

SB 2030 As-Designed Training

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Agenda

01 About SB 2030

02 Navigating SB 2030

03 Creating SB 2030 Models

- Building
- HVAC
- Design
- Results



BUILDINGS, BENCHMARKS & BEYOND

Tools and Programs for Sustainable Buildings in Minnesota

Administered by:





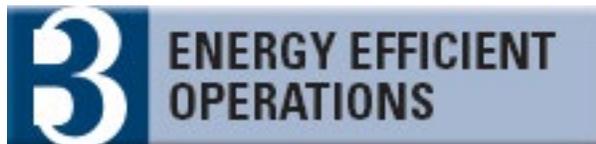
For new buildings or renovations to meet sustainability goals for site, water, energy, indoor environment, materials and waste



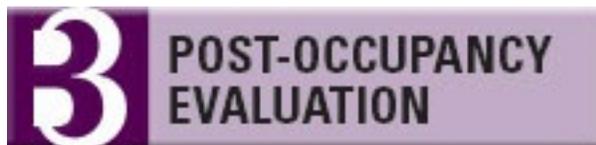
Meet energy use and carbon emissions goals



Track and compare energy use on existing buildings



Minimize energy use during building operations
This program can be applied to any existing building

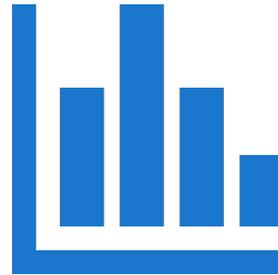


Determine occupants' perceptions of the building indoor environmental quality
The POE survey is required for B3 buildings

Three Types of Code Compliance



Prescriptive



Performance



Outcome

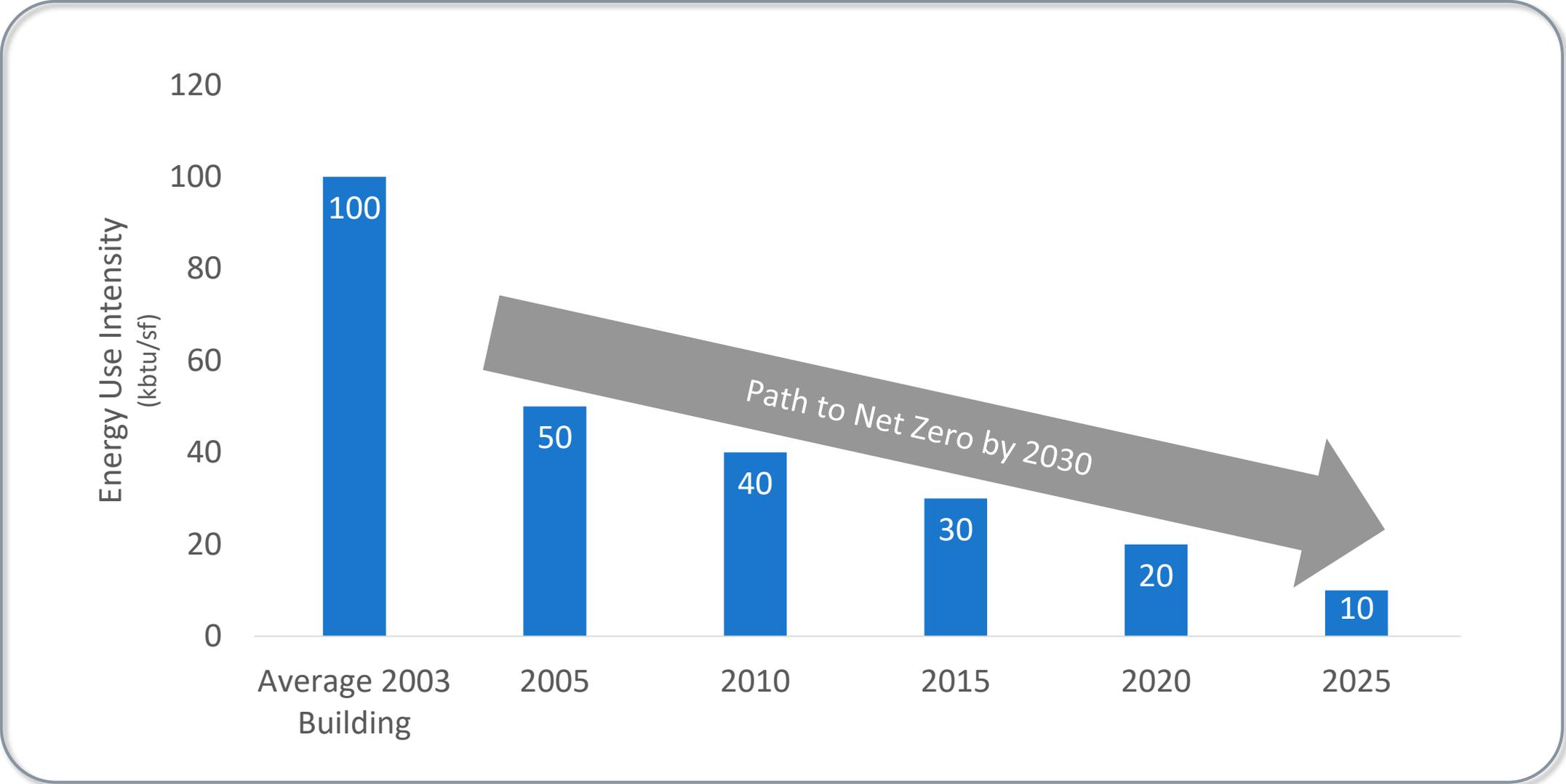
Minnesota's SB 2030

About SB 2030

- Outcome-based energy goal for State-bonded buildings
- Sets energy use and carbon emissions as a % reduction from typical building of that type
- Requires 10 years of metered performance
- 15-year payback maximum



Energy Use Goal Tapering to Zero in 2030



Moving to 80% Better in 2020

For projects stating schematic design or later on or after January 1, 2020

- Proposed Approach
 - Evaluation of compliance based both on carbon and on site energy consumption
 - Modify the requirements around on-site renewable energy evaluation
 - Allow a campus-based approach to renewable energy development
 - Eliminate the relaxed standard for renovation projects
 - Exclude EV charging and process loads
 - Characterize biomass derived using carbon-neutral methods

- Future Considerations
 - Time-of-day CO₂ emissions factors



CASE STUDIES DATABASE

Home
Projects
Contact

Use the filters below to narrow down to a specific organization, building type, or set of strategies.

Organization:

Building Type:

Strategies

Choose Specific Strategies

Customize Table

Table Views:

Submit

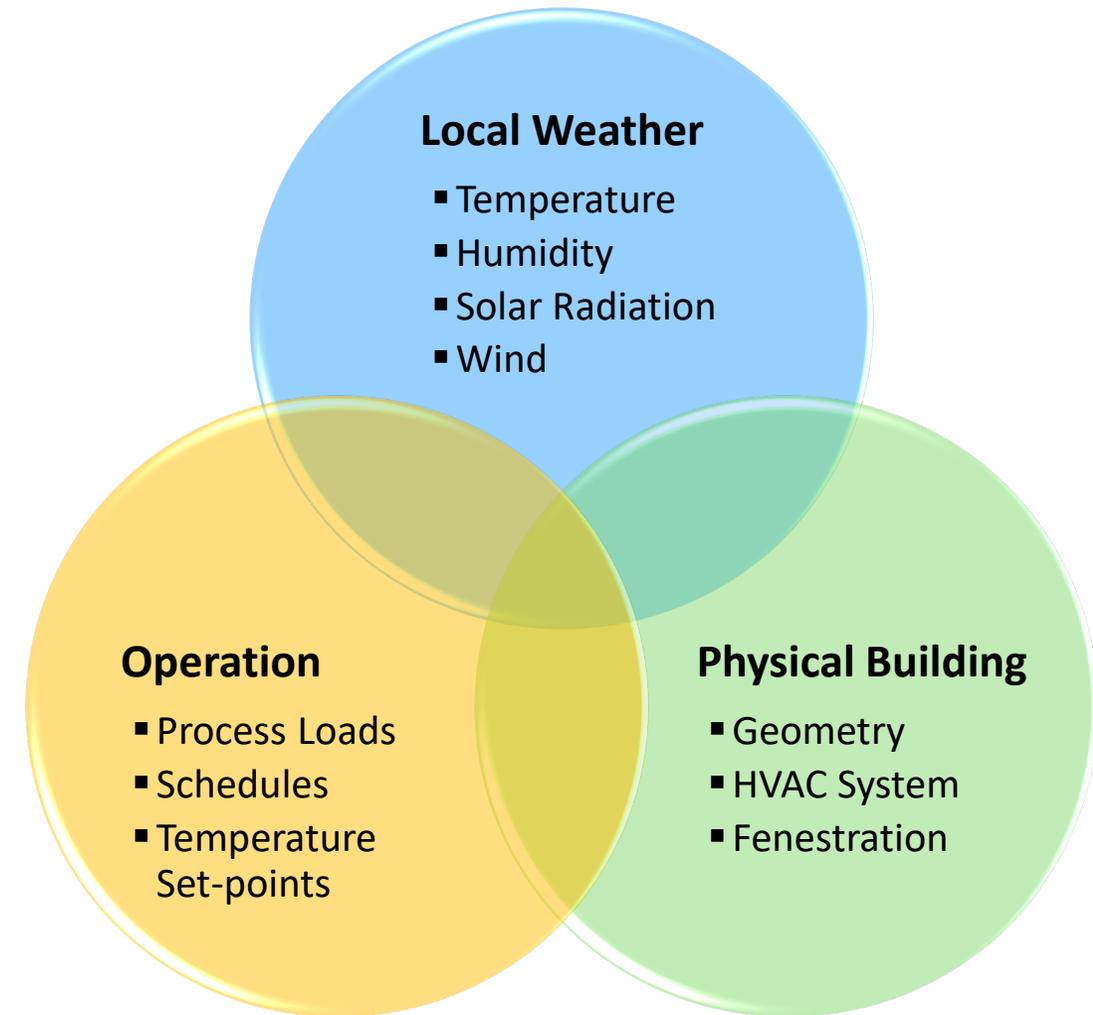
Export To Excel

Tile View
 Card View
 Table View

Name	Organization	Building Type(s)	Building Area (sf)	SB 2030 Compliance	Design Energy - SB 2030 Standard (kBtu/sf-yr)	Design Energy - Design (kBtu/sf-yr)	Design Energy - Ratio (Design/Standard)	Design Energy - Graphic (Design/Standard)
2700 University	City of Saint Paul	Housing, Retail, Parking	345,594	<input checked="" type="checkbox"/>	65	32	0.49	
Camp Ripley COE Training Facility	Military Affairs	Military Training	22,100	<input checked="" type="checkbox"/>	74	71	0.95	
Camp Ripley Education Center	Military Affairs	Classroom	67,436	<input checked="" type="checkbox"/>	68	54	0.79	
CHS Field	Minnesota Department of Employment and Economic Development	Athletic Facility	80,349	<input checked="" type="checkbox"/>	85	85	1.00	
City of Mankato Transit Facility	Minnesota Department of Transportation	Transit Facility	43,651	<input checked="" type="checkbox"/>	112	69	0.61	
DNR Area Office, Glenwood	Minnesota Department of Natural Resources	Office	8,828	<input checked="" type="checkbox"/>	74	36	0.48	
Duluth Entertainment and Convention Center	Minnesota Department of Employment and Economic Development	Ice Arena	188,700	<input checked="" type="checkbox"/>	90	80	0.89	

SB 2030 Tool

- SB 2030 Tool uses DOE-2, a simulation engine developed by the Department of Energy
- DOE-2 performs an hour-by-hour analysis of the building accounting for
 - Physical building
 - Operation
 - Local weather



- Each hour of the year, DOE-2 accounts for the following things:
 - Outdoor weather conditions
 - Sun position
 - Number of people in the building
 - Amount of lighting turned on
 - Infiltration
 - Ventilation requirements
 - Wall/roof insulation levels
 - Window properties
 - HVAC efficiencies and controls
 - And more!



■ Default Building Characteristics

- Industry data to set defaults for building and space characteristics
- Standards such as ASHRAE 90.1, COMNET, ASHRAE Fundamentals, AIA Healthcare Guide, ASHRAE 62.1, and more...
- Where industry standards lack data, SB 2030 pulls data from nearly 2,500 real buildings

■ Web Based Simulation Tool

- HTML5 and AngularJS technologies
 - Compatible with most browsers and devices. IE11, Edge, Chrome, FireFox, Safari
 - No need for iOS or Android apps!
- Responsive web design automatically responds to window size and screen size
- Touch-friendly design can be used on laptops or tablets down to 7.8" x 5.3" in size

Navigating SB 2030

Navigating to SB 2030 Tool

- Access full version of tool from B3 Guidelines Tracking Tool
- Goal Setting version available at <https://www.b3mn.org/2030energystandard/>

The screenshot displays the 'Project Manager' interface of the 'B3 GUIDELINES TRACKING TOOL'. The page title is 'Project Manager' and it shows 448 project(s). The interface includes a navigation menu (Home, Projects, Reports, About, Administrator) and a user profile for Chris Baker. A filter sidebar on the left allows filtering by Current Phase, Project Group, Project SubGroup, Status, and State Funded. The main content area displays a table of projects with the following data:

Name	Code	Group	Type	Status	State Funded	Current Phase	Created
DEED Perham Area Family & Wellness Center 620 3rd Avenue SE, Perham Perham, MN 56573	G126	Department of Employment and Economic Development (DEED)	New Construction/ Renovation	Active	Yes	Predesign In Process (0%)	3/14/20
Rolf 3.0 Test Project 123 Fake Street Minneapolis, MN 55455		Testing	New Construction	Active	Unspecified	Predesign In Process (0%)	3/6/20
DEED KSMQ Public Television Station 107 West Oakland Avenue Austin, MN 55912			New Construction	Active	Unspecified	Predesign In Process (53%)	2/6/20
Hennepin County Triage 1800 Chicago Avenue Minneapolis, MN 55404	PS06	Hennepin County	Renovation	Active	Yes	Predesign In Process (50%)	12/21/

