Energy Modeling

From Conceptual Design to an Energy Model

BLD125981

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Electrical Designer

Nik Weller
Digital Practice Manager

Your Presenters

- Andrew Leavitt
  - Electrical Designer
  - 20 years using Autodesk products
  - First time presenting at AU
- Nik Weller
  - Digital Practice Manager
  - Enjoys a nice pair of slacks
  - Presented at AU in 2012

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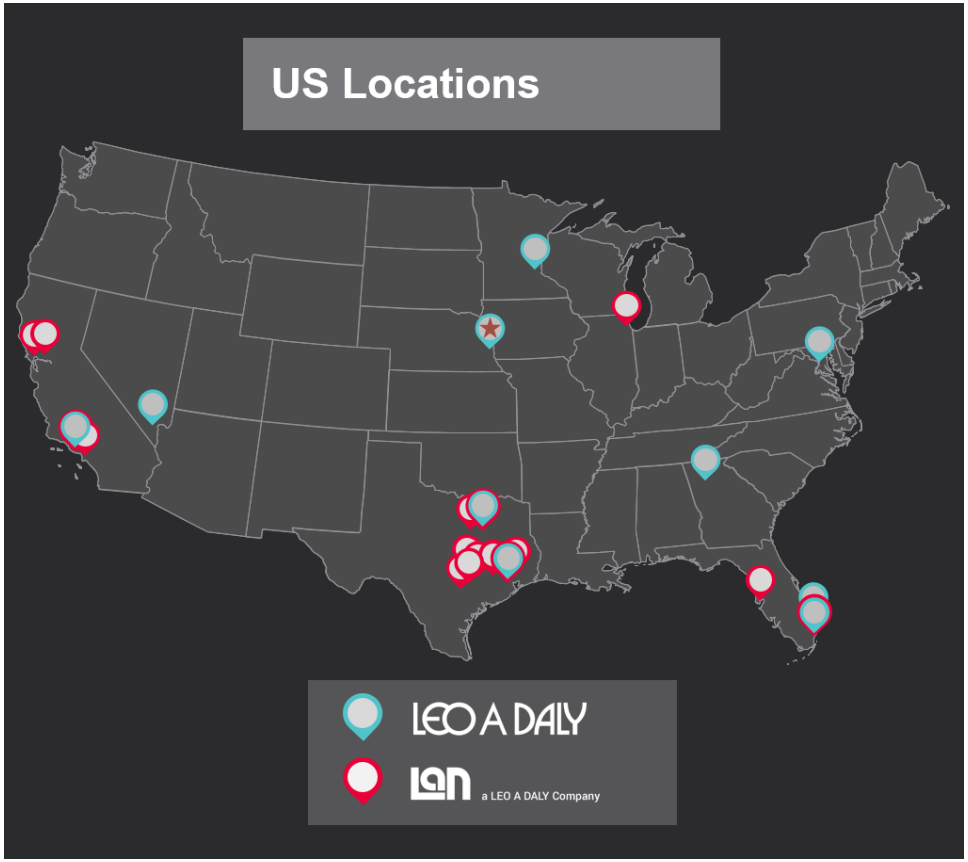
- Three generations of design
- One of the largest privately held A/E firms in North America
- Over 800 professionals in 31 offices
- Working internationally for over 50 years



