

OpenStudio Version 0.11.0 Build 11573

Release Notes – 03/29/2013

These release notes describe a particular version of the OpenStudio software suite developed by the National Renewable Energy Laboratory (NREL), Electricity, Resources, and Building Systems Integration Center (ERBSIC), 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>.

Installation Notes

OpenStudio is supported on Windows XP – 7, OS X 10.7 – 10.8, and Ubuntu 12.04.

Installation Steps

- Download and install [EnergyPlus 7.2](#).
- OpenStudio SketchUp Plug-in requires [SketchUp](#) 8.0 or later (not available for Linux).
- Download and install [OpenStudio](#).

Optional Installation Steps

- For Radiance integration, download and install [Radiance](#).
- If you plan to use the OpenStudio SDK Ruby bindings via command prompt on Windows, download and extract [ruby.zip](#) to C:\Ruby (or other desired location), and add C:\Ruby\bin to the PATH environment variable.
- Install the DAKOTA algorithm library as described on the [developer pages](#) if you plan to run large-scale analyses with the Ruby bindings.
- Download and install the [32-bit OpenSSL libraries](#) if you will be running simulations remotely through an SSH connection on Windows.

Overview

The OpenStudio Version 0.11.0 release focuses on extensions to the SDK to enable a user-configurable parametric tool. The Parametric Analysis Tool (PAT) lets users modify a baseline OpenStudio model using OpenStudio measures to produce design alternatives. OpenStudio measures are specially formatted Ruby scripts and accompanying files for modifying energy models in OpenStudio or EnergyPlus format. A small library of measures is included in the installer; more measures are available for download from the [Building Component Library](#), and users can create their own measures by following the [Measure Writing Guide](#). In PAT, modifications to the baseline energy model are specified by selecting a measure and setting its argument values. Mutually exclusive choices (e.g. alternative values of the South façade window-to-wall ratio) are typically placed in a measure group to ensure that a design alternative's measures do not conflict with or overwrite each other. Design alternatives are specified by choosing 0-1 measures from each group. Users can debug their measures and other simulation steps by reviewing the detailed information on the simulation run tab. Upon successful simulation, summary energy metrics for each design alternative are reported on the results tab, where the final models may also be opened in the OpenStudio Application.

OpenStudio 0.11.0 supports EnergyPlus 7.2.

New Features

OpenStudio Platform 0.11.0

- Added infrastructure for OpenStudio measures. Formerly, these were single Ruby scripts containing a class derived from `ruleset::UserScript`. This notion has been expanded to define a measure as an entire directory containing *measure.xml*, *measure.rb*, a *tests* folder, and an optional *resources* folder. For a full description of how to write measures, see the [Measure Writing Guide](#). Individual features in support of measures include:
 - Added the `BCLMeasure` class to facilitate creating, loading, updating, and saving of measures. It also allows you to change the default location of your *My Measures* directory, as well as load measures stored in the Local BCL, PAT's installed measures directory, or from *My Measures*.
 - Updated the `RemoteBCL` class to download measures from the Online BCL.
 - Added the `ruleset::OSResult` class and related `ruleset::OSRunner` methods to return detailed runtime information from OpenStudio measures. These results are available for inspection in the Parametric Analysis Tool, the Sketch-Up Plugin, the OpenStudio Application, and the analysis framework.
 - Refactored `ruleset::OSRunner` to be less Sketch-Up Plugin-specific, and to provide more assistance to measure writers.
 - An embedded Ruby interpreter is available for use in applications. Helper classes and methods for using this interpreter to extract arguments from `openstudio::BCLMeasures`

are available in the ruleset sub-project. Arguments may be extracted from BCLMeasures using the Ruby bindings via `OpenStudio::Ruleset::getArguments(BCLMeasure)`.

- Enhanced the analysis framework in support of the Parametric Analysis Tool. The framework was originally designed for use in custom Ruby script applications. To make it more suitable for interactive GUI applications and address a few known deficiencies, the following features were added:
 - Extended the analysis framework to provide setting and editing methods, dirty flags propagated by Qt signals, and flags on the Analysis class that indicate when results or data point definitions are out of date.
 - Created the `analysisdriver::SimpleProject` class to provide standardized access to all of the classes involved in creating, saving, and running a single `analysis::Analysis`. Includes support for maintaining a project-specific library of BCLMeasures.
 - Generalized `analysis::Problem` to better support EnergyPlus measures and measures of any type that should be run in every `analysis::DataPoint`'s workflow. Problems are now defined by a vector of `analysis::WorkflowSteps`, each of which is either an `analysis::InputVariable` or a `runmanager::WorkItem`.
 - Errors, warnings, and other `runmanager::Job` runtime information are persisted in the RunManager database, and are now available for each `analysis::DataPoint` on a per-WorkflowStep basis.
- Improved Windows file system integration. Registered the .osm and .osp file extensions on Windows such that they can be double-clicked and automatically launch with OpenStudio or the ParametricAnalysisTool, respectively. File system integration for Linux and OS X will be included in an upcoming iteration release.
- Added support for building OpenStudio with Visual Studio 2010.

