OpenStudio Version 2.4.0

Release Notes – 12/29/2017

These release notes describe version 2.4.0 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

Where to Find OpenStudio Documentation

- OpenStudio release documentation, including these release notes, tutorials, and other user documentation, is available at https://www.openstudio.net/.
- C++ API documentation is available at https://openstudio-sdk-documentation.s3.amazonaws.com/index.html.
- Measure development documentation is available at http://nrel.github.io/OpenStudio-user-documentation/reference/measure_writing_guide/.

Installation Notes

OpenStudio is supported on Windows 7 – Windows 10, OS X 10.10 – 10.11, and 64-bit Ubuntu 14.04.

OpenStudio 2.4.0 supports EnergyPlus Release 8.8.0, which is bundled with the OpenStudio installer. It is no longer necessary to download and install EnergyPlus separately. Other builds of EnergyPlus are not supported by OpenStudio 2.4.0.

OpenStudio 2.4.0 supports Radiance 5.0.a.12, which is bundled with the OpenStudio installer; users no longer must install Radiance separately, and OpenStudio will use the included Radiance version regardless of any other versions that may be installed on the system. Other builds of Radiance are not supported by OpenStudio 2.4.0.

Installation Steps

- The OpenStudio SketchUp Plug-in requires SketchUp 2017 (not available for Linux). The OpenStudio SketchUp Plug-in does not support older versions of SketchUp.
    - If the OpenStudio Plug-in does not automatically load in SketchUp, open the Window->Preferences->Extensions window in SketchUp and enable the OpenStudio plug-in if it is listed.
- Download and install OpenStudio. Select components for installation.
- 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.

For help with common installation problems please visit, http://nrel.github.io/OpenStudio-user-documentation/help/troubleshooting/.

Overview

OpenStudio SDK:

Many new external interface objects have been wrapped and are available in the API:

- OS:ExternalInterface
- OS:ExternalInterface:Schedule
- OS:ExternalInterface:Variable
- OS:ExternalInterface:Actuator
- OS:ExternalInterface:FunctionalMockupUnitImport
- OS:ExternalInterface:FunctionalMockupUnitImport:From:Variable
- OS:ExternalInterface:FunctionalMockupUnitImport:To:Schedule
- OS:ExternalInterface:FunctionalMockupUnitImport:To:Actuator
- OS:ExternalInterface:FunctionalMockupUnitImport:To:Variable
- OS:ExternalInterface:FunctionalMockupUnitExport:From:Variable
- OS:ExternalInterface:FunctionalMockupUnitExport:To:Schedule
- OS:ExternalInterface:FunctionalMockupUnitExport:To:Actuator
- OS:ExternalInterface:FunctionalMockupUnitExport:To:Variable

OS:Output:Variable, OS:EnergyManagementSystem:OutputVariable, OS:ExternalInterface:Schedule, OS:ExternalInterface:Variable, OS:ExternalInterface:Actuator have received the new IDD field “Export To BCVTB” which defaults to “True”. If set to true, it will add the variable or external interface object to the variable.cfg file that is now auto-generated on E+ translation. Note: the order of the variables in the file is not guaranteed to remain the same between different translations, however it can be easily hand-edited.

The OpenStudio SDK now includes the EMPD (Effective Moisture Penetration Depth) model, a simplified approach to simulate surface moisture adsorption and desorption.

OpenStudio Server:

Several new algorithms have been added to the OpenStudio Server and are available thru PAT:

- GA (https://cran.r-project.org/web/packages/GA/GA.pdf) is a single objective Genetic Algorithm with hybrid gradient search that will added in a future release.
- GAIsl (https://cran.r-project.org/web/packages/GA/GA.pdf) is an Islands Genetic Algorithm where parallel independent GAs are executed in each island and only occasionally sparse exchanges of individuals are performed among the islands.
- fast99 (https://cran.r-project.org/web/packages/sensitivity/sensitivity.pdf) is the Extended Fourier Amplitude Sensitivity Test. fast99 implements the so-called "extended-FAST" method (Saltelli et al. 1999). This method allows the estimation of first order and total Sobol’ indices for all the factors.

Existing OpenStudio Server algorithms received the following improvements:

- Morris R2 parameter is available for using the Campolongo space filling improvement.
- Sobol now has the following methods available for computing Sobol indices:
    - Sobol
    - Sobol2002
    - Sobol2007
    - Jansen
    - Mara
    - Martinez
- 'random_seed' is now an algorithm level parameter and can be set for reproducibility across analyses. The default value is nil which makes repeated runs non-deterministic.
- R is now using version 3.4.2.
- Rserve is now using version 1.8-4.

Known Issues

DView is not currently available in Ubuntu packages. We hope to address this soon.

Issue Statistics Since Previous Release

- 51 new issues were filed since the 2.3.0 release of OpenStudio (not including opened pull requests).
- 156 issues were closed since the 2.3.0 release of OpenStudio (not including closed pull requests).