Cushing Terrell

University of Montana, Washington-Grizzly Champions Center | Missoula, MT

Energy Modeling: Leveraging Data for Better Design Decisions

We use energy modeling to review potential building performance scenarios long before construction. Combining factors such as building orientation, weather patterns, construction materials, and HVAC systems, we analyze the data and make adjustments to find the right balance between cost and energy-use options for your particular project.

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Energy Modeling Strategies

Energy models must be nimble enough to influence design rather than simply document performance. Our simulations answer complex questions with straightforward, elegant results. While project goals determine the scope of energy modeling activities, the following are common strategies.

Design Exploration

With energy simulation tools, we create a virtual building in the initial design phase in order to review features that have the greatest impact on performance. These tools allow us to explore hundreds of options, guiding us to a solution tailored to your needs.

System Selection

When energy simulation tools are combined with financial models, system selections — such as HVAC, daylighting, and renewable energy options — are better informed, and data driven. Models incorporate utility, maintenance, inflation, and other costs for a predicted lifecycle cost.

Documentation of Design

Once the design is complete, we document performance to show compliance with energy codes and assist with utility incentive applications. Our team is adept at navigating the complexities of performance-based compliance paths and providing the documentation needed to put the code reviewer's mind at ease.

Green Building Certification

We believe in doing our part to make buildings more sustainable. One way to demonstrate this is through building certifications such as LEED, Green Globes, CHPS, and the Guiding Principles for Federal Architecture. We use energy models as a compass, guiding the design team through the project to maximize energy savings.

Measurement & Verification

Measuring actual building performance and comparing it to modeled data helps us better understand the impacts of design decisions and calibrate our assumptions for future energy simulations.

Energy Auditing / Re-Commissioning

In most cases, energy performance deteriorates over time. Our goal is to understand the causes of deterioration and prioritize strategies for improvement. Energy simulation is critical in this process as we calibrate models to actual utility data to quantify the impacts of energy upgrades.

Aligned with ASHRAE Standard 209: Energy Simulation-Aided Design, our end goal is a high-performance building that is constructible, meets the project budget, reduces building operation costs and environmental impacts, improves occupant health and well-being, and overall, exceeds expectations.

Ready to get started? Have questions? Contact us!
We'd love to chat.

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