



Designing Energy Efficient Buildings with OpenBuildings Energy Simulator

CalBUG Lecture: Thursday, November 2nd – 1:00 PM – 2:00 PM
Mark Enos – Senior Application Specialist

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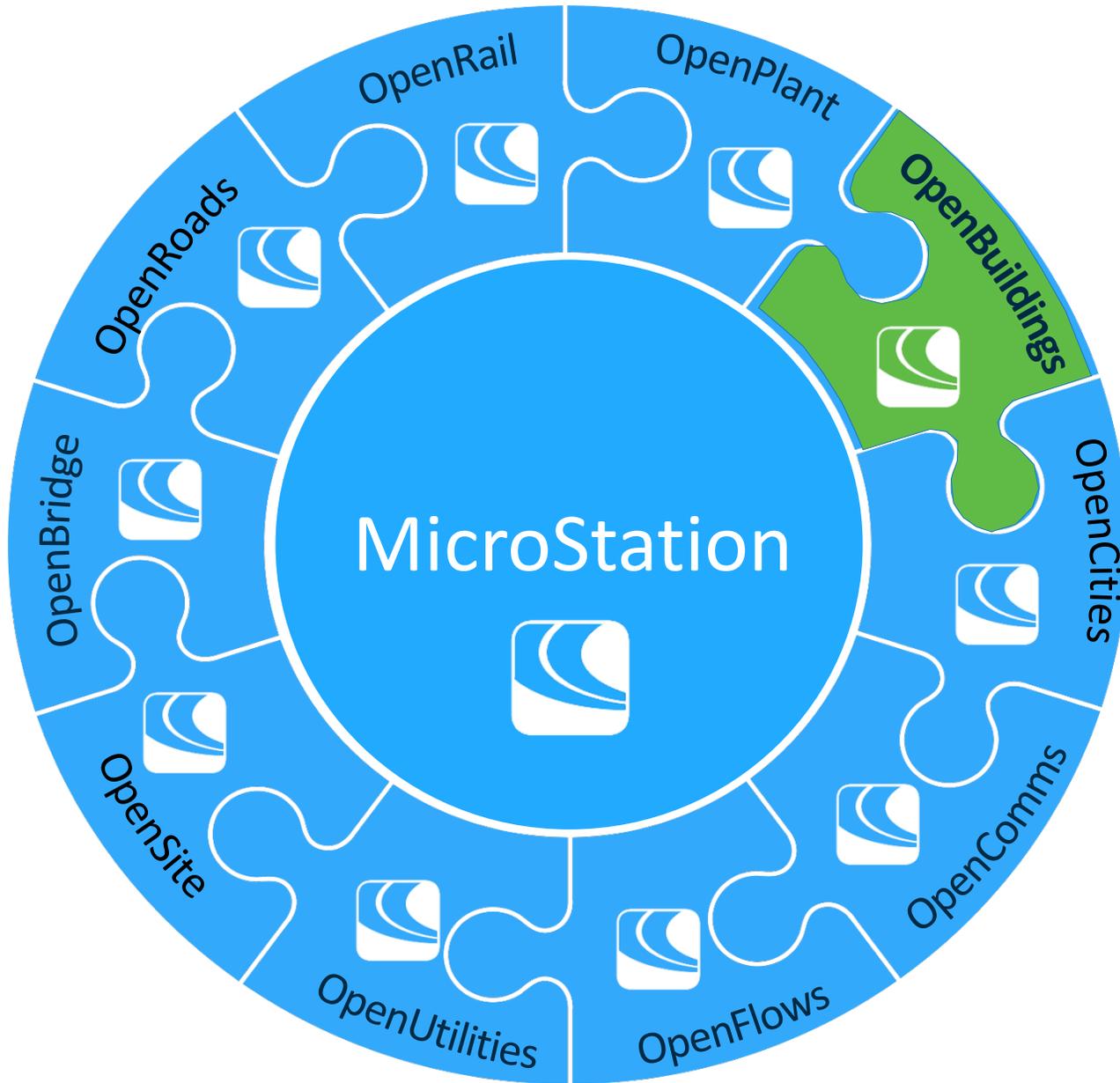
Bentley®

Designing Energy Efficient Buildings with OpenBuildings Energy Simulator

Agenda

- **Introduction to OpenBuildings Designer**
- **Overview of OpenBuildings Energy Simulator**
- **Creating a WorkSpace, WorkSet, and Design Files**
- **Conceptual vs. Standard Project Workflows**
- **Creating a Baseline Report and Compare Reports**






OpenBuildings™ Designer
 CONNECT Edition

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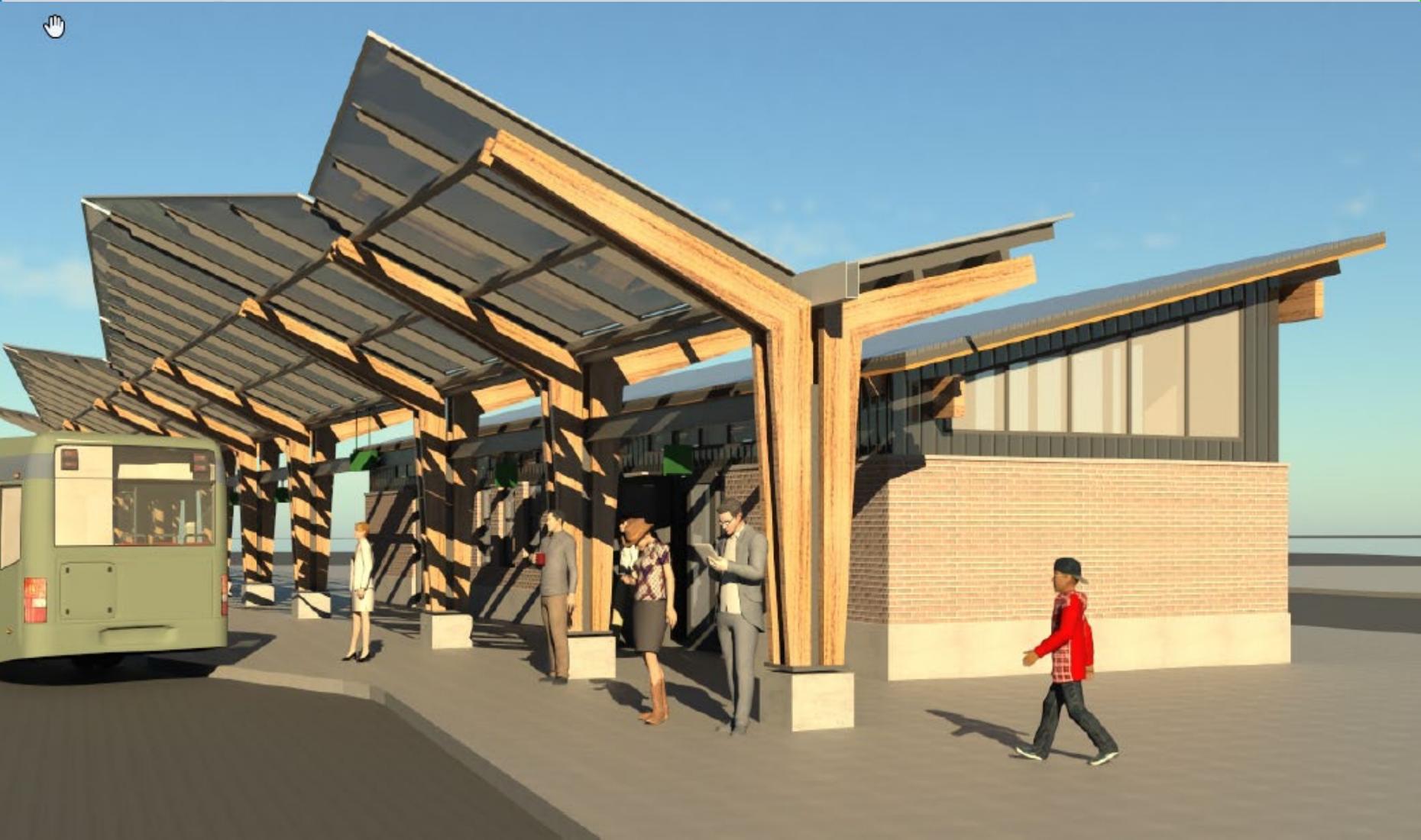
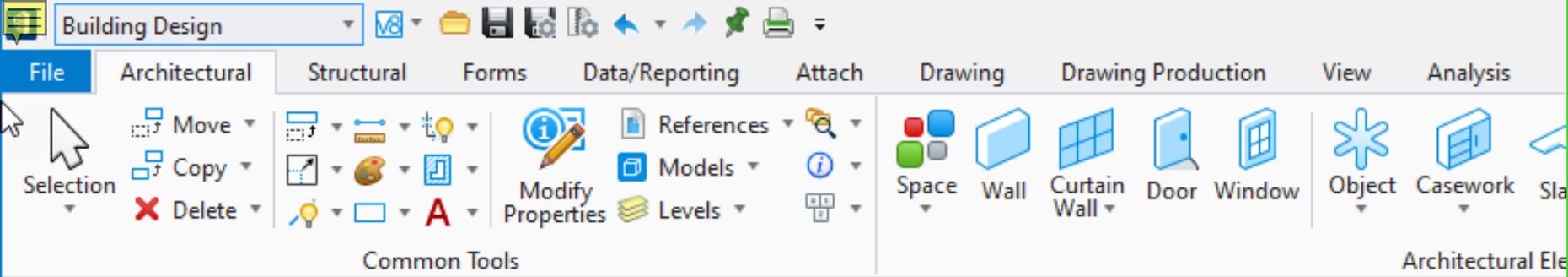

OpenBuildings™ Energy Simulator
 CONNECT Edition

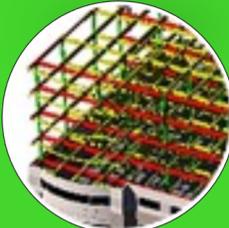
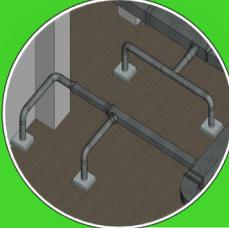
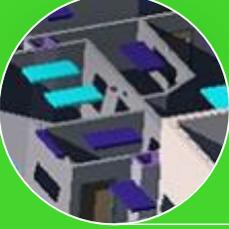
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OpenBuildings™ Generative Components®
 CONNECT Edition

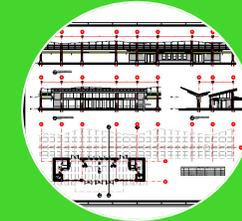
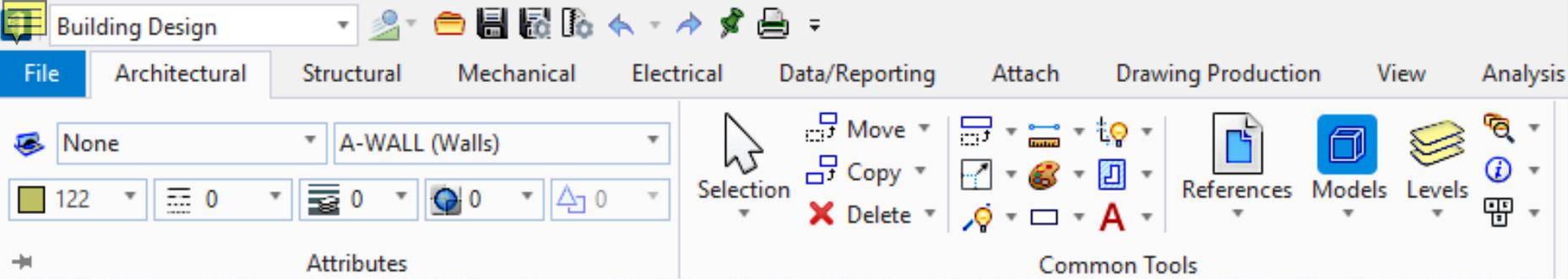
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OpenBuildings™ Station Designer
 CONNECT Edition

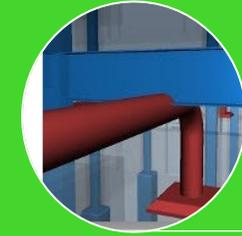


-  Architecture
-  Structural-PS
-  Mechanical
-  Electrical
-  Facilities & Space Planning

Bentley



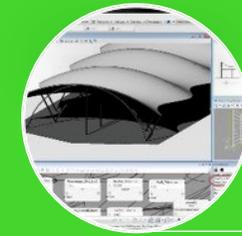
CAD-DGN



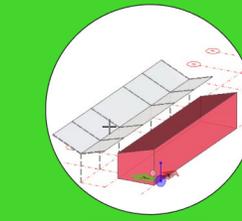
Clash Detection



Rendering



Generative Design



Conceptual Modeling

OpenBuildings Designer CONNECT Edition

OpenBuildings Designer CONNECT Edition

Application Path

C:\Program Files\Bentley\OpenBuildings CONNECT Edition\

Companion Features

- Descartes** *(License-Required)* Show More ▾
- OpenBuildings GenerativeComponents** *(Optional-Free)* Show More ▾
- OpenBuildings Station Designer** *(Optional-Free)* Show More ▾
- ProjectWise Drive**
(This Companion Feature is already installed) Show More ▾

Companion Applications

- Bentley LumenRT CONNECT Edition - Update 14**
(This Companion Product or a higher version is already installed) Configure Show More ▾