Navigating to SB 2030 Tool

- Tool is under E1A
- Separate instances of tool for each phase

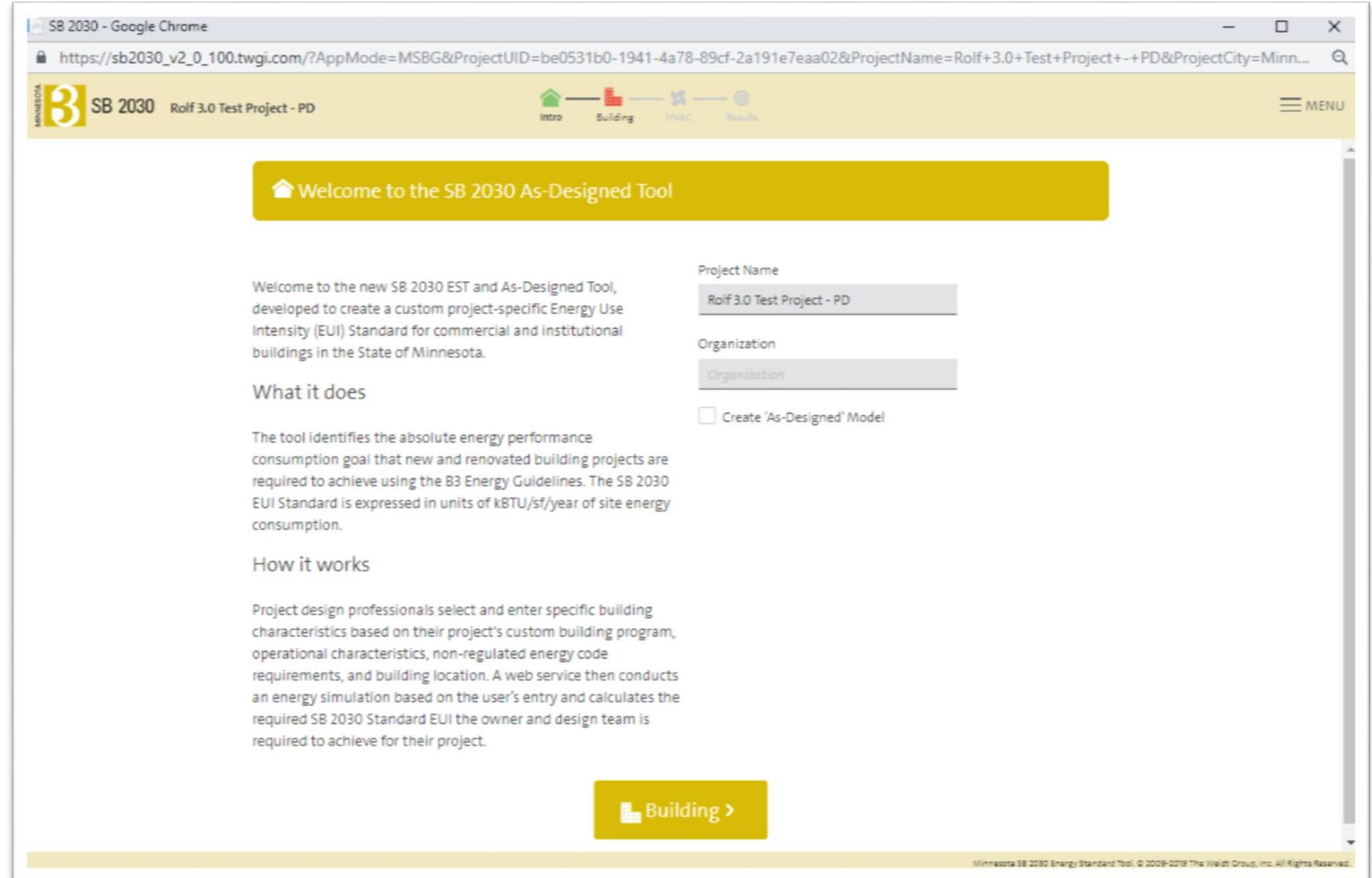
The screenshot shows a web browser window with three tabs: 'SB 2030', 'Rolf 3.0 Test Project', and '2030energystandard - 83'. The address bar shows the URL: <https://trackingtool.l3mn.org/ProjectDashboard?ProjectID=1717>. The page header features the Minnesota '3' logo and the text 'GUIDELINES TRACKING TOOL'. A user profile for 'Chris Baker' is visible in the top right corner with links for 'My Account' and 'Sign Out'. A navigation menu includes 'Home', 'Projects', 'Reports', 'About', and 'Administrator'. The main content area is titled 'Rolf 3.0 Test Project' and shows the address '123 Fake Street, Minneapolis, MN 55455'. It indicates the 'Current Phase: Predesign Phase' and 'Phase State: In Process'. A table of guidelines is displayed with columns for 'Guideline', 'Responsible Role', 'Person', 'Action', and progress indicators for 'PD*', 'D', 'FD', and 'CO'. The 'PD*' column shows '0%' for the current phase. A legend on the left side defines symbols for Action Items, Completed, Variance, Not applicable, Current Phase, Required, and Actual Phase.

Guideline	Responsible Role	Person	Action	PD*	D	FD	CO
Phase Summary Reports:				0%			
PERFORMANCE MANAGEMENT				PD*	D	FD	CO
SITE AND WATER				PD*	D	FD	CO
ENERGY AND ATMOSPHERE				PD*	D	FD	CO
E.0. Energy and Atmosphere Strategies							
E.1. Energy Use							
E1A. Meet SB 2030 Energy Standards	Energy Leader	(Unassigned)	Required				
E1B. Document predicted energy use by type	Energy Leader	(Unassigned)	Required				
E.2. Renewable Energy							
E.3. Efficient Equipment and Appliances							
E.4. Atmospheric Protection							

