BEDES Dictionary 1.0

November 13, 2014

Elena Alschuler
elena.alschuler@ee.doe.gov
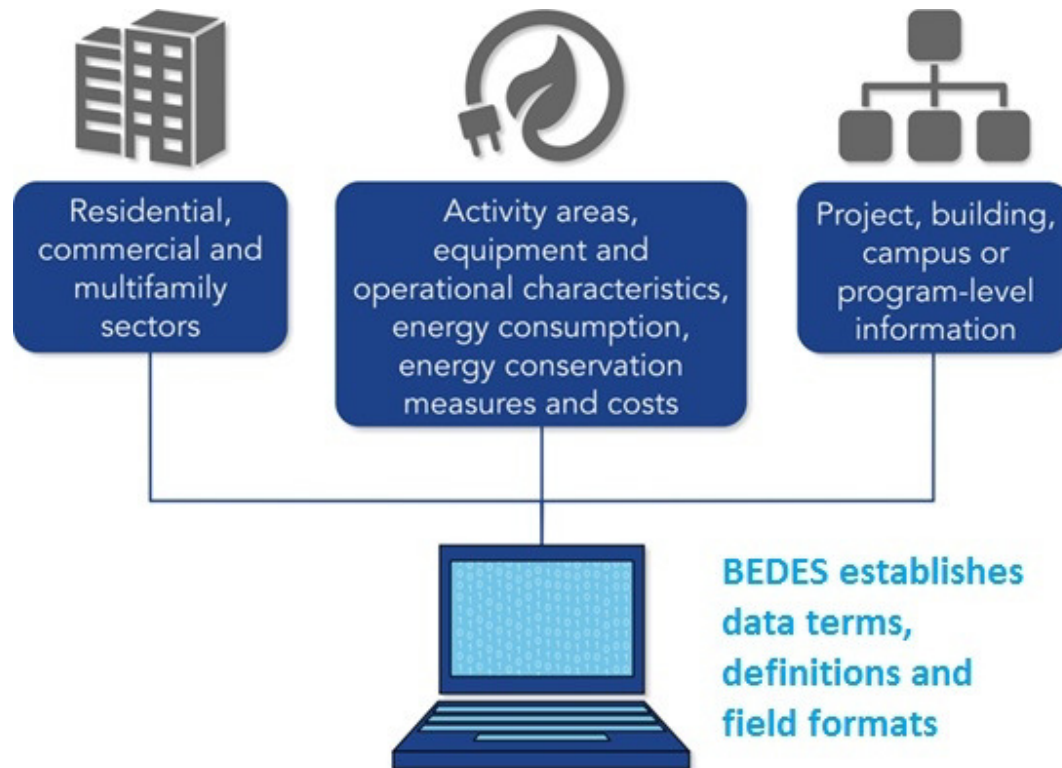
Paul Mathew
pamathew@lbl.gov

Robin Mitchell
rdmitchell@lbl.gov

Webinar Overview

- What is BEDES?
- Background
- Use Cases
- Dictionary Walkthrough
- Strategic Working Group Recommendations
- Plans for 2015
- Get Involved

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

What is BEDES?

BEDES provides a common set of terms, definitions and data fields that can be used by public and private software tools, data schemas and databases working within the building energy performance sector.

Residential, commercial and multifamily sectors

Activity areas, equipment and operational characteristics, energy consumption, energy conservation measures and costs

Project, building, campus or program-level information

BEDES establishes data terms, definitions and field formats

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

BEDES Background

Originally developed to improve interoperability of DOE's software tools and data collection efforts

DOE scoping study confirmed that BEDES would be useful to stakeholders outside DOE

Lawrence Berkeley National Lab led a technical working group process to develop BEDES Beta

After 9 months of extensive review and feedback, BEDES 1.0 was released

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

BEDES Use Cases

ENERGY EFFICIENCY INVESTMENT DECISION-MAKING

Owners and managers use building energy performance information to assess capital and operational opportunities in individual buildings, develop energy strategies across portfolios, and identify trends in local real estate markets.

BUILDING PERFORMANCE TRACKING

The implementation of disclosure policies for public or private buildings requires public officials to collect, clean and analyze massive amounts of data, then share portions of it with the public.

ENERGY EFFICIENCY PROGRAM IMPLEMENTATION AND EVALUATION

Energy efficiency programs often provide incentives or technical assistance to support owners' data collection and analysis activities. They also use data to conduct program design and outreach, track project performance, and evaluate programs.

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

BEDES Endorsers

More than 80 people participated in the BEDES working group, and the following organizations have officially endorsed the BEDES Dictionary project:

- **Building Energy Inc.**
- **City of Berkeley, CA**
- **Elevate Energy**
- **Empowered Energy Solutions, Inc.**
- **Innovate Washington**
- **Institute for Sustainable Performance of Buildings (SuPerB)**
- **kW Engineering Inc.**
- **Northeast Energy Efficiency Partnerships (NEEP)**
- **SparkFund**
- **The Energy Coalition**

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

BEDES 1.0 Dictionary
Walkthrough

BEDES Strategic Working Group

- LBNL convened a series of stakeholder Strategic Working Groups to discuss BEDES implementation issues in depth and make recommendations to the BEDES team.

- Based on these discussions, LBNL developed seven recommendations for the future direction of BEDES that were then reviewed and approved by the stakeholders.

- These recommendations are explored in-depth in the Strategic Working Group Recommendations document.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Recommendation #1: Lead by Example

- DOE's Building Technology Office should commit to using BEDES compliant tools wherever possible in its portfolio. By using BEDES-compatible tools, DOE can lead by example in introducing BEDES to wider markets both in the public and private sector.

