BEDES Kick-Off Summit

December 11, 2013

Renaissance Downtown Hotel, 999 Ninth Street NW, Washington, DC

Convener: Lawrence Berkeley National Laboratory (LBNL)

Facilitator: Raab Associates, Ltd.

(See attendees in Appendix I)

Meeting Summary

1:00 **Welcome and Agenda Review**—Norm Bourassa, LBNL and Dr. Jonathan Raab, Raab Associates

1:10 **Federal Governments Perspective on Building Energy Data Standardization and Broader Market Vision**

Following is a summary of the keynote addresses provided by Dr. Kathleen Hogan, Deputy Assistant Secretary of Energy Efficiency, DOE and Jean Lupinacci, Chief, Energy Star Commercial and Industrial Branch, EPA

Dr Kathleen Hogan, DOE

- The lack of data on the actual energy performance of buildings makes it difficult to:
  - Understand the drivers of variations in building performance
  - Identify efficiency investment opportunities and project the likely savings
  - Tailor energy efficiency programs and policies based on local needs
- More available, accurate, and consistent building energy performance information will create opportunities for:
  - Energy savings verification
  - Success of better products/solutions
  - Readily valued energy performance
  - Increased value and desirability of buildings
  - Easily identified operational and equipment changes that have the greatest potential returns
  - Property energy management, tracking, and decision-making needs
  - Local benchmarking or energy efficiency program participation.
- Strategy: DOE is building a foundation that the private sector can build upon, which involves performance-based approaches through a set of collaborative efforts: BEDES, National Building

Rating Program, Uniform Methods Project, Buildings Performance Database, Standard Energy Efficiency Data Platform

- BEDES Opportunities
    - Makes it possible for all the pieces to connect and have greater impact.
    - Recently there has been an increase of performance data, but this data is hard to access, aggregate, share and utilize because it is often in differing formats.
    - Market participants spend more time on data formatting and cleaning than they do on conducting analysis.
    - BEDES will increase interoperability among tools and lower the cost and increase the viability of products and services that utilize energy data
    - Products and services will achieve greater market penetration and deliver better information to decision-makers, facilitating the growth of energy efficiency related markets.
- BEDES has helped improve the consistency of federal tools and we hope that it will help the marketplace as well with challenges in exchanging and combining datasets.
- LBNL is tasked with developing a BEDES version 1 and a plan for its wider implementation in the market.

Jean Lupinacci, EPA

- Standardization is necessary for EPA to certify products, homes, buildings and plants
- EPA relies on common language, terms and definitions and data format for buildings in Portfolio Manager
- Standardized data is not EPA's Goal for buildings, but the MEANS to implement EPA's strategy:
    - Allow owners to consistently compare and prioritize investments in building performance
    - Promote whole building energy performance management by conveying simple metrics
    - Motivate improvement by rewarding top performance and reductions
    - Engage 3rd parties to bring solutions (validated and exchangeable data is critical for scale)
    - Manage buildings from design to operation
- Portfolio Manager is central to helping track energy, GHG emissions, water and cost data
- Access to EPA's Portfolio Manager and common data facilitates policies and programs:
    - Benchmarking and disclosure mandates at federal, state and local levels
    - Voluntary campaigns and competition around the country
    - All might not choose the same metrics but they use the same platform and data
- Opportunities
    - Data is not automatically information. Information can drive change when it is:
        - Based on Credible, Consistent and Trusted Data
        - Readily available, accessible and transferable
        - Answers questions or drives solutions
    - DOE's effort can help explain why buildings perform the way they do
- Challenges and opportunities for standardization
    - Tension between a laundry list of definitions and what data people should use.
        - Value is in what can be measured
        - Create a data standard with a purpose
    - No matter how clear the definition is, people always have questions.

        - Sometimes definition is what IT IS and what IT IS NOT
    - Retrofit and equipment data lacks standardization
        - Standardizing important to aggregate data and determine best approaches to investment, but today it is not collected consistently
    - Decisions on pacing - when and what to publish as BEDES (drafts) will be important:
        - People make decisions/investments so stability and timing is important
    - Things change over time:
        - Need commitment and process
        - Ripple effects: we didn't know all the uses of Portfolio Manager
- Common language and data formats have been valuable to reach EPA's goals
- We are committed to Portfolio Manager and the type of information currently standardized remains our foundation to continue to reduce carbon pollution
    - Portfolio Manager fields constitute a small portion (10%) of the current draft of BEDES
- EPA and DOE will develop a process to ensure BEDES remains consistent with and builds off of Portfolio Manager

1:50 **BEDES Beta Overview and Tour**-- Elena Alschuler, DOE & Norm Bourassa, LBNL