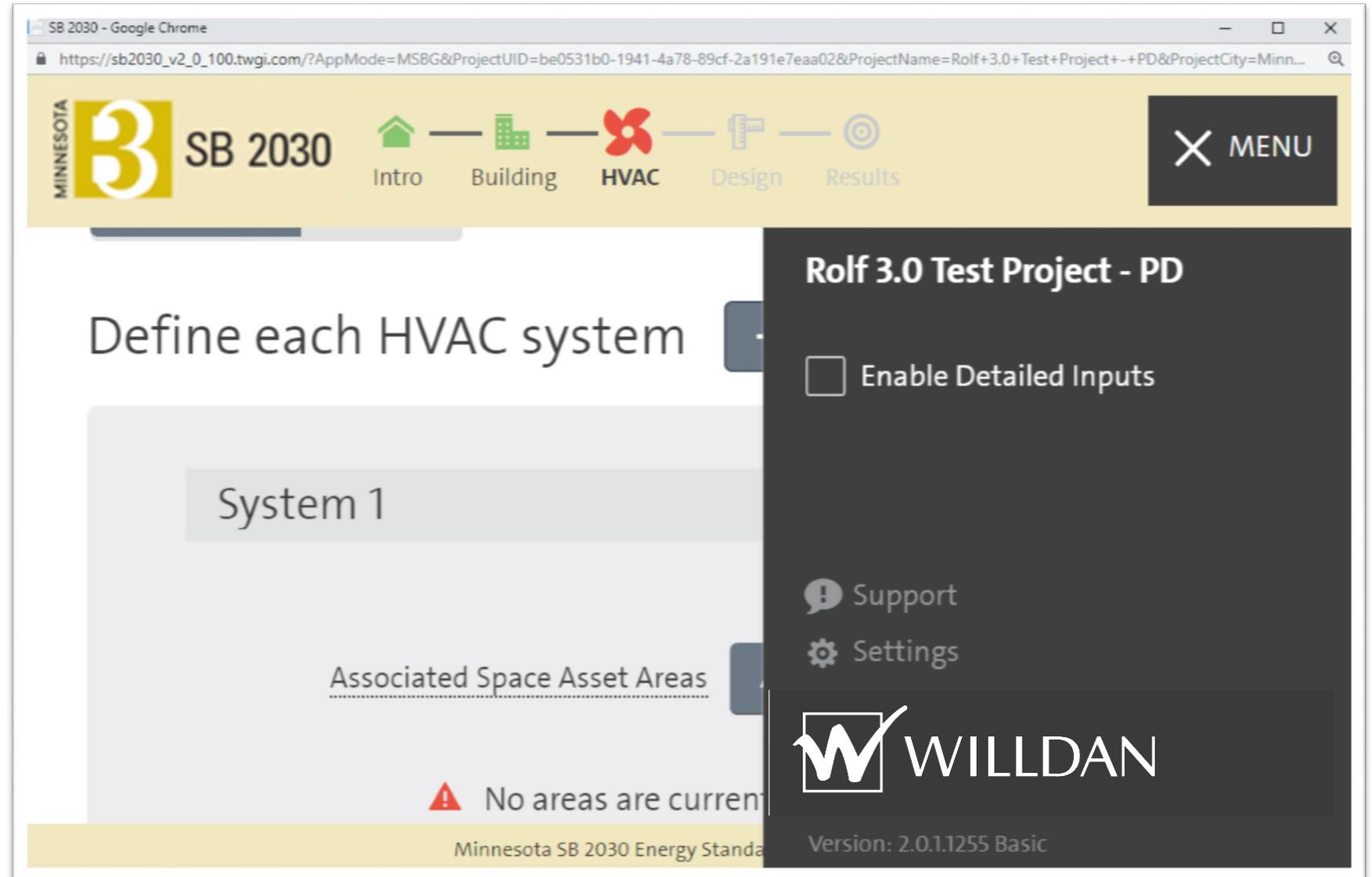
Creating SB 2030 Models

USER INTERFACE OVERVIEW

- Two modes
 - Standard Tool
 - As-Designed Mode



- Top menu shows steps
 - Building
 - HVAC
 - Design
 - Results
- Color indicates status
 - Red – error Light gray – not complete
 - Green – complete
 - Bold – indicates location
- Enable Detailed Inputs for
 - Schedules
 - Geometry
 - Constructions
 - Plug/process loads



User Interface Overview

Error Messaging

Next, define the building's mechanical system

Define central equipment

Service Water Heating Fuel Type: None

Heating Plant: None

Cooling Plant: None

Water to Air Heat Pump Plant: None

Dedicated Outside Air System: Not Installed Installed

Define each HVAC system

+ Add System

System 1

Conditioning: Heating and Cooling

System Type:

⚠ No areas are currently assigned

Edit

- Watch out for red error messaging...
- Hovering over the warning will expand it
- Red outlines or underlines will guide you to the issue

User Interface Overview

Help and Definitions

SB 2030 Rolf 3.0 Test Project - PD

Intro Building HVAC Design Results MENU

First, define the building's parameters

Building Definition **Lock** **Unlock**

Building Type: Office

Gross Building SF: 200,000 ft²

Location: Minneapolis

Space Asset Areas **Add Area** **Scale All To Fit** **Summary**

Legacy baseline for residential SAAs

Office

Type: **Office** Area: **200,000 ft²** (100%)

Floors: **4** Arrangement: **Adjacent**

Construction Type: **New**

Edit

Exterior Lighting

Parking Area Illuminated

Number of Main Entrances

Number of Secondary Entrances

Minnesota SB 2030 Energy Standard Tool. © 2009-2019 The Weidt Group, Inc. All Rights Reserved.

- Help is indicated by lines under headings and are located throughout the tool – use them!

BUILDING A SB 2030 ENERGY MODEL

Starting a SB 2030 Model

Building Type



- Users start by reviewing the building
- This creates defaults as starting points for the model
- User is able to modify as many defaults as known to further refine the model
- The building types comes from the B3 Guidelines Tool, but you can change it here



First, define the building's parameters

Building Definition

Done

Cancel

Building Type

Office

Gross Building SF

180,000

ft²

Location

Minneapolis

Available Building Types

- Automotive Facility
- Bank
- Broadcast Facility
- Computer Center
- Convention Center
- Core and Shell
- Corrections Facility
- Courthouse
- Data Center
- Dining – Bar
Lounge/Leisure
- Dining – Cafeteria/
Fast Food
- Dining - Family
- Dormitory
- Education – College/
University
- Education – Elementary
- Education – High School
- Education – Middle School
- Fire Station
- Gymnasium
- Healthcare Clinic
- Hospital
- Hotel
- Laundry
- Library
- Mall
- Manufacturing Facility
- Multifamily
- Museum
- Nursing home
- Office
- Other
- Parking – Enclosed Garage
- Police Facility
- Post Office
- Religious Facility
- Retail – Big Box
- Retail – Convenience Store
- Retail – Strip Mall
- Retail – Supermarket
- Senior Housing
- Student Union
- Theater/Auditorium
- Town Hall
- Transportation
- Warehouse – Active
- Workshop



CREATING THE UNIQUE BUILDING

Space Asset Areas

Creating the unique building

- Building blocks to create the unique building
- Represent different programmatic functions within a building
- Users can build custom buildings from the collection of available types
- Definitions are based on ASHRAE, COMNET and past experience
 - Some details are editable by the user
- Additional Space Asset Areas can be used to represent different building conditions
 - Original Apartment Units with PTACs
 - 2010 addition with air source heat pump
 - Building would have two Apartment Space Asset Areas



Space Asset Areas vs. Space Type



- SAAs were developed primarily by assigning Building-Type level characteristics
- Most SAAs are applied broadly across areas of the building
- Some Space Asset Area (SAA) characteristics are more representative of a specific space type
- Practice called for some SAAs to be more specific
 - AIA Healthcare ventilation requirements
 - Space-type lighting power densities