- Equally important to the development of BEDES-compatible tools is the role of other federal agencies as vocal and visible supporters.

Recommendation #2: Naming and Branding

Develop a name, logo, and tagline for BEDES, and ensure that these are trademarked so that the brand is recognized and valued in the market.

Recommendation #3: Develop Compliance Paths

In order to review, support, and promote BEDES-compliant products, the team will facilitate two different paths for compliance: through Mapping and Exchange.

Criteria	Mapping Compliance	Exchange Compliance
Product	Document showing mapping to BEDES terms	Schema with BEDES terms
Applicability	Software tools, schemas, databases, data forms, etc.	Schemas
Map to BEDES terms	Yes	Yes
BEDES team approves mapping	Yes	Yes
BEDES team approves schema	Not Applicable	Yes
Public publishing on BEDES website	Yes	Yes
Right to use "BEDES" in product marketing	Yes	Yes
Examples	Mapping of: CEUS, CBECS	BuildingSync Home Performance XML GreenButton

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Sample Mapping

Implementation Table Name	Implementation Field	Implementation Value	Implementation Units	BEDES Term	Value Mapping	BEDES Unit	Unit Conversion
Building Info	Gross Floor Area (ft2)	[value]	ft2	Floor Area Qualifier	="Gross"		
				Floor Area Value	=[value]	ft2	=[value]
	Building Type	Hospital	n/a	Occupant Classification	="Inpatient hospital"		
		Office			="Office"		
		School			="Education"		
		Supermarket			="Grocery store"		
		Restaurant			="Food Service"		
	Number of Employees	[value]	people	Occupant Quantity Type	="Workers on main shift"		
				Occupant Quantity	=[value]	people	=[value]
	Number of Floors Above Grade	[value]	floors	Grade Status	="Above grade"		
				Number of Floors	=[value]	floors	=[value]
	Owner	[value]	n/a	Role	="Owner"		
				Name	=[value]	n/a	
Energy Use	Site EUI (MJ/ft2)	[value]	MJ/ft2	Resource	="Combination"		
				End Use	="Whole building"		
				Interval Frequency	="Annual"		
				Site Energy Use Intensity	=[value]	kBtu/ft2	=[value]*0.9478
	Electricity (renewable)	[value]	kW	Resource	="Electricity"		
				End Use	="Whole building"		
				Generation Type	="Onsite renewable"		
				Interval Frequency	=Annual"		
				Units	="kW"		
				Reading	=[value]	kW	=[value]

Recommendation #4: Pilot and Evaluate the Use of BEDES by Early Adopters

Several public and private entities have expressed an interest in being an early adopter of BEDES. These groups can serve as pilots that should be both supported and evaluated for future updates.

Stakeholder Type	Potential Early Adopters
Exchange schemas	Home Performance XML Green Button HPXML BuildingSync
Software tools	Portfolio Manager Commercial Building Energy Asset Score Home Energy Score eProjectBuilder Non-profit and Private-sector software and databases
Standards	ASHRAE SPC 211 Real Estate Transaction Standard
Entities that collect or distribute data	California Energy Commission Cities with disclosure laws Home Performance with Energy Star City Energy Project partners

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

Recommendation #5: Provide Maintenance and Updates

- **Maintenance, error fixing, and periodic updates:** There will need to be a process for providing maintenance, fixing user-identified errors, and periodic updates

- **User support:** A mechanism for answering user questions about how BEDES is to be used, and what it can and cannot do, and reviewing new mappings and schemas.

- **Upgrades and future development**: There are several features that could be added to future versions of BEDES.

- **Promotion and adoption:** There is a need for a plan to promote BEDES and engage market players.

- **Education and Training:** There is a likely need that new users would benefit from education and training.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Recommendation #6: Transition to a Non-Profit Organization

BEDES is currently supported by DOE and managed by Lawrence Berkeley National Laboratory (LBNL). The recommendation is that BEDES move toward a self-supporting model, managed by a non-profit organization.

The non-profit would need to address the following for BEDES:

- **Technical development and support**
- **Compliance certification**
- **Deployment partners**
- **Fund raising and business development**
- **Management**
- **Governance**

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Recommendation #7: Support BEDES Becoming An Industry Standard

- The ultimate goal for BEDES is to become the *de facto* industry standard for building energy data exchange. The BEDES Strategic Working Group explored the issue of whether to pursue the adoption of BEDES as an *actual* industry standard, and determined that it should be postponed to a later time.

- The short-term effort should be made to ensure that BEDES is used widely and evolves organically. It can be codified as a formal industry standard at a later date.

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

Plans for 2015

- Encourage Adoption
  - Support 6-8 key early adopters by helping them to develop BEDES-compliant mappings and schemas.
  - Provide technical support to more adopters as budget allows.
  - Publish and disseminate BEDES compliant products.

- Evolve BEDES
  - Publish two major updates to BEDES (Spring and Fall of 2015) with the support of the BEDES working group.
  - Ongoing error catching and fixing.

- Better Resources
  - A new website with powerful search features for the Dictionary.

- Initiate transition to a non-profit foundation

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Get Involved

There are many ways that you can get involved in the BEDES project:

- Use BEDES in your products and business processes. If you have questions about using BEDES in your product or process, please email BEDES@ee.doe.gov

- Contribute to the future evolution of the BEDES Dictionary and keep abreast of the latest developments by joining the BEDES Working Group.

- Spread the message about BEDES – on your website, in presentations or elsewhere.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Questions?

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy