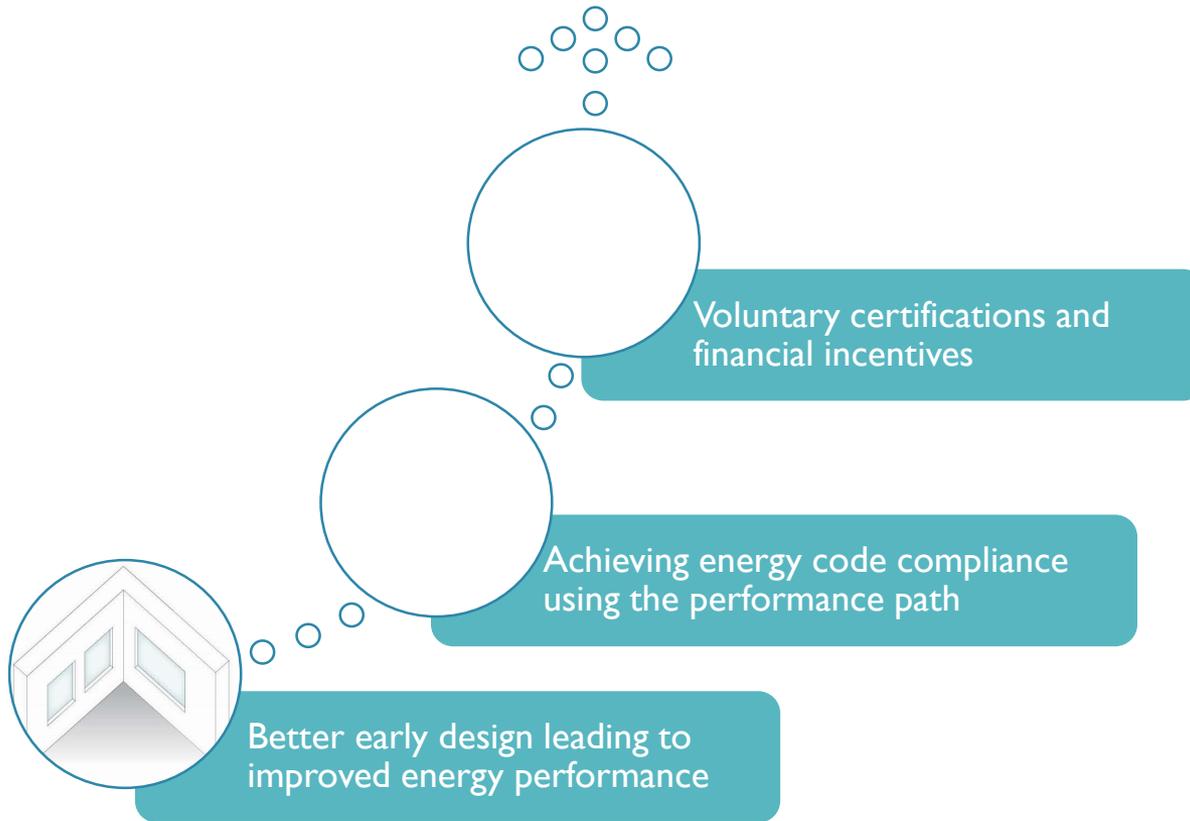


# Paving the way for widespread use of modeling for code compliance

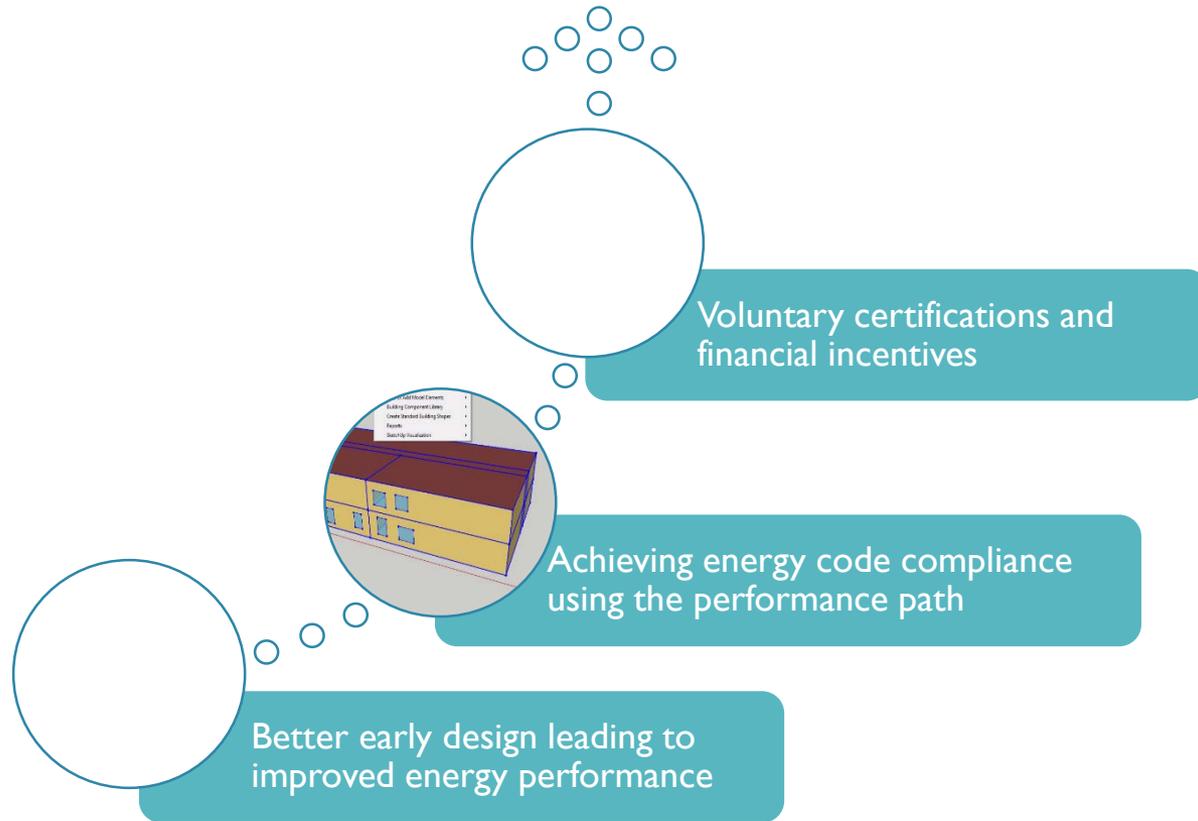


March 24, 2015  
Kamaria Greenfield  
Program Associate  
Building Codes Assistance Project

