

# OpenStudio Version 1.5.0

*Release Notes – 9/26/2014*

These release notes describe version 1.5.0 of the OpenStudio software suite developed by the National Renewable Energy Laboratory (NREL), Buildings and Thermal Systems, Commercial Buildings Research Group, Tools Development Section, and associated collaborators. The notes are organized into the following sections:

- Where to Find OpenStudio Documentation
- Installation Notes
- Overview
- New Features
- Known Issues

## Where to Find OpenStudio Documentation

- OpenStudio release documentation, including these release notes, tutorials, and other user documentation, is available at <http://openstudio.nrel.gov/documentation>.
- C++ API documentation is available at <http://openstudio.nrel.gov/sdk-documentation>.
- Measure development documentation is available at <https://github.com/NREL/OpenStudio/wiki/Measure-Writing-Guide>.
- OpenStudio Life Cycle Costing Examples are available at <http://openstudio.nrel.gov/openstudio-life-cycle-examples>.

## Installation Notes

OpenStudio is supported on Windows 7 – 8.1, OS X 10.9, and 64-bit Ubuntu 14.04.

OpenStudio 1.5.0 supports EnergyPlus Release 8.1.

## Installation Steps

- Download and install EnergyPlus 8.1.
  - [Download EnergyPlus 8.1](#). Create an account and login if you don't already have one.
  - OpenStudio will work with 32 or 64bit EnergyPlus installers.
- The OpenStudio SketchUp Plug-in requires [SketchUp 2014](#) (not available for Linux). Older versions are not supported.
- Create an OpenStudio account, then download and install [OpenStudio](#).
- Setup a Building Component Library (BCL) account to access online building components and measures. [View instructions on how to setup your account and configure the key in OpenStudio](#).

## Optional Installation Steps

- For Radiance integration, download and install [Radiance](#).

## Overview

This OpenStudio 1.5.0 release updates many OpenStudio dependencies. The biggest of these is an upgrade from Ruby 1.8 to Ruby 2.0. This update allows OpenStudio to leverage upon the improvements available in Ruby 2.0, and provides compatibility with SketchUp 2014. However, this update also means that OpenStudio will no longer be compatible with SketchUp 2013 or SketchUp 8. C++ developers will notice upgrades to Qt 5 and Boost 1.55, as well as the inclusion of C++11 features in OpenStudio source code.

OpenStudio for OS X is now built with the 10.9 SDK for Ruby 2.0 support, making Mavericks the primary Apple platform, and Ubuntu 12 support has been removed in favor of Ubuntu 14.04 LTS. Windows platform support remains the same, with Windows 7 – 8.1 compatibility.

This OpenStudio 1.5.0 release also includes several improvements to measures. Reporting measures can now request output variables from EnergyPlus to ensure that they have the data they need to create plots or make reports. Additionally, units and descriptions can now be added to measure arguments.

The OpenStudio C++ SDK documentation has been significantly improved, which includes a search feature and links between all Doxygen directories. Updated [C++](#) and [Ruby](#) coding standards can be found on the [GitHub wiki](#).

Other notable improvements:

- Previously available for Refrigeration Walk Ins and Refrigeration Cases, GridView (a grid-style interface providing detailed component views) has now been applied to the Space Types tab, as well as the Thermal Zones tab. These GridView-enabled tabs now allow practitioners to view and modify numerous Space Types (or Thermal Zones) and their objects, simultaneously.
- Multiple performance improvements and bug fixes.

## OpenStudio Platform 1.5.0

- HVAC objects added from the OpenStudio HVAC [roadmap](#):  
Changeover Bypass Unitary System
  - AirLoopHVAC:UnitaryHeatCool:VAVChangeoverBypass
  - AirTerminal:SingleDuct:VAV:HeatAndCool:NoReheat
  - AirTerminal:SingleDuct:VAV:HeatAndCool:Reheat

Supply air to Four Pipe Fan Coil Terminal from DOAS

- AirTerminal:SingleDuct:InletSideMixer

Series PIU Terminal

- AirTerminal:SingleDuct:SeriesPIU:Reheat

Four Pipe Induction Terminal

- AirTerminal:SingleDuct:ConstantVolume:FourPipeInduction

High Temperature Radiant Heater (Gas or Electric)

- ZoneHVAC:HighTemperatureRadiant

#### Two Speed Cooling Tower

- CoolingTower:TwoSpeed

#### Electric Steam Humidifier and assorted Humidity Setpoint Control Types

- Humidifier:Steam:Electric
- SetpointManager:SingleZone:Humidity:Minimum
- SetpointManager:MultiZone:MinimumHumidity:Average
- SetpointManager:MultiZone:Humidity:Minimum