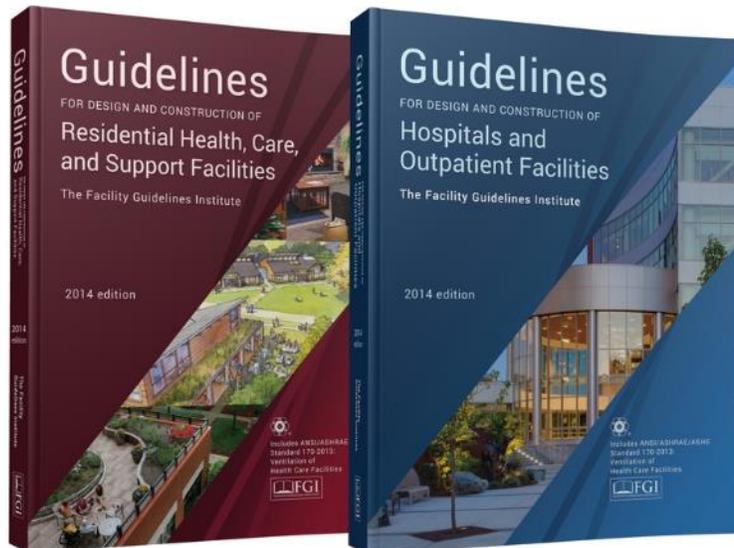


Space Asset Areas vs. Space Type

Space Asset Areas that can fall in this SAA/Space Type gray area

■ Healthcare Ventilation

- Emergency Departments
- Laboratory
- Operatory
- Patient Room
- Treatment



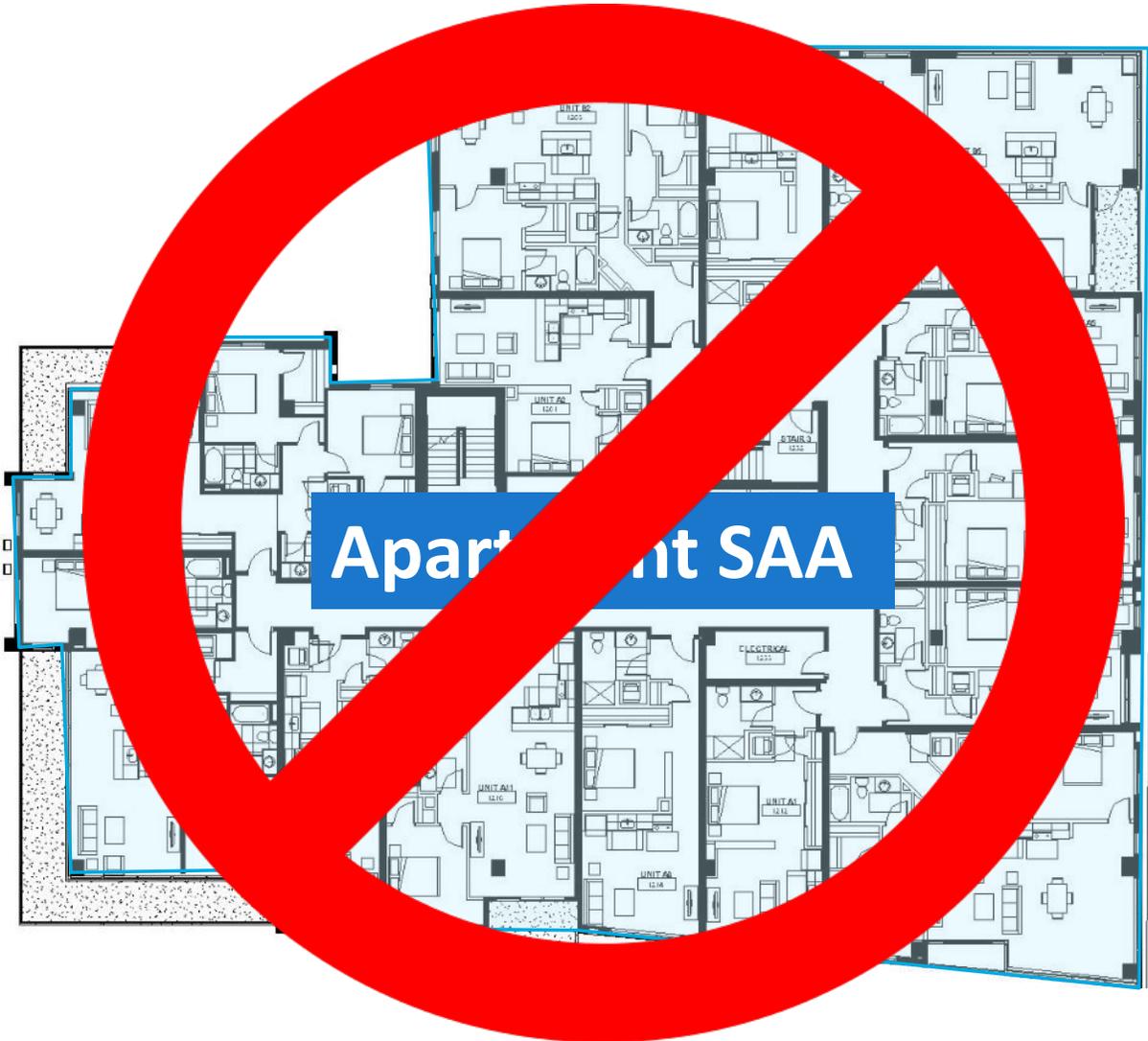
Space Asset Areas vs. Space Type

Space Asset Areas that can fall in this SAA/Space Type gray area

- Space-Type loads
 - Apartments
 - Laboratory
 - Computer Center
 - Kitchen
 - Laundry
 - Locker Rooms
 - Convention Center
 - Conference/Meeting area
- Not an exact science
 - Do not overthink
 - If using drawings, take in large chunks
 - Model is an abstraction based on a typical building; as such, SAA areas should be developed similarly



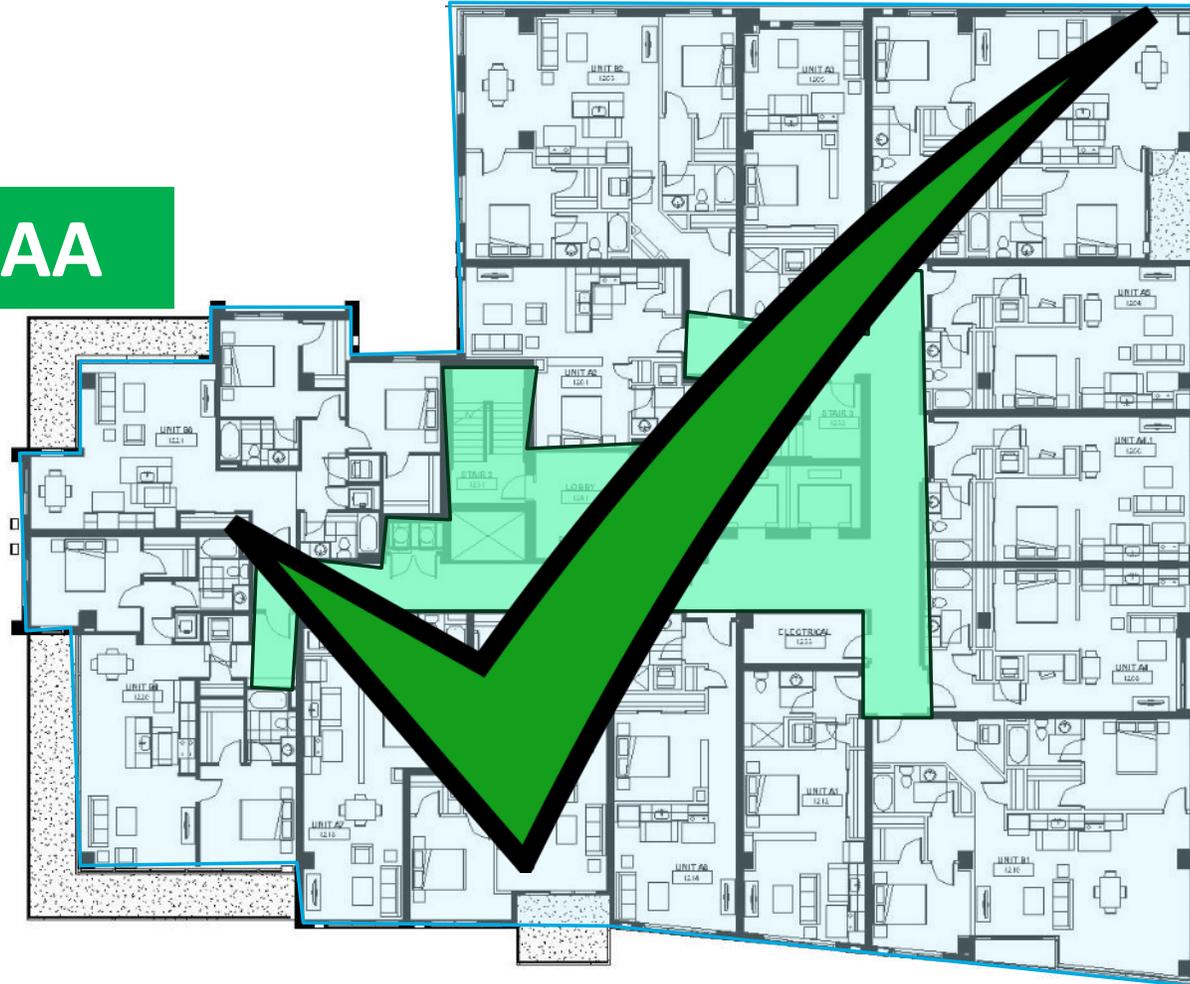
Example Area Take-offs: Apartments



Example Area Take-offs: Apartments

Apartment SAA

Common Areas SAA



Example Area Take-offs: Hospital



Example Area Take-offs: Hospital



Current Available Space Asset Types

- Apartment
- Auto Repair
- Classrooms
- Common Areas – Multifamily
- Computer Center
- Conference/Meeting Area
- Convention Center
- Core and shell
- Data Center
- Dining
- Dorm Rooms
- Exhibit Space and Archives
- Fitness
- Garage – Emergency Vehicle
- Garage – Enclosed
- Guest rooms
- Gymnasium
- Jail Holding Area
- Kitchen
- Laboratory – Educational
- Laboratory – Research
- Laundry
- Locker rooms
- Maintenance/Repair
- Manufacturing
- Office
- Operatory
- Patient Room
- Retail
- Retail – Refrigerated
- Stacks and Reading
- Tenant Shell
- Theater/Auditorium
- Treatment
- Vivarium
- Warehouse – Active
- Warehouse – Inactive
- Workshop
- Worship Area