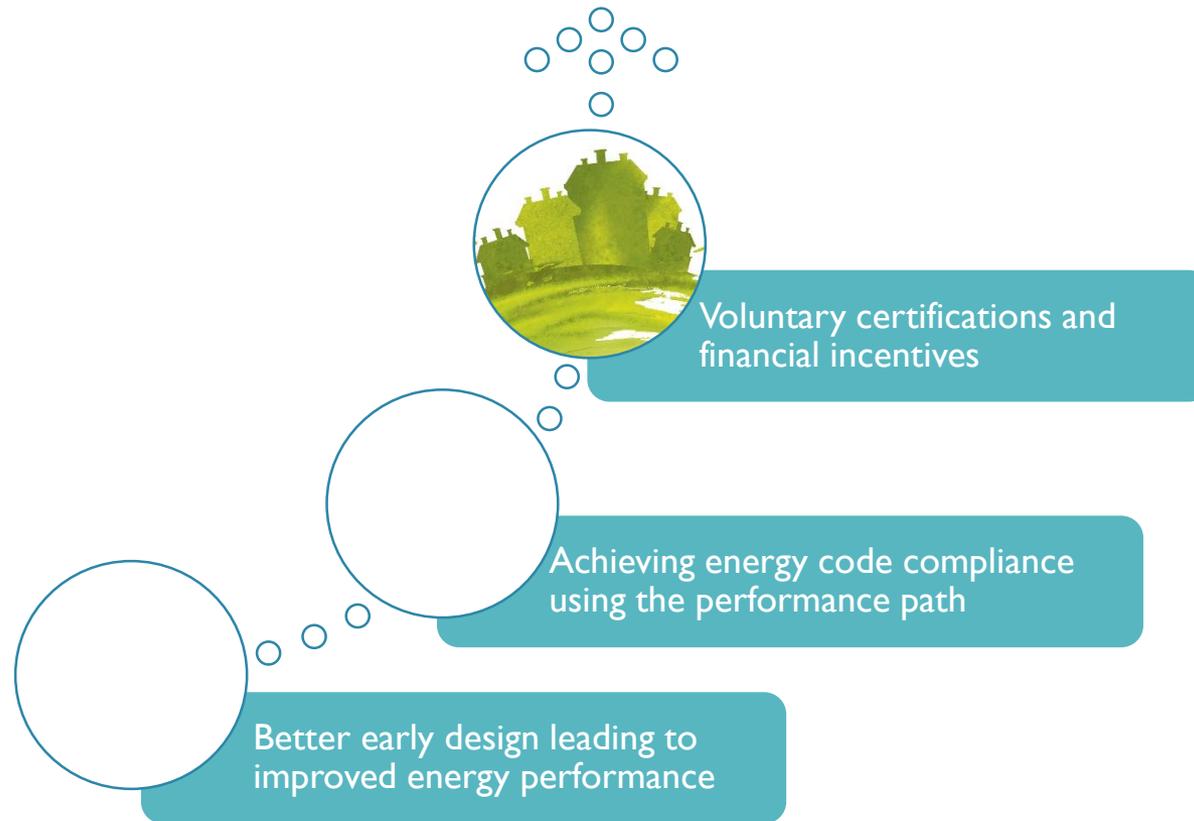
# Benefits of choosing energy modeling



# Benefits of choosing energy modeling



# Benefits of choosing energy modeling



# Reimagining the design process



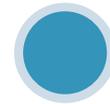
## Schematic and conceptual phases

Broad energy efficiency goals are identified. Designers consider climate, site, building usage, and other factors before moving on to identifying the biggest energy consumers and eliminating inefficient strategies.



## Design development

After a single scheme has been chosen based on an educated, collaborative decision, the models become more refined until there is enough information to generate documentation for code compliance.



## Construction and post-occupancy

Estimated energy costs are documented. If necessary, energy modeling is used to inform decisions about change orders. After construction, predictions should be compared to actual energy consumption.

# Reimagining the design process



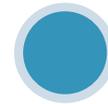
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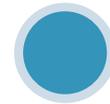
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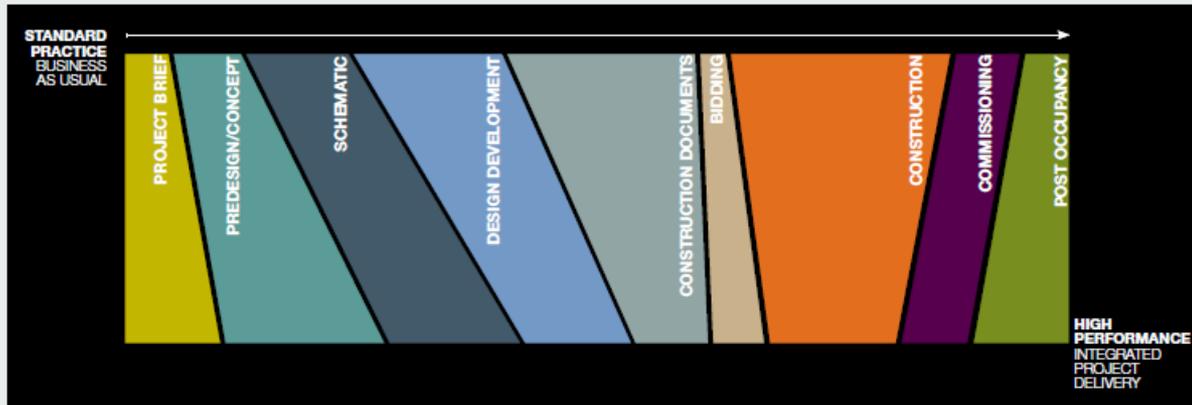