#### Indirect Evaporative Cooler

- EvaporativeCooler:Indirect:ResearchSpecial

#### Dual Setpoint Control – allows temp to float between heating and cooling setpoints

- Useful for GSHP loops
- SetpointManager:Scheduled:DualSetpoint

#### Outdoor Air Pretreat Control – allows you to specify OA pretreat controls

- SetpointManager:OutdoorAirPretreat

#### Multi-Stage Unitary System – Available in back end (via Measures) but not in GUI yet

- AirLoopHVAC:UnitaryHeatPump:AirToAir:MultiSpeed
- Coil:Cooling:DX:MultiSpeed
- Coil:Heating:Gas:MultiStage
- ZoneControl:Thermostat:StagedDualSetpoint

- Improved general performance, stability, and usability.

#### OpenStudio SketchUp Plug-in 1.5.0

- No changes.

#### OpenStudio Application 1.5.0

- GridView has now been applied to the Space Types tab, as well as the Thermal Zones tab.
- Improved general performance, stability, and usability.

#### OpenStudio ParametricAnalysisTool 1.5.0

- Improved general performance, stability, and usability.

#### OpenStudio ResultsViewer 1.5.0

- No changes.

#### OpenStudio Ruby Bindings 1.5.0

- No changes.

#### OpenStudio C# Bindings 1.5.0

- No changes.

## OpenStudio Python Bindings 1.5.0

- No changes.
- Python bindings are not packaged with OpenStudio. To use them see our [developer page](#) for guidance on building OpenStudio.

## OpenStudio JavaScript V8 Bindings 1.5.0

- No changes.
- JavaScript bindings are not packaged with OpenStudio. To use them see our [developer page](#) for guidance on building OpenStudio.

## OpenStudio Java Bindings 1.5.0

- No changes.
- Java bindings are not packaged with OpenStudio. To use them see our [developer page](#) for guidance on building OpenStudio.

## OpenStudio RunManager

- The RunManager application has been deprecated in favor of the OpenStudio and ParametricAnalysisTool applications. The RunManager library will remain available.

## Known Issues

The following are issues known at the time of publication of these release notes. Please contact [openstudio@nrel.gov](mailto:openstudio@nrel.gov) if you require further assistance.

### Known Issues Common to All Platforms

#### OpenStudio SketchUp Plug-In

- If you use copy multiple on group-level OpenStudio objects, you will get one extra copy. The extra group is created by the first copy-and-paste operation and is not removed when the copy multiple occurs. To address this, after you perform a copy multiple procedure on groups or spaces, press delete. The objects you need to delete should already be selected. If you are copying loose surfaces such as windows, there are no problems, as SketchUp will merge equivalent surfaces. [issue [#28](#)]
- Using SketchUp's undo operation on OpenStudio model elements may produce unexpected results. [issues [#54](#) and [#150](#)]
- SKP and OSM link is not maintained when files are relocated. However, you can manually re-establish that link. When opening a SketchUp file, launch SketchUp and then open the SketchUp file. If that doesn't work you can also directly load the OSM file, bypassing the SKP file. [issue [#409](#)]
- It is possible for the OpenStudio plug-in to conflict with other SketchUp plug-ins. If you suspect this is a problem, try testing with other plug-ins disabled, or contact [openstudio@nrel.gov](mailto:openstudio@nrel.gov) for assistance. [issue [#26](#)]
- Using "Intersect" in the surface matching dialog can result in a crash or unexpected results. This is more common with models that were imported from other CAD formats at some point in the workflow. It is a good idea to save prior to using this to avoid any loss of data. This is related to an underlying SketchUp bug. [issue [#168](#)]

- “Project Loose Geometry” can crash SketchUp. It is a good idea to save prior to using this to avoid any loss of data. [issue [#484](#)]
- Adjacent stacked spaces in same zones may result in incorrect area and likely loads as well. [issue [#561](#)]
- SaveAs in SketchUp corrupts measures in model. To avoid this, only add measures into model after work in SketchUp is done. [issue [#754](#)]
- Using AutoSave in SketchUp can overwrite changes made in OS app if the file is open in both locations. [issue [#899](#)]

If your OpenStudio model causes a crash of SketchUp or has unexpected behavior, please forward it to [openstudio@nrel.gov](mailto:openstudio@nrel.gov) with a detailed description of the problem along with the steps that produced the issue. Please also include the directory that has the same name as the OSM file. You can attach it as a zip file.

