

# OpenStudio Version 0.5.0 Build 6720

*Release Notes – 09/30/2011*

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This document contains information specific to the OpenStudio suite developed by the National Renewable Energy Laboratory – Electricity, Resources, and Building Systems Integration Center (ERBSIC), Commercial Building Research Group, Tools Development. The document contains 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>. Documentation of the OpenStudio C++ and Ruby APIs is available at <http://openstudio.nrel.gov/sdk-documentation>.

## Installation Notes

OpenStudio is supported on Windows, Mac, and Linux platforms.

### Installation Notes for Windows

Supported platforms are Windows XP/2000/Vista/7.

- Download [EnergyPlus 6.0](#)
- OpenStudio SketchUp Plug-in requires [Google SketchUp](#) 7.0 or later (Free or Pro versions).
- Optionally download [ruby.zip](#) and install if you plan to use the OpenStudio Ruby bindings outside of the SketchUp Plug-in. To install, unzip the download to C:\Ruby (or other desired location), add C:\Ruby\bin to the PATH environment variable, and create the environment variable RUBYOPT (leave its value blank).
- Optionally download and install the 32-bit [OpenSSL libraries](#) if you will be running simulations remotely through a SSH connection.
- Download the [OpenStudio installer](#)
- Run the installer.

### Installation Notes for Mac

Supported platforms are Mac OS X 10.5/10.6:

- Download [EnergyPlus 6.0](#)

- OpenStudio SketchUp Plug-in requires [Google SketchUp](#) 7.0 or later (Free or Pro versions).
- Ruby bindings require Ruby 1.8.6 or 1.8.7, which comes installed on Mac OS X machines. No need to install.
- Download the [OpenStudio installer](#)
- Run the installer.

## Installation Notes for Linux

Supported platform is Ubuntu 10.04:

- Download [EnergyPlus 6.0](#)
- OpenStudio SketchUp Plug-in is not supported on Linux platform, as Google SketchUp is not available.
- Ruby bindings require Ruby 1.8.6 or 1.8.7: **sudo apt-get install ruby-full.**
- Download the [OpenStudio installer](#)
- Run the installer.

## Overview

The OpenStudio version 0.5.0 release marks an important milestone. Previous versions of OpenStudio did not have a sufficient data and object model to support the ability to easily create, edit, and simulate whole buildings in EnergyPlus. In previous releases, in order to temporarily overcome such limitations, the software was passing certain portions of the EnergyPlus simulation data through the OpenStudio translators without knowledge or processing. Although this temporary solution enabled users to run energy simulations, the fragility and maintainability of the solution required a major refactor of the platform. Starting with this release, the OpenStudio Model API has become sufficiently rich to enable the creation of simulatable models leveraging the OpenStudio translator functions. As an added benefit of the refactor, the expanded Model API has also enabled the development of new features in the SketchUp Plug-In and SystemOutliner modeling tools.

A new Sequential Search optimization algorithm, which can operate on OpenStudio Models, EnergyPlus IDF, or a mixture of the two, has been added to the OpenStudio API and is available through Ruby scripting.

NOTE: A temporary limitation of the refactor is that some EnergyPlus data, which was passed unchanged through tools like the SketchUp Plug-In prior to the refactor, has not been translated to the OpenStudio Model yet and therefore is lost on import from EnergyPlus IDF files. In addition, this release is not backwards compatible with data files from previous OpenStudio releases, and no tools have been provided to upgrade data files from version 0.4 and earlier.

## New Features

### OpenStudio Platform 0.5.0

- The OpenStudio data model has been completely decoupled from the EnergyPlus data model. All OpenStudio IDD objects are now prefixed by 'OS'.
- A significant number of new objects are included in the OpenStudio Model API and accessor methods have been improved for most objects.
- Portions of the mesh analysis capability in the OpenStudio Project API have been reorganized into the new Analysis and AnalysisDriver APIs. This reorganization of the code allows the support of more general analyses, including the newly added sequential search optimization feature.