2:30 **BEDES Working Group Process**-- Jonathan Raab

- **Questions and Concerns Regarding BEDES Overall and Working Group Process**
    - Portfolio Manager and BEDES interface
        - A very small portion of what will be standardized through BEDES is contained in Portfolio Manager (PM)
        - Whole building usage is what EPA is interested in
        - The data is a means to an end
        - BEDES will drive consistency and help PM do what PM does
        - BEDES will help us understand improvements to buildings and enable a richer data collection approach
    - What are you doing to engage agencies around other data types (indoor environmental air quality, Department of Homeland Security, HUD)?
        - Trying to drive consistency around that path as well. Expansion of the multifamily Better Buildings Challenge (BBC) with HUD
    - BEDES is trying to bring specs together into one package and make them more robust to facilitate answer these larger questions
    - We are awash with data. There is a lot of work to tease out the useful information.
    - In order to put data into use, you must be asking a question of it. Ask the questions and look at the data for the answers, but don't assume the data will answer all the questions.
    - Mapping of data standards or extraction?
        - We did do a 1-1 mapping. Going data field by data field. At some points we made decisions on inclusion or which to follow.
    - Is BEDES going to bring consistency to conversion factors (for example source vs. site)?

        - No, BEDES spec is not going to do those conversions for you. It is not a software project. It is agnostic. It is a reference document to help establish consistent data naming implementations as much as possible in the market.
    - How much room is there for flexibility and change, what is locked?
        - BEDES Beta is what was put together for the suite of Federal government and DOE tools we presented earlier. Now we are hosting this stakeholder input process to determine the private sector data exchange needs and scope to achieve the same level of functionality in the wider market. The basic question being, where does BEDES need to evolve to in order to conform to stakeholders data standardization needs?
        - We have run into issues with PII we are addressing that in one of the working groups. We will be covering how to standardize those fields; we will not be tackling the issues around that like security/privacy of issues. Where we want you to be involved in, is how to design the BEDES format.
    - BEDES is domestic-focused for now
    - Is BEDES setup to rollup similar categories into levels, what is the granularity?
        - BEDES is a series of descriptors and they are all categories. You can build up and layer whatever schema you need for your purposes. One of the things we are looking at is what fields to include in the spec. Once we have chosen those, we need to decide which enumerations to list, and thereby decide on the granularity.
    - If you are looking at the least granular, do the most granular map into those?
        - We have drawers in the spec. You must assemble your own model. There are sub-lists in the spec, and you can roll them up.
    - What is your education plan for use? Guidance on how users can adapt to use this to collect data. It would be a huge organizational effort. What is needed to encourage use and to help with rollout?
        - We don't have those answers yet, but will be asking the Strategic Working Group to provide input on this.
    - Have you considered creating a mosaic of the other specifications?
        - It is a bit of a mosaic. For example, Green button addresses a portion of it for utility billing history. We will explore whether or not to leave it as a mosaic or not.
    - Is there going to be online forums to hash out details?
        - We haven't decided yet. We could have online forums available on discrete topics. Online polling will be available.
- **Takeaways/Action Items**
    - Consider creating online forum on discrete topics
    - Define granularity in more detail
    - Layout the changes hoped for in V1 vs. beta. Stakeholders role vs. what is set.
    - Be explicit about what is in the beta and what it not

3:15 **Stakeholder Perspectives on BEDES Opportunities and Challenges** (Guided panel discussion followed by participant questions)

- **Robin LeBaron, National Home Performance Council**
  - How does your organization use energy data?
    - Residential energy efficiency through whole house retrofits. Identifying pain points in the industry and working to fix them. Data is crucial for the industry. The barriers and challenges of collecting reliable data are significant. Particularly true for the whole building sector. Since 2010, we have been working on building institute data standards. One is a data collection standard which mirrors BEDES, but is specific to the residential sector. The second is an XML schema, for the purposes of transferring data for the home performance industry. Want to identify specific use cases. HPXML and BEDES have been produced simultaneously. The goal is to free up contractors from having to use specific software, but they must standardize the data via our XML standard. There is an incredible mix of data formats that contractors must navigate.
  - Dos and don'ts of the standardization process?
    - Test your product before you setup a complicated infrastructure. Even with the data dictionary, it isn't real until you are using it. The issues of granularity are very real, and you will stumble on those when you implement. You aren't doing something real until people are fighting over it. There will be tension; you need a way of dealing with it. Need a way to deal with the conflict. The granularity issue will come up again. Staffing- this stuff doesn't do itself and the volunteer model only gets you so far. There are 3 staffing needs. One is the management of the standards process and the aligning/updating. Second one is technical support (only for XML really). Third you need the staff to push adoption.
  - What benefits to you foresee from having BEDES in the market and what do you see as the largest challenge?
    - One smaller scale benefit is that when people talk about HPXML, I tell people that it is aligned with DOE, BEDES, and EPA. People have put skin in the game based on that reputation. The diminishing returns of colleting the granular data is true. One role DOE can play is simply having a conversation about cost effective data sets balancing the multiple reasons we need it (EM&V, etc). You need to think creatively about how to get adoption for BEDES. Think about ways that the standard data set can be pitched in a compelling way (more opportunities, etc).