Creating an Energy Model from Scratch

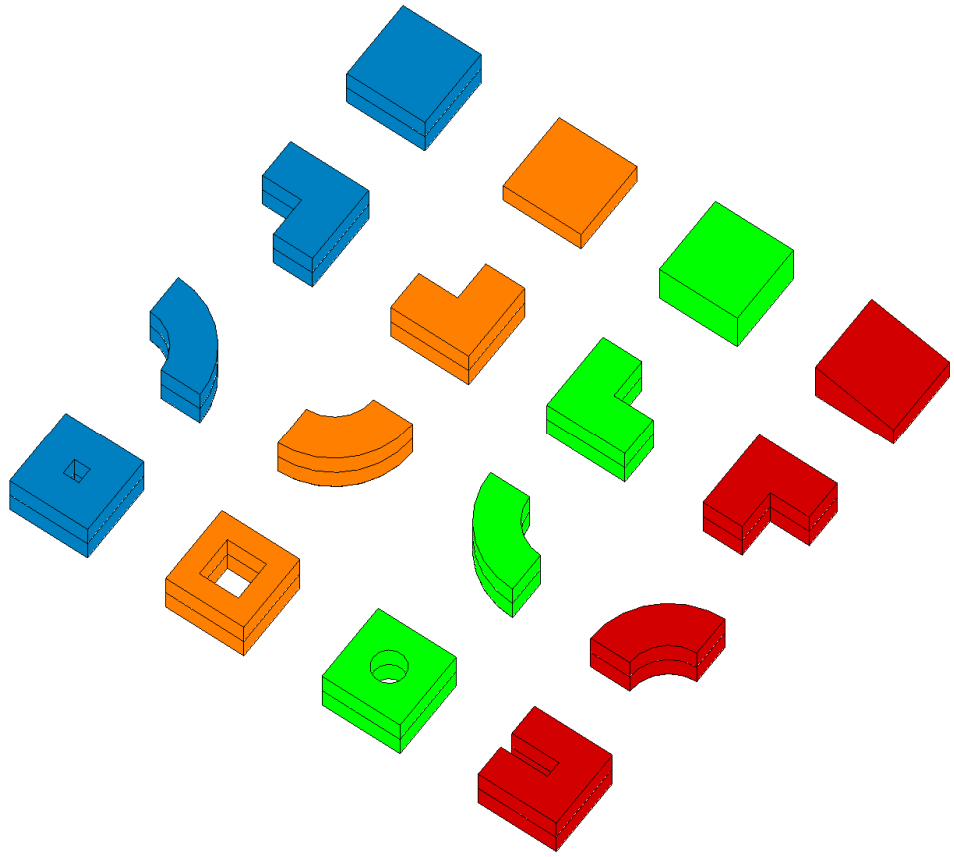
- Develop Building Concept
- Model Masses
- Assign Energy Settings
- Fine-Tune
- Analyze the Model
- Iterate, Iterate, Iterate!

