method used to assess how uncertainties in a model's output can be attributed to different sources of uncertainty in the model inputs.
- In building energy modeling, it examines how variations in assumptions regarding building design, occupancy patterns, equipment efficiency, and environmental conditions affect estimated energy consumption and indoor environmental quality.





# METHODOLOGY FOR CONDUCTING SENSITIVITY ANALYSIS IN BEM



- Define the model and objectives: Establish the specific energy model and define the objectives of the sensitivity analysis.
- Select Key Inputs: Choose the parameters to be varied, such as building envelope properties, HVAC system efficiencies, internal loads, and weather data.
- Establish a Baseline Model: Run the initial simulation using nominal values for all input parameters to create a baseline.
- Vary Inputs Systematically: Use a structured approach to modify input parameters.
- Analyze Outputs: Record the outcomes from each simulation run, focusing on key performance indicators (KPIs).
- Statistical Evaluation: Use statistical methods such as regression analysis or tornado diagrams to visualize the sensitivity of outputs to each input variable.

# IDENTIFYING CRITICAL SYNERGISTIC INTERACTIONS OF BUILDING COMPONENTS

- Component Analysis: Start by analyzing individual components such as lighting, HVAC, and the building envelope.
- Integrated System Modeling: Create a comprehensive model that incorporates all building systems.
- Simultaneous Variations: Conduct simulations where multiple parameters are varied concurrently.
- Monitor Interdependencies: Observe how changes in one system influence others.



**B E Y O N D**  
S M A R T C I T I E S

**CONTACT US**



+91 6363032722



info@beyondsmartcities.in



learn.beyondsmartcities.in



#55,HMR Layout ,Bengaluru ,India



# THANK YOU