Back

Cancel

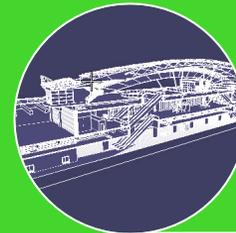
Next



*Descartes**



GenerativeComponents



OpenBuildings Station Designer Example



LumenRT Designer



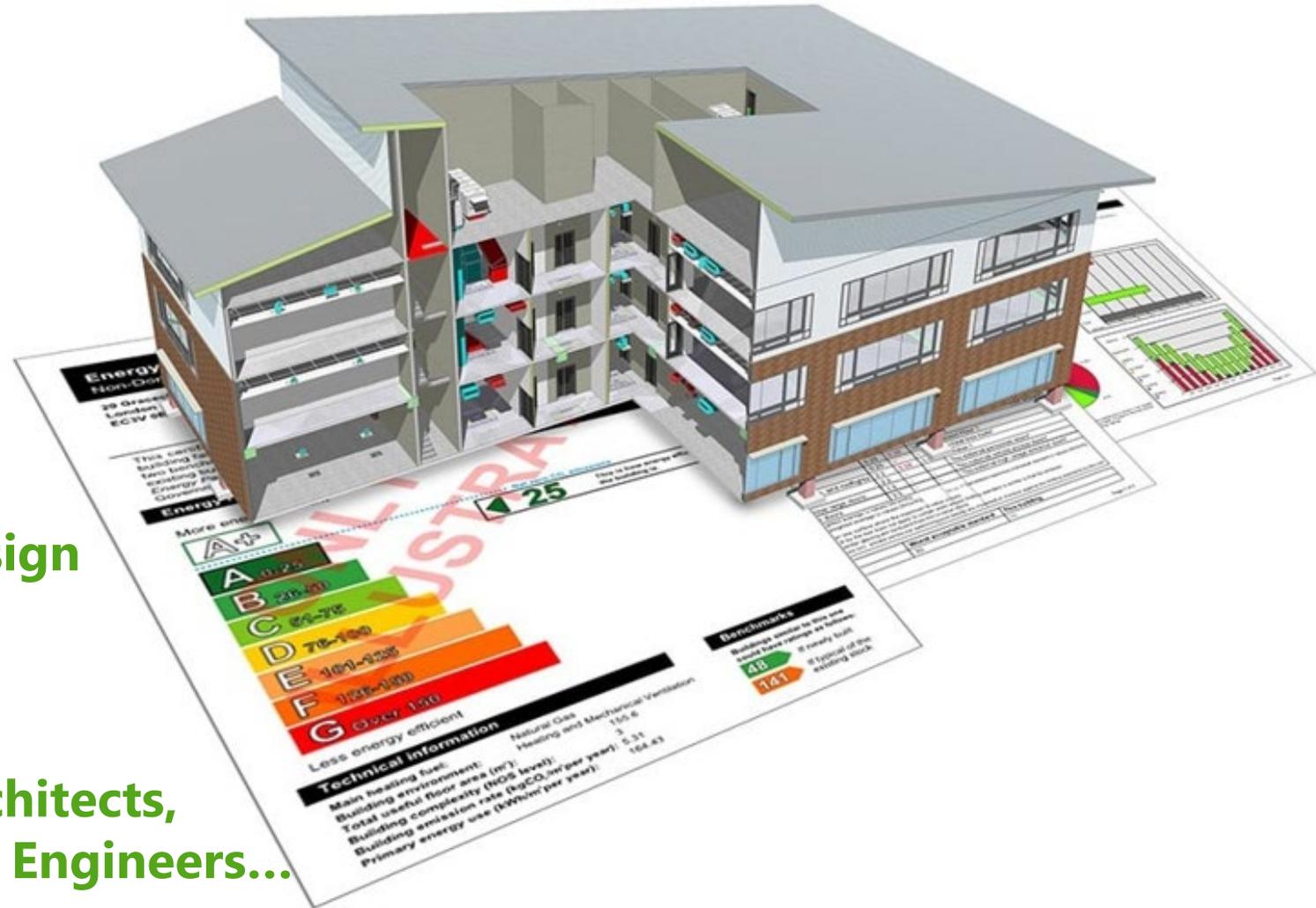
OpenBuildings™ Energy Simulator

CONNECT Edition

An energy forecasting application utilizing steady state calculations of building energy loads to design mechanical systems and hourly simulation tools to predict performance to inform design approach.

Energy Simulator Overview

- Delivered as standard as part of OpenBuildings Designer and uses the same license.
- Complete solution for designing energy efficient buildings.
- Workflows for both new and existing buildings.
- Conceptual through Detailed Design
- Used by:
Mechanical Engineers,
Building Services Engineers, Architects,
Energy Assessors, Sustainability Engineers...



Energy Simulator Capabilities

Steady State Calculations

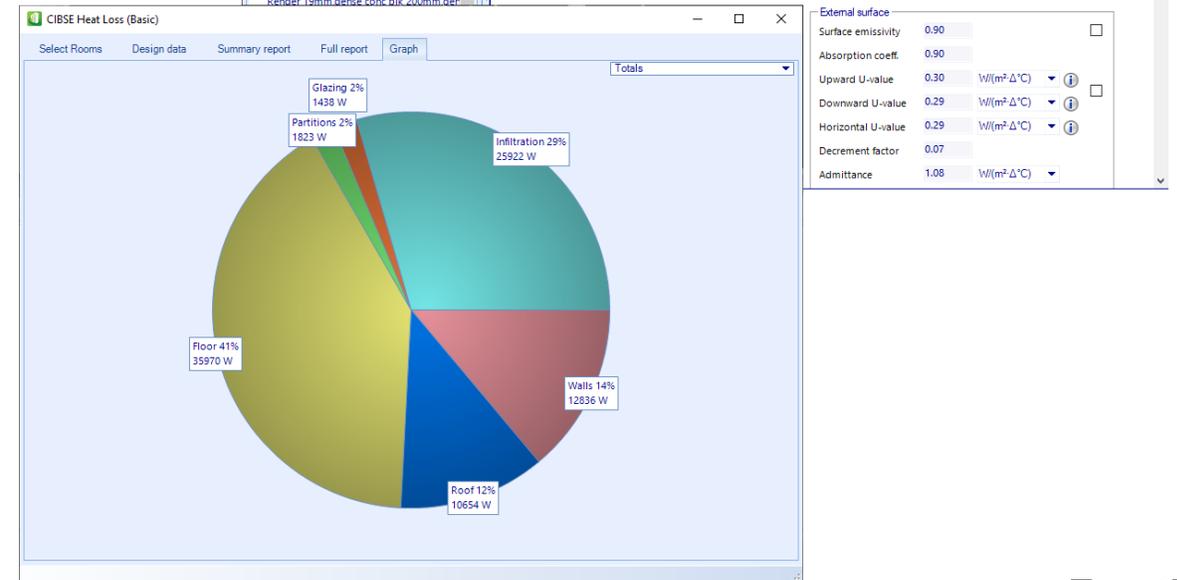
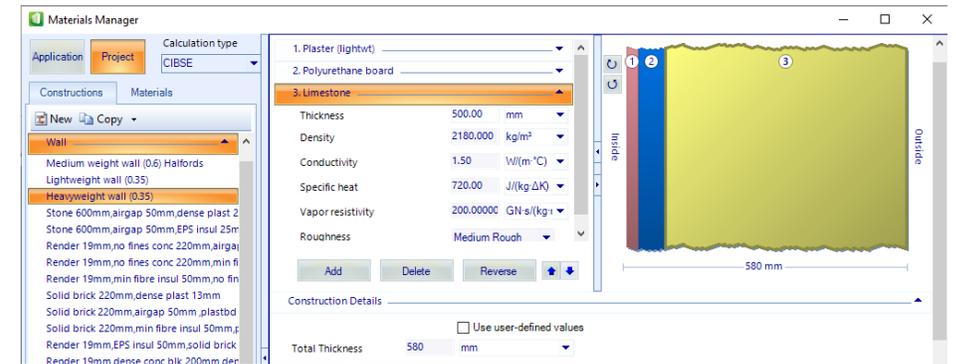
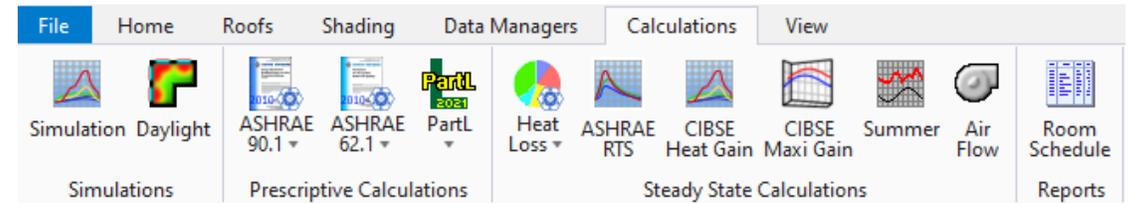
- ✓ Heat Gain
- ✓ Heat Loss
- ✓ ASHRAE and CIBSE
- ✓ Peak Summertime temperatures

Building Material Analysis

- ✓ Huge catalogue of materials included
- ✓ Easily calculate U-values
- ✓ Condensation Analysis

Part L

- ✓ Fully approved for Part L 2021 & 2013
- ✓ Check Compliance & Submit EPC's
- ✓ Officially approved by CIBSE



Energy Simulator Capabilities

Dynamic Simulation

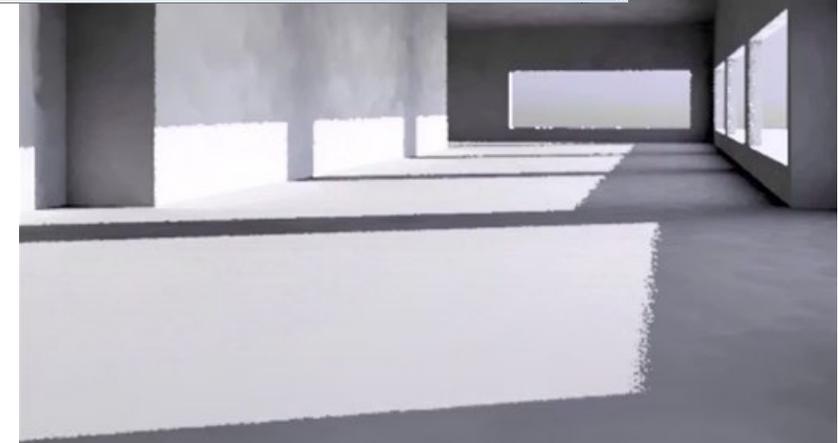
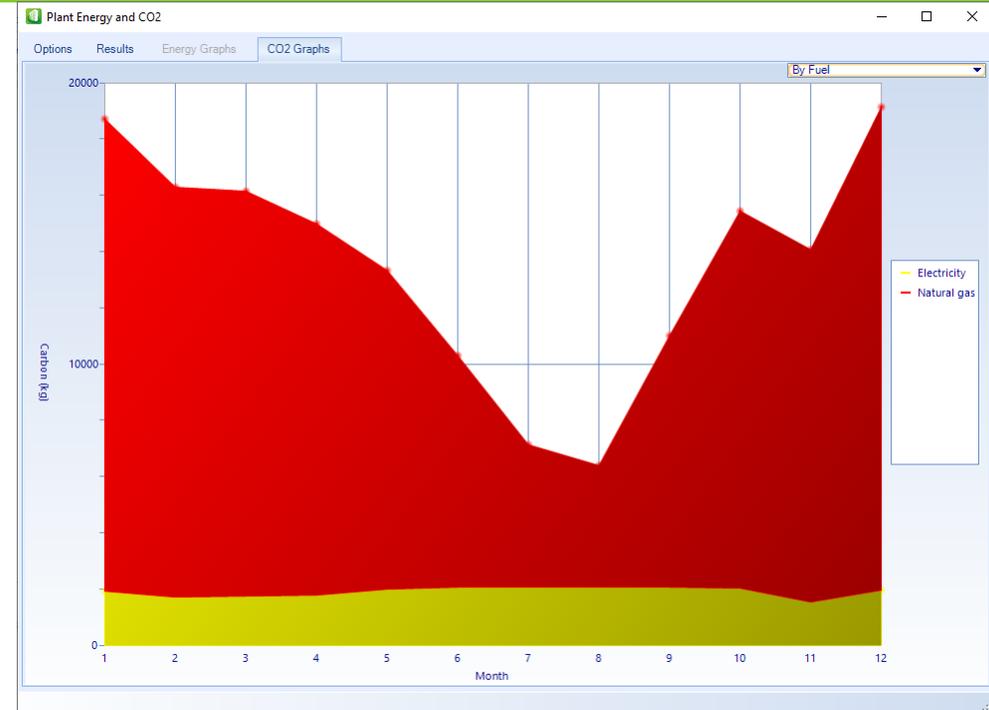
- ✓ **EnergyPlus engine**
- ✓ **Overheating Analysis**
- ✓ **Occupant Comfort**
- ✓ **Energy and CO2**

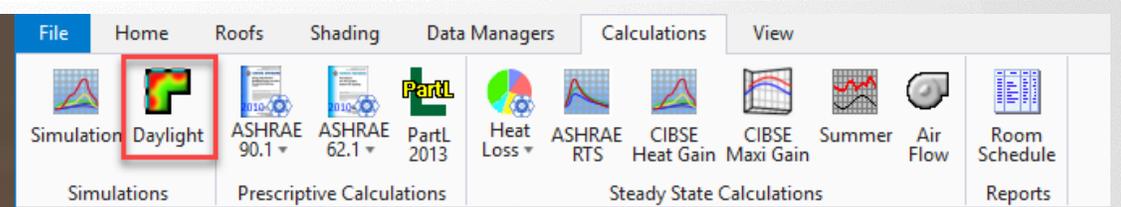
Simulate HVAC Performance

- ✓ **Library of Standard Systems**
- ✓ **Create Custom HVAC**

Daylight Simulation

- ✓ **Radiance Simulation Engine**
- ✓ **Calculate daylight factors**
- ✓ **Visualize internal daylight and lux levels**
- ✓ **External Shading**





Daylight factors

Room selection

Runtime Details Point Results Room Views Contour Views

Room: Office 1-0 (Image 1)

Room: Office 1-0
View Point: 2.89 m, 11.91 m, 0.85 m
View Target: 7.49 m, 4.54 m, 0.85 m
View Direction: 0.53 m, -0.85 m, 0 m

Lux

- 937.5
- 812.5
- 687.5
- 562.5
- 437.5
- 312.5
- 187.5
- 62.