http://tastykitchen.com

Energy Analysis with Conceptual Masses

- Rapid assessment
- Inform decisions
- Iterate successful designs

- Not Building Element Energy Analysis



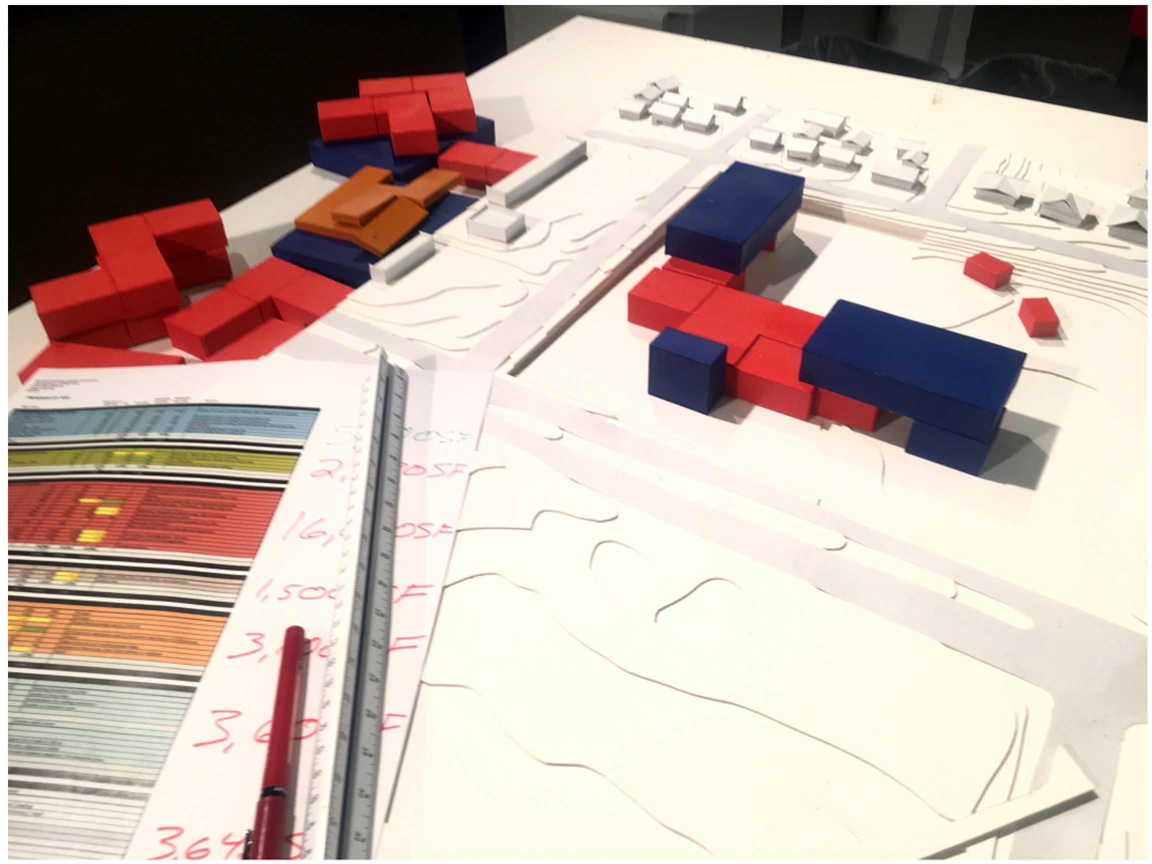
Integrative Design and Sustainability

- 47% of energy usage
- 2030 Challenge and Net Zero
- Collaboration is key

Florida Atlantic University, Engineering and Computer Sciences Classroom Building
LEO A DALY 2010

Building Concept

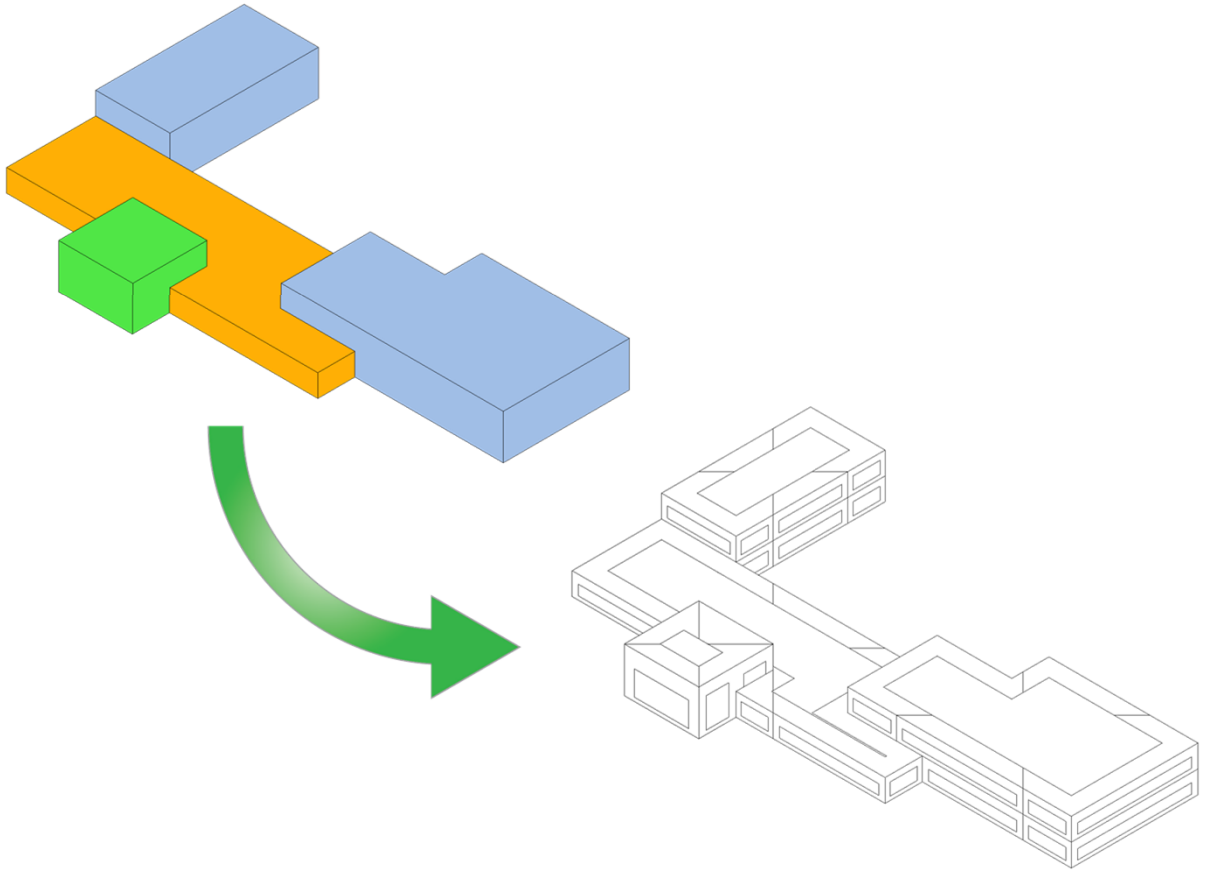
- Programming study
- Existing drawings
- Google Earth
- Just an idea



Slifer and …
Google Earth
LEGENDARY

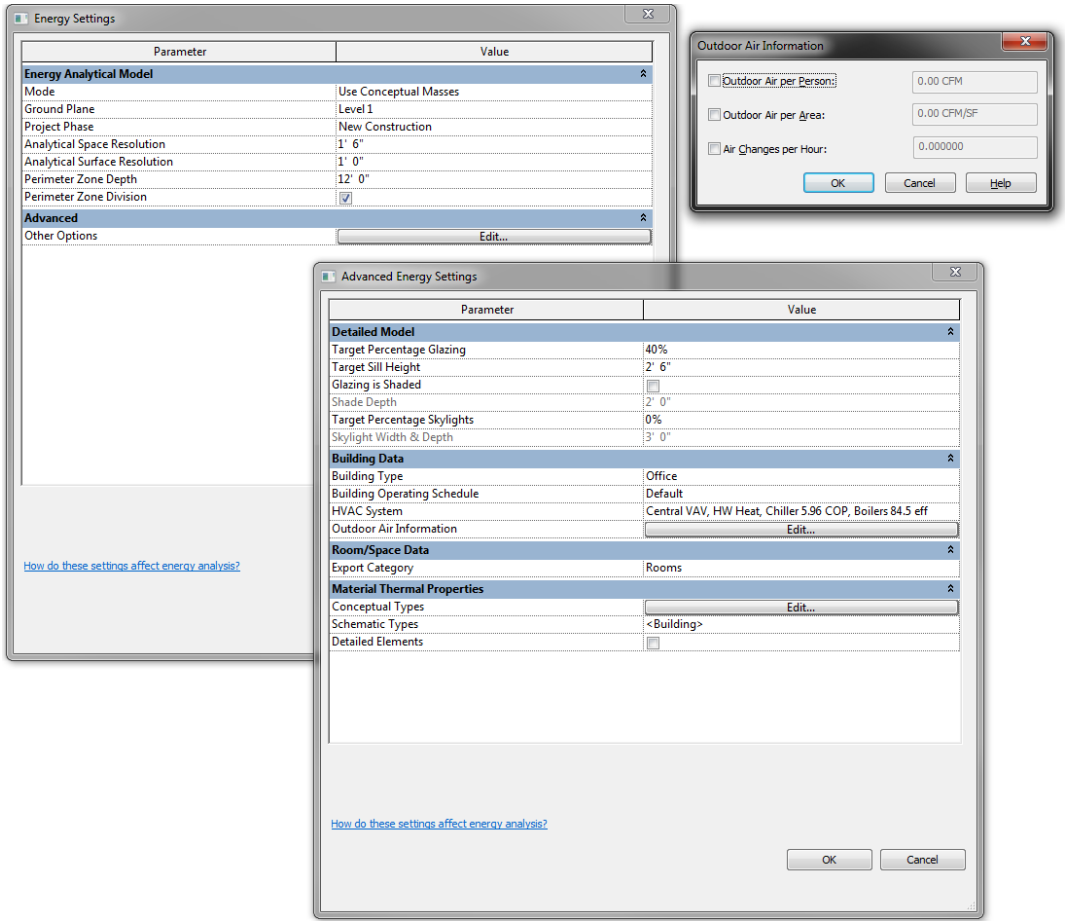
Creating a Conceptual Mass Model

- Set Project Location
- Create Masses
  - Programming Study
  - Model In-Place
  - Mass Families
- Assign Mass Floors
- Create Energy Model