Starting a SB 2030 Model

Building Definition

Define the Space Asset Areas

- Default based on building type
- Add with 'add area' button
- Delete with 'trash can'
- Scale area to fit
- More than one of the same SAT can be used within the building

The screenshot shows the 'Space Asset Areas' interface with the following data:

Area Name	Type	Floors	Area (ft ²)	Area (%)	Arrangement
Retail	Retail	1	8,250	11%	Adjacent
Common areas	Common areas	3	9,000	12%	Hosted
East Apartments	Apartments	2	27,750	37%	Adjacent
West Apartments	Apartments	3	30,000	40%	Adjacent

Starting a SB 2030 Model

Refining Space Asset Types

■ Edit Space

Asset Areas

- Use the Edit Button under the SAT
- Give a custom name
- Adjust type
- Select # of floors
- Adjust the size
- Adjust the geometry
 - Adjacent – SAT is next to another
 - Stacked - SAT is on top of another
 - Hosted – SAT if fully contained in another

Apartments

Space Asset Type

Apartments

Area

13,200 ft²

Number of Floors

1

Number of units

12

Arrangement

Adjacent / Grade

Done View Details

MODIFYING SPACE ASSET AREA DETAILS

Starting a SB 2030 Model

Refining Space Asset Types

- Edit space asset area, select
- Sets additional parameters when known
- Not required to complete a model
- Default is selected energy code
- Details include
 - Schedules
 - Ventilation rates
 - Geometry
 - Floor to floor heights
 - Space temperatures
 - Plug and process loads
- Each Space Asset Area can be different

Apartments

Space Asset Type: Apartments

Area: 50,000 ft²

Number of Floors: 2

Number of units: 55

Arrangement: Stacked

Stacked On: Retail

Done Modify Details

Details for *Apartments*

Operations Mechanical Architectural Electrical & Process

Starting a SB 2030 Model

Operational details

- Make a SAA unoccupied
- Adjust the # of people in a SAA
- Typically, defaults are fine here

People

Area Occupancy

Occupied Unoccupied

People Density

40.0 ft²/person

Starting a SB 2030 Model

Operational details

- Select use by day
 - None, partial, full
- Select hours in use per day
 - This is full-time use
- Choose the months for which this schedule applies
- Add a 2nd schedule if needed
- Schedules impact lights, plugs, people and fans
- Default schedules are from ASHRAE

Schedules

[Add 2nd Schedule](#)

Daily Use

Sun	None	Partial	Full
Mon	None	Partial	Full
Tue	None	Partial	Full
Wed	None	Partial	Full
Thu	None	Partial	Full
Fri	None	Partial	Full
Sat	None	Partial	Full

Applicable Months

<input checked="" type="checkbox"/> January	<input checked="" type="checkbox"/> February
<input checked="" type="checkbox"/> March	<input checked="" type="checkbox"/> April
<input checked="" type="checkbox"/> May	<input checked="" type="checkbox"/> June
<input checked="" type="checkbox"/> July	<input checked="" type="checkbox"/> August
<input checked="" type="checkbox"/> September	<input checked="" type="checkbox"/> October
<input checked="" type="checkbox"/> November	<input checked="" type="checkbox"/> December

Hours In Use per Day:

Starting a SB 2030 Model

Mechanical details

- Adjust thermostat setting
 - Separate heating and cooling
 - Separate occupied and unoccupied
 - Settings carry forward, no operation strategies at this time to adjust for savings
- Ventilation
 - Ability to set on air change or flow rate basis
 - Defaults to ASHRAE 62.1

The screenshot shows a software interface with four tabs: Operations, Mechanical (selected), Architectural, and Electrical. The 'Thermostat' section has four input fields: Cooling Set Point, Occupied (75 °F), Cooling Set Point, Unoccupied (80 °F), Heating Set Point, Occupied (70 °F), and Heating Set Point, Unoccupied (60 °F). The 'Ventilation Requirements' section has two tabs: Air Changes and Flow (selected). It contains six input fields: Minimum Air Changes, Unoccupied (empty), Minimum Air Changes, Occupied (empty), Outside Air Fraction (empty), Outside Air Per Person (10.0 ft³/min/person), Outside Air Per Area (0.12 ft³/min/ft²), and Exhaust Flow Per Area (0.00 ft³/min/ft²).

Starting a SB 2030 Model

Architectural details

- Geometry
 - Covered later
- Envelope Construction
 - Hover over underlined name to gain additional information or see defaults
 - Floor to Floor Height –
 - Enter specific value