## Construction and post-occupancy

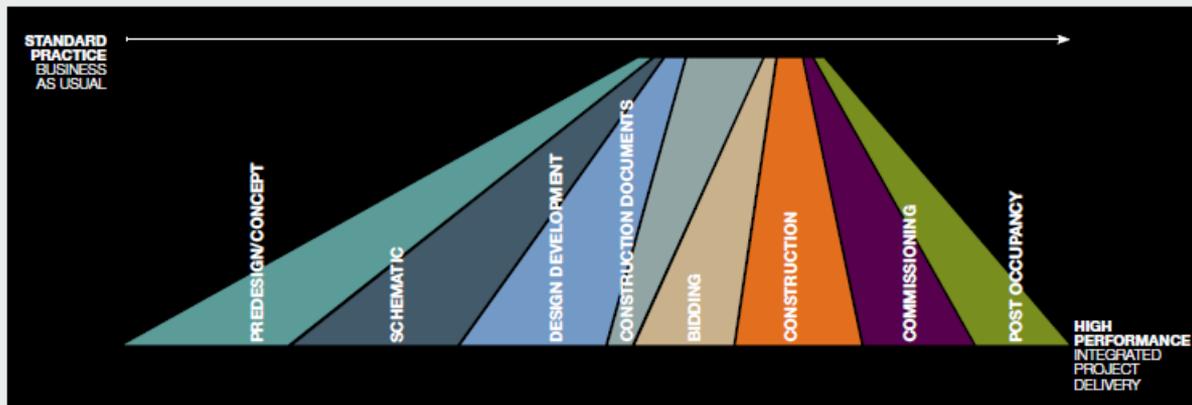
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# Reimagining the design process