- **Cliff Majersik, Institute for Market Transformation**
  - How does your organization use energy data?
    - Focus on market transformation. Identify market failures and try to craft policies to address them. You can't address what you don’t measure. Many buildings don't track. We believe the data is very powerful, and in the right format, can

lead to useful outcomes. We need to have a good way of identifying and knitting together building data. Our interest is in getting this data out in a way the market (real estate) can use. If these large, powerful owners are forced to compete, they will get involved and save energy.

- You're working with benchmarking and disclosure in municipalities. Do you have issues with data compatibility?
    - The cities want to have a standard. They know it is much more powerful if it can be picked up by other entities. They don't want to have to learn multiple different standards. We need to be thinking about how to move the market. The standardization is a really key component. It is getting everyone to adopt it. Maintaining standards and offering support is really important. We have been focusing on equipment of buildings, but we need to pay equal attention to operational data. The quality of the data is also an issue. Trash in, trash out. Audit trails and tracking sources. Anything related to data quality should be tracked. We need to provide confidence in the data.
- What benefits do you foresee from having BEDES in the market and what do you see as the largest challenge?
    - Standardization to the extent that BEDES can become a standard and people could build on top of it, would be a huge help for software companies. No one wants to suck up standards from all over. Challenges: need to get adoption. Momentum is key. If the resources don't continue going into the spec, people will not continue working with it. Need to establish a reputation. Need a long-term commitment to the standard, working with the market, and with software developers. We need to recognize that many stakeholders don't care about EE, they care about money. Need to have their interests in mind.

- **Carmen Best, California Public Utilities Commission**
    - How does your organization use energy data?
        - Primary function of data we collect is to inform our activities or a product from one of our collections. We go out in the field and assess the market, collect data on savings, impacts, customer, for long term procurement planning. We collaborate heavily with utilities to standardize tracking data to minimize post process standardizing. This data is the core information we use to design our programs and to design our studies to inform uncertainties in portfolio. We use it to inform the public and decision makers on where we are in our programs that we implement. Each entity has different reasons that they need to use the data. We are working on optimizing how to mash the data together for individual components and for the group as a whole.
    - What are the types of things you have standardized and how you wrestled with trying to get common definitions and protocols?
        - One of the keys is knowing where you want to end up. We are looking at what types of measures were installed, what kind of replacement type it was, etc.

There are likely diminishing returns for how much data to collect. Once you get your basic spec together, you can append more details onto it. Some of the surprising areas that come up are naming conventions for different technologies, and other details on that front. Having the ability to roll these things up is really important. The how: Worked with utilities and getting a level of quality from their program implementers as well.

- What benefits to you foresee from having BEDES in the market and what do you see as the largest challenge?
    - The value for the customer is on target with respect to the hurdles. We want to see programs that are incorporating data in real time to make better decisions. Having a whole building component and operational aspects to show to customers. BEDES can lead to greater socialization of data and enable things that we may not even be aware of yet. Enables activities around the world. Field evaluation is very expensive, but we need to first tackle opportunities that can cut out cost.

- **Brad Molotsky, Brandywine Realty Trust**
    - How does your organization use energy data?
        - We have ~30 million sq. ft. of space. When we are in these buildings, each of them is a little different and special. We are in the process of a lot of construction where there are different attributes. For the most part, the tenant pays the bill, so you have a split incentive. In some instances, you've got tenants making the decisions, but owners putting up the capital. The level of understanding and sophistication varies widely in all buildings. So all of the buildings get their Portfolio Manager score monthly. The ability to have the information readily accessible helps. That provides the baseline for follow-up. It allows us to goal set and benchmark. The ability to socialize the information leads itself to people being a little more competitive. How do we educate building owners and operators?
    - What type of info is the most important to you and compelling and any lessons you have learned?
        - We are looking at the raw spend (regional, portfolio, company). It gets a reaction at a company level and then small changes are big numbers. Also, how we are using that on a kBTU/sq. ft. The tenants are not excited about energy management, and as a group (~5-25k square ft.) they don't trust the landlord to be telling them what to do.
    - What benefits to you foresee from having BEDES in the market and what do you see as the largest challenge?
        - BEDES is a system that will allow for one more arrow in the quiver to move people to action. The more info I have, the more granular, the more I can move people to action. In terms of challenges, adoption is the problem- we are asking people to stop, think about how they are going to integrate this into their work.

