



BUILDING SYSTEM OPTIMIZER

v1.50

# NEW FEATURES GUIDE

Carrier Software Systems  
Carrier Corporation  
Syracuse, New York

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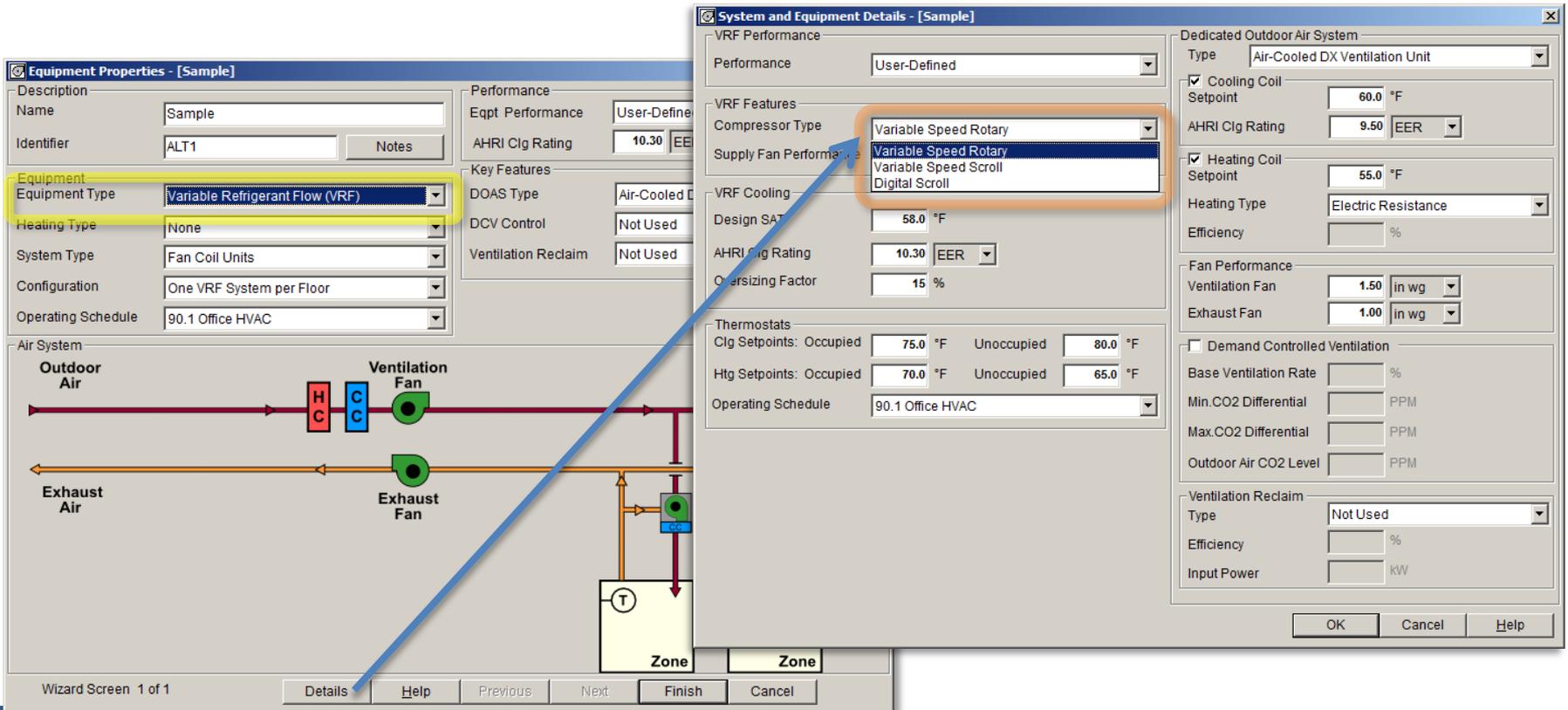
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# Variable Speed Rotary VRF

**Details:** Added simulation performance curves for variable speed rotary compressor VRF condensing units. With this addition, BSO now offers three types of performance models for VRF: variable speed rotary, variable speed scroll, and digital scroll.