Master Atrium - Copy.dgn [3D - V8 DGN] - AECOsim Energy Simulator V8 (SELECT Series 3)

Home Data Managers System Managers Calculations View

New Copy Delete Adjust Rooms Trace Define Move Copy Split Merge Resize Delete Add Wall Delete Wall Add Window Add Door Add Surface Component Add Fin Delete Opening Move Opening Changes Distance Validation

X: -8009 Y: 6579 Z: 0

Grid Floor_Surfaces

AEOSim Energy Simulator Project Tree

- All
- Project: Master Atrium - Copy
 - Site: New Site
 - Building: New Building
 - Floor: Grd Floor

Daylight

Calculate Results

Buildings: New Building

Zones: AllRooms, Grd Floor

Rooms: LB2(11), Male WC(11), Office 1(11), Office 2(11), Office 3(11), Office 4(11), Office 5(11), Office 6(11), Office 7(11), Riser 1(11), Riser 2(11), Common Room(12), Conf 1(12), Conf 2(12), Conf 3(12), Conf 4(12), WC(12)

Name: Daylighting 2
Date: 4 June
Time: 10:00
Description: Zone 1
Zone 1

Sky Conditions: Sky, Sunny with sun

Accuracy: Model detail: Medium, Lighting variability: Medium, Image quality: Medium

Calculation Grid: Working plane height: 0.85 m, Grid spacing X: 0.50 m, Grid spacing Y: 0.50 m

Views: Enable, Add, Delete, Edit

View Point: Room: Atrium, Direction: 41.47, 30.03, 2.05, -0.55, 0.84, 0, 41.08, 32.88, 2.05, 0.79, 0.61, 0

Start

Cloud

DF

37.5

32.5

27.5

22.5

17.5

12.5

7.5

2.5

Daylight factors

Room selection

Runtime Details Point Results Room Views

16	1.62	3.46	4.35	4.68	4.64	4.12	3.79	3.35	2.98	2.48	1.77
17	1.72	3.49	4.69	4.73	4.7	4.29	4	3.52	2.98	2.47	1.67
18	1.71	3.47	4.54	5.04	4.75	4.72	4.17	3.56	3.09	2.37	1.65
19	1.54	3.19	4.2	4.57	4.58	4.3	4.04	3.44	2.87	2.11	1.61
20	1.08	2.27	3.02	3.34	3.29	3.24	2.97	2.73	2.16	1.63	1.3
21	0.61	1.11	1.5	1.66	1.66	1.68	1.62	1.46	1.29	1.15	0.8

Point results for room : Office 4(3)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0.52	0.64	0.72	0.77	0.86	0.93	0.87	0.92	0.98	1.07	1.05	1	1.08	0.93	0.92	0.99	0.97	0.93
2	0.76	0.85	0.96	1.07	1.14	1.18	1.28	1.28	1.35	1.4	1.39	1.41	1.42	1.45	1.43	1.39	1.33	1.29
3	0.77	0.96	1.17	1.32	1.37	1.48	1.48	1.58	1.56	1.62	1.61	1.72	1.8	1.7	1.68	1.62	1.61	1.6
4	0.87	1.09	1.29	1.48	1.62	1.68	1.75	1.83	1.86	1.84	1.89	1.99	2.02	1.94	1.87	1.87	1.84	1.83
5	1.05	1.22	1.47	1.58	1.74	1.87	1.95	2.03	2.06	2.08	2.14	2.19	2.24	2.17	2.16	2.12	2.1	2.05
6	1.04	1.4	1.66	1.8	1.99	2.11	2.22	2.32	2.27	2.31	2.38	2.42	2.47	2.48	2.38	2.39	2.37	2.32
7	1.12	1.54	1.81	2.03	2.23	2.38	2.49	2.58	2.49	2.57	2.61	2.64	2.72	2.74	2.66	2.67	2.69	2.63
8	1.26	1.64	2	2.35	2.6	2.65	2.82	2.92	2.85	2.78	3	2.87	3.08	3.09	3.19	3.08	3.21	3.06
9	1.2	1.74	2.2	2.73	2.8	3.17	3.06	3.18	2.98	2.9	3.01	3.19	3.2	3.45	3.31	3.44	3.35	3.3
10	1.06	1.67	2.16	2.56	2.81	3.07	3.12	2.99	2.89	3.03	2.81	2.96	3.08	3.3	3.34	3.27	3.24	3.44
11	0.73	1.17	1.64	1.95	2.16	2.17	2.21	2.19	2.1	1.96	2.01	2.17	2.29	2.36	2.44	2.42	2.43	2.38
12	0.35	0.5	0.59	0.68	0.72	0.75	0.78	0.79	0.81	0.84	0.85	0.85	0.86	0.84	0.87	0.84	0.81	0.8

Energy Simulator Capabilities

Complete Solution

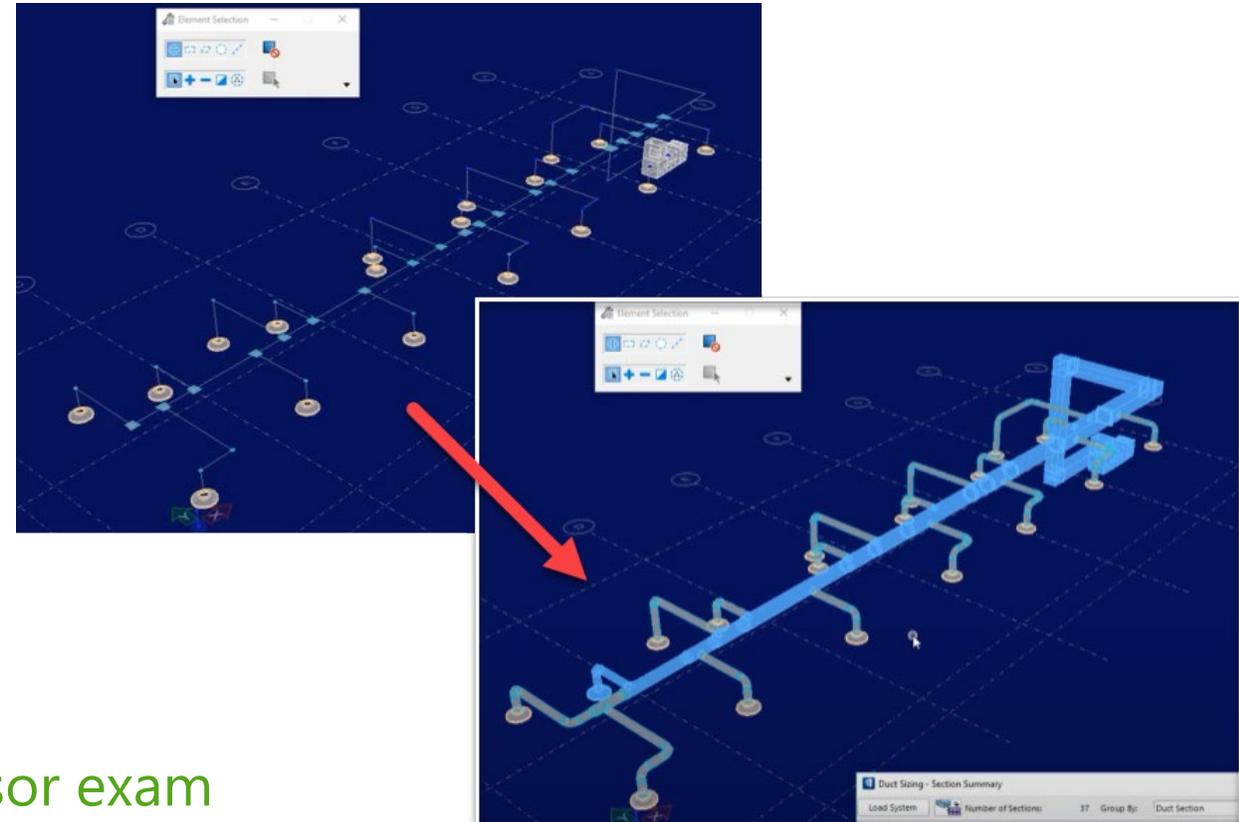
- ✓ All calc's & simulations included in one license
- ✓ Conceptual designs to building compliance

Total Building Design

- ✓ OpenBuildings Designer included
- ✓ CAD
- ✓ BIM
- ✓ Duct sizing – simple 2D schematic similar to Netsys, or directly in 3D model.

Support & Training

- ✓ All Training Courses - free
- ✓ Hassle-free, online Part L Energy Assessor exam



Energy Simulator Benefits

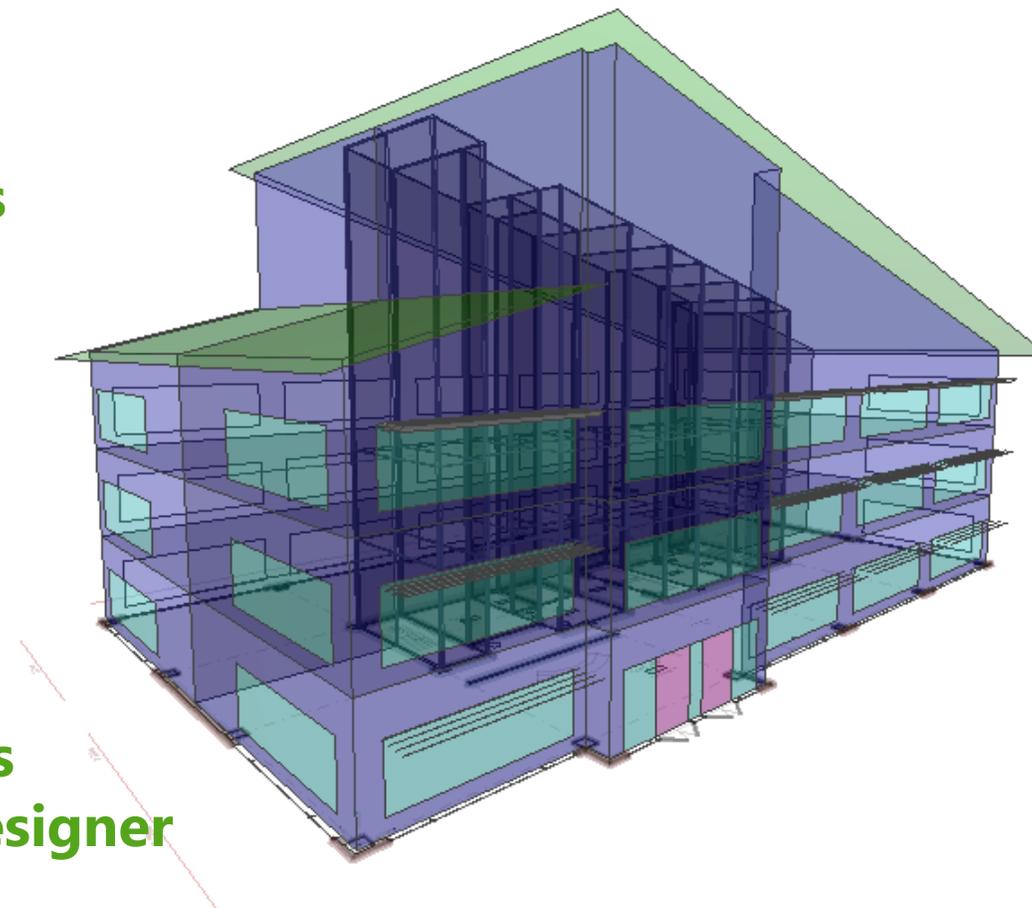
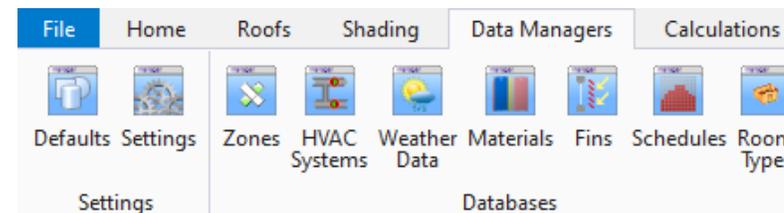
Easy to use

- ✓ **Intuitive Workflows**
- ✓ **Familiar for Hevacomp users**
- ✓ **Easy learning curve**
- ✓ **Simplicity - quickly build model & run calc's**

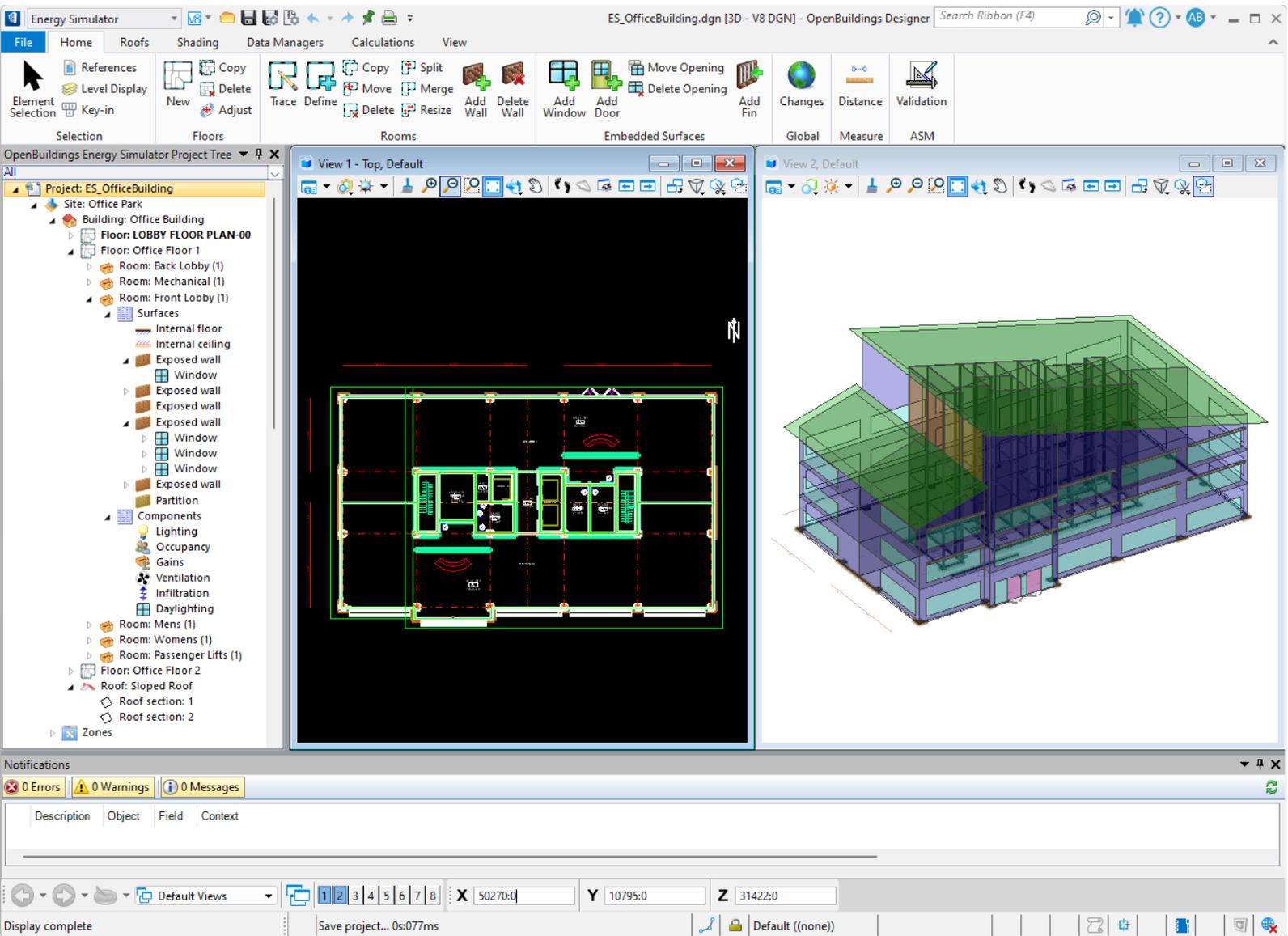
Flexibility & Interoperability

Several Methods of modelling

- ✓ **Trace model in simple 2D**
- ✓ **Use dwg/dgn/dxf/PDF...**
- ✓ **Conceptual Modelling Workflows**
- ✓ **Import Hevacomp projects**
- ✓ **Import GBXML from other BIM Applications**
- ✓ **Import BIM directly from OpenBuildings Designer**



Flexibility and Interoperability



Intuitive Visual Modeling

Import Analytical Space Models directly from

 OpenBuildings Designer

Interoperability

- Trace model in 2D
- Import DWG / DXF / DGN / PDF
- Import gbXML
- Import legacy Hevacomp projects



Hevacomp[®]

Integrated with ProjectWise

The screenshot displays the ProjectWise Explorer interface. On the left is a hierarchical tree view of a project structure. The center pane shows a table of files with columns for Name, Description, File Name, File Size, Object Id, Folder Id, and Owner. The right pane shows a 3D architectural model of a building floor plan with various rooms and walls.

Name	Description	File Name	File Size	Object Id	Folder Id	Owner
Floorplan.dgn	Floorplan	Floorplan.dgn	74 KB	16	86	admin
Marlow 1st Floor	Marlow 1st Floor	Marlow 1st Floor.dgn	4,498 KB	7	86	admin
Marlow Basement	Marlow Basement	Marlow Basement.dgn	5,293 KB	10	86	admin
Marlow Building.dgn	Marlow Building	Marlow Building.dgn	528 KB	17	86	admin
Marlow Ground Floor	Marlow Ground Floor	Marlow Ground Floor.dgn	7,537 KB	13	86	admin

ProjectWise Design Integration
CONNECT Edition

Project Explorer

- Models
- Views
- Items
- Default
- Marlow 1st Floor.dgn_Default
- Marlow 1st Floor.dgn_Facilities W
- A-DOOR
- A-EQPM-FIXT
- A-FLOR
- A-GLAZ
- A-ROOF
- A-WALL
- A-WALL-FULL
- Building
- Deductions
- Default
- G-ANNO-SYMB
- G-ANNO-TEXT

11:08 AM

Learn Server Training

Bentley
Help Profile Sign Out

Home Find Training
My Learning Paths

Home > Find Training > View Learning Path

QuickStart for OpenBuildings Energy Simulator Learning Path 👤

In this Learning Path you will learn how to use OpenBuildings Energy Simulator. The courses will take you through the OpenBuildings Energy Simulator software interface and show you how to create an Energy model using the Modeling tools and the Data Managers. Finally you will learn to run a variety of steady state calculations based on the energy model.

➕ Add to My Learning Path
🔗 Personalize

BIM QuickStart ES101: Modeling ▬▬▬

This hands-on course contains instructions for getting started with Bentley's OpenBuildings Energy Simulator. The student will create a new project WorkSet, set up the project tree, ... [More](#)

▶ Find Training (1)

BIM QuickStart ES102: Data Managers and Calculations ▬▬▬

This hands-on course contains instructions for getting started with Bentley's OpenBuildings Energy Simulator. The student will continue with the energy model created in ES101. They... [More](#)

▶ Find Training (1)

QuickStart ES103: Dynamic Simulations and HVAC ▬▬▬

	
This workbook follows on from ES101 and ES102, and contains exercises for performing Dynamic Simulations in OpenBuildings Energy Simulator.
it will help an experienced OpenBui... [More](#)

▶ Find Training (1)

Energy Simulator ES 201: PartL Interface Level 3 and 4 ▬▬▬

This course is working towards the OpenBuildings Energy Simulator software competency exam, which shows competence in using OpenBuildings Energy Simulator's approved SBEM interface ... [More](#)

▶ Find Training (1)

OpenBuildings Energy Simulator: PartL Import from Hevacomp ▬▬▬

Upon completion of the course, users will be deemed competent in importing their Hevacomp models into OpenBuildings Energy Simulator, in order to produce EPCs, Compliance Documents, ... [More](#)

▶ Find Training (1)

Training & Learning My Learning History Professional Development Hours	Support & Services Downloads User Management	Communities Product Communities User Learning Community Bentley Events	Social Media Facebook Twitter YouTube LinkedIn
-----------------------------------------------------------------------------------------	---------------------------------------------------------------	----------------------------------------------------------------------------------------	-------------------------------------------------------------------

Practice Workbook

This workbook is designed for use in Live instructor-led training and for OnDemand self study. OnDemand videos for this course are available through [CONNECT Advisor](#) and on the [LEARNserver](#).

Bentley® OpenBuildings™ Designer CONNECT Edition—Energy Simulator

BIM QuickStart ES101: Modeling

About this Practice Workbook:

- This PDF file includes bookmarks providing an overview of the document. Click on the bookmark to quickly jump to any section in the file.
- This workbook shows Imperial units—with International System (metric) units shown in blue italicized text in brackets—for example:
Height: 15:0 [4500 mm] where the Imperial value for the height is 15' and the SI value is 4500 mm.

training examples delivered with the software.

Help?
While taking this course, search in CONNECT Advisor for related courses and submit questions to the Building Analysis and Design Forum on [Bentley Communities](#) where subject matter experts are available to help.

Course Level: Fundamental

DISTRIBUTE - Printing for student use is permitted

Practice Workbook

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Bentley® OpenBuildings™ Designer CONNECT Edition—Energy Simulator

BIM QuickStart ES102: Data Managers And Calculations

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Revision: CE07 en. 1

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Bentley® OpenBuildings™ Designer CONNECT Edition—Energy Simulator

QuickStart ES103: Dynamic Simulations and HVAC

About this Practice Workbook:

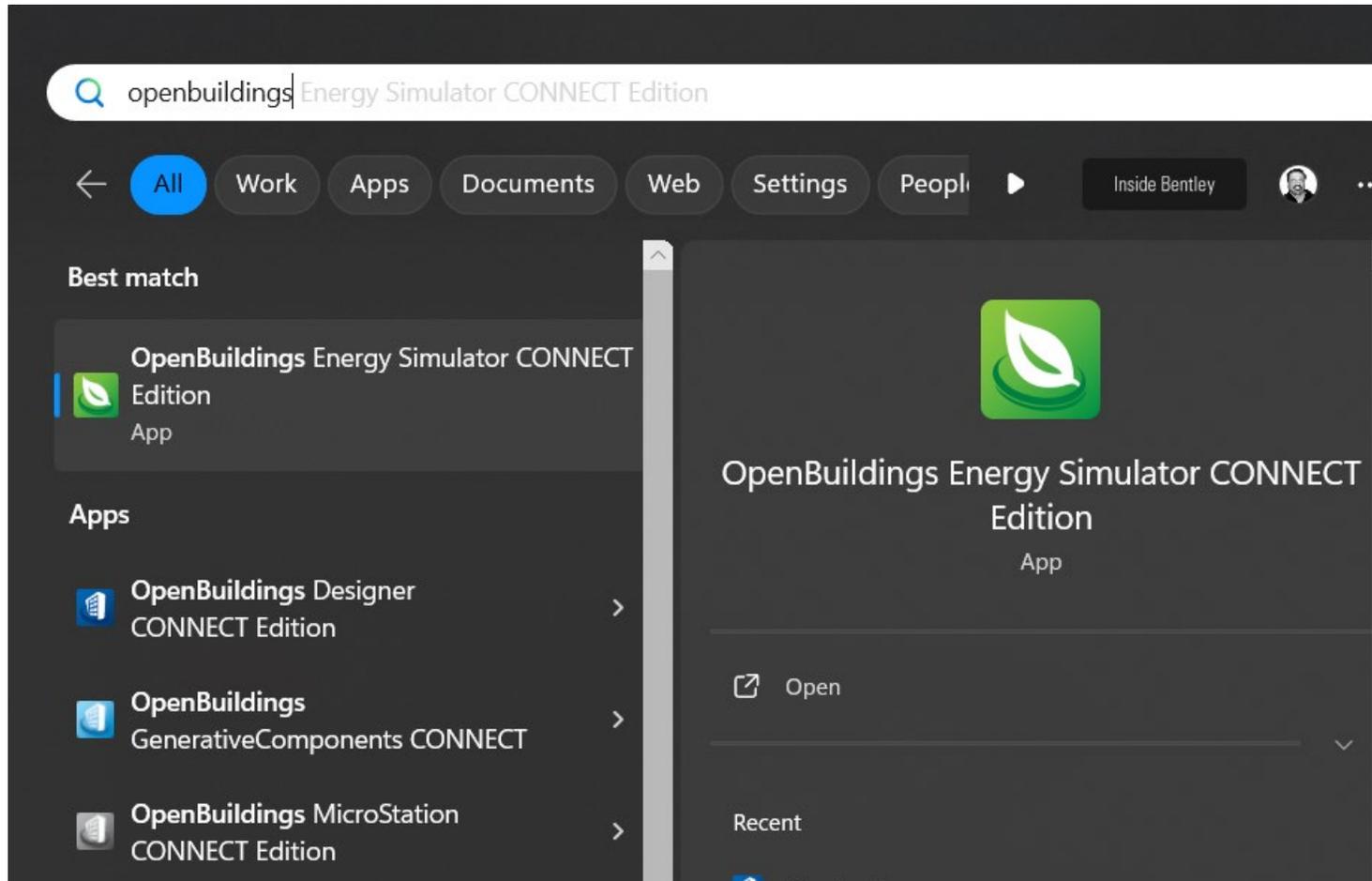
- This PDF file includes bookmarks providing an overview of the document. Click on the bookmark to quickly jump to any section in the file.
- This course uses training examples delivered with the software.
- This workbook uses Metric units.

Have a Question? Need Help?
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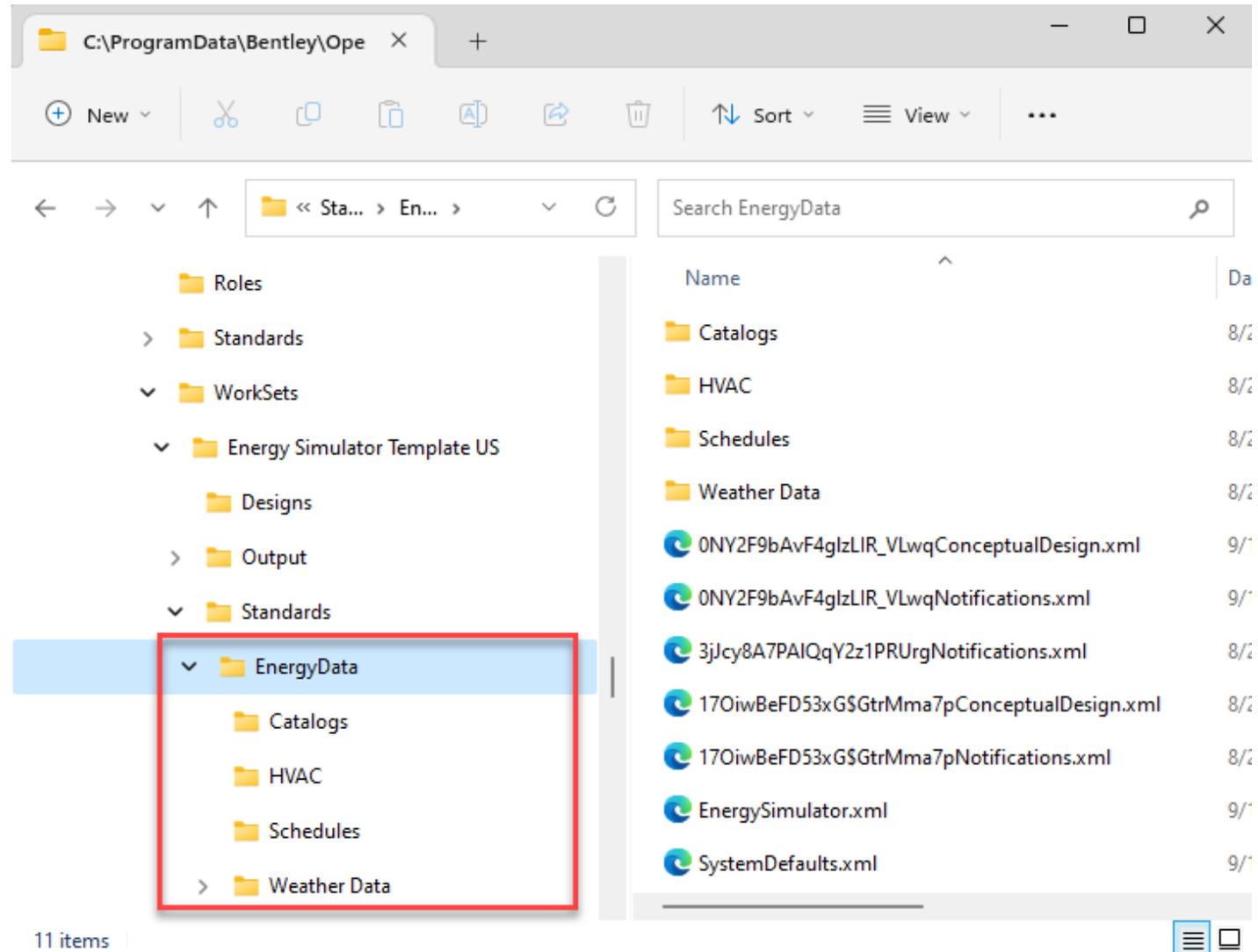
Revision: CE09 en. 1

