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

BBA Equipment Performance Specifications

Better Buildings Alliance

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Project Overview

The BBA Performance Specifications project provides information and tools to help BBA members and other commercial building owners/operators specify and purchase high efficiency equipment.

Identify commercial building technologies with high energy savings potential

- Limits scope to products that can have largest market impact and stakeholder buy-in.

Develop performance specifications

- Helps manufacturers understand customer requirements
- Enables end users to specify the equipment they want (can include directly in purchase orders)
- Fills equipment gaps in the current voluntary programs.

Conduct field demonstrations

- Demonstrates that high-efficiency equipment achieves the desired energy savings while operating reliably and otherwise meeting end-user requirements

Collaborating with stakeholders

- Ensures targeted technologies are of interest to end users and manufacturers
- Helps audience have full access to performance specifications and field-evaluation results

Purpose & Objectives

Problem Statement:

- End users are unaware of high efficiency equipment, or how to specify it
- End users perceive risks (complexity, reliability, etc.) with high efficiency equipment
- Manufacturers may not understand end-user requirements for high efficiency equipment
- Manufacturers do not perceive sufficient market potential for high efficiency equipment

Impact of Project:

- Provides BBA members and other commercial building owners/operators with knowledge and information needed to identify, evaluate and purchase high efficiency equipment
- Defines end-user requirements for high efficiency equipment
- Helps aggregate market demand for high efficiency equipment

Project Focus:

- High efficiency commercial building equipment that existing specification programs (i.e., ENERGY STAR, CEE Tiers) do not cover