### OpenStudio SketchUp Plug-in 0.5.0

- Geometry
  - The User Interface has been updated to work with spaces, space types, and building story objects.
  - A new toolbar item has been added to the User Interface to allow the setting of common attributes (e.g. thermal zone, space type) for multiple spaces simultaneously.
  - A new toolbar item allows the user to extrude each face in a collection of loose SketchUp geometry into a new space.
  - A new toolbar item allows the user to intersect an OpenStudio model with loose SketchUp geometry.
  - Several new rendering modes (render by construction, space type, thermal zone, and building story) are available to help diagnose and understand the building model.
  - Surface search has been extended to search by surface orientation.
- Constructions
  - A new hierarchical system for defaulting constructions and schedules has been implemented.
- Loads
  - More than one daylighting control or illuminance map may now be added to a space.
  - A new Luminaire object allows lights to be added into model geometry.
- Other
  - The plug-in now allows users to add their own scripts to the plug-in. This feature allows users to automate portions of their workflows using the OpenStudio and SketchUp Ruby APIs.
  - A new object inspector allows access to a much wider selection of OpenStudio objects.
  - General performance and stability improvements.

### OpenStudio RunManager 0.5.0

- New job types including IdfToModel, ModelToIdf, and EnergyPlusPostProcess.
- General performance and stability improvements.

## OpenStudio ResultsViewer 0.5.0

- No changes since Version 0.4.0.

## OpenStudio SystemOutliner 0.5.0

- Ability to import air systems from EnergyPlus IDF files.
- Major changes of the User Interface towards completeness, usability, and layout.
- General performance and stability improvements.

## OpenStudio ModelEditor 0.5.0

- Pulldown menus are now sorted alphabetically.
- General performance and stability improvements.

## OpenStudio Policy Analysis Tool 0.5.0

- The Policy Analysis Tool is not included in the 0.5.0 release. Work is being planned to reorganize the tool by leveraging the new analysis capabilities of the platform. The Policy Analysis Tool will be re-released in a future version of OpenStudio.

## OpenStudio Ruby Bindings 0.5.0

- New objects and methods are available in the Ruby bindings. Please refer to the developer documentation for details.
- The OpenStudio::Analysis and OpenStudio::AnalysisDriver modules were added to allow for more configurable analyses. See the SDK documentation and the example scripts CreateExampleOptimizationProblem.rb and RunExampleOptimizationProblem.rb.
- General performance and stability improvements.

## OpenStudio C# Bindings 0.5.0

- New objects and methods are available in the C# bindings. See the developer documentation for details.

## 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

- The new OpenStudio Plug-in has been equipped with additional validations and checks on files containing unknown or flawed objects. If your file does not open automatically, please examine the error and warnings dialog popup. If the errors and warnings dialog does not automatically open, you can manually open it from the OpenStudio toolbar. A text editor may be used to alter or remove the objects listed in this report before OpenStudio applications can open the file successfully. There may be times when the file doesn't open correctly and doesn't offer an

error. Some examples are duplicate named objects and constructions with air gap materials on an exposed surface. Please contact [openstudio@nrel.gov](mailto:openstudio@nrel.gov) for assistance or if you are unable to resolve this issue.

- Unclassified surfaces may be created when a long operation is canceled. When you draw in a space and extrude your plan up, OpenStudio classifies all the newly created base surfaces. Normally this is a fast operation, but occasionally it may take longer if you have a complex shape or if you have SketchUp's Outliner window open. If you interrupt the process by exiting the space before it is complete, the surfaces will not be classified. If this happens, you should delete and redraw the incorrect surfaces.
- 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.
- Making copies of multiple spaces, or multiple copies of a single space, may be very slow. You should save a file before initiating a large copy operation.
- The environment period drop-down menu is not updated correctly in the rendering settings dialog. When changing variables, updating normalization, etc., please make sure to reselect the correct environment period in the drop-down menu.
- When running a simulation from an .osm file that contains weather information, the full path to the weather file may not appear properly in the weather file text field. This is a display issue only, and does not affect functionality.
- Loose comments are removed from files opened or imported into the SketchUp Plug-in. This does not affect comments following valid objects, just comments on their own line.
- If you have a SQL file open in ResultsViewer from an earlier simulation, re-running that simulation without closing the SQL file will result in a simulation failure. You will have to close and unlock the SQL file to resolve this. Please contact [openstudio@nrel.gov](mailto:openstudio@nrel.gov) for assistance.
- Batch operations on multiple spaces may be slow. This will be addressed in a next software iteration. A workaround is to switch to render by class prior to batch space operations.
- The Object Inspector does not show units for a field until you enter data for that field.
- Surfaces do not always classify correctly. When this happens, you can manually re-classify the surface, or delete and redraw an edge, and let OpenStudio create a new surface.
- SKP and OSM link is not maintained when files are relocated. You can manually re-establish that link
- Attempting to open a 0.4 .osm file will result in an error indicating that the file could not be opened. It does not indicate why it will not open. In many cases the best transition workflow is to export to an IDF format OpenStudio 0.4 and then import it into OpenStudio 0.5. Since you cannot have the 0.4 and 0.5 SketchUp Plugins configured at the same time, you can use ModelEditor 0.4 to export the IDF from the old .osm file.