Energy Settings

- Basic Energy Settings
- Advanced Energy Settings
- HVAC Systems
- Conceptual Types

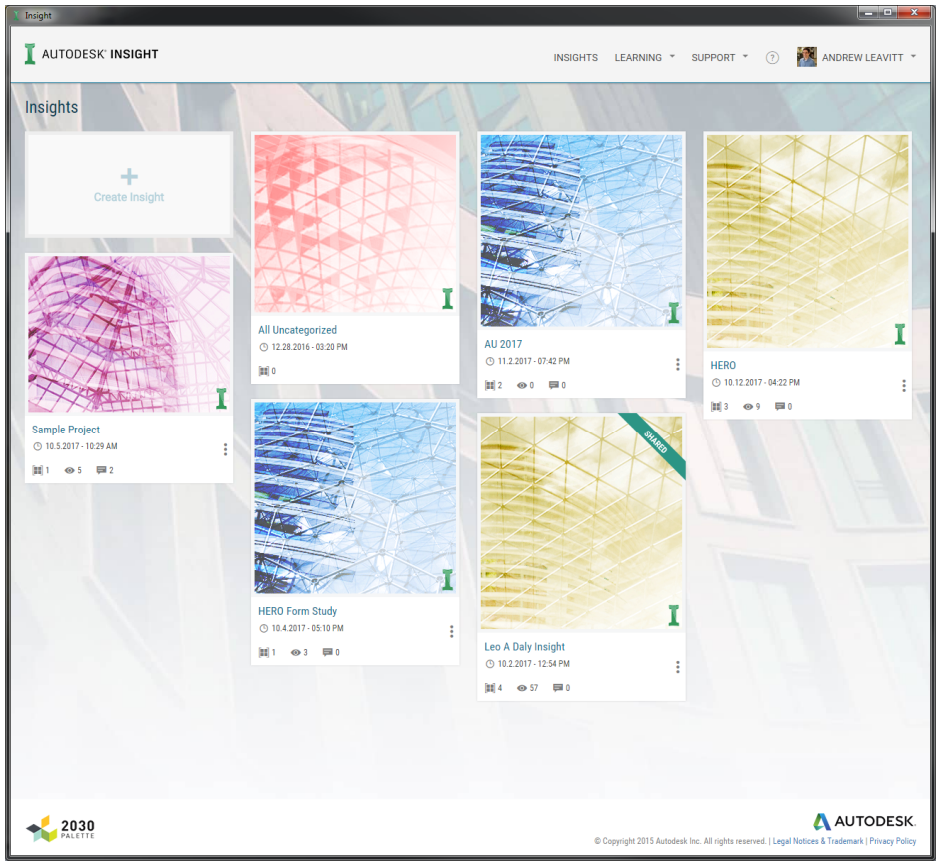


Fine-Tuning the Mass Model

- Zones
- Masses
- Surfaces
- Building and Space Types
- FenestraPro

Generate Insight

- Upload the Mass Model
- Analyze the model
- Review potential design changes
- Compare benchmarks
  - EUI
  - Cost per area
- Share and compare models



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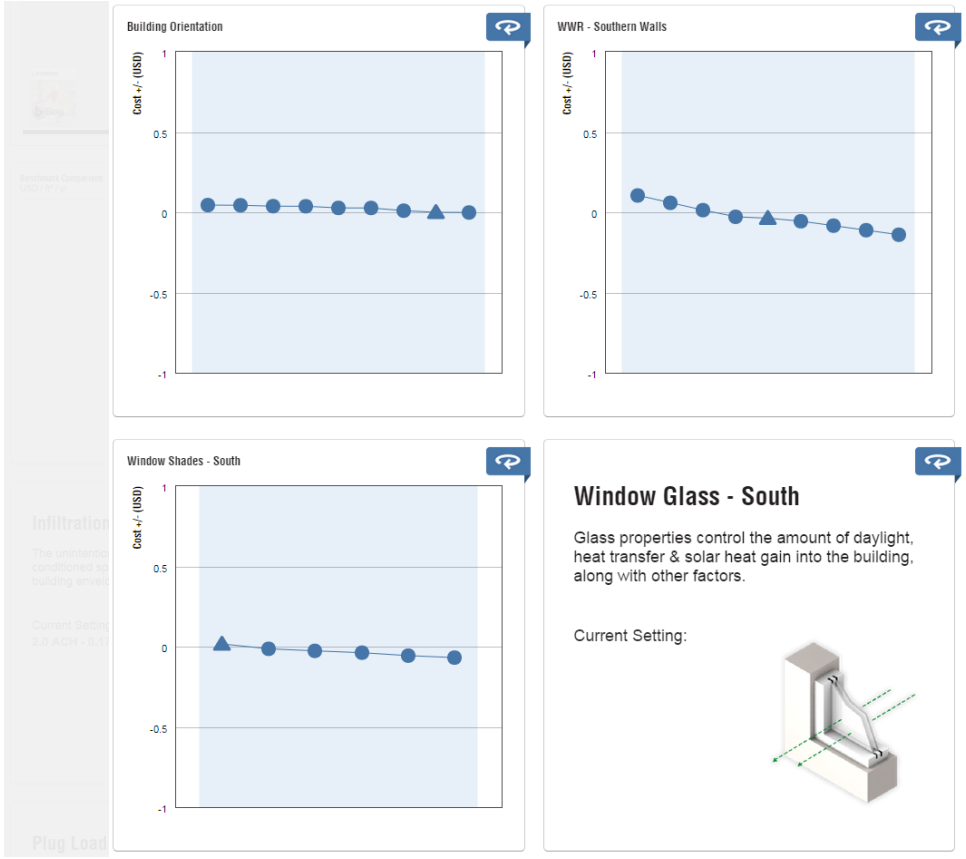
Insight 360 Model Analysis

- View model benchmark and building form
  - Photovoltaic analysis
  - Heating Loads
  - Cooling Loads
- Review model history

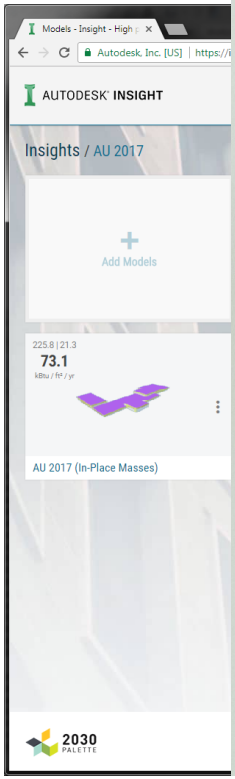
Insight 360 Widgets

- Results for specific model categories
  - Building Orientation
  - HVAC System
  - Glazing
  - Etc.
- Apply constraints
- Reorder based on importance



Insight 360 Scenarios

- Save configurations and constraints
- Compare multiple Scenarios
- Compare multiple buildings
- Sample Scenarios: Net Zero, Architecture 2030



Designing with Insight 360 Energy Analysis

- A360 Cloud service
- Analyze major decisions early
- Track results of changes
- Share with colleagues
- Apply recommendations to Revit model
- Plan for sustainability from the beginning

Energy Analysis and Integrative Design

- Drive decisions for multiple disciplines
  - Building form and orientation
  - Materials and assemblies
  - Electrical and mechanical loads and systems
- Unite disciplines in pursuit of the same goals

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Conclusion

- All you need is an idea
- Model masses and apply settings
- Use Insight 360 to inform, drive, and track design decisions
- Bring disciplines together
- Design more sustainable buildings

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AUTODESK®

Make anything.