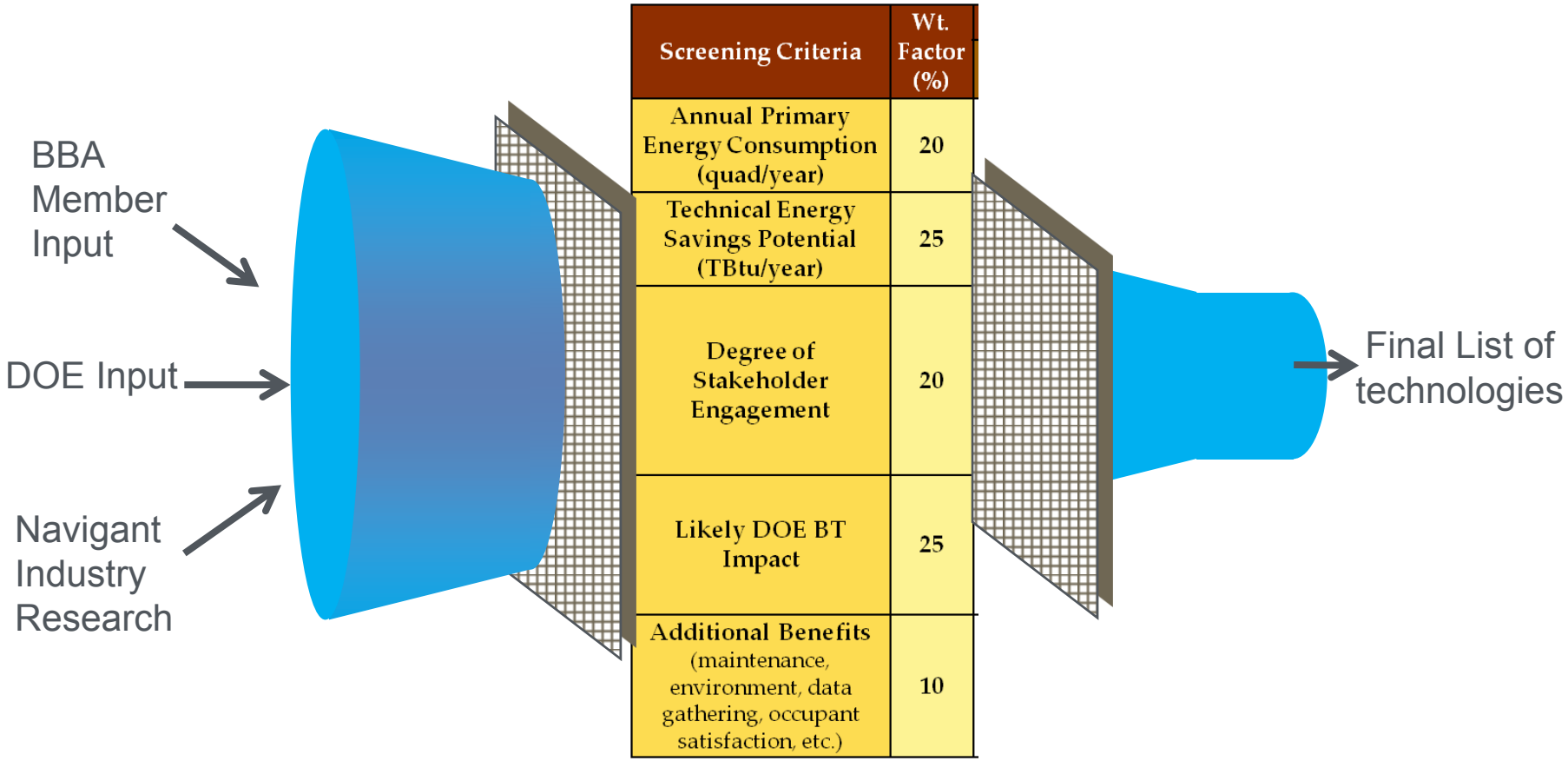
Approach

We developed two types of performance specifications, depending on the technology, to best advance energy savings.

- Advanced Specification – Promotes purchase of existing products that have not yet achieved significant market penetration (targeted ~20% improvement over typical efficiencies)
- Challenge Specification – Sets efficiency level beyond what is currently available and challenges manufacturers to meet them

Approach, Cont.

We narrowed an initial list of high potential commercial building technologies based on five impact criteria.



Approach, Cont.

The final technologies list includes commercial building technologies that are utilized by BBA members.

Low-Voltage Distribution Transformer

- LVDTs are used in the final voltage transformation step for commercial buildings.
- All electricity used by the building runs through LVDTs, meaning small efficiency gains can have significant impact

Gas Heater

- Gas unit heaters are self-contained space-heating systems designed to be installed within large open facilities with high ceilings, often exposed to outdoor conditions.

Commercial Water Heater

- Heat pump water heaters offer substantial energy savings over traditional electric water heaters.
- Common applications are food service and other buildings with large hot water loads.

Ultra-Low Temperature Freezer

- These are freezers used in laboratories to store medical or scientific samples .
- Storage requirements down to -80° C result in very high energy consumption

Laboratory Fume Hood

- Another laboratory product, fume hoods ventilate noxious gases, fumes, and small particles generated from stored substances.
- They are among the highest energy consumers in laboratory environments, sometimes consuming more than a typical residence.

Approach, Cont.

We developed the initial specifications with the input and support of leading manufacturers and industry organizations.

Low-voltage Distribution Transformer	Gas Heater	Commercial Water Heater	Ultra-low Temperature Freezer	Laboratory Fume Hood[1]
POWERSMITHS POWER FOR THE FUTURE	MODINE	A.O. Smith	Panasonic ideas for life	JMP Jamestown Metal Products
CEE	REZNOR	COLMAC	New Brunswick an eppendorf company	
Hammond Power Solutions Inc.	CAMBRIDGE ENGINEERING INC		STIRLING ULTRACOLD	BAKER BioScience Solutions
EATON Powering Business Worldwide			SO-LOW FREEZERS & REFRIGERATORS	mott MANUFACTURING ISO 9001:2008 REGISTERED
Schneider Electric			NORLAKE	
			Thermo SCIENTIFIC	
			BAKER BioScience Solutions	

[1] Navigant developed the specification, while deployment is being performed In collaboration with LBNL, who is managing the fume-hood field evaluations.

Approach, Cont.

We are now validating the specifications and deploying them to a broader audience. The exact tasks will vary per technology, but most will follow a similar four-step process.

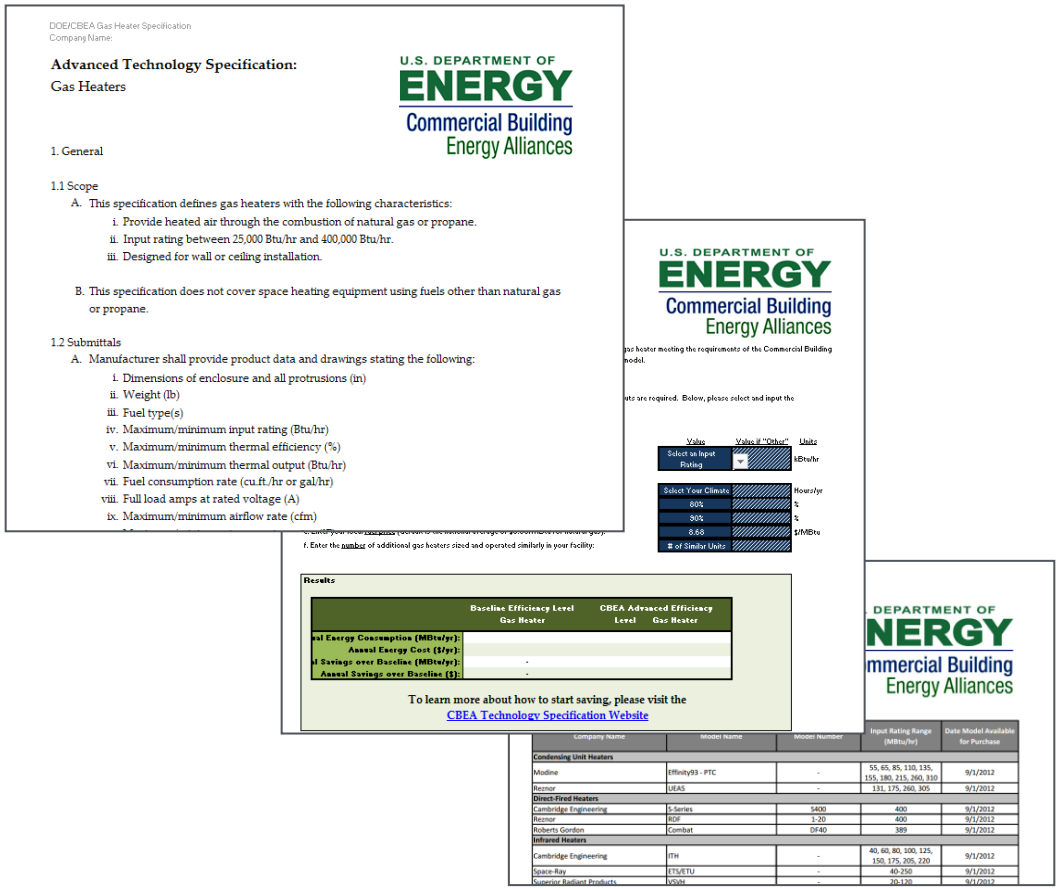
1. Validate the energy savings by conducting field demonstrations in real-world applications.
2. Update business case resources based on the lessons learned in the field evaluations.
3. Conduct webinars and conference presentations with evaluation partners.
4. Partner with other teams and organizations to promote the specifications to early adopters.

Accomplishments and Progress

In FY12, we posted the specification packages to the Better Buildings Alliance site where they can be used by members and the public.

Each specification package includes:

- Product specification
- Energy savings calculator
- List of qualifying products



http://www1.eere.energy.gov/buildings/commercial/bba_tech_specs.html

Accomplishments and Progress, Cont.

To date in FY13, site hosts have signed 3 final agreement letters for laboratory freezer field evaluations.

Michigan State University (Jespersen Lab)

Michigan State University, with BBA assistance, is installing and testing a high-efficiency Panasonic ULF. This model is expected to save 20-30% energy as compared to standard models. Initial data are expected in September.

EPA (Research Triangle Park Campus)

EPA is testing a recently-installed unit of the same model. This model is expected to save 20-25% energy as compared to standard models.

University of Colorado

UC is in the final stages of selecting which laboratory will participate in the demonstration. Monitoring is expected to begin in the spring.

Accomplishments and Progress, Cont.

Seven other agreements are in various stages of negotiation, and a major utility is assisting in securing additional demonstration sites. Discussions with other sites and utility organizations are also proceeding.