Course Level: Advanced

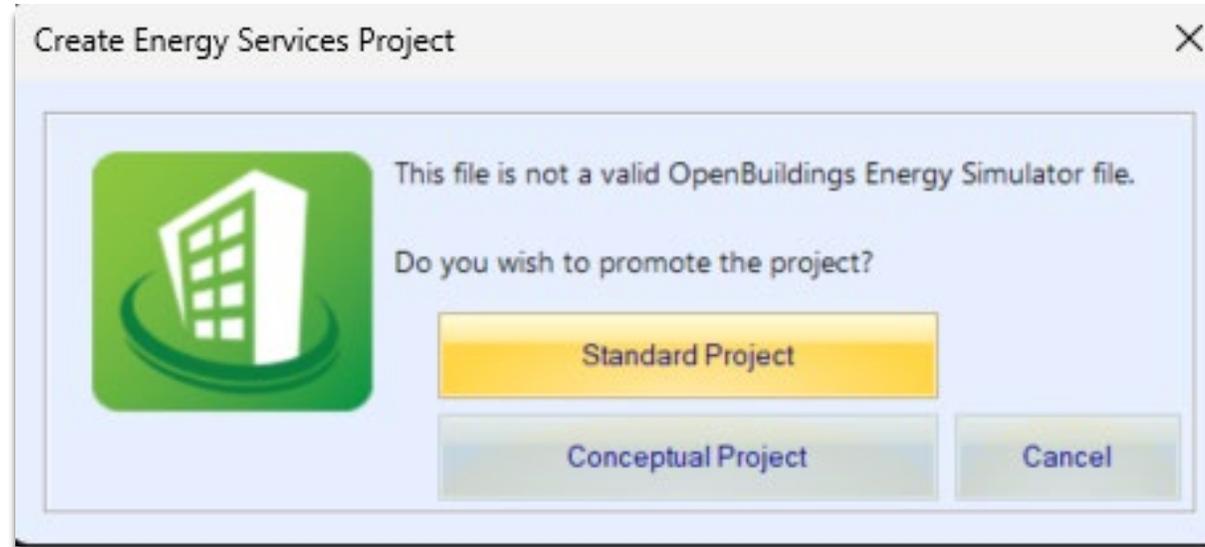
Launching the Application



Creating a WorkSpace, WorkSet, and Design Files

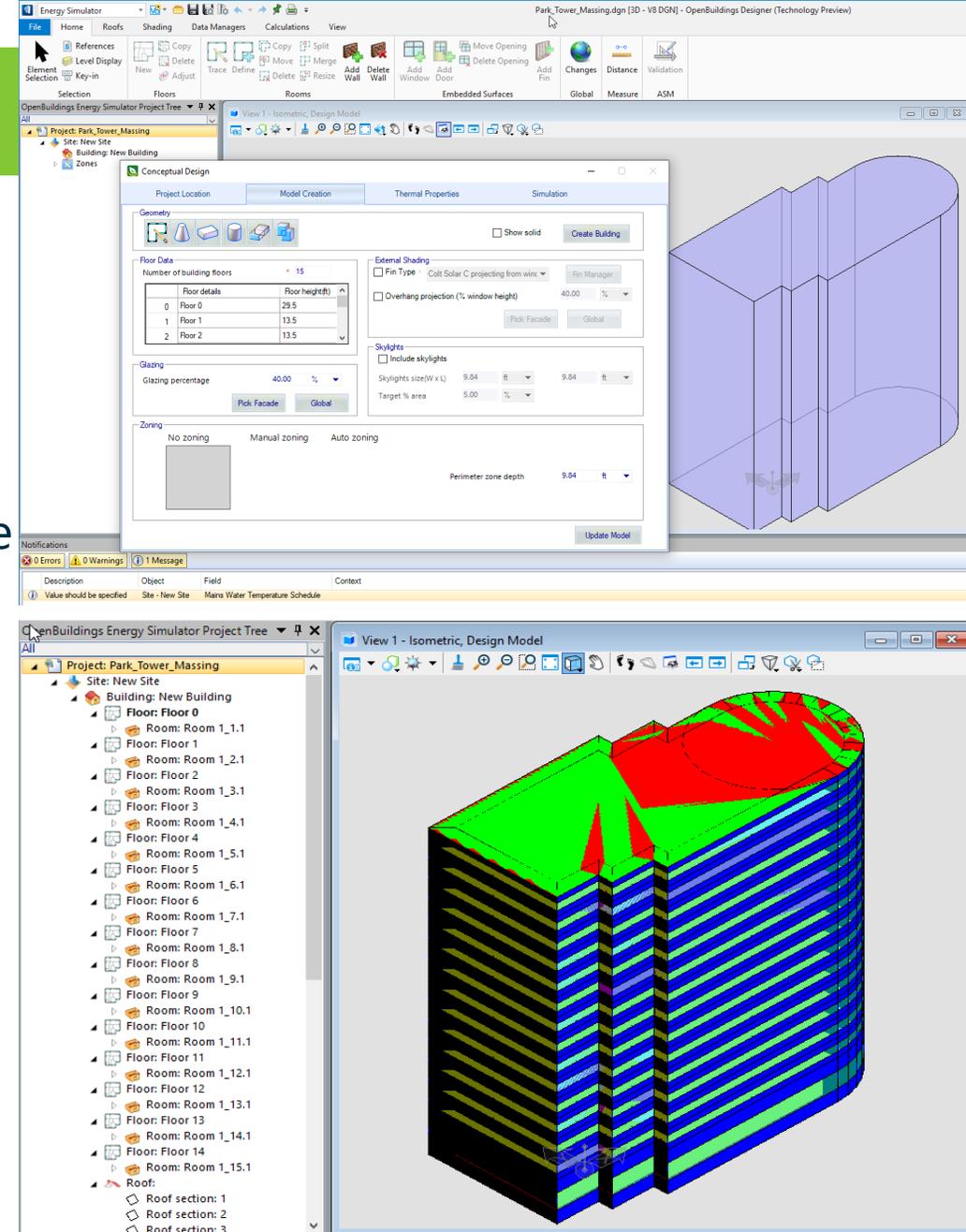


Conceptual vs Standard Project Workflows

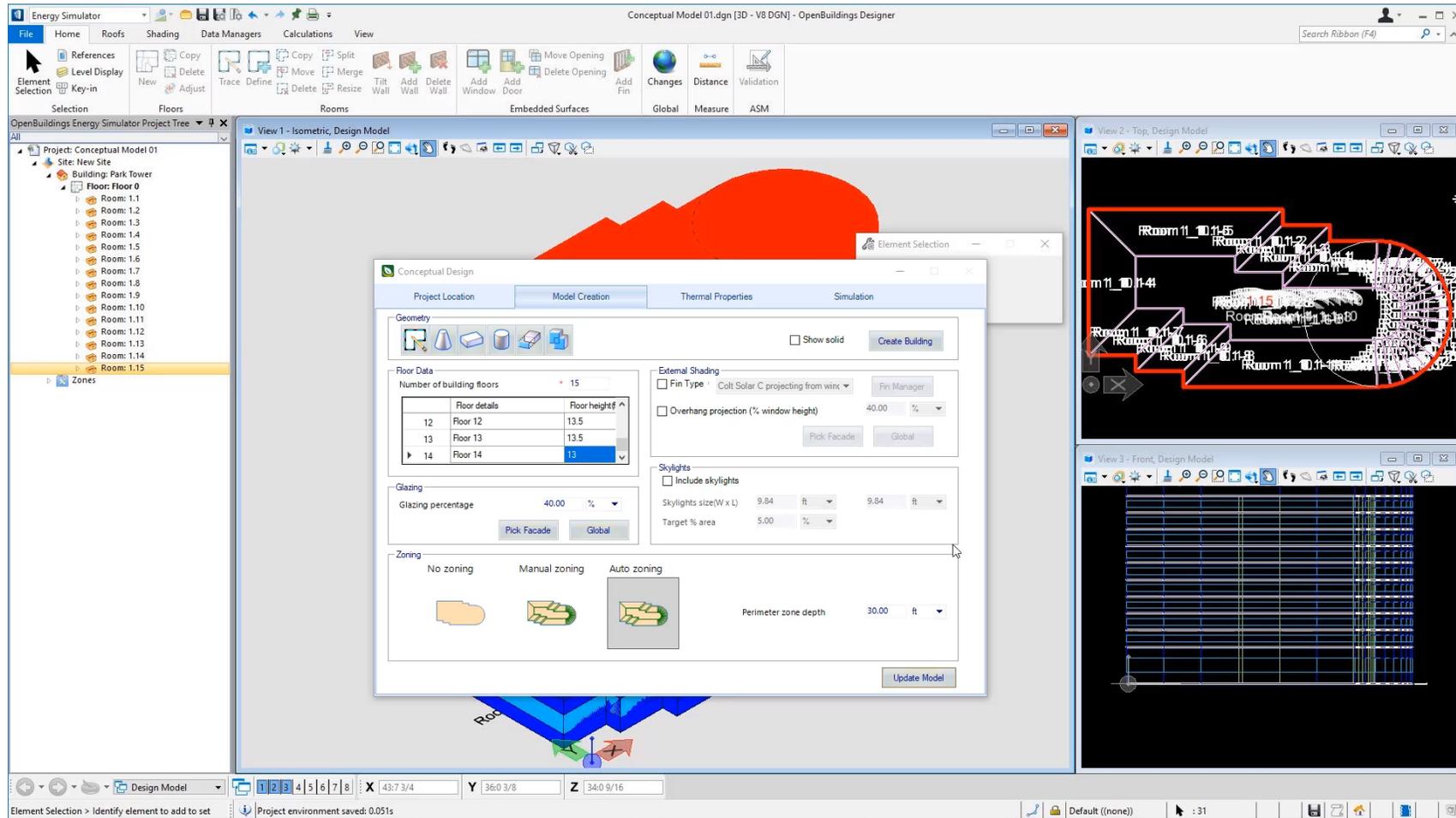


Conceptual Project Workflows

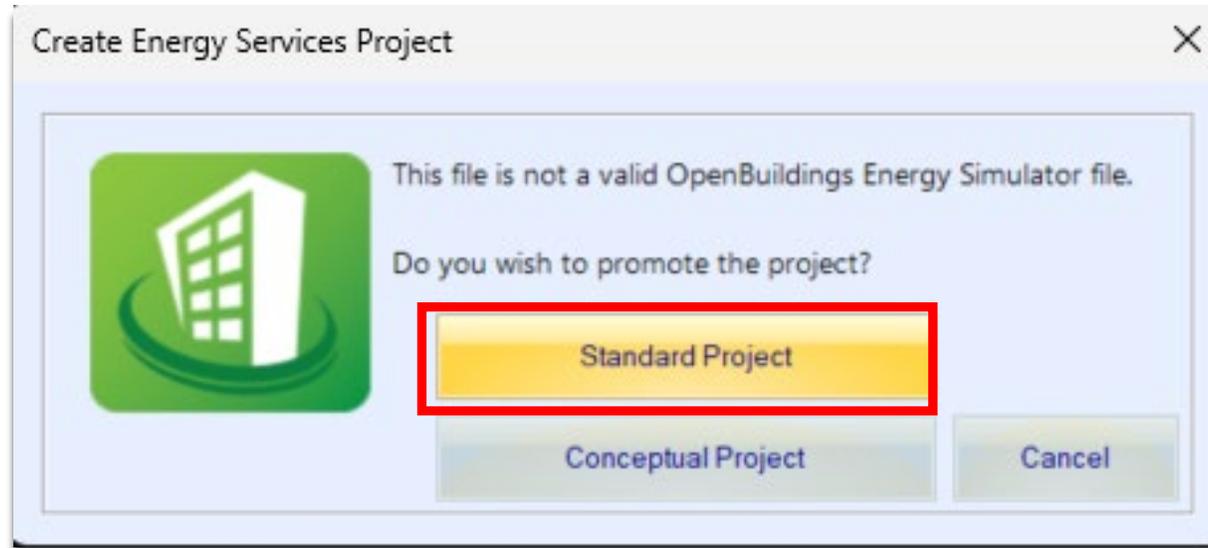
- Conceptual mass created using Push-Pull solid geometry functions
- Globally change glazing % and shading options and rotate model (orientation)
- Globally change thermal properties (constructions and design parameters)
- Enhanced reporting allowing comparison of different modelling strategies
- Compare Energy requirements for different HVAC systems



Conceptual Energy Reports and Comparisons



Standard Project Workflows





Standard Project Workflows

- **Trace 2D Plan DGN/DWG/DXF/PDF**
- **Import GBXML from other BIM Applications**
- **Import Hevacomp projects**
- **Import directly from OpenBuildings Designer**



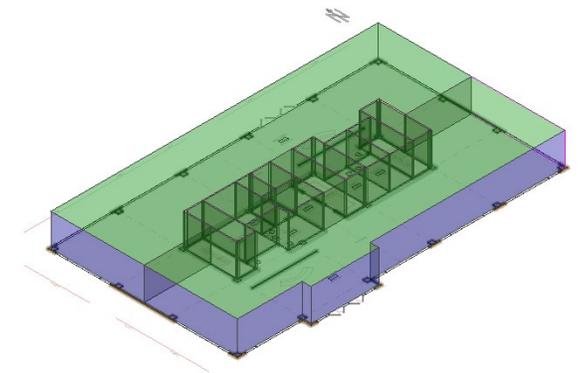
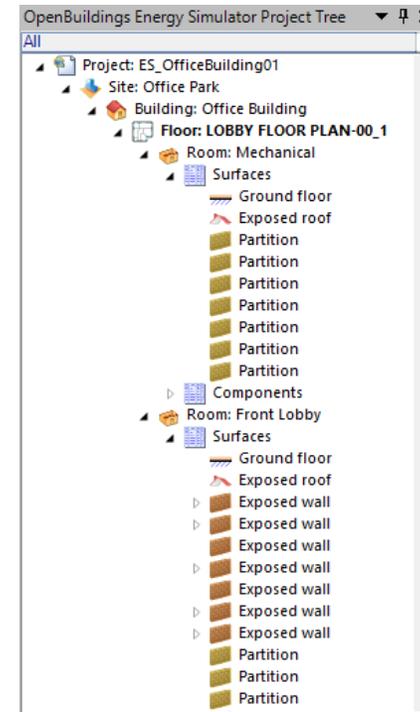
Standard Project Workflows

- **Trace 2D Plan DGN/DWG/DXF/PDF**
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OpenBuildings | Energy Simulator

