**Proposal for New BEM Standard on Compliance Software**

November 2019

Building energy modeling software is commonly used to show compliance with building energy codes and standards as well as beyond code programs. Many of these software programs implement rulesets such as ASHRAE Standard 90.1 Performance Rating Method (Appendix G), that take the user’s building energy model and automatically modify it to create the proposed and baseline building energy model. This transformation process is complex and fraught with mis-interpretation due to the complexity of the original standard. Review of these models is tedious and requires substantial expertise, beyond the capabilities of most code officials. While ASHRAE Standard 140 tests some of the physics involved in BEM, there is no standard method of testing the implementation of the rulesets. A new ASHRAE Standard is being developed which would provide acceptance criteria and an automated testing framework for software tools that implement rulesets such as Appendix G, removing much of the review burden from code officials and program implementors. The framework would comprise of the following components (i) a structured data format representing modeling inputs and outputs; (ii) An open-source verification tool, which would read a model represented in the structured data format to verify the implementation of the ruleset; (iii) Test cases, represented in the structured data format for testing and verification of the verification tool. Such a process of verification of ruleset implementation and a standard which could be used to enforce this process can help improve implementation of rulesets in software tools and provide additional confidence and guidance to jurisdictions adopting these rulesets for code compliance or beyond code programs.

**Title:** Protocol for Evaluating Ruleset Implementation in Building Performance Modeling Software

**Purpose:** This standard establishes tests and acceptance criteria for implementation of rulesets (e.g. modeling rules) and related reporting in building performance modeling software

**Scope:**

2.1 This standard applies to building performance modeling software that implements rulesets.

2.2 This standard applies to rulesets associated with new or existing buildings and their systems, system controls, their sites, and other aspects of buildings as described by the ruleset implementation being evaluated

Reference:

Roth, Amir. “Rulesets are Great. Certified Rulesets are Greater.” ACEEE Summer Study on Energy Efficiency in Buildings. 2018.

<https://aceee.org/files/proceedings/2018/assets/attachments/0194_0286_000360.pdf>

**Timeline**

* 3 years
  + Goal: at least have this completed for app g
  + Will be a standing standard – will be updated as standards are updated and additional rulesets might be added in the future