The screenshot displays two overlapping software windows. The background window is 'Equipment Properties - [Sample]', showing fields for Name (Sample), Identifier (ALT1), and Equipment Type (Variable Refrigerant Flow (VRF)). The foreground window is 'System and Equipment Details - [Sample]', which is divided into several sections:
 

- VRF Performance:** Performance is set to 'User-Defined'.
- VRF Features:** Compressor Type is set to 'Variable Speed Rotary' (highlighted with an orange box and a blue arrow pointing from the 'Equipment Properties' window). Other options include 'Variable Speed Scroll' and 'Digital Scroll'.
- VRF Cooling:** Design SAT is 58.0 °F, AHRI Ctg Rating is 10.30 EER, and Oversizing Factor is 15 %.
- Thermostats:** Ctg Setpoints (Occupied: 75.0 °F, Unoccupied: 80.0 °F) and Htg Setpoints (Occupied: 70.0 °F, Unoccupied: 65.0 °F).
- Dedicated Outdoor Air System:** Type is 'Air-Cooled DX Ventilation Unit'. Cooling Coil Setpoint is 60.0 °F, AHRI Ctg Rating is 9.50 EER, Heating Coil Setpoint is 55.0 °F, and Heating Type is 'Electric Resistance'.
- Fan Performance:** Ventilation Fan is 1.50 in wg, Exhaust Fan is 1.00 in wg.
- Ventilation Reclaim:** Type is 'Not Used'.

 The bottom of the interface shows a 'Wizard Screen 1 of 1' with navigation buttons: Details, Help, Previous, Next, Finish, and Cancel. A schematic diagram at the bottom of the 'Equipment Properties' window shows 'Outdoor Air' flow through a heating coil (H), cooling coil (C), and fan, and 'Exhaust Air' flow through an exhaust fan.

# Waterside Economizer for Air-Cooled Chiller Plants

**Details:** This feature models a cooling tower used for direct cooling duty alongside air-cooled chillers, when ambient conditions allow. Integrated and non-integrated configurations are supported. This complements existing features for water-cooled chiller plants.

**Equipment Properties - [Sample]**

Plant Configuration

Plant Type: Chiller Plant

Number of Units: 2 Chillers - Equally Sized

Equipment Type: A/C Packaged Screw

Eqt Performance: User-Defined

Input Power: 1.256 kW/Ton

Key Plant Features

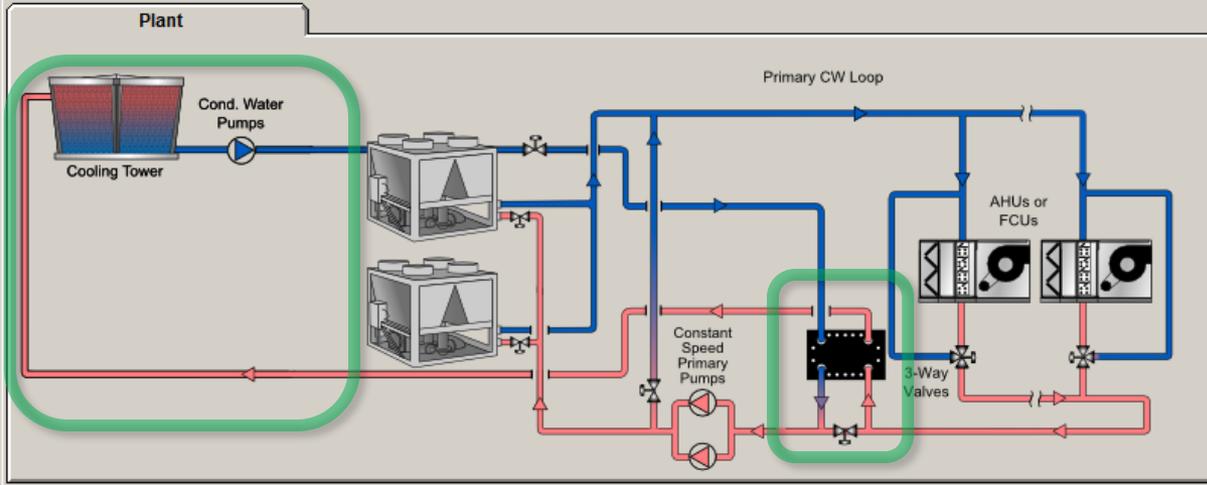
Distribution System: Primary-Only, Constant Speed

Temperature Reset Control: Constant Leaving Temperature

DX Free Cooling: Not Used

Waterside Economizer: 
Integrated Waterside Economizer  
Not Used  
Non-Integrated Waterside Economizer  
Integrated Waterside Economizer

**Plant**

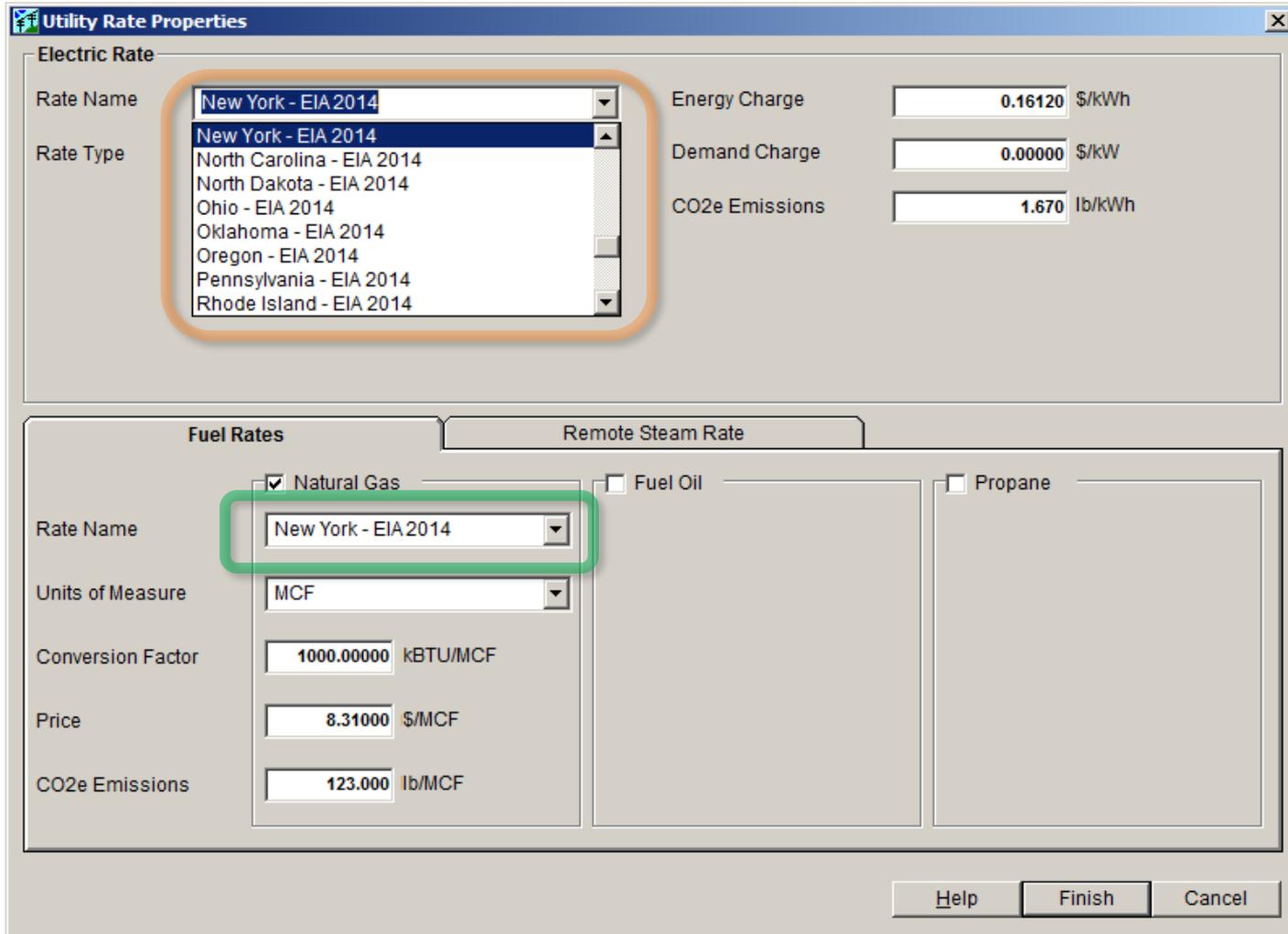


Wizard Screen 2 of 3

Details
Help
Previous
Next
Finish
Cancel

# US Energy Information Administration (EIA) Rates

**Details:** The Utility Rate Wizard has been updated with 2014 EIA rates for gas and electricity. (2014 data was the latest available).



**Utility Rate Properties**

**Electric Rate**

Rate Name	New York - EIA 2014	Energy Charge	0.16120 \$/kWh
Rate Type	New York - EIA 2014	Demand Charge	0.00000 \$/kW
	North Carolina - EIA 2014	CO2e Emissions	1.670 lb/kWh
	North Dakota - EIA 2014		
	Ohio - EIA 2014		
	Oklahoma - EIA 2014		
	Oregon - EIA 2014		
	Pennsylvania - EIA 2014		
	Rhode Island - EIA 2014		

