

## BEDES Technical Working Group

First Meeting—December 12, 2013 (1:30-5:00)

Renaissance Downtown Hotel

Convener: Norm Bourassa, Lawrence Berkeley National Laboratory

Facilitator: Dr. Jonathan Raab, Raab Associates, Ltd.

### Meeting Summary

36 people attended the meeting either in person or over the phone. The slide decks can be found on the BEDES [website](#).

#### Welcome, Introductions, and Overview of TWG Process | 1:30

After introductions, Norm Bourassa, LBNL welcomed the TWG members, and Dr. Raab reviewed the TWG process and ground rules. LBNL then recapped the SWG discussion about BEDES use cases.

#### Guidelines for Inclusion/Exclusion of Fields | 2:00

**Presentation.** After a brief tour of BEDES, LBNL staff presented potential parameters to use in developing guidelines for the inclusion/exclusion of fields in BEDES including: 1) importance; 2) ease of collection; 3) accuracy, and 4) whether a field is independent or derived.

**Discussion.** Following the presentation, the TWG members discussed the different parameters. Some of the questions and comments included:

- Question: does BEDES define each field's unit of measure?
  - Response: Yes for the most part. There are a few cases where there are options for units of measure.
- Add second level tag to designate default, verified, collected, the source, derived (meta-data)
- The use case influences how important values are and how easy they are to collect
- A time-stamp or date of verification is useful to understand the value of the data.
- The source of the data is also important. For example, is utility data electronically transferred from the utility or hand-entered from paper bills?
- Is the goal intersection or unification or specs?
- BEDES needs quality control built into it.
- Longevity of BEDES: Just because data is difficult to obtain now doesn't mean it will always be. The criticality of the data should be the primary factor, not ease of collection.
- BEDES could also be used to bring consistency to conversion factors
  - Response: We would provide the definition for the field, but not the way you calculate that field, the UMP does that
- How reactive will BEDES going to be if someone submits a list of new variables?
- What designates BEDES compliance?

- We should be over inclusive. Define all possible data.
- Suggest picking a consistent means of defining units, either as a default tied to the value, or as a second field of enumerated type list that is attached to a value field.
- There is also a benefit to keeping track of where the data came from (utility, self-reported, software tool, etc), and whether it was measured, calculated, simulated.
- Derived values are very important, and should be included (for example EUI is derived from energy consumption and square footage, and r-value can be derived from insulation type and thickness)
- We don't need to define the calculation for how the fields are derived, just provide a placeholder for them
  - Response: other efforts have developed calculation methodologies
- Even though BEDES should aim to be inclusive, data fields can be given priority labeling in order to give some insight on data collection prioritization
- Communities of practice can also define their own priorities for data collection

### **Guidelines for Inclusion/Exclusion of Fields Key Takeaways/Next Steps**

- The TWG agreed that the importance of the data should be the primary factor in determining inclusion vs. exclusion of fields, and that the ease of collection and other factors should be secondary concerns.
- The TWG also stressed the importance of trying to be as comprehensive as possible (aim for a complete data dictionary), while avoiding a large database with relatively unimportant fields. Some members expressed support for addressing this by prioritizing fields.
- They also advocated for adding meta-data aspects. Meta data such as data source, time stamps independent versus derived or directly measures.

### **Guidelines for Enumerated Lists | 3:30**

**Presentation.** LBNL staff presented slides on guidelines for data field types (enumerated lists) and provided some examples from BEDES to illustrate a range of flat and hierarchical options.

**Discussion.** Some of the questions and comments included:

- Hierarchy should be flat, so you can decide how you want to build something with it.
- Quantitative fields are better than qualitative fields
- Flat structure is the most flexible
- Flatter data is easier to input and map
- If you make an error in a hierarchical structure, the data is junk
- There is no way you can define the hierarchy. You should allow the users to define.
- The hyphens are building hierarchy into the fields in BEDES as it stands, so BEDES beta isn't totally flat
- If you want to roll up this data, and be consistent across software, you need to build in hierarchy
- The hierarchical part is necessary. It helps with the entering of data and the accuracy of it. You might inadvertently have contradictory choices

- Options may have a different meaning based on the hierarchy
- We might be conflating type hierarchy vs. data hierarchy. There should be a difference between type (which should be flat) and attribute (which can be hierarchical).
- In HPXML, we have a hierarchy. We are still struggling with the definitions and the dictionary so we should focus on that as opposed to the relationship between fields.
- Everything is a tag, you can think of everything as true or false. Project Haystack has a tagging model, which is flexible and makes it easier to add and subtract.
- If it's flat you can multi-select, but a big long list can be unwieldy.
- If it's flat, is it hard to aggregate across different platforms that create different hierarchies?
- Also, fields may be defined differently depending on the context, for example "efficiency" is defined differently for different kinds of equipment
- For data types, you need to define the list of options under the base class, like office and warehouse under commercial. Attributes are things like "refrigerated."
- A data hierarchy has nested subgroups which are hard to make into a human-readable dictionary
- For software development, the hierarchical type approach is easier to handle. But on the other hand writing the dictionary would be difficult with nested hierarchies.
- Software development has come a long way and flat structures are not that much harder to implement now.
- There will need to be some guidelines as far as how to implement the flat structure.
- Need to provide guidance on how-to use BEDES