Envelope Construction

Floor to Floor Height

20.0 ft 

Infiltration

Air Sealing Blower Door Test, Pressure Boundary

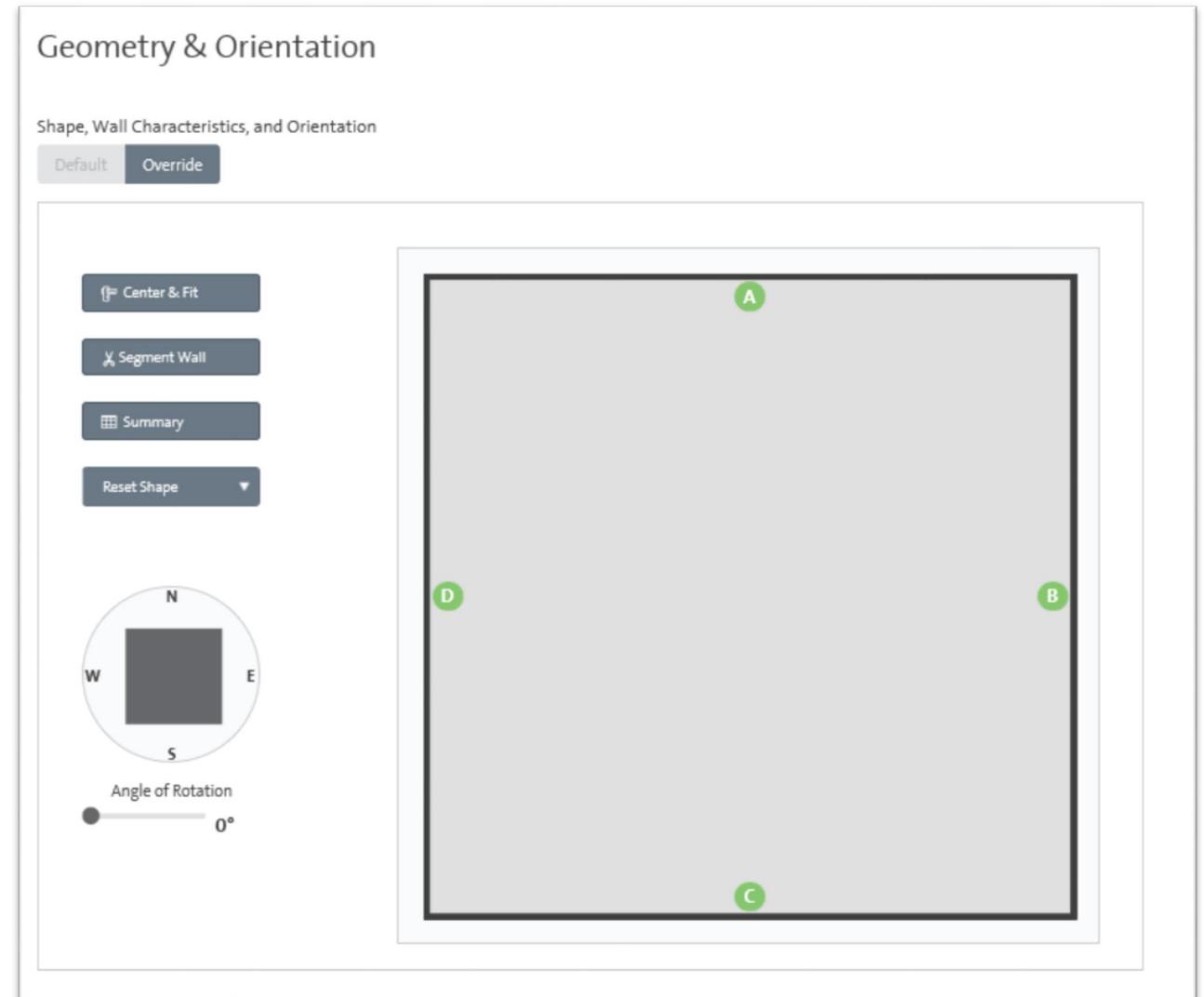
Included Excluded

MODIFYING DETAILED GEOMETRY

Starting a SB 2030 Model

Architectural details

- Adjust geometry beyond SAT arrangement
 - Do only if unique
 - Done on a SAT-by-SAT basis
 - Can segment or note shared walls
 - Can set window to wall ratio by orientation
- May impact heat pump or VRF systems more than central systems
- Intended to be high level geometry; **DO NOT** include every cut out and corner!



Starting a SB 2030 Model

Architectural details

- Custom Geometry

- Choose from standard shapes
- Rotate building
 - Note rotation only shown here
- Segment wall to further change shape



Starting a SB 2030 Model

Architectural details

■ Custom Geometry

■ Summary

- Note shared walls with another SAA
- Adjust window to wall ratio

Geometry & Orientation

Shape, Wall Characteristics, and Orientation

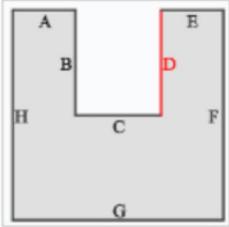
Default Override

Center & Fit

Segment Wall

Done

Reset Shape



Walls reference

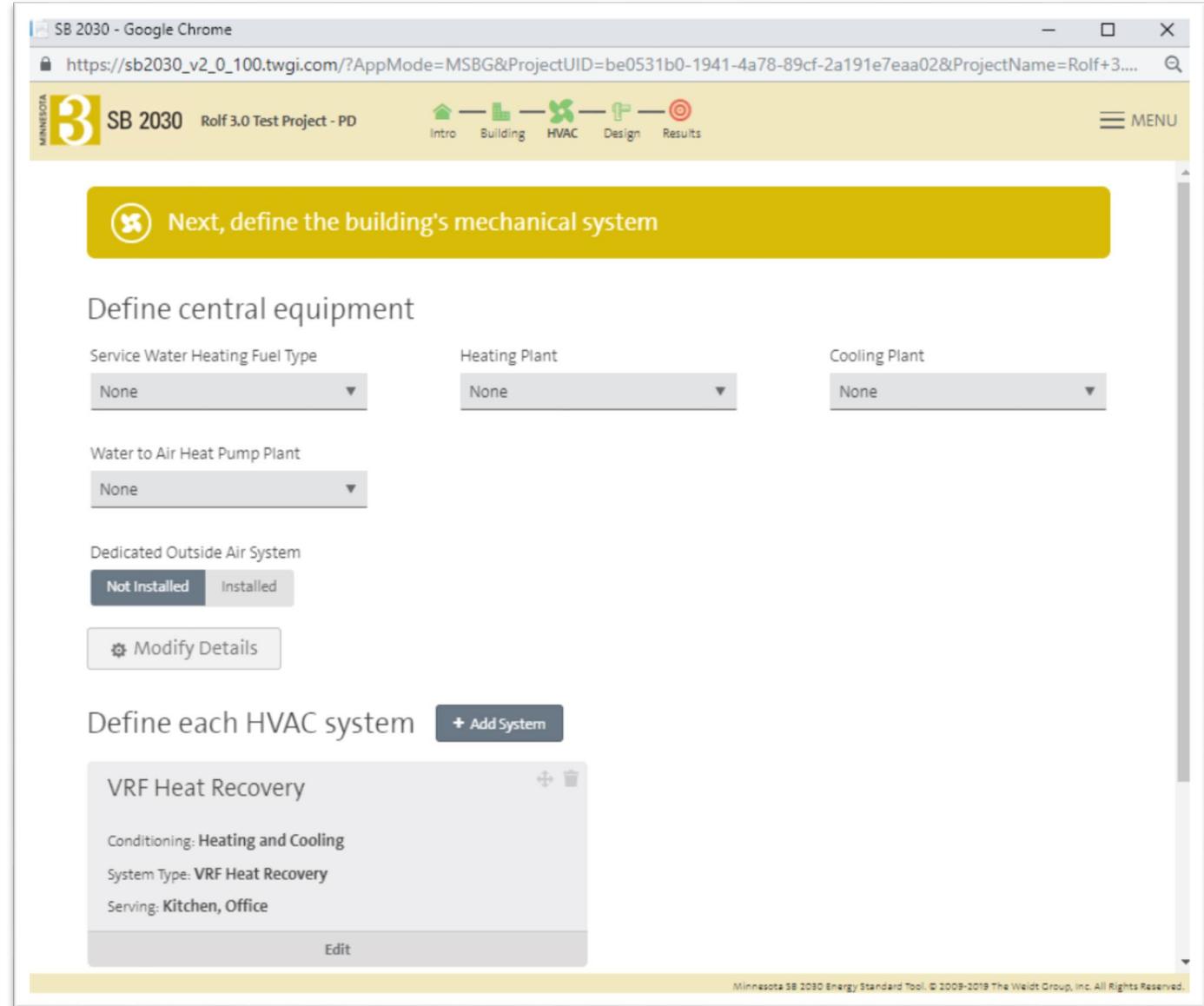
	Whole Wall Shared	Shared Wall Width (ft)	Shared Wall Height (ft)	Window:Wall Ratio (non-shared wall, %)
A	<input type="checkbox"/>	0.0	0.0	10.0
B	<input type="checkbox"/>	0.0	0.0	20.0
C	<input type="checkbox"/>	0.0	0.0	30.0
D	<input type="checkbox"/>	0.0	0.0	20.0
E	<input type="checkbox"/>	0.0	0.0	10.0
F	<input type="checkbox"/>	0.0	0.0	30.0
G	<input type="checkbox"/>	0.0	0.0	30.0
H	<input type="checkbox"/>	0.0	0.0	30.0

HVAC SYSTEMS

Starting a SB 2030 Model

HVAC details

- Define any central plant
- Then define system and zone level HVAC components
- HVAC systems are defined and one or more SAAs can be added to a system
- Red triangles let you know a system is not fully defined



CENTRAL PLANT EQUIPMENT

Starting a SB 2030 Model

HVAC details – central plant

- Select service water heating system fuel type
 - Select none if SWH is not a factor in the project
- Select heating plant type
 - Boiler
 - District
 - None if no central equipment
- Select cooling plant type, if no chiller select none
 - District cooling
 - Air-cooled chiller
 - Water-cooled chiller
 - None if no central equipment

The screenshot shows a web browser window titled "SB 2030 - Google Chrome" with the URL "https://sb2030_v2_0_100.twgi.com/?AppMode=MSBG&ProjectUID=be0531b0-1941-4a78-89cf-2a191e7eaa02&ProjectName=Rolf+3...". The page header includes the Minnesota SB 2030 logo, the project name "Rolf 3.0 Test Project - PD", and navigation links for "Intro", "Building", "HVAC", "Design", and "Results". A yellow banner at the top of the main content area says "Next, define the building's mechanical system". Below this, the "Define central equipment" section contains several dropdown menus: "Service Water Heating Fuel Type" (set to "None"), "Heating Plant" (set to "None"), "Cooling Plant" (set to "None"), and "Water to Air Heat Pump Plant" (set to "None"). There are also radio buttons for "Dedicated Outside Air System" with "Not Installed" selected. A "Modify Details" button is located at the bottom of the form.