- **Questions and Comments**
    - We want people to spend less time doing paperwork and more time saving energy.
    - It is critical that we identify some really strong value propositions. Get BEDES out there and test it. Try to come up with really discreet use cases.
    - We need to think about the aspect of translation of data, for systems that already exist. It is important to show other people how to translate into this. It is a huge hurdle to overcome.
    - Should look at where we have amassed the most data and start there

- **Takeaways/Action Items**
    - Restate DOE's long-term commitment to BEDES. Reinforce that we are aligning DOE tools with BEDES.
    - Be clear about what the incentives are to use BEDES when it exists. Talk about who is demanding this.
    - Important to show examples of buy in / commitment
        - NYSERDA helped HPXML by using it and making their contractors do it.
        - Use examples like EPARS and try to get other (a couple big PUCs, NYSERDA, etc)
    - Discuss how we will acknowledge and plan to deal with existing similar efforts. We don't expect people to wait around.
    - Be upfront that we don't underestimate the challenges and want people to keep being upfront about them so we can put those challenges on the list and deal with them.

4:45 Wrap-Up and Next Steps— Norm Bourassa and Jonathan Raab

5:00 Adjourn--Informal Networking (optional, no-host) at Mixx Lounge in hotel lobby

Appendix I: Attendance

BEDES Kick-Off Summit Attendance-December 11, 2013		
Last Name:	**First Name:**	**Company:**
Abercrombie	Steven	NW Smart Buildings Center
Alschuler	Elena	US DOE
Antonoff	Jayson	Institute for Market Transformation (IMT)
Balbach	Chris	PSD
Balsano	Rick	Opower
Barnes	Jeff	San Diego Gas & Electric
Berry	Chip	Energy Information Administration
Best	Carmen	California Public Utilities Commission
Bourassa	Norm	LBNL
Brauch	Michael	Actionet Inc. (contractor to DOE FEMP)
Brill	Micah	ULI Greenprint
Burns	Martin	NIST
Burstiner	Brian	Sustainable Real Estate Solutions
Caracino	Julie	National Home Performance Council
Carey	David	Harcourt Brown & Carey
Cheifetz	Magnus	Building Energy Inc.
Cook	Leslie	EPA
Deru	Michael	NREL
Dickey	Glenn	SRA International
Duer-Balkind	Marshall	District Dept. of the Environment, DC Gov't
Earni	Shankar	Lawrence Berkeley National Laboratory
Eisenberg	Brad	Greenewit
Fehrenbach	Daniel	CNT Energy
Ferrante	Angela	Energi
Flett	Eric	ABM
Fritsch	Andrew	ActioNet
Gilligan	Donald	NAESCO
Golden	Matt	Efficiency.org / EDF
Gurfel	Helen	ULI Greenprint Ctr for Building Performance
Harangozo	Matej	Greenewit
Hendron	Bob	National Renewable Energy Laboratory
Hoffmeyer	Dale	U.S. DOE
Hooper	Barry	San Francisco Dept of Environment
Isakow	Craig	WegoWise, Inc
Jacobs	Cindy	EPA
Keck	Jon	Bright Power, Inc.
Kerr	Laurie	Natural Resources Defense Council
Kismohr	Steven	MEEA
Knapstein	Jessica	Energetics
Lawrence	Jessica	Institute for Market Transformation
LeBaron	Robin	National Home Performance Council
Lupinacci	Jean	US EPA
Majersik	Cliff	IMT
Mejia	John	Lawrence Berkeley National Laboratory
Mercado	Andrea	Lawrence Berkeley National Laboratory
Michaels	Joelle	Energy Information Administration
Molotsky	Brad	Brandywine Realty Trust
New	Joshua	ORNL
Olsen	Josh	DOE
Panek	Mira	US Green Building Council
Powell	Kevin	SRA, International
Punjabi	Sonia	U. S. Department of Energy

Pyke	Chris	USGBC
Raab	Jonathan	Raab Associates
Robbins	Lindsay	NYSERDA
Roth	Amir	DOE
Roth	Stephen	Carmel Software Corporation
Schultz	Robert	Pacific Northwest National Laboratory
Shah	Monisha	National Renewable Energy Laboratory
Sherman	Genevieve	CEFIA
Sweetser	Richard	EEB Hub
Taylor	Cody	Department of Energy
Tremper	Chris	DOE Federal Energy Management Program
Wagner	Scott	EEB Hub
Wallen	Adam	Skyfoundry
Wang	Nora	Pacific Northwest National Laboratory
Ward	Alicia	LBNL
Winters	Dan	US Green Building Council
Wollman	David	NIST