## TYPICAL TIME (FEE) SPEND WITHIN THE TYPICAL PHASES OF THE DESIGN PROCESS



## USE OF 'ENERGY' (PERFORMANCE) MODELING AS PART OF THE DESIGN PROCESS



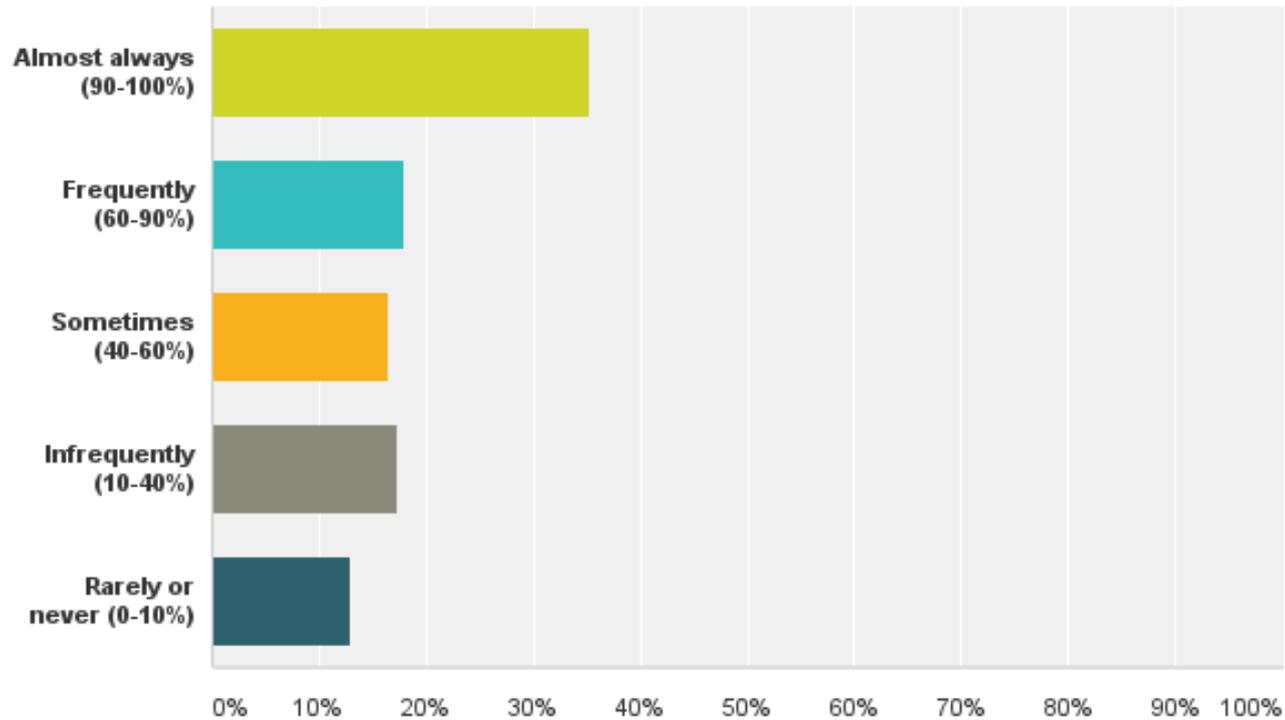
From AIA's *Integrating Energy Modeling*, 2012.

## Preliminary survey results

- How often is the performance path used in your building designs for energy code compliance?