Adding Rooms

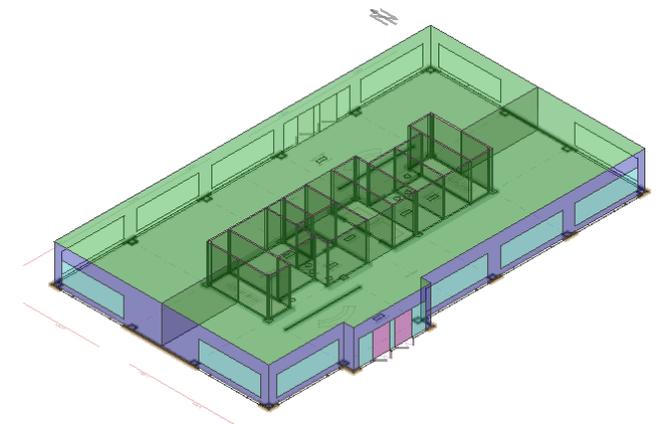
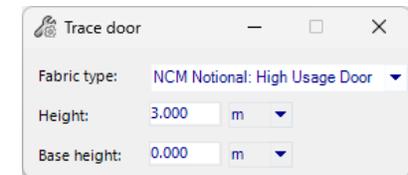
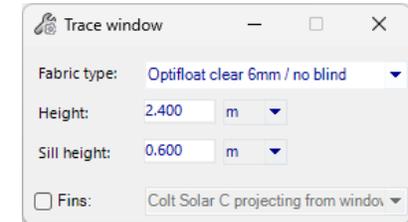
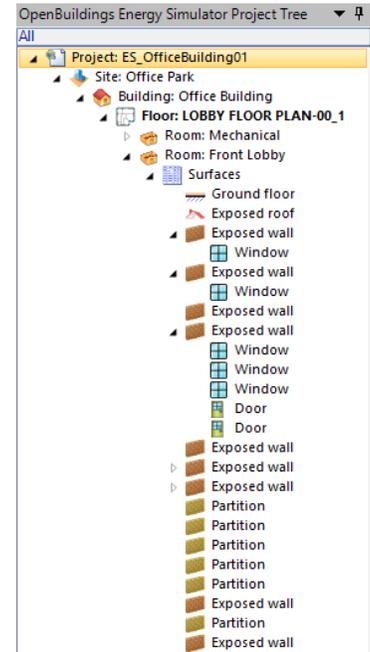
- Trace model in 2D
- Automatically define entire room geometry
- Rooms define surfaces that make up spaces within the building
- Can set default materials and constructions
- Surfaces automatically adjust as the model is built



OpenBuildings | Energy Simulator

Embedded Surfaces

- Definition of Windows
- Definition of Doors
- Easy control over properties via project tree

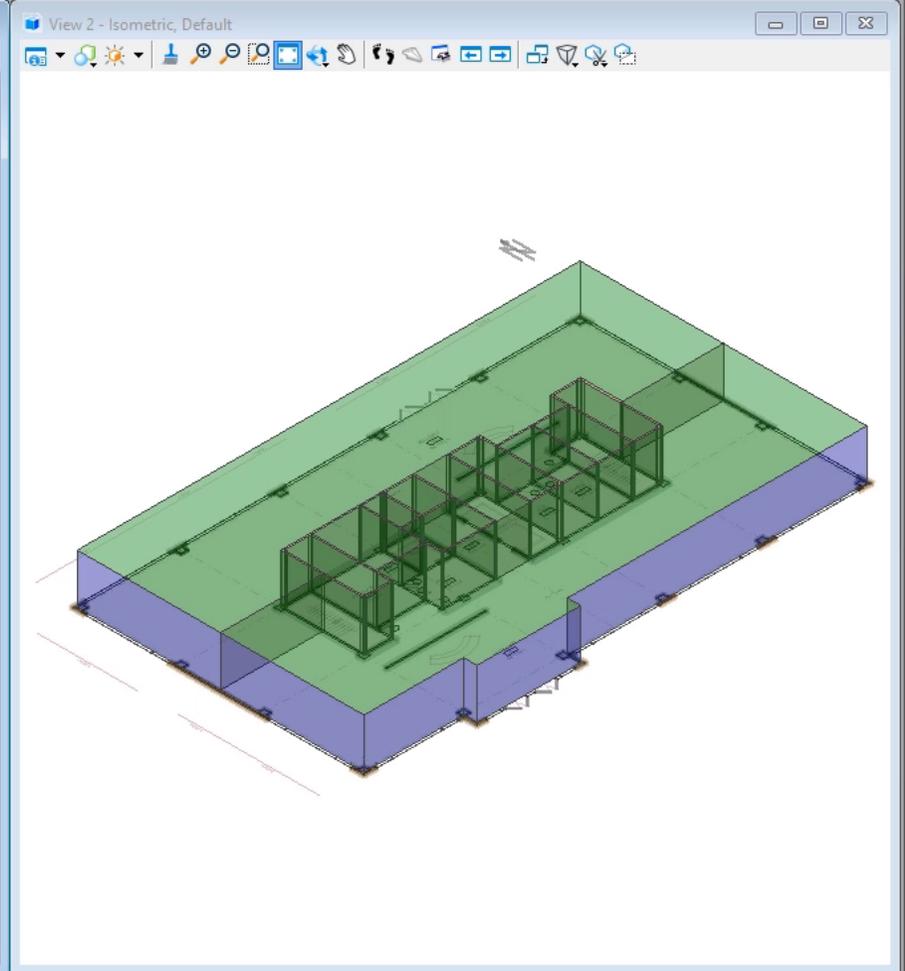
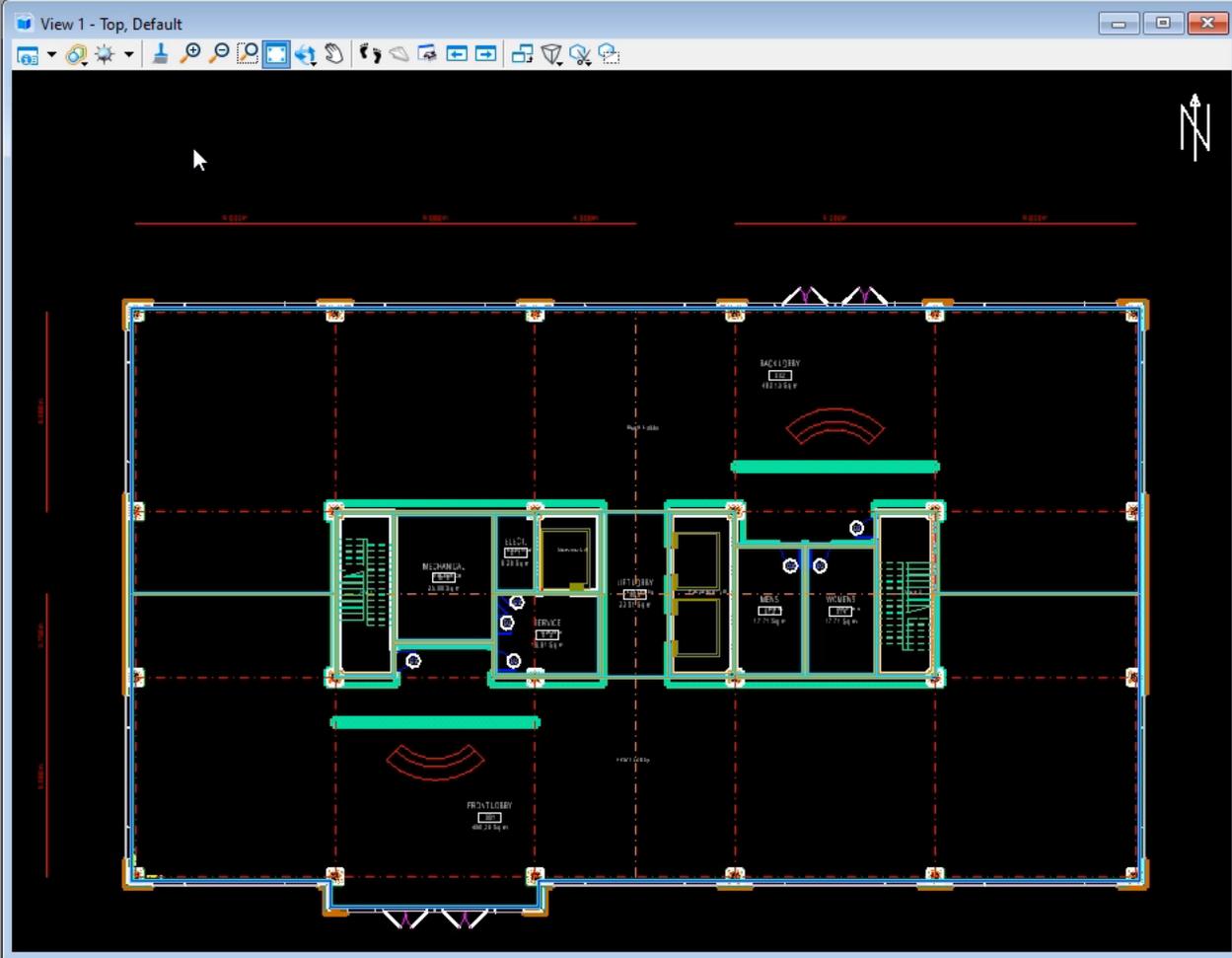


File Home Roofs Shading Data Managers Calculations View

Element Selection References Level Display Key-in Copy New Delete Adjust Trace Define Move Merge Delete Resize Add Wall Delete Wall Add Window Add Door Move Opening Delete Opening Add Fin Changes Distance Validation Global Measure ASM

OpenBuildings Energy Simulator Project Tree

- Project: ES_OfficeBuilding01
 - Site: Office Park
 - Building: Office Building
 - Floor: LOBBY FLOOR PLAN-00_1
 - Room: Mechanical
 - Room: Front Lobby
 - Room: Back Lobby
 - Room: Electrical
 - Room: Service
 - Room: Lift Lobby
 - Room: Mens
 - Room: Womens
 - Room: Stair 1
 - Room: Stair 2
 - Room: Service Lift
 - Room: Passenger Lift
 - Zones



Notifications

0 Errors 0 Warnings 0 Messages

Description	Object	Field	Context
-------------	--------	-------	---------

Save project

Default Views

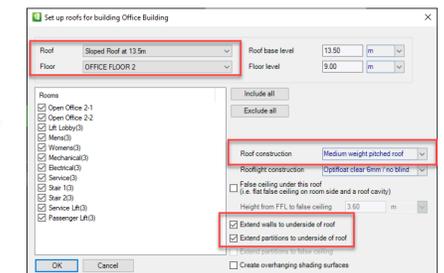
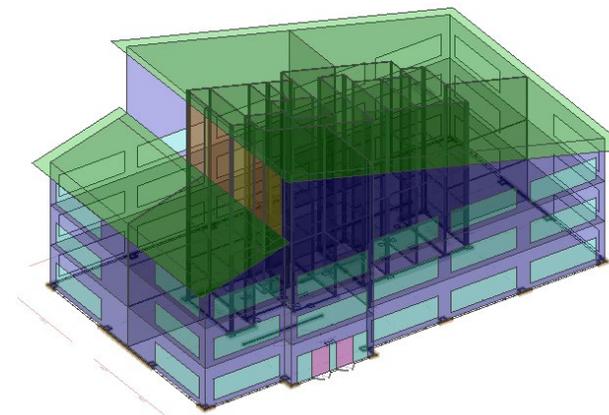
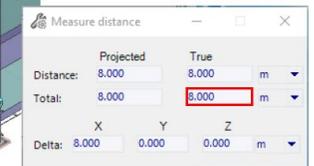
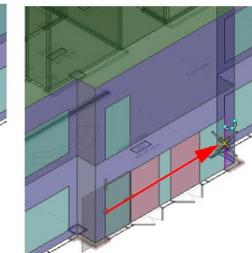
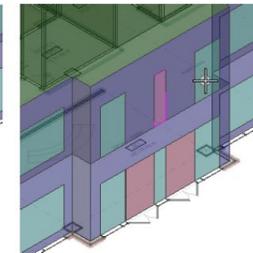
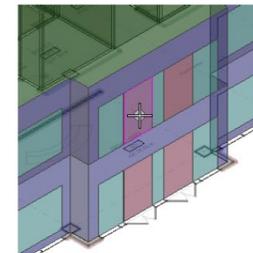
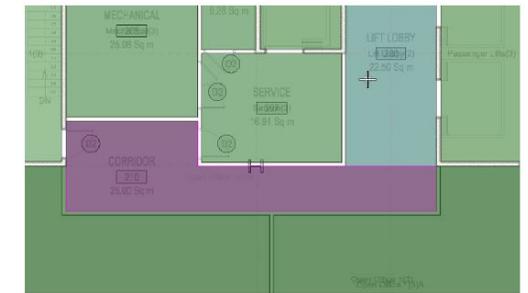
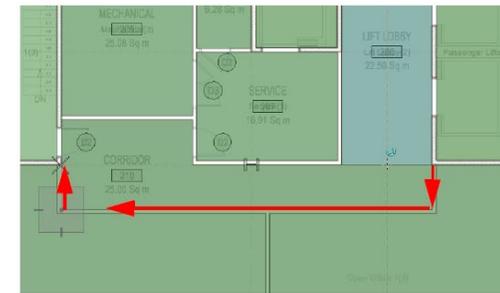
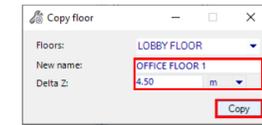
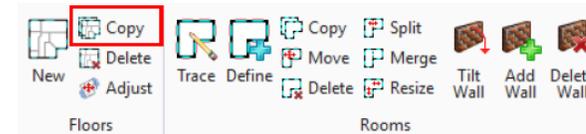
1 2 3 4 5 6 7 8 X 2583:0 Y 32943:0 Z 2250:0

Default (none)

