OpenStudio Version 1.3.0

Release Notes – 3/28/2013

These release notes describe version 1.3.0 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 http://openstudio.nrel.gov/openstudio-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 XP – 8.1, OS X 10.8 – 10.9, and Ubuntu 12.04.
OpenStudio Version 1.3.0 supports EnergyPlus Release 8.0.

Installation Steps

- Download and install EnergyPlus 8.0.
    - Download EnergyPlus 8.0. 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 8.0 or SketchUp 2013 (not available for Linux). SketchUp 2014 is supported for windows, but not yet for Mac.
- 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.

- 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.

Overview

Development for OpenStudio 1.3.0 has two main focuses.

- Development continuation of the refrigeration interface and addition of new refrigeration model objects. This resulted in a new detailed component grid-view of refrigeration systems. The development was carried out with requirements gathering and guidance from practitioners. The new refrigeration objects include contributions from Oak Ridge National Laboratory.

- Enhancements of model objects and methods in support of a collection of Energy Conservation Measures. ECMs were developed to model the recommendations from both the ASHRAE 50% Advanced Energy Design Guide for K-12 Schools, and the ASHRAE 50% Advanced Energy Design Guide for Small to Medium Offices. The ECMs are posted to the Building Component Library (BCL) in conjunction with this OpenStudio release. In addition, ECM supporting material is included with the OpenStudio installer. This includes:

  - A new multi-space type office template.
  - New objects to map constructions and space types to their intended uses.
  - New fenestration methods to describe view and daylight fenestration and skylights.

New Features

OpenStudio Platform 1.3.0

- Improved Standards Data Dictionary (SDD) translation for the California Energy Commission's CBECC tool.
- Added model objects needed for refrigeration systems – Contributed by Oak Ridge National Laboratory. See the OpenStudio's Contributors page.
- Added HVAC objects from the OpenStudio's HVAC roadmap.
- Added climate zone tags to the model. This is in support of measures that need to know what climate zone the model is in.
- Added tags to constructions to indicate both the intended surface type and the standards construction type. This is in support of measures that need to know if a construction represents a steel framed or mass wall.
- Added tags to space types to indicate what building type it is intended for, and what specific space type to map it to. This is in support of measure that will apply to only certain types of spaces.

- Added tags to the building object to indicate what building type this model represents. This is also in support of measures that have different behaviors depending upon the building type.
- Created a new multi-space type Office Template to replace the whole building small, medium and large office templates. This allows measures to be applied to specific space types within and office building. It also gives the modeler more control over the ratio of various space types in their model.
- Added new methods to create and apply skylight grids to roofs.
- Added new methods to apply view and daylight glazing in conjunction with exterior shading and interior light shelves.

OpenStudio SketchUp Plug-in 1.3.0
- Updated templates to use the new tags added for constructions and space types. Also, updated infiltration to be on a per exterior wall area vs. air changes per hour.
- Continued to develop experimental user script to import OpenStudio spaces as standard SketchUp groups and to merge SketchUp groups back to OSM files.

OpenStudio Application 1.3.0
- Added customizable pull down menus for standards related tags for climate zones, constructions, space types, and building types. These menus show up in the site, constructions, space types, and facility tabs.
- Updated refrigeration systems in the GUI to support walkin cases.
- Added a detailed component based interface for refrigeration systems interface including cascading systems. A grid style interface has also been added to view multiple refrigerated cases and walkins all in a single view.
- Added support for Variable Refrigerant Flow (VRF) systems.
- Added support for zone exhaust fans.
- Added support for supply and return plenums.

OpenStudio ParametricAnalysisTool 1.3.0
- Improved general performance, stability, and usability.

OpenStudio RunManager 1.3.0
- No changes.

OpenStudio ResultsViewer 1.3.0
- No changes.

OpenStudio Ruby Bindings 1.3.0
- No changes.

OpenStudio C# Bindings 1.3.0
- No changes.

OpenStudio Python Bindings 1.3.0

- 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 1.3.0

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

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. [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 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 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]
- Some pull-down lists in simulation settings don't work. [issue #496]
- 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]
- RefrigeratedCaseAndWalkinListName field showing in inspector when it should not. [issue #946]
- OpenStudio App will crash if you create a new "Glazing Group Thermochromic Windows Material". [issue #949]
- 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 are 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.
- The OSM to Radiance translation doesn't support solar diffusing. This affects materials that have a switch in the GUI for "Solar Diffusing" when you use radiance for daylighting calculations.

OpenStudio ParametricAnalysisTool

- 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.

- PAT won't prevent you from loading OSM files that are from a newer version of OpenStudio than you have installed, but the analysis won't run. [issue #330]
- 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]
- If a measure causes a ruby error, the error details won't show in PAT, and you may see a failed job without an indication of which task it failed on. [issue #939]
- PAT can crash in certain cases when a measure instance is removed from tab 1 but its arguments still shows up in the inspector. [issue #941]

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. [bug #239]

Known Issues Specific to OS X

- To install OpenStudio 1.0 and greater on OS X you need to first uninstall earlier versions of OpenStudio. [bug #365]
- 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]

- OpenStudio 1.3 doesn't support SketchUp 2014 on Mac. This will be addressed in a future release.

Issue Statistics Since Previous Release

- 117 new issues were filed since the 1.2.0 release of OpenStudio (not including closed pull requests).
- 46 issues were closed since the 1.2.0 release of OpenStudio (not including closed pull requests).