- What is the biggest factor in choosing the performance path over the prescriptive path?
- What missing features would make building performance analysis easier for you?

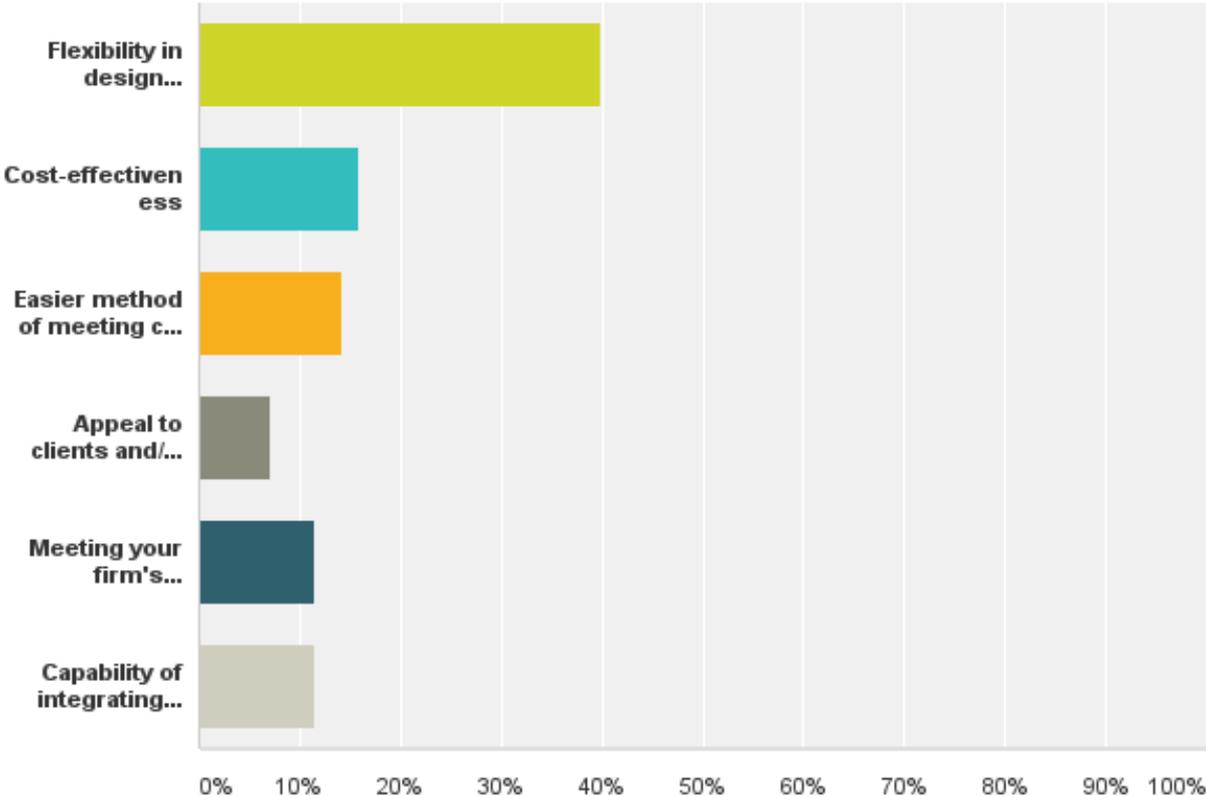
## Q8 How often is the performance path used in your building designs for energy code compliance?