- It is possible for the OpenStudio Plug-in to conflict with other SketchUp plugins. If you suspect this is a problem, try testing with other plugins disabled, or contact [openstudio@nrel.gov](mailto:openstudio@nrel.gov) for assistance.

### OpenStudio ModelEditor

- If a field is set to Autosize, the units will not display. Once a valid number is input and the window redraws itself, the units will show up. Redraw can be triggered by changing the style of the floating point display (from unformatted to scientific notation or back), or by picking a new model object to inspect and then return to the previous object.
- Clicking on OpenStudio HVAC, then dragging OS:AirLoopHVAC:OutdoorAirSystem onto OS:SimulationControl in the Model Objects pane results in a crash.
- If floating point display is set to unformatted (the default), you cannot enter any non-digits except for ".". This means you cannot input a number in scientific notation. Switch to scientific notation to allow the input of numbers in the style: 1.943e+5.
- No undo capability is currently available.
- Copy and paste does not grab data fields for some object types.
- Newly created objects are not always visible on screen.
- Cannot add top level objects while in tree view.

### OpenStudio SystemOutliner

- EnergyPlus plant loop is currently unsupported.
- Plant loops, dual duct air loops, and air loops containing supply or demand plenums are planned for a next version of the tool.

### OpenStudio ResultsViewer

- Alias changes do not update in table view until the data are read in again.
- Data sets are expected to start on January 1 or later, and end on December 12 or earlier. Run periods cannot wrap around the end or beginning of the year.
- Table view column rearrangements are not preserved.

### OpenStudio RunManager

- Not all SSH error conditions are properly handled during remote SLURM job execution.
- Can only remove the output files for one selected job at a time
- Can only remove one tool at a time, despite being able to select multiple
- The tool may crash or produce error messages when searching for the radiance simulation engine.

### OpenStudio Platform, Including SWIG Bindings

- `IdfObject::getQuantity` and `IdfObject::setQuantity` functionality is not comprehensive.
- 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.
- Using objects of type `FluidProperties:Names` or `FluidProperties:GlycolConcentrations` may result in a crash related to their first fields being both extensible and tagged as `\reference`.

- Text IDF objects whose type names are misspelled are imported under the type name Catchall, but the original misspelled name is not retained.
- C# bindings are only available on Microsoft Windows. The Alpha1 C# example solution does not compile.

## Known Issues Specific to Microsoft Windows

### OpenStudio RunManager

- If you launch the RunManager application from the icon in the Start Menu, there may be problems when trying to run a simulation on an .osm file with the workflow: modeltoidf -> energyplus. This occurs when trying to run this specific workflow on the included example .osm file. Workaround: The simplest workaround is to launch the application from the <Install Location>\OpenStudio 0.5.0\bin folder.

## Known Issues Specific to Mac

### OpenStudio SketchUp Plug-in

- Toolbar tooltips may not work correctly on a Mac if you have made your toolbars horizontal. The tooltips never show on a Mac in the status bar.

## Known Issues Specific to Linux

### Qt libpng version

- Depending on what version of libpng.so is installed, there might be many warnings from programs compiled with Qt (SystemOutliner, ModelEditor, RunManager, ResultsViewer). There is currently no fix for this problem. Hopefully the next version of Qt will be compiled with a more up-to-date libpng. This does not seem to affect the correctness of any OpenStudio software; it just causes a large number of warning messages on the terminal.