OpenStudio Version 3.4.0

Release Notes - 04/27/2022

These release notes describe version 3.4.0 of the OpenStudio SDK developed by the National Renewable Energy Laboratory (NREL), Buildings and Thermal Sciences Center, Commercial Buildings Research Group, Tools Development Section, and associated collaborators. The notes are organized into the following sections:

- Overview
- Where to Find OpenStudio Documentation
- Installation Notes
- OpenStudio SDK: Changelog

Overview

As of April 2020, development and distribution of the OpenStudioApplication and the SketchUp plugin have transitioned to the OpenStudio Coalition, who is independently managing and distributing the software through its own openstudiocoalition/OpenStudioApplication repository. The OpenStudio SDK is continuing to be actively developed and distributed by NREL and is released two times per year, through a spring and a fall release.

Below is the list of components that is included in this SDK installer:

OpenStudio SDK 3.4.0 - EnergyPlus - Command Line Interface (CLI) - Radiance - Ruby API - C++ SDK

Note that PAT is not included in either the SDK or the OpenStudio Coalition's Application installers. You will need to install PAT separately which is distributed on the OpenStudio-PAT GitHub page.

Where to Find OpenStudio SDK Documentation

- OpenStudio SDK 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/
- A roadmap for planned features is available at http://nrel.github.io/OpenStudio-user-documentation/getting_started/roadmap/.

Installation Notes

OpenStudio SDK 3.4.0 is supported on 64-bit Windows 7 – 10, OS X 10.15, and Ubuntu 18.04, 20.04

OpenStudio SDK 3.4.0 supports EnergyPlus Release 22.1.0, 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 SDK 3.4.0.

OpenStudio SDK 3.4.0 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 SDK 3.4.0.

As usual, you can refer to the **OpenStudio SDK Compatibility Matrix** for more information.

Installation Steps

- Download and install OpenStudio SDK and/or openstudiocoalition/OpenStudioApplication depending on your needs. Select components for installation. Note that OpenStudio Application is a standalone app and does not require you to install OpenStudio SDK.
- 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.
- The OpenStudio Application SketchUp Plug-in requires SketchUp 2019 (not available for Linux). The OpenStudio Application SketchUp Plug-in does not support older versions of SketchUp. SketchUp must be installed before OpenStudio Application to automatically activate the plugin. If you install SketchUp after OpenStudio Application, simply re-run the OpenStudio Application installer.

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

OpenStudio SDK: Changelog

The 3.4.0 is a major release. This update includes several new features, performance improvements, and bug fixes. You can find the list of Pull Requests that got into this release here.

Python Bindings

As of OpenStudio SDK 3.2.0, Python bindings are officially supported and distributed through Python Package Index (PyPI). To install, users will need to

have Python3 installed along with pip and simply run the following command in a terminal window.

```
pip install openstudio==3.4.0
```

Please see openstudio on PyPi for further instructions on how to install. Users can also visit the test channel at https://test.pypi.org/project/openstudio/ to install development bindings.

New Features, Major Fixes and API-breaking changes

- #4560, #4540 - Update to EnergyPlus v22.1.0
- #4550 - Addresses #4403, add Sql helper methods to retrieve assembly U-factor, SHGC, and Visible Transmittance values for glazing systems
- #4456 - Fix #4456 - Improve performance of OpenStudio::UnzipFile::extractAllFiles
- #4424 - Fixes #4361 OpenStudio API-reported surface "netArea" (when dealing with Frame & Divider objects)
- #4502 - #4496 - Add gems cbor and msgpack and allow using a package from an openstudio-gems PR
- #4497 - Addresses #4495, ElectricLoadCenterDistribution FT has incomplete charge/discharge logic
- #4494 - Addresses #4483, OS:Coil:Heating:DX:MultiSpeed:StageData has no Name field
- #4499 - Addresses #4410, wrap AirflowNetwork:MultiZone:SpecifiedFlowRate
- #4510 - Addresses #4509, bad nodes created for AirLoopHVAC:UnitarySystem with only cooling coil and supplemental heating coil
- #4508 - Addresses #4469, method to reverse translate the EnergyPlus ScheduleYear object to the OpenStudio ScheduleRuleset object
- #4525 - Fixes #4387 gltf changes as per PR 4520 comments/suggestions
- #4485 - Fixes #4438 gbXML export order is not reproducible
- #4444 - Fixes #4375 gbXML Import reverses floors/ceilings normals and surface types
- #4527 - Fixes #4372 intersection issue found using create bar
- #4535 - Fixes #4533 - Wrap SurfaceProperty:LocalEnvironment and SurfaceProperty:SurroundingSurfaces
- #4513 - Addresses #4457, support gbXML reverse translation where user-input `<Name>` is different from the ID
- #4534 - Addresses #4311, add water heaters (mixed or stratified) to the supply side of different plant loops using source/use side connections (e.g., to configure a heat recovery chiller)
- #4528 - Cooling tower fixes (ctor for SingleSpeed, and missing IDD defaults) and model tests
- #4520 - Adds exports functionality to a use web standard glTF to replace deprecated three.js JSON format
- #4548 - Addresses #4531, breaking changes for some model getters:
  - CoolingTower:*Speed

        * `evaporationLossMode` (`boost::optional<std::string>` to `std::string`)
        * `blowdownCalculationMode` (`boost::optional<std::string>` to `std::string`)
        * `cellControl` for CoolingTower:VariableSpeed
    - PlantLoop
        * `commonPipeSimulation` (`boost::optional<std::string>` to `std::string`)
        * add new methods: `isCommonPipeSimulationDefaulted`, `commonPipeSimulationValues`, and `validCommonPipeSimulationValues`
- #4505 Addresses #4477, improve handling of invalid values passed to SDK by adding optional switch for turning off IDD validity checking
- #4504 Fix #2941 - Add option to show workflow run stdout + style + timings

Minor changes and bug fixes

- #4487 - Add operator< for BCLComponent and BCLMeasure
- #4482 - Fix #4481 - add missing `\ip-units W` to the OpenStudio.idd
- #4491 - Fix #4490 - Expose RoofGeometry helpers to Swig bindings
- #4498 - Bump to 3.3.1 and add default VT
- #4474 - Better string representation of Matrix and Transformation in the bindings
- #4475 - Add a method on the FT to get known ft options
- #4512 - Update copyrights 2022
- #4537 - Review PR #4534 (for issue #4311) - Proposed changes
- #4553 - HotFix #4550 - Remove getExteriorFenestrationValue from public API
- #4555 - Adjustments to WindowPropertyFrameAndDivider and new model gtest
- #4562 - Update idfs to V22.1.0
- #4564 - update openstudio gems for standards 0.2.16
- #4518 - Bump openstudio-gems, conan-openstudio-ruby and add support for Apple M1
- #4558 - Update macOS M1 (arm64) dependencies

Developer changes:

- OpenStudio-benchmarks - Added additional performance benchmark tests to improve SDK performance.

OpenStudio New Contributors

- @Brijendra21 made their first contribution in https://github.com/NREL/OpenStudio/pull/4525

OpenStudio Standards v0.2.16

- #1229 Fix autosized minimum OA flow rate for OA controllers and ERV SAT control
- #1231 Fixed bug adding duplicate water heater object when adding a heat pump water heater
- #1248 Update deprecated methods from OS 3.2
- #1249 Fix ERV lookup for 90.1-2019
- #1250 Fix high-rise apartment water heater ambient temperature
- #1242 Enable autosizing for HPWHs
- #1244 Fix check for zone unitary system fuel and fan power lookup
- #1253 Fix skylight requirements for 90.1-2016, 90.1-2019
- #1255 Implement new construction search method to accommodate wwr specific lookups
- #1259 Update ground construction properties to use FC factor constructions for non-prototype uses
- #1257 Adjust climate zone lookup in construction search to account certain sub-climate zone variations
- #1263 Add U-values for pre 90.1-2004 attic roofs tagged as residential
- #1268 Update deprecated zone ventilation method
- #1270 Fix non-rectangular sky-light in primary school prototype
- #1271 Remove fluid cooler artifact from geometry templates
- #1272 Add guard clause in the efficiency lookup in case coil has no capacity
- #1276 Updated college building occupancy schedules
- #1281 Correct design outdoor air requirements for some building types, which fixes issue #933
- #1284 Fix #1284 (low U-value constructions) by removing insulation for low U-value constructions
- #1278 Fix issue #1278 by adding lab fumehood exhaust fan
- #1288 Expose occupancy hours for radiant slab controls
- #1291 Fix issue #1226 by also removing AirLoopHVACDedicatedOutdoorAirSystem objects when removing all HVAC systems
- #1292 Fix issue #1100 by adding support for propane heating systems
- #1293 Fix issue #1221 by coordinating inputs to hot water boilers
- #1294 Fix issue #170 by explicitly setting the standards construction type for exterior doors
- #1295 Fix issue #1295 by using longstanding ruby syntax
- #1304 Fix issue #1119 (duplicate constant day schedules) by using a tolerance instead of value check for constant day schedules
- #1305 Enable and fix testing for college and courthouse prototypes #1302
- 1306 Fix issue #1306 by setting the correct arguments when adding psz-ac systems to avoid an empty hot water loop

OpenStudio Server v3.4.0

- Update to 3.4.0 OpenStudio

- #651 Update rails and puma for security patches
- #642 pass in allow_disk_usage to mongo in
- #646 Remove references to travis in documentation and fix badges
- #647 Update rails for security patches

Issue Statistics Since Previous Release

35 Closed Issues 39 New Issues