### OpenStudio Application

- Similar thermostats assigned in the SketchUp Plug-in are shared across thermal zones in the OpenStudio application. Changing or turning off one will do the same to others. [issue [#123](#)]
- The view does not always refresh correctly when you delete a material from a construction. If you still see a material after clicking the “x”, switch away from and back to the object to refresh the view. [issue [#196](#)]
- OS App Schedule Editor allows entering values outside of type limits. [issue [#531](#)]
- All drop zones under Water Use Equipment Definitions doesn't enforce schedule types. [issue [#532](#)]
- Removing CoilHeatingWater objects can result in orphaned hot water coils. [issue [#594](#)]
- Some HVAC components in OpenStudio are missing from the HVAC Library (e.g. Fan:OnOff). [issue [#599](#)]
- Several objects in OpenStudio appear to accept erroneous input values, but seems like it is just displaying the erroneous value and not storing it. [issue [#656](#)]
- Attempting to autosize a WaterHeater will result in an error. [issue [#669](#)]
- Entering an invalid date on the Utility Bills subtab crashes OpenStudio. [issue [#739](#)]
- To enable set point schedule drop zones on the Thermal Zones tab, you need to first turn on the thermostat.
- The Site / Utility Rates subtab in the workflow is marked as “coming soon,” and will be completed in an upcoming release of OpenStudio.
- The default reporting measures used for the results tab show results in IP units, and do not react to changes in the user’s unit preferences. That will be addressed in future versions of OpenStudio. The measure can be altered to show SI units instead.
- It is not possible to choose or define a refrigeration case (or walkin) re-stocking schedule in the “Grid” view or the “Layout” view; the drop down list is blank. [issue [#966](#)]
- Report web views may load slower than they use to with the update to Qt5. [issue [#1211](#)]
- With larger models, GridView’s performance may slow. Performance improvements are currently being implemented and will be available soon in a minor release.

### OpenStudio ParametricAnalysisTool

- NOTE: Cloud functionality is temporarily disabled. This issue is planned to be resolved shortly.

- NOTE: when using cloud service, please make sure to stop the cloud using the cloud button in PAT when your simulation session is done, and after you have downloaded all of the detailed results you want. You are also strongly encouraged to go to the AWS Management Console to confirm that all instances are terminated. If they are not terminated, you will need to manually terminate them from the console. [We have a sticky post on our forum](#) with best practices for cloud simulation in OpenStudio.
- Daylighting control object variables can't be requested in the output variables tab. [issue [#355](#)]
- Adding a design alternative using measure groups will remove any design alternatives made from external files. However, you can add a design alternative made from external files without losing design alternatives made from measure groups. [issue [#369](#)]
- Always Run measures are applied to externally constructed design alternatives. This may result in unexpected results or errors. [issue [#369](#)]

### OpenStudio ResultsViewer

- Alias changes do not update in table view until the data are read in again. [issue [#25](#)]
- Re-arranged column order doesn't stick on next launch. [issue [#30](#)]

### OpenStudio RunManager

- EnergyPlus ForwardTranslator errors do not appear in the RunManager GUI elements. [issue [#181](#)]

### OpenStudio Platform, Including SWIG Bindings

- `IdfObject::getQuantity` and `IdfObject::setQuantity` functionality is not comprehensive. The quantity getters and setters for fields whose units are "BasedOnField AX" are not expected to work at the `IdfObject` level, but are to be handled only for OS: prefixed objects by the specific interfaces of classes derived from `ModelObject`.
- The default naming scheme of `WorkspaceObject` (base class for `ModelObject`, etc.) sometimes results in undesired name clashes when transferring objects between models, including in the EnergyPlus translators. Therefore, some objects may be unexpectedly renamed or copied.
- `OpenStudio::Model::ComponentVector` objects may be inaccessible from the Ruby bindings. [issue [#239](#)]
- If schedule type limits fields are not set properly, OS will not give error but also will not hook up affected schedules. [issue [#967](#)]
- There is no default construction for adiabatic surfaces. [issue [#974](#)]
- Cloning a building disconnects spaces from thermal zones. [issue [#980](#)]
- The simulation fails if ground preprocessor boundary conditions are used. [issue [#1127](#)]

### Known Issues Specific to OS X

- The SketchUp Plug-in toolbar tooltips do not work correctly on OS X if you have made your toolbars horizontal. The tooltips never show on OS X in the status bar. The button state may also be incorrect. This is a bug in SketchUp versus the plug-in. [issue [#45](#)]

### Issue Statistics Since Previous Release

- 63 new issues were filed since the 1.4.0 release of OpenStudio (not including opened pull requests).

- 33 issues were closed since the 1.4.0 release of OpenStudio (not including closed pull requests).