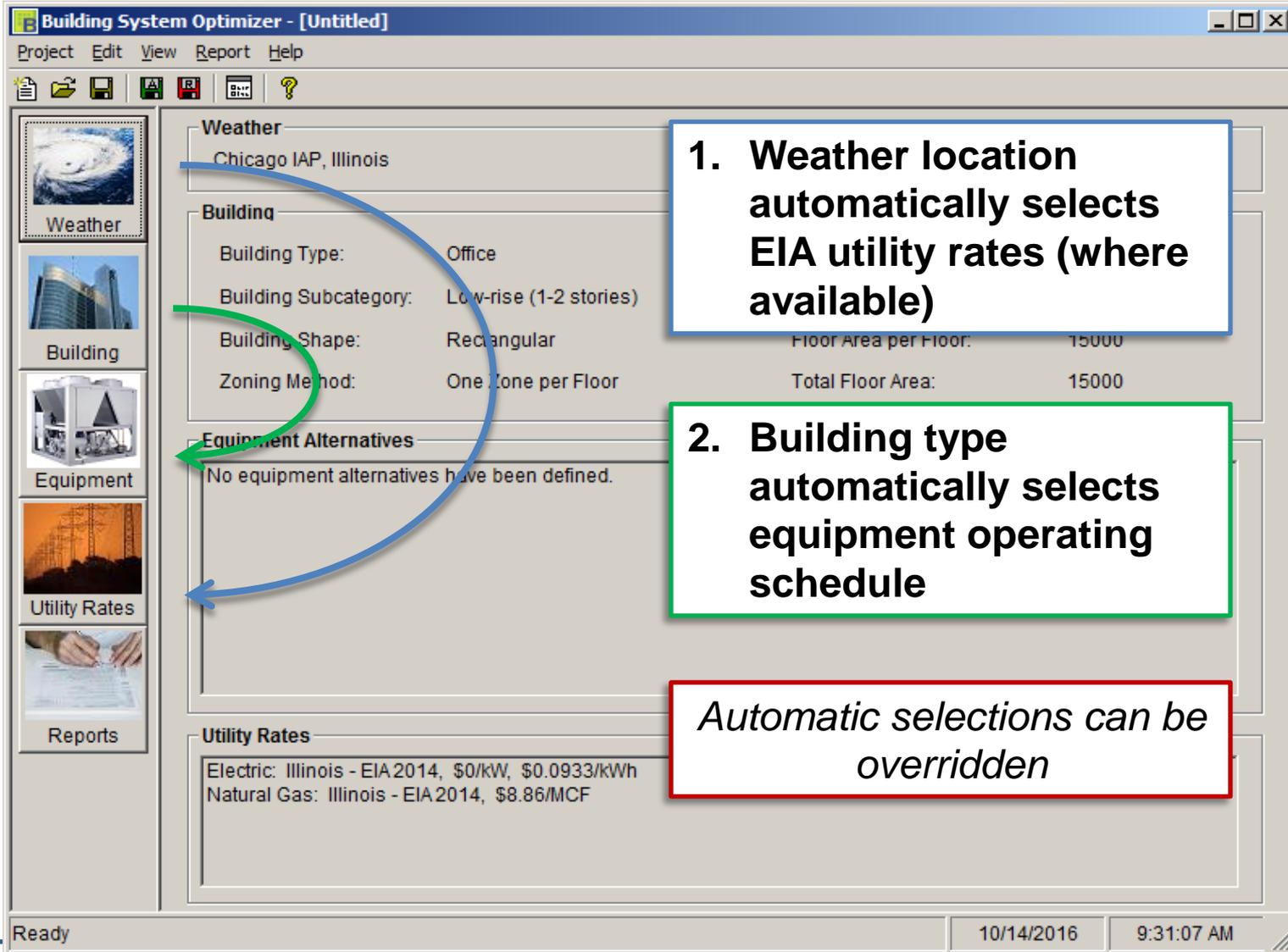
**Fuel Rates**

Natural Gas     Fuel Oil     Propane

Rate Name	New York - EIA 2014
Units of Measure	MCF
Conversion Factor	1000.00000 kBTU/MCF
Price	8.31000 \$/MCF
CO2e Emissions	123.000 lb/MCF

Help    Finish    Cancel

# Interoperability Among Wizards



The screenshot shows the 'Building System Optimizer' software interface. The main window is titled 'Building System Optimizer - [Untitled]' and has a menu bar with 'Project', 'Edit', 'View', 'Report', and 'Help'. Below the menu bar is a toolbar with icons for file operations and help. On the left side, there is a vertical navigation pane with five categories: 'Weather' (with a weather icon), 'Building' (with a building icon), 'Equipment' (with an equipment icon), 'Utility Rates' (with a utility icon), and 'Reports' (with a report icon). The main workspace is divided into several sections: 'Weather' (Chicago IAP, Illinois), 'Building' (Building Type: Office, Building Subcategory: Low-rise (1-2 stories), Building Shape: Rectangular, Zoning Method: One Zone per Floor), 'Equipment Alternatives' (No equipment alternatives have been defined.), and 'Utility Rates' (Electric: Illinois - EIA 2014, \$0/kW, \$0.0933/kWh; Natural Gas: Illinois - EIA 2014, \$8.86/MCF). On the right side of the main workspace, there is a table with two rows: 'Floor Area per Floor: 15000' and 'Total Floor Area: 15000'. Three callout boxes are overlaid on the interface: a blue box containing '1. Weather location automatically selects EIA utility rates (where available)', a green box containing '2. Building type automatically selects equipment operating schedule', and a red box containing 'Automatic selections can be overridden'. Blue arrows point from the 'Weather' callout to the 'Weather' section and the 'Utility Rates' section. A green arrow points from the 'Building' callout to the 'Building' section. The status bar at the bottom shows 'Ready', '10/14/2016', and '9:31:07 AM'.

**1. Weather location automatically selects EIA utility rates (where available)**

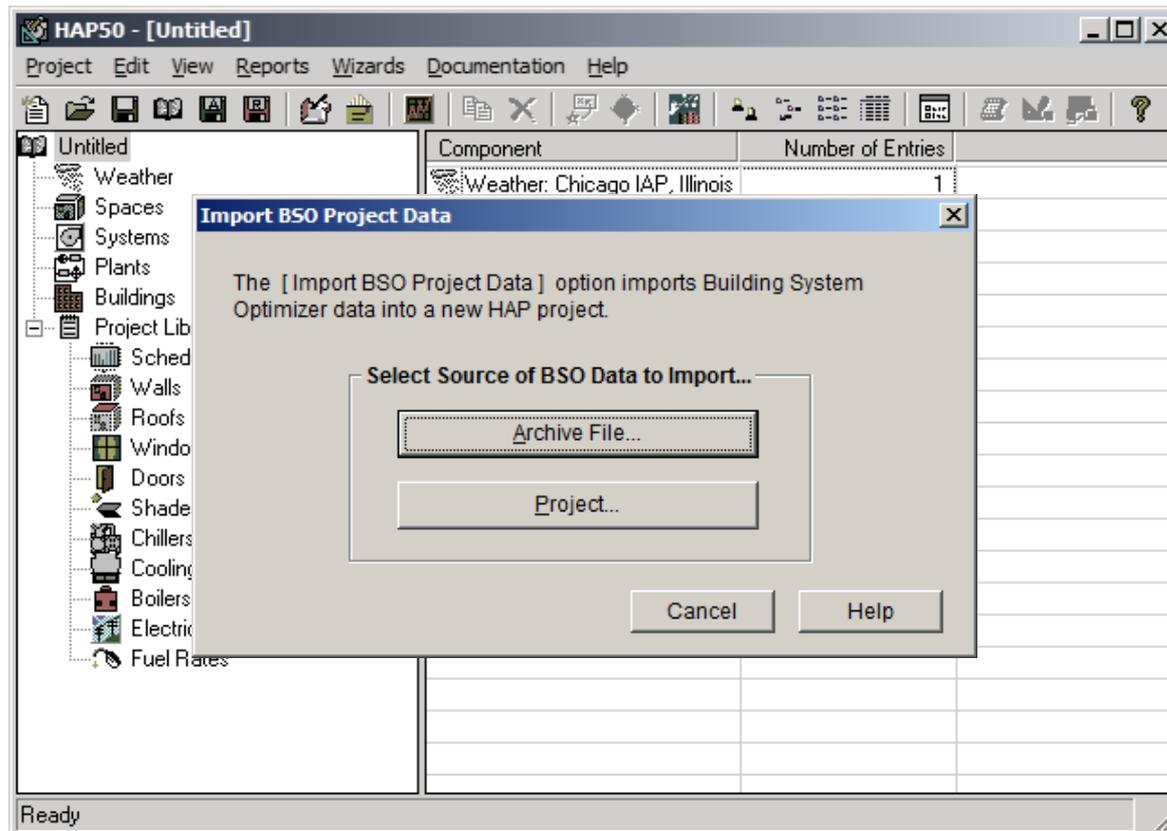
**2. Building type automatically selects equipment operating schedule**

*Automatic selections can be overridden*

# Import into Carrier Hourly Analysis Program

**Details:** Projects created in Building System Optimizer (BSO) can now be loaded into Carrier HAP. Once imported, full HAP capabilities can be used.

*This facilitates scenarios where schematic design was done in BSO but further detailed design or analysis is required.*



# Bugs / Corrections

*The following problems were corrected:*

**1. Building Wizard –**

When a wall, roof, or window assembly created in the detailed user interface was selected in the Building Wizard, the overall U-value was shown as zero. In addition, an error occurred when generating the Building Wizard input report. These were cosmetic errors; inputs were reliable for use in load calculations and energy simulations.

**2. Utility Rate Wizard –**

When price data for remote steam was entered, it was incorrectly assigned to remote hot water.

**3. Reports –**

Under specific conditions an “Error 521: Unable to open clipboard” error occurred when generating certain reports.

# QUESTIONS?

*For questions or assistance, please contact Carrier Software Systems at*

**[software.systems@carrier.utc.com](mailto:software.systems@carrier.utc.com)**

*Thank you!*