BuildingSync Updates for ASHRAE Meeting

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Version 2.4 Updates

Version 2.4 Release

- Version 2.4 released to GitHub on **September 30th, 2021**

- Features
  - Add new elements from UDFs
  - Refactor duplicated elements
  - New website
  - Documentation updates
  - New use cases and examples

Category	Count
Controls	0
Documentation	8
General	6
Measures	0
Reports	3
Systems	2
Validation	0
Other	4
Total	23

Minor Breaking and Non-Breaking Changes

Non-Breaking Changes

- Documentation/Support
  - #339, docs: add versioning documentation
  - #344, docs: add notes for making pre-releases
  - #366, Publish geometry reference guide on release
  - #368, Docs/bsync examples
  - #371, update links to buildingsync website
  - #372, fix selection tool urls
  - #386, Update Jupyter notebook
  - #388, renamed selection tool repo to website

- Additions
  - #298, Add AuditorYearsOfExperience
  - #299, Add SpatialUnits
  - #306, Add TotalCommonConditionedAboveGradeWallArea
  - #307, Add TotalRoofArea
  - #308, Add AuditFilingStatus
  - #309, Add EarlyCompliance
  - #310, Add MultiTenant
  - #311, Add AverageAnnualOperatingHours
  - #322, test: add test for duplicate element names
  - #327, build: add gh workflow for building releases
  - #385, Add PRMS in eGRIDRegionCode
  - #387, Add eGRIDSubregionCodes
  - #395, Add MaximumOutsideAirFlowRate

- Modifications
  - #349, Refactor/remove duplicates
  - #392, Update change_log.rb

Major Breaking Changes

There were no major breaking changes in Version 2.4

Selection Tool Updates

- Use cases supported in version 2.4
  - ASHRAE 211 Preliminary Analysis
  - ASHRAE 211 Level 1 Audit
  - ASHRAE 211 Level 2 Audit
  - OpenStudio Level 000
  - OpenStudio Level 100
  - Bsyncr
  - SEED
  - BRICR files on SEED
  - New York City LL87 Audit
  - San Francisco Audit
- Updated BuildingSync/BEDES mappings to BEDES v2.5

Water Conservation Measures (WCMs)

- Water Conservation Measures (Energy Act 2020)
  - ~150-200 WCMs
  - Currently under review with FEMP
- Need to coordinate with RP1836 team
- Align with Audit Template, BuildingSync, CTS, and others?

Suggested Measures for BuildingSync		
MeasureName	**Technology Category**	**Category**
Install noise loggers or listening sticks	ChilledWaterHotWaterAndSteamDistributionSystems	Water-Efficient Technology Opportunities
Use hand-held thermal imaging for leak detection		
Install in-pipe leak detection sensors		
Install fiber optics leak detection sensors		
Use satellite for leak detection		
Implement ground penetration to detect leaks		
Use drone-operated thermal imaging for leak detection		
Implement advanced cooling tower controls	ChillerPlantImprovements	
Use connectionless food steamer	Add CookingEquipments or KitchenImprovements or ChilledWaterHotWaterAndSteamDistributionSystems	
Use multi-Stream rotational sprinkler heads	Add IrrigationSystems or ChilledWaterHotWaterAndSteamDistributionSystems	
Establish traditional wastewater treatment plant		
Install pond system		
Install intermittent sand filter or trickling filter		
Create wetlands		

BSyncPy and Jupyter Notebook

- BSyncPy Package updates (pypi | github)

- Updated Jupyter Notebook for Auditors

  - https://nbviewer.org/github/BuildingSync/schema/blob/develop-v2/docs/notebooks/bsync_examples/Small-Office-Level-1.ipynb

```
Input

from lxml import etree
from bsyncpy import bsync

# Create a root and set the version attribute
root = bsync.BuildingSync()
root.set('version', '2.4.0')

# Valid element attributes can also be passed in as kwargs
f = bsync.Facilities(bsync.Facilities.Facility(ID='Facility-1'))

# Add the facilities.facility elements to the root
root += f

# write the document to disk
with open('output.xml', 'wb+') as f:
    output = etree.tostring(root.toxml(), pretty_print=True, doctype='<?xml
    f.write(output)
```

```
Output

<?xml version="1.0" encoding="UTF-8"?>
<BuildingSync version="2.4.0">
  <Facilities>
    <Facility ID="Facility-1"/>
  </Facilities>
</BuildingSync>
```

BuildingSync Pre-Import Processor

- Package to extract aggregated statistics out of BuildingSync
  - Examples
    - weighted average lighting power density for entire building
    - Principal heating type by area served
    - Age of the oldest boiler
- Will be imported into SEED as high-level, trackable building characteristics
- Can be used as a launching point to translate to UNIFORMAT based on assets in the BuildingSync

Version 3.0-pr1 Updates

Version 3.0-pr1 Release

- Version 3.0-pr1 released to GitHub on **September 30th, 2021**
- Features
    - Remove flagged deprecated items
    - Add version translator
    - Alignment with CTS

Category	Count
Controls	0
Documentation	2
General	4
Measures	8
Reports	0
Systems	5
Validation	0
Other	5
Total	24

Minor Breaking and Non-Breaking Changes

Non-Breaking Changes

- Additions
  - #348, Feat/translation
  - #360, Feat/v2 to v3 translation updates
  - #378, Feat/v3 to v2 translation

- Modifications
  - #350, Refactor/update simple types

- Documentation/Support
  - #346, Docs/versioning v3
  - #373, Docs/selection tool
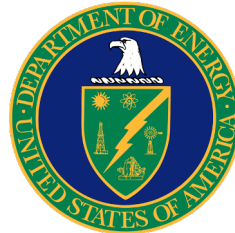
Major Breaking Changes

Breaking Changes

- Deprecations
  - [#271](), Remove 'Add heat recovery' from EMCS Technology Category
  - [#272](), Remove 'Separate SHW from heating' from Hot Water Systems
  - [#275](), Remove Energy cost reduction through rate adjustments – uncategorized
  - [#329](), Remove other redundant items
  - [#331](), Remove redundant "Add or replace cooling tower"
  - [#342](), Deprecate MORE in eGRIDRegionCode
  - [#345](), Deprecate WallID as direct child under Side
  - [#351](), Deprecate InstalledFlowRate under FanSystem

- [#352](), Deprecate PrimaryHVACSystemType
- [#353](), Deprecate OutputCapacity for HeatingSource and HeatingPlant types
- [#354](), Deprecate Capacity and CapacityUnits in Delivery
- [#364](), Deprecate DoorID and WindowID as direct Child under Side
- [#394](), Deprecate eGRIDRegionCode
- [#396](), Deprecate MaximumOAFlowRate

- Modifications
  - [#334](), Correct capitalization - change `Convert to Cleaner Fuels` to `Convert to cleaner fuels`
  - [#335](), Address issue using `/` with spaces
  - [#341](), Refactor Measurename minOccurs maxOccurs
  - [#389](), Refactor/remove old versions

Thank you!

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