#### **Guidelines for Enumerated Fields Key Takeaways/Next Steps**

- Most TWG members appeared to feel strongly or be leaning toward a flat structure because it is more extensible (easier to modify, expand and utilize for different purposes). However, there was a range of opinions (and many questions) about what that meant in practice.
- The group agreed to take this up again at the next face-to-face meeting, and LBNL agreed to seek answers to the questions and put together more fleshed out examples (i.e., for the entire residential and/or commercial sector) for the TWG to look at ahead of the meeting.

#### **Sub-Group Work-Plans for Module 1 | 4:15**

- Module 1: Building Level Data (Residential) – Kickoff Jan 7
- Module 1: Building Level Data (Commercial/Multi-Family) – Kickoff Jan 9

#### **Wrap-Up and Planning for Next Meeting | 4:45**

- **TWG agreed to try to move the next TWG meeting scheduled on January 23rd to the afternoon of January 22nd, immediately following the ASHRAE meeting.** The meeting will be face-to-face for those who can make it to NYC, and phone participation for others.
- Facilitator/LBNL will create draft meeting summary of this meeting, and agenda ahead of the February meeting—as well as circulate material ahead of the January TWG meeting and the January Sub-Group meetings

- TWG and Sub-Group members will review material circulated ahead of January meetings
- See Key Takeaways/Next Steps at the end of sections on Guidelines for Inclusion/Exclusion of Fields and Guidelines for Enumerated Lists for additional action items (above)

<b>Attendance - First TWG Meeting - Dec 12, 2013</b>			
<b>Last Name</b>	<b>First Name</b>	<b>Organization</b>	<b>Mark w/X</b>
Abercrombie	Steven	Innovate Washington	X
Alschuler	Elena	US DOE	X
Antonoff	Jayson	IMT	X
Balbach	Chris	Performance Systems Development	X
Balsano	Rick	Opower	X
Barnes	Jeff	San Diego Gas & Electric Co	X
Baron	Gregory	Hitachi Consulting	X
Blaine	Joel	US DOE	X
Bourassa	Norm	Lawrence Berkeley National Lab	X
Brauch	Michael	FEMP/ActionNet	X
Brill	Micah	ULI Greenprint	X
Burstiner	Brian	Sustainable Real Estate Solutions	X
Caracino	Julie	National Home Performance Council	X
Cheifetz	Magnus	Building Energy Inc	X
Chou	Alex	IBM	
Costa	Marc	The Energy Coalition	
Deru	Michael	NREL	X
Duer-Balkind	Marshall	District Department of the Environment	X
Fehrenbach	Dan	CNT Energy	X
Fournier	Ashley	Southeast Energy Efficiency Alliance	
Fritsch	Andrew	Actionet/FEMP	X
Gaspari	Alfred	PG&E	
Goel	Supriya	PNNL	
Golden	Matt	EDF	
Gowri	Krishnan	Pacific Northwest National Lab.	
Gurfel	Helen	ULI Greenprint Ctr. for Building Performance	
Harangozo	Matej	greeNEWit	
Hendron	Bob	National Renewable Energy Laboratory	X
Hooper	Barry	SF Department of Environment	
Johnson	Devan	kW Engineering	
Keck	Jon	Bright Power, Inc.	X
Kismohr	Steve	Midwest Energy Efficiency Alliance	X
Ku	John	PG&E	
Larson	Rob	CRMLS	
Mejia	John	Lawrence Berkeley National Lab	X
Metoyer	Jarred	DNV KEMA Energy and Sustainability	
Miller	Alexi	New Buildings Institute	

New	Joshua	Oak Ridge National Laboratory	X
Peters	Ed	Opower	
Phillips	Joe	IBM	
Pyke	Chris	US Green Building Council	
Raab	Jonathan	Raab Associates (facilitator)	X
Robbins	Lindsay	NYSERDA	X
Roth	Amir	DOE	X
Roth	Stephen	Carmelsoft/gbXML	X
Schultz	Robert	Pacific Northwest National Laboratory	X
Settlemyre	Kevin	Sustainable IQ	
Sharrard	Aurora	Green Building Alliance	
Sherman	Genevieve	CEFIA	
Slakman	Adam	ULI Greenprint	
Studer	Daniel	National Renewable Energy Laboratory	X
Sweetser	Richard	EEB Hub	X
Taylor	Cody	DOE	X
Tremper	Chris	DOE Federal Energy Management Program	X
Wagner	Scott	EEB Hub	X
Wallen	Adam	Skyfoundry	X
Wang	Nora	Pacific Northwest National Laboratory	X
Winters	Dan	USGBC	
Yakubov	Yuri	PG&E	