OpenBuildings | Energy Simulator

Copying Floors & Roof Modeling

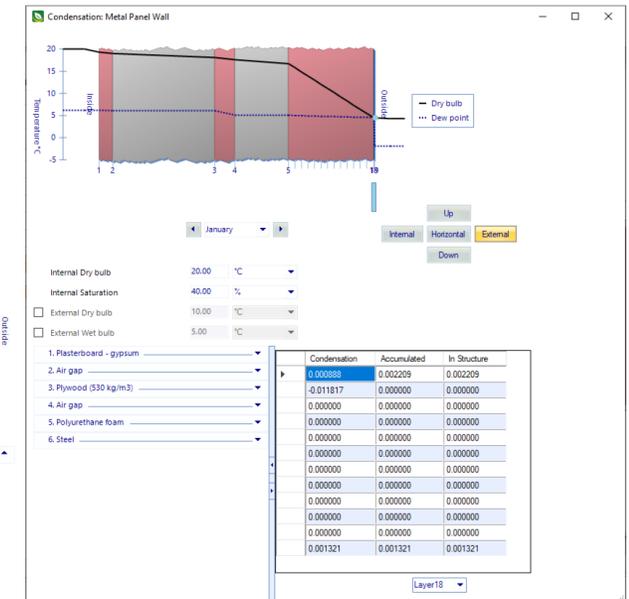
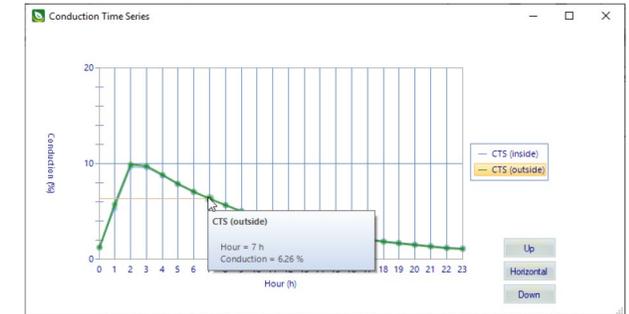
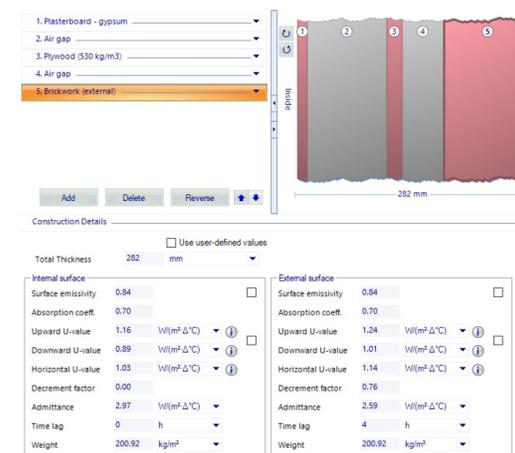
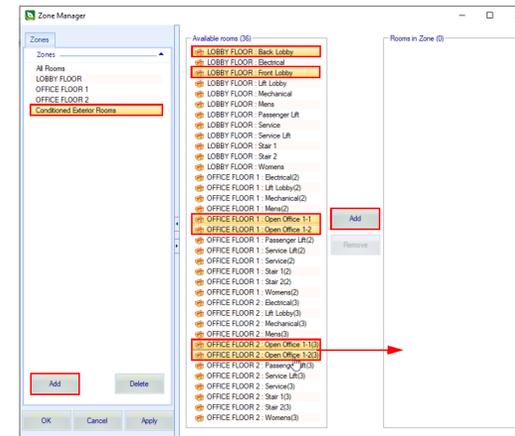
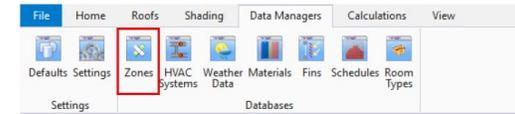
- Speed up workflow by copying similar floors
- Change floor plans and adjust room geometry
- Modification of Room properties
- Modification of embedded surfaces
- Powerful roof modeling tools



OpenBuildings | Energy Simulator

Data Managers

- Zone Manager to organize rooms into groups for multiple purposes such as HVAC systems, lighting, etc.
- Materials Manager for access to database of building materials
- Easily calculate U-values and other thermal properties



OpenBuildings | Energy Simulator

Materials Manager

- Copy/rename from Application to Project

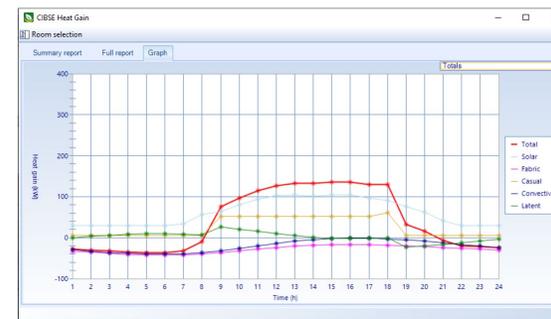
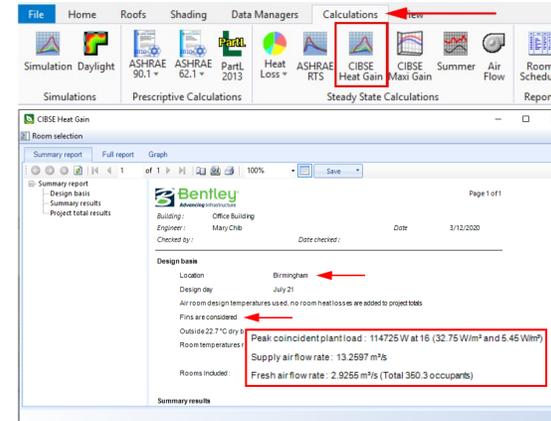
The screenshot displays the Materials Manager window with the 'Application' tab selected and highlighted with a red box. The 'Project' tab is also visible and highlighted with a green box. A list of construction materials is shown, with '1in stone, sheathing...' selected. A context menu is open over this selection, with the 'Copy to project' option highlighted in a red box. The right side of the window shows a cross-section diagram of a wall with four layers (1, 2, 3, 4) and a total thickness of 143 mm. Below the diagram, the 'Internal surface' and 'External surface' properties are listed, including Surface emissivity, Absorption coeff., U-values, Decrement factor, Admittance, Time lag, and Weight. The status bar at the bottom indicates 0 Errors, 0 Warnings, and 0 Messages.

Internal surface		External surface	
Surface emissivity	0.84	Surface emissivity	0.84
Absorption coeff.	0.70	Absorption coeff.	0.70
Upward U-value	0.44 W/(m ² Δ°C)	Upward U-value	0.45 W/(m ² Δ°C)
Downward U-value	0.42 W/(m ² Δ°C)	Downward U-value	0.43 W/(m ² Δ°C)
Horizontal U-value	0.43 W/(m ² Δ°C)	Horizontal U-value	0.45 W/(m ² Δ°C)
Decrement factor	0.00	Decrement factor	0.97
Admittance	1.08 W/(m ² Δ°C)	Admittance	1.06 W/(m ² Δ°C)
Time lag	0 h	Time lag	1.7 h
Weight	84.51 kg/m ²	Weight	84.51 kg/m ²

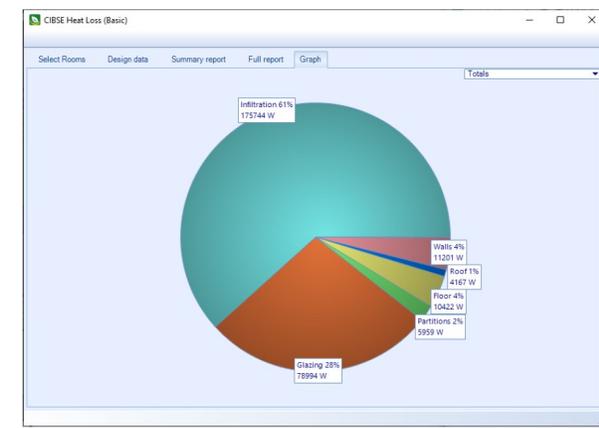
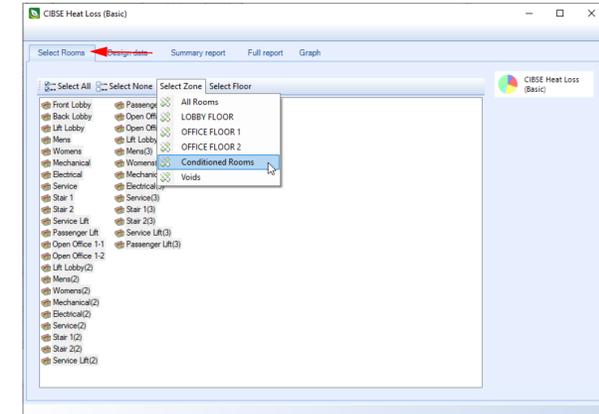
OpenBuildings | Energy Simulator

Steady State Calculations

- Heat Loss Calculations:
 - ASHRAE Heat Loss
 - CIBSE Heat Loss (Simple & Basic)
- ASHRAE RTS (Radiant Time Series)
- Heat Gain Calculations:
 - CIBSE Heat Gain
 - CIBSE Maxi Heat Gain
- Peak Summertime Temperatures



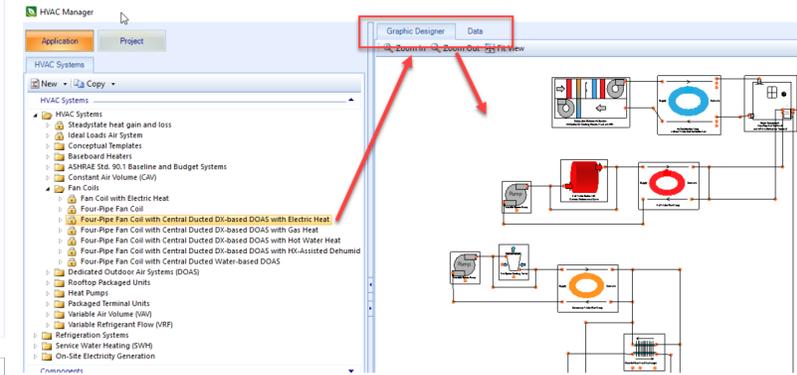
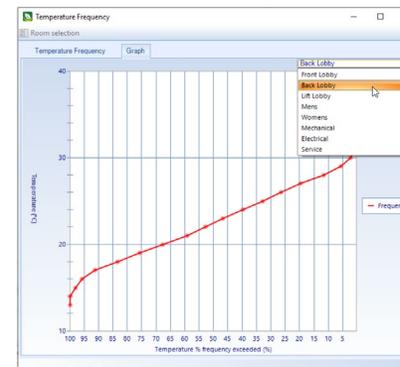
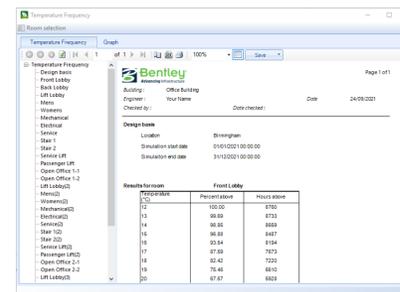
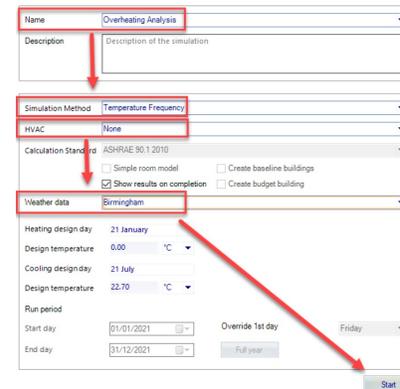
Room ref	Peak room loads (W)			Time of peak	Maximum temp	Air flow (m³/s)
	Sensible	Latent	Total			
Back Lobby	29143	-686	28458	18	23	2.685
Electrical	157	-9	148	16	23	0.0144
Electrical(2)	157	-9	148	16	23	0.0145
Electrical(3)	220	-26	196	16	23	0.0203
Example room	1638	48	1686	18	23	0.151
Front Lobby	33197	-717	32480	16	23	3.0585
Lift Lobby	485	-32	453	16	23	0.0447
Lift Lobby(2)	488	-32	456	16	23	0.0449
Lift Lobby(3)	689	-77	612	15	23	0.0635
Mechanical	622	-36	586	16	23	0.0573
Mechanical(2)	626	-36	590	16	23	0.0575
Mechanical(3)	851	-42	809	16	23	0.0763
Mens	363	-25	338	16	23	0.0325
Mens(2)	365	-25	340	16	23	0.0326
Mens(3)	484	-32	452	16	23	0.0446
Open Office 1-1	50686	-711	49975	16	23	4.6355
Open Office 1-2	45117	-688	44429	16	23	4.0585
Open Office 2-1	54970	-140	54830	16	23	5.0000
Open Office 2-2	47183	-131	47052	16	23	4.3000
Passenger Lift	419	-28	391	16	23	0.0360
Passenger Lift(2)	422	-28	394	16	23	0.0362
Passenger Lift(3)	560	-36	524	16	23	0.0480
Service	420	-24	396	16	23	0.0360



OpenBuildings | Energy Simulator

Dynamic Simulations and HVAC

- Simulation: EnergyPlus Interface
- Temperature Frequency Simulation
- Plant Energy & CO₂ Simulation



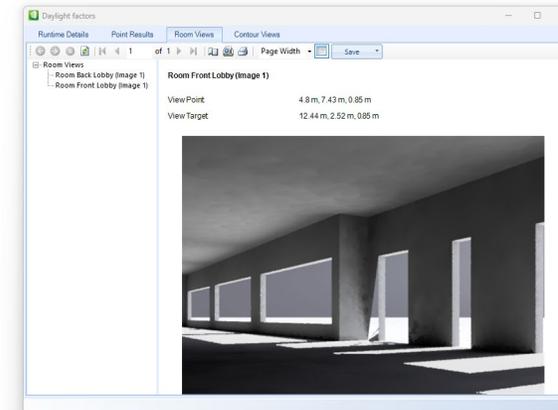
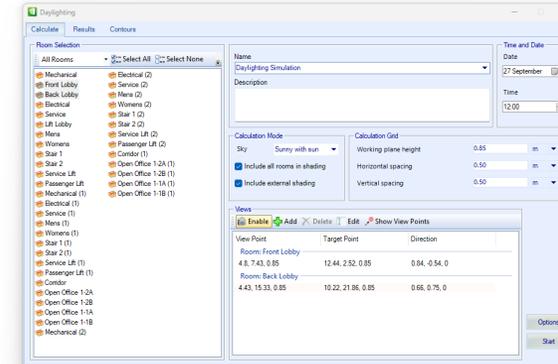
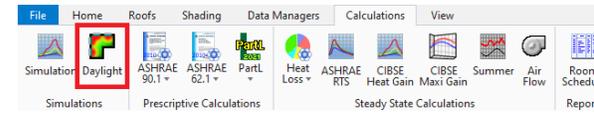
Month	Energy (kWh)	CO2 (kg)	Peak (kW)	CO2 (kg/h)	Peak (kW)	CO2 (kg/h)
January	6207.18	2071.38	255.00	1584.92	10.18	10.18
February	6206.78	2070.88	254.83	1584.74	10.18	10.18
March	6182.28	2074.48	257.03	1594.88	10.18	10.18
April	7101.08	2394.88	282.12	1811.88	10.18	10.18
May	6460.08	2204.98	257.18	1624.88	10.18	10.18
June	4761.98	1606.88	189.78	1194.88	10.18	10.18
July	3001.98	1009.98	127.87	804.88	10.18	10.18
August	4761.98	1606.88	189.78	1194.88	10.18	10.18
September	6182.28	2074.48	257.03	1594.88	10.18	10.18
October	6206.78	2070.88	254.83	1584.74	10.18	10.18
November	7101.08	2394.88	282.12	1811.88	10.18	10.18
December	6207.18	2071.38	255.00	1584.92	10.18	10.18



OpenBuildings | Energy Simulator

Daylight Simulation

- Daylight Simulation using Radiance Engine
- Compute radiance values and generate reports
- Generate room views with lighting contours



Export from OpenBuildings to Energy Simulator

The screenshot displays the OpenBuildings software interface, showing a 3D model of a school building and a list of rooms for export to an energy simulator. The interface includes a menu bar, a toolbar, a left-hand pane with a tree view, a central 3D view, a right-hand pane with a room list, and a bottom status bar.

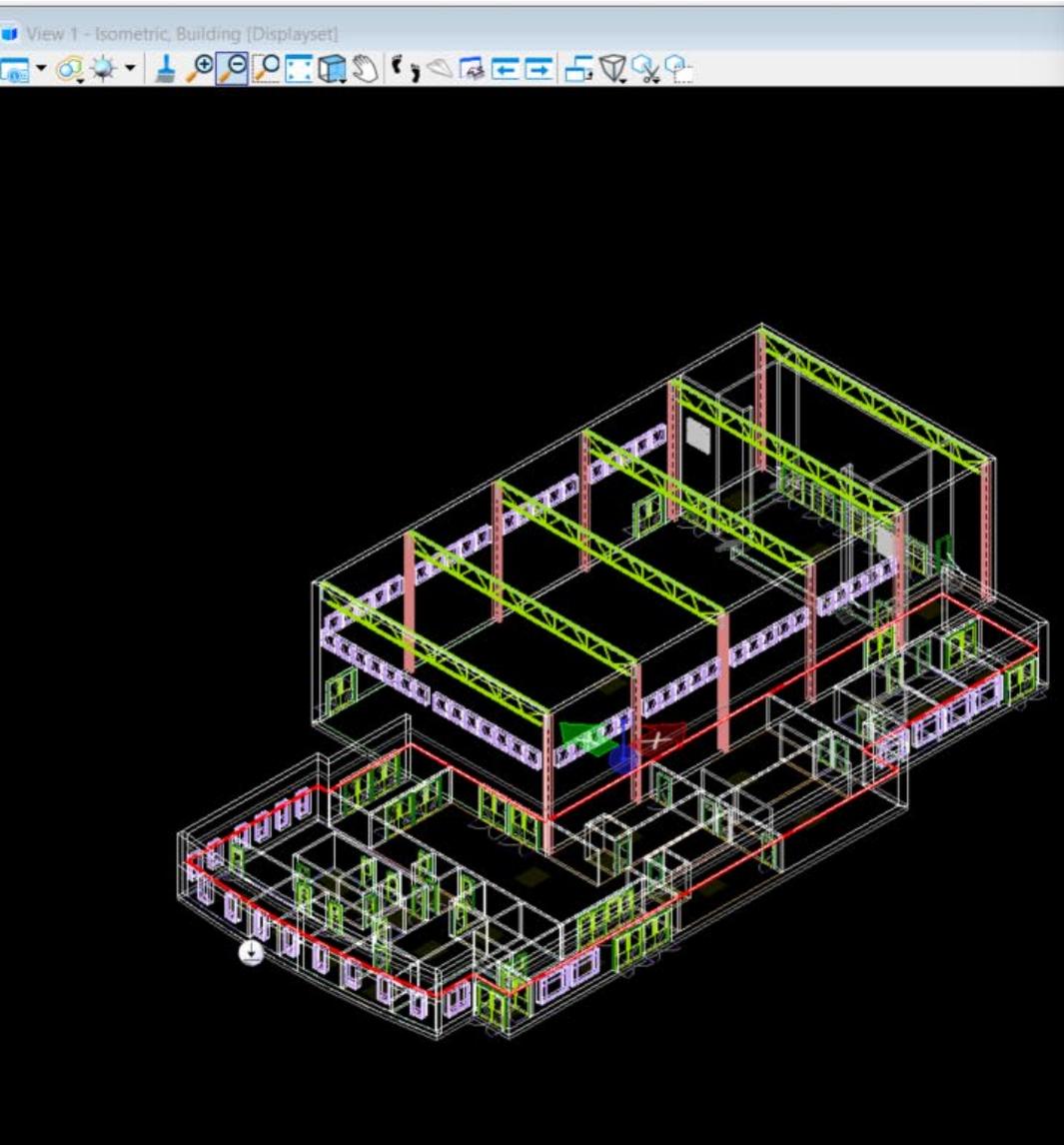
Room List (Floor: Floor 1):

- Room: WORK ROOM 102
- Room: CONFERENCE ROOM 107
- Room: CONFERENCE ROOM 112
- Room: OFFICE EXAM 108
- Room: VESTIBULE 117
- Room: EXAM ROOM EXAM 104
- Room: VESTIBULE 126
- Room: PRINCIPAL 101
- Room: CONFERENCE ROOM 106
- Room: STORAGE 133
- Room: STORAGE 131
- Room: CONFERENCE ROOM 103
- Room: STORAGE 132
- Room: VESTIBULE 115
- Room: HEALTHCARE SUITE EXAM
- Room: VESTIBULE 118
- Room: OFFICE 128
- Room: RESTROOM 110
- Room: STORAGE 111
- Room: GYM 134
- Room: OFFICE 127
- Room: OFFICE 129
- Room: OFFICE 130
- Room: CORRIDOR 125
- Room: JANITOR'S CLOSET JAN 115
- Room: JANITOR'S CLOSET JAN 120
- Room: RESTROOM 109
- Room: GALLERY 116
- Room: RESTROOM 121
- Room: RESTROOM 122
- Room: OPEN OFFICE 113
- Room: STAGE 135
- Room: LOCKER ROOM 123
- Room: LOCKER ROOM 124

Notifications:

Description	Object
HVAC room component has not been assigned to any rooms.	Room Component - Water-Source Heat Pump with Electric Supplemental
HVAC room component has not been assigned to any rooms.	Room Component - PTAC with Air-Cooled DX Cooling and Hot Water Hea
HVAC room component has not been assigned to any rooms.	Room Component - PTHP with Air-to-Air DX Coil Electric Supplemental He
Value should be specified	DOAS Exhaust Air Fan

Bldg Volume Defined by Walls, Space, Ceilings, Plenums, Voids



Schedules

New Schedule | Modify | Refresh | Filter | Working Units | Zoom & Select | Place Table | Export | Excel Exchange

Show Used

Catalog Types

- Architectural
 - Compound Slab Assembly
 - Compound Slab Leaf
 - Louver
 - Railing
 - Slab
 - Space
 - Finish Schedule
 - Space Program(Export in Numeric Master Units)
 - Space Review
 - Stair
 - Openings
 - Door
 - Window
 - Walls
 - Wall
- Structural
 - Columns
 - Column | Steel

Label	Label 2	Space Num...	Ceiling Hei...	Area Actual
CONFERENCE ROOM		107	9' 0"	155 sq. ft.
CONFERENCE ROOM		112	9' 0"	130 sq. ft.
CONFERENCE ROOM		106	9' 0"	258 sq. ft.
CONFERENCE ROOM		103	9' 0"	247 sq. ft.
CORRIDOR		125	9' 0"	679 sq. ft.
EXAM ROOM	EXAM	104	9' 0"	112 sq. ft.
GALLERY		116	9' 0"	1620 sq. ft.
GYM		134	36' 0"	7030 sq. ft.
HEALTHCARE SUITE	EXAM	105	9' 0"	400 sq. ft.
JANITOR'S CLOSET	JAN	119	9' 0"	32 sq. ft.
JANITOR'S CLOSET	JAN	120	9' 0"	30 sq. ft.
LOCKER ROOM		123	9' 0"	641 sq. ft.
LOCKER ROOM		124	9' 0"	640 sq. ft.
OFFICE	EXAM	108	9' 0"	96 sq. ft.
OFFICE		128	9' 0"	96 sq. ft.
OFFICE		127	9' 0"	96 sq. ft.
OFFICE		129	9' 0"	160 sq. ft.
OFFICE		130	9' 0"	160 sq. ft.
OPEN OFFICE		113	9' 0"	716 sq. ft.
PRINCIPAL		131	9' 0"	257 sq. ft.
Plenum - ADMINISTRATION			3' 0"	9073 sq. ft.
Plenum - BELOW STAGE			2' 6"	1178 sq. ft.
RESTROOM		110	9' 0"	40 sq. ft.
RESTROOM		109	9' 0"	40 sq. ft.
RESTROOM		121	9' 0"	396 sq. ft.
RESTROOM		122	9' 0"	398 sq. ft.
STAGE		135	33' 0"	904 sq. ft.
STORAGE		133	36' 0"	247 sq. ft.
STORAGE		131	36' 0"	247 sq. ft.
STORAGE		132	33' 0"	264 sq. ft.
STORAGE		111	9' 0"	76 sq. ft.
VESTIBULE		117	9' 0"	64 sq. ft.
VESTIBULE		126	9' 0"	192 sq. ft.
VESTIBULE		115	9' 0"	279 sq. ft.
VESTIBULE		118	9' 0"	426 sq. ft.
WORK ROOM		102	9' 0"	121 sq. ft.

Energy Simulator Benefits

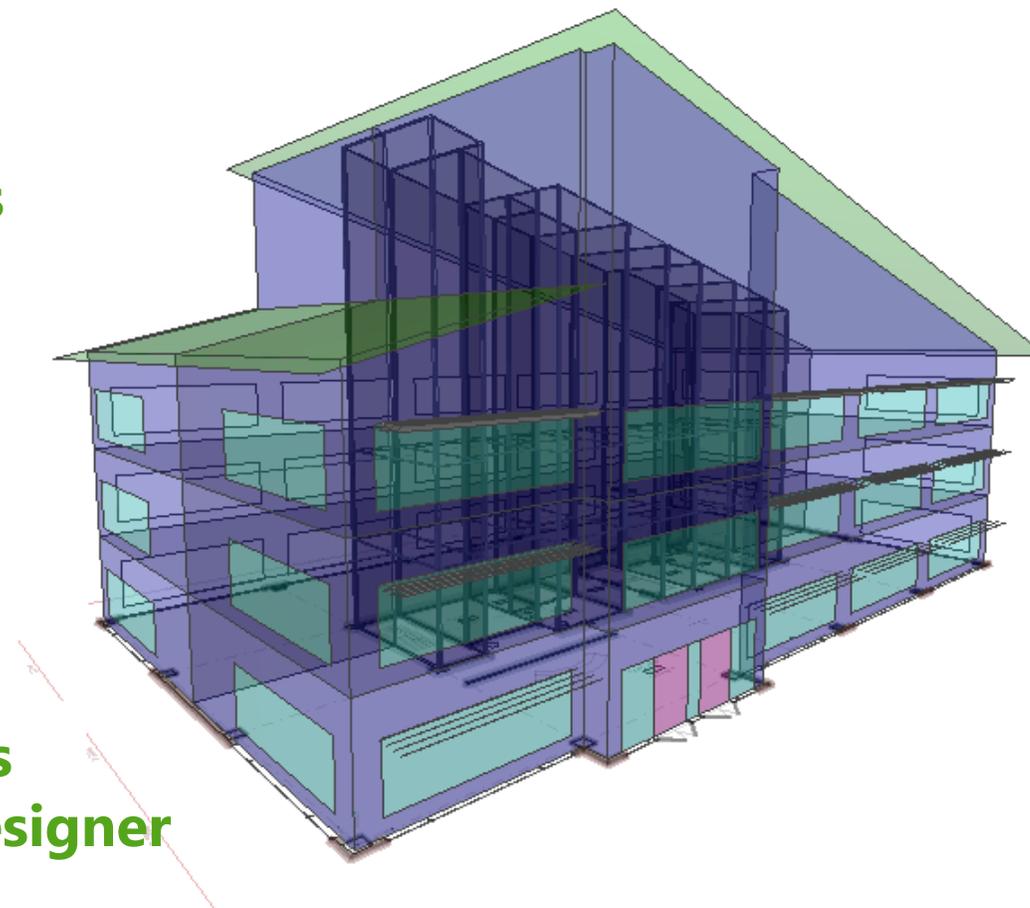
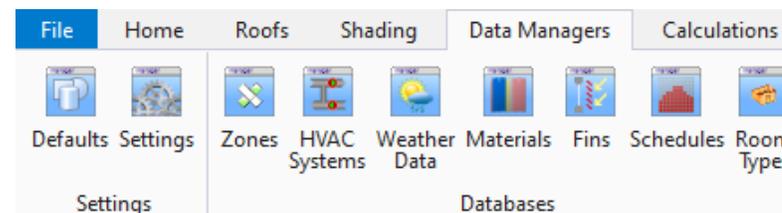
Easy to use

- ✓ **Intuitive Workflows**
- ✓ **Familiar for Hevacomp users**
- ✓ **Easy learning curve**
- ✓ **Simplicity - quickly build model & run calc's**

Flexibility & Interoperability

Several Methods of modelling

- ✓ **Trace model in simple 2D**
- ✓ **Use dwg/dgn/dxf/PDF...**
- ✓ **Conceptual Modelling Workflows**
- ✓ **Import Hevacomp projects**
- ✓ **Import GBXML from other BIM Applications**
- ✓ **Import BIM directly from OpenBuildings Designer**



Analytical Space Model Explorer

- [Analytical Space Model Explorer \(bentley.com\)](https://www.bentley.com)