Starting a SB 2030 Model

HVAC details

- Dedicated outside air systems set at this level
 - If selected as Installed, specify additional details
- Select cooling option
 - DX
 - Heat pump
 - VRF
 - Central plant
- Select heating option
 - Furnace
 - Heat pump
 - VRF
 - Central plant
 - Electric resistance

The screenshot shows the SB 2030 web application interface. The browser title is "SB 2030 - Google Chrome" and the URL is "https://sb2030_v2_0_100.twgi.com/?AppMode=MSBG&ProjectUID=be0531b0-1941-4a78-89cf-2a191e7eaa02&ProjectName=Rolf+3...". The application header includes the "SB 2030" logo, the project name "Rolf 3.0 Test Project - PD", and navigation tabs for "Intro", "Building", "HVAC", "Design", and "Results". A yellow banner at the top right says "Next, define the building's mechanical system". The main content area is titled "Define central equipment" and contains several configuration options:

- Service Water Heating Fuel Type: None
- Heating Plant: None
- Cooling Plant: None
- Water to Air Heat Pump Plant: None
- Dedicated Outside Air System: Not Installed (selected), Installed
- DOAS Cooling Option: (empty dropdown)
- DOAS Heating Option: (empty dropdown)

A "Modify Details" button is located at the bottom left of the configuration area.

CREATING HVAC SYSTEMS

Starting a SB 2030 Model

HVAC details - systems

- Define each system
 - Provide system name
 - Default is System 1
- Add space asset areas; can be 1 or many
- Complete drop-downs for other choices
 - Conditioning type
 - System type
 - Cooling source
 - Heating source
 - Zone heating source
- Use DOAS is only available if DOAS was selected in the plant section
- Repeat for additional systems

Define each HVAC system used in *Scenario A* + Add System

System 1

Associated Space Asset Areas

Assign Area ▼

▲ No areas are currently assigned

Conditioning Type ▼

System Type ▼

Cooling Source ▼

Use DOAS (defined above) No Yes

System Heating Source ▼

Zone Heating Source ▼

Done ⚙️ Modify Details

ADDING MEASURES

- Categories
 - Mechanical
 - Architectural
 - Lighting/Electrical
 - Plug/Process
 - Refrigeration
 - Service Water Heating
- Three levels of applicability
 - Facility
 - System
 - Space Asset Area

- Mechanical
 - Facility
 - Equipment efficiencies
 - Pump controls
 - Pump power reductions
 - DOAS related strategies
 - System
 - Equipment efficiencies
 - Motor efficiencies
 - Fan power reductions
 - Fan controls
 - Heat recovery
 - Space Asset Area
 - Ventilation controls
 - Thermostat setback controls

Mechanical
Facility
Beyond premium efficiency pump motor
Reduced heating water pump head
VFD on building heating water pump
Increased gas boiler efficiency
Increased condensing gas boiler efficiency
Variable Air Volume
Sensible heat recovery
Total heat recovery
Remove heat recovery
Demand control ventilation for Office
Remove demand control ventilation for Office
Occupancy sensor control of terminal boxes for Office
Displacement ventilation for Office
Beyond premium efficiency fan motor
Reduced fan power
Increased DX cooling efficiency
Standard efficiency DX compressor part load performance
High efficiency DX compressor part load performance
Premium efficiency DX compressor part load performance

- Architectural
 - Facility
 - Infiltration
 - System
 - None
 - Space Asset Area
 - Wall insulation
 - Roof insulation
 - Roof reflectivity
 - Improved glazing characteristics

Architectural
Facility
Reduced air infiltration
Retail
As-designed glazing
Increased wall assembly R-value
Office
As-designed glazing
Increased roof assembly R-value
White roof
Increased wall assembly R-value

- Lighting
 - Facility
 - Exterior lighting power reduction
 - System
 - None
 - Space Asset Area
 - Interior lighting power reductions
 - Occupancy/
Vacancy controls
 - Daylighting controls

Lighting

Retail

- Stepped daylighting control
- Multi-stepped daylighting control
- Dimming daylighting control
- Occupancy sensor controls
- Dual level occupancy sensor control
- Vacancy sensor controls
- Reduced lighting power density

Office

- Stepped daylighting control
- Multi-stepped daylighting control
- Dimming daylighting control
- Remove daylighting control
- Occupancy sensor controls
- Dual level occupancy sensor control
- Vacancy sensor controls
- Remove automated lighting controls
- Reduced lighting power density

- Plug/Process
 - Facility
 - Snow melt system efficiency
 - Elevator efficiency
 - System
 - None
 - Space Asset Area
 - Office plug load controls
 - Residential ENERGY STAR[®] appliances
 - Commercial ENERGY STAR appliances

Plug/Process

Office

Occupancy sensor control of office equipment

Remove occupancy sensor control of office equipment

- Service Water Heating
 - Facility
 - System efficiency
 - On-demand water heater
 - Heat Pump water heater
 - System
 - None
 - Space Asset Area
 - Residential low-flow showerheads

Service Water Heating

Facility

SWH efficiency

Gas fired on-demand SWH

- Refrigeration
 - Facility
 - None
 - System
 - None
 - Space Asset Area
 - Casework lighting
 - Casework antisweat heat controls
 - Casework door improvements

Adding Measures

- First come, it will be blank
- Use Add Strategy button to choose from a list of available measures

Finally, modify your design to meet the EUI target

+ Add Design Parameter Expand All Collapse All Calculate

As Designed 25
0 28 95
Target

Mechanical ▾

Facility ▾

- DOAS, Beyond premium efficiency fan motor
- Improved heat pump cooling efficiency (DOAS) - (Improved heat pump efficiency - 13.00 EER) ▾
- Increased gas furnace efficiency (DOAS) - (Explicit efficiency percent - 95 %) ▾
- DOAS, Total heat recovery - (Summer/winter effectiveness - 75 % | Latent effectiveness - 75 %) ▾

VRF Heat Recovery ▾

- CO2 control of outside air for Office
- Displacement ventilation for Office

Architectural ▾

Office ▾

- Increased wall assembly R-value - (R-value - 16.00 hr-ft²-°F/Btu) ▾
- Increased roof assembly R-value - (R-value - 24.00 hr-ft²-°F/Btu) ▾
- As-designed glazing - (Unit u-value - 0.42 Btu/hr-ft²-°F | Center of glass u-value - 0.29 Btu/hr-ft²-°F | Solar heat gain coefficient (SHGC) - 0.38 | Visible transmittance (VT) - 0.70 | Infiltration - 0.0010 cfm/ft²) ▾

UPDATES FOR 2020

- Updated tracking tool, Energy Standard Tool, and SB 2030 As-Designed Tool live January 1, 2020
 - Evaluation of compliance based both on carbon and on-site energy consumption
 - Modify the requirements around on-site renewable energy evaluation
 - Allow a campus-based approach to renewable energy development
 - Update cost-effectiveness evaluation
 - Eliminate the relaxed standards for renovation projects
 - Adding Solar PV to SB 2030 As-Designed Tool

SB 2030 SUPPORT

■ Resources

- 'How NEO® Works' videos at: <https://netenergyoptimizer.com/how-it-works>
- sb2030@b3mn.org

■ Helpful information to provide when reporting an issue

- Brief description of error or issue and when it occurred
- Brief description of the building and model
- Provide screenshots if available

Acknowledgements

- Clients



- Partners



QUESTIONS?

Thank You



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