OpenStudio SketchUp Plug-in 0.11.0

- Improved general performance and stability.

OpenStudio Application 0.11.0

- Improved general performance and stability.

OpenStudio ParametricAnalysisTool 0.11.0

- A new application has been added to the OpenStudio tool suite. The application provides an easy-to-follow workflow for generating and comparing parametrically-related design alternatives. The specific capabilities of the tool are user-configurable through the development and sharing of OpenStudio measures.
- The application is organized into four tabs:
 - Organize and Edit Measures
 - View and use measures from your OpenStudio installation, the Building Component Library (BCL), and from your personal measures library.
 - Create new measures from scratch or by copying an existing measure.

- Instance measures by dragging them into your project and assigning specific argument values.
 - Organize measure instances into groups of mutually exclusive design choices appropriate for your particular project(s).
 - Set the baseline model for your analysis.
- Create Design Alternatives
 - Choose which individual measures, or combinations of measures, you want to apply to the baseline model.
 - Specify any alternate models you want to compare to the baseline model. (Measures cannot be applied to alternate models. The baseline weather file and design days will be used even if the alternate model specifies different weather information.)
- Run Simulations
 - Create and simulate the baseline model and all design alternatives.
 - Monitor simulation progress and evaluate error, warning, and informational messages on a per-workflow step basis.
- Create and View Reports
 - Currently contains a single view of high-level results for the baseline and design alternative models. Metrics for the alternative models are presented in absolute and percent savings (over baseline) terms.
- The application partially interoperates with the OpenStudio Application. In particular, models can move back and forth between the two applications, but at this time, they do not carry their measures/scripts or simulation results with them. More uniform handling of measures, simulation workflows, and simulation error reporting is planned for a future release.

OpenStudio RunManager 0.11.0

- No changes.

OpenStudio ResultsViewer 0.11.0

- No changes.

OpenStudio PolicyAnalysisTool

- Deprecated in favor of the ParametricAnalysisTool.

OpenStudio Ruby Bindings 0.11.0

- New objects and methods are available in the Ruby bindings. In general, functionality available in C++ is also available in Ruby with minimal syntactical changes. The Ruby API documentation is no longer readily accessible from the OpenStudio website because in most situations the C++ documentation is preferred. However, to check particular syntax, advanced users may still consult <http://openstudio.nrel.gov/ruby-sdk-documentation> or <http://openstudio.nrel.gov/latest-ruby-sdk-documentation>.

OpenStudio C# Bindings 0.11.0

- New objects and methods are available in the C# bindings. Please refer to 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 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. [bug 36]
- Using SketchUp's undo operation on OpenStudio model elements may produce unexpected results. [bugs 438 and 797]
- SKP and OSM link is not maintained when files are relocated. You can manually re-establish that link. [bug 61]
- 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 for assistance. [bug 24]
- When in render by data mode with a SQL file loaded, the model will be slow to respond when you change the time of day or time of year. [bug 381]
- Some models may not intersect or match correctly. Email openstudio@nrel.gov for assistance if this happens. [bug 856]
- Importing Constructions and Import Schedules from the OpenStudio SketchUp Plug-in are broken, but you can load an OSM file as library in the OpenStudio application and then selectively drag specific objects into your model. [930]

OpenStudio Application

- The Site / Utility Rates subtab the workflow are marked as “coming soon,” and will be completed in upcoming releases of OpenStudio.
- To enable set point schedule drop zones on Thermal Zones tab, you need to first turn on the thermostat.
- Using the mouse scroll wheels while hovering over graphics in the results summary tab will inadvertently zoom them in and out. [bug 574]
- 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. [bug 722]

- 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. [bug 925]
- Not all of the schedules required to make a valid People object can be assigned in the application. [bug 664]
- The 3-phase daylighting simulation method is currently inoperable, due to a fundamental change in the way the lighting calculation points are passed to Radiance. [bug 943]
- A crash when running the simulation can be produced if the required “Availability Schedule Name” field is missing from OS:Coil:Cooling:DX:TwoSpeed objects. [bug 1027]

OpenStudio ParametricAnalysisTool

- The *Update All of My Measures* button doesn’t accurately report how many new measures were detected, how many measures were removed, and how many were updated. [bug 1205]

OpenStudio ResultsViewer

- Alias changes do not update in table view until the data are read in again. [bug 7]
- 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. [bug 78]
- Table view column rearrangements are not preserved. [bug 34]

OpenStudio RunManager

- EnergyPlus ForwardTranslator errors do not appear in the RunManager GUI elements (Bug 897)

OpenStudio Platform, Including SWIG Bindings

- `IdfObject::getQuantity` and `IdfObject::setQuantity` functionality is almost, but not completely, 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. [bug 1005]

Known Issues Specific to Mac

- At this time, we are unable to provide simple installation instructions for DAKOTA on OS X. We are working with the DAKOTA team to be able to provide this sometime in early 2013. [bug 437]

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. The button state may also be incorrect. This is a bug in SketchUp versus the plug-in. [bug 375]
- The Color scale in the Render Settings dialog appears in grayscale versus color. Render by data is slow to update when time or date is changed. [bug 379]