IBPSA-USA Advancing Standardized BEM Output Reporting

Overview

The IBPSA-USA Building Data Exchange (BDE) Committee has been working to address long-standing inconsistencies in Building Energy Modeling (BEM) output reporting. The 2023-2024 project, *Review of BPM Protocols and BEM Reporting Output,* analyzed reporting requirements across protocols and software, identified 48 categories, and revealed significant fragmentation in how outputs are defined. This work showed that inconsistent terminology and data structures hinder automation efforts, add to reviewer burden, and reduce the usefulness of models for compliance, performance rating, and design-assist applications. Building on these findings, the 2024 project, *BEM Compliance Reporting Automation Roadmap*, set out a vision for schema-driven reporting and began outreach to Authorities Having Jurisdiction (AHJs), software developers, and practitioners, highlighting the need to move from conceptual frameworks to practical schema development, example reports, and active stakeholder engagement.

The next phase of this effort will focus on moving from vision to implementation by developing a standard data model specification for BEM output reporting, along with modern, automatically generated human-readable report(s) to showcase what the schema enables. Together, these specifications will create a bridge between automation and practical application, enabling both streamlined compliance workflows and easier interpretation of results.

Funding is provided by the Department of Energy's Building Technology Office, with a total budget of $16,000 allocated for this scope of work.

Scope of Work

IBPSA-USA is seeking a consultant to collaborate with the BDE Output Reporting working group in developing this data model specification, example file(s) compiling the aforestated specification, and example report(s) automatically generated from the example building energy simulation data.

Qualifications

The following are requirements for this Scope of Work:

- Contractor shall demonstrate knowledge and understanding of the past related projects, including the 2023 *Review of BPM Protocols and BEM Reporting Output* final report and supporting matrices.
- Contractor shall demonstrate working knowledge of the most commonly used BEM software engines and interfaces, and their input/output formats..
- Contractor shall demonstrate prior experience with ASHRAE Standard 232, and its application to this and other BDE projects to publish IBPSA-USA consensus documents.

Tasks

The consultant will complete the following major tasks in coordination with the BDE Output Reporting Working Group:

Task 1 – Working Group Coordination and Review
- Organize, facilitate, and manage regular meetings with the IBPSA-USA BDE Output Reporting Working Group for the duration of the project. Meetings to occur bi-weekly, or as needed.
- Provide meeting agendas, notes, and action tracking to ensure alignment between the subcontractor, BDE volunteers, and the PEC.

Task 2 – Data Model Specification, Example Files and Automated Reports
- Develop a data model specification that defines data groups, enumerators, metadata and other content necessary to adequately represent BEM simulation results for reporting protocols. The data model shall include, but not be limited to, the following:
  - Energy end-use categories (e.g., interior lighting, space heating, etc.)
  - Energy sources (e.g., electricity, natural gas, purchased chilled water, etc.)
  - Treatment of whether energy use is "regulated" or "unregulated".
  - Treatment of renewable energy generation.
  - Metadata (e.g., project name, location, climate zone, software version, etc.)
  - Treatment of units (e.g., IP, SI).
  - Reporting timestep (e.g., annual, monthly, hourly, etc.).
- Provide recommended mapping of output data from at least three commonly used BEM software engines in order to demonstrate how the data model accommodates a variety of commonly used tools.
- Provide at least two example data files that represent realistic energy model outputs that follow the data model specifications.

- Create software that can automatically produce at least one human-readable report from the provided example files. These reports should summarize the output data in a way that aligns with current common reporting styles and protocols, while also incorporating dynamic, colorful visualizations to offer more contemporary data viewing methods than traditional BEM reports. Multiple reports may be provided, as needed to achieve both objectives.
- **Deliverables:**
  - o Draft submission: Share repository with each document described in this task for review by the Working Group. This will be an internal deliverable.
  - o Final submission: Address feedback and comments from the Working Group on the draft submission in a final version.

Task 3 – Outreach

- Organize and host one recorded webinar to present project outcomes, demonstrate schema/reporting examples, and gather community feedback.
- **Deliverable**: Memo summarizing the webinar and feedback.

Deliverables and Timeline

Deliverable/Milestone	Date
Issue RFP	September 29, 2025
Proposal Deadline	October 31, 2025
Project Kick-off	December 1, 2025
Task 1: Working Group Coordination and Review	June 2026
Task 2: Data Model Specification, Example Files and Automated Reports	May 2026
Task 3 – Education and Outreach	June 2026

Format for Submittals

1. **CV and Team Expertise:** Description of general qualifications, specific evidence of relevant experience, and a listing of key personnel that would be available to work on this project.

2. **Cost:** Proposed hourly billing rate for each team member. Also provide a proposed total budget for this project (not-to-exceed), and a description of any match funding or in-kind contributions that would be provided.

3. **Description of Approach:** Provide a description of the consultant's approach to meeting the project objectives and deliverables. Describe how past experiences have contributed to the consultant's qualifications to successfully complete this project.

3. **Comparable Projects:** Summary of past projects that demonstrate the consultant's expertise, including links to published documents or repositories, as appropriate.

Evaluation of Submittals

IBPSA-USA will evaluate all submittals to determine which Consultants have the experience, and qualifications, and approach that are best suited for this project.

IBPSA-USA may in the course of soliciting proposals:
- modify the timeline
- negotiate with one or more respondents to modify the proposed scope
- solicit contracts with one or more respondents for all or a portion of the work
- opt not to pursue any proposals at the current time

Submission Schedule

Submit proposals in PDF form via email to Hanif Smith, executive.director@ibpsa.us, by 5:00pm Pacific time on October 31, 2025.

References

1. https://www.ibpsa.us/wp-content/uploads/2023/06/FINAL-IBPSA-USA-RFP-BPM-and-BEM-Output-Review.docx.pdf
2. https://www.ibpsa.us/wp-content/uploads/2024/07/Output-IBPSA-BPM-Research-Project-Final-Report-2Feb2024-with-Appendices.pdf
3. https://www.ibpsa.us/wp-content/uploads/2024/07/IBPSA-USA-RFP-Output-Reporting-Road-Map-DRAFT.docx.pdf