Answered: 139 Skipped: 3



# Q11 What is the biggest factor in choosing the performance path over the prescriptive path?

Answered: 113 Skipped: 29



## Q18 What missing features would make building performance analysis easier for you?

*“Increased adoption of SketchUp, Layout, OpenStudio, and EnergyPlus...anything that does not require an AutoCad/Revit license.”*

*“Ability to import BIM data and MEP schedules.”*

*“To be able to use one single platform and/or model for better coordination.”*

*“Integration. No tool can do everything we need. If tools could be better integrated to start with passive analysis of massing and fenestration, then move with the design development...and then finally code compliance, I think everyone would use energy modeling a lot more.”*

# Barriers and opportunities

Workflow fragmentation

Communication between architects, engineers, code officials, and consultants

Interoperability of CAD and BIM software with energy modeling software

Lack of information leads to uncertainty

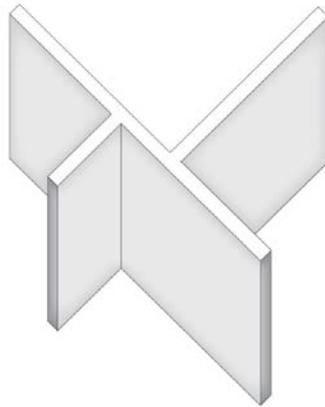
Defined goals of building performance simulation

Public online database for all design professionals

# Barriers and opportunities

Workflow  
fragmentation

Design model wall partitions



Thermal model zones

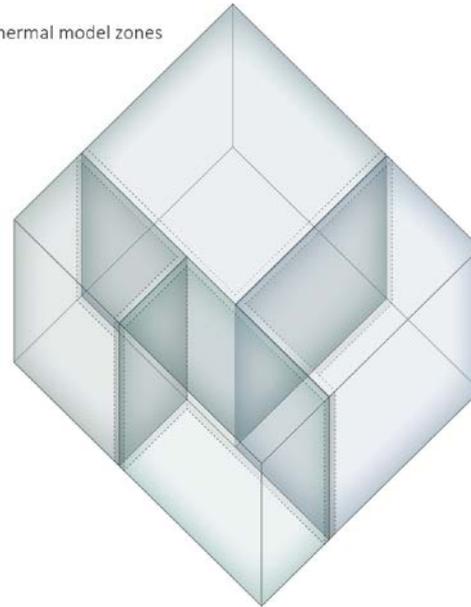


Figure 6: Diagram of differences in representation between a BIM and a BEM showing the same interior spaces.

## Barriers and opportunities

Investing  
time and  
money

Free, open source  
software and  
educational  
opportunities

Leveraging value  
of green buildings

The  
question  
of existing  
buildings

Energy modeling is  
also valuable for  
retrofitting and  
remodeling



**Thank you!**