Cornell University	Fume Hood[1]	Letter of Intent signed. Final agreement expected in April. Cornell and LBNL will test hoods in various campus laboratories
Michigan State University	Fume Hood[1]	Letter of intent signed. Final agreement expected in April. MSU testing will commence in early spring
EPA	Fume Hood[1]	Letter of intent signed. Final agreement expected in April. EPA and LBNL will test hoods that meet the BBA specification
Pacific Gas & Electric	Distribution Transformer	PG&E will provide financial and technical assistance for a demonstration within their service territory—may offer a future incentive program.
Whole Foods	Distribution Transformer, Water Heater	Whole Foods is seeking to demonstrate a LVDT at a Northern California store and is also considering stores for water heater testing.
Starbucks	Water Heater	Starbucks and A.O. Smith are collaborating to develop and evaluate a new product that aligns with the BBA specification
Wawa	Water Heater	Wawa and A.O. Smith are identifying the appropriate demonstration store
Liberty Properties	Gas Heater	Liberty is identifying a candidate warehouse to demonstrate a high efficiency gas heater.

[1]Fume Hood field evaluations will be managed by LBNL

Accomplishments and Progress, Cont.

Industry stakeholders are showing strong support for the specifications.

"Participating in this effort with DOE is of great importance to CU Green Labs." -*Kathryn Ramirez, University of Colorado at Boulder*

"Please make this [spec] happen quickly because it's very much needed in the industry. Customers are not believing manufacturers' own specifications…given that results from all the different interest groups are all over the map." – *Joe LaPorte, Panasonic*

"We see the DOE demonstration as a great compliment to our ongoing … tests of heat pump water heaters – intended to prove the energy benefits of high efficiency units."
– *Brad Simcox, Starbucks*

"I talked to several [utility] members about [BBA's] efforts on transformers, and their response was positive."
-*Jess Burgess, Industrial Program Manager, CEE*

Project Plan & Schedule

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FY12 activities focused on development of specifications. FY13 activities focus on deployment.

Summary	
WBS Number or Agreement Number	
Project Number	
Agreement Number	

Legend	
	Work completed
	Active Task
	Milestones & Deliverables (Original Plan)
	Milestones & Deliverables (Actual)

Task / Event	FY2012				FY2013				FY2014			
	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)
Project Name: BBA Technology Specficiations Development and Deployment												
Q1 Milestone: Screen initial technology list. Select technologyes												
Q2 Milestone: Convene manufacturer working groups to evaluate technologies												
Q3 Milestone: Determine energy performance level for specfication												
Q4 Milestone: Develop initial business case resources. Develop website.												
Q2 Milestone: Obtain agreements for field evaluations												
Q3 Milestone: Kick off field evaluations.												
Q4 Milestone: Update business case data.												
Potential future work plan												
Hold informational session at major industry conference												
Update business case data with field evaluation data												
Develop technical requirements to allow TPE to identify BBA spec'ed products												
Kickoff promotional campaign with major industry partners												

Project Budget

Project Budget: $150K per technology (FY13)

Variances: None

Cost to Date: ~$300k (FY13)

Additional Funding: In-kind contributions from utilities, end-users, and manufacturers

Budget History					
FY2010		FY2011		FY2012	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
n/a	n/a	n/a	n/a	$450k	n/a

Collaboration, Communications, & Next Steps:

- Many organizations are supporting the project
  - *BBA Members:* Input into the specs, providing demonstration sites
  - *Equipment Manufacturers*: Input on specifications, discounted products for demonstrations
  - *CEE & Utilities:* Input on specifications, financial support, coordination of incentive programs
  - *Commercial Building Consortium:* support deployment efforts and provide insight into business case information
  - *Federal Government:* Discussions with GSA to determine if BBA specs can be used for GSA purchasing; coordinating on integration of specifications into Technology Performance Exchange, promoting via intergovernmental working group; reviewed opportunities with FEMP
- We are educating stakeholders about the specifications via several efforts
  - *Webinar*: Conducted information sessions to multiple BBA project teams and public
  - *Conferences:* Presented at Labs21 conference
  - *Website:* Updates to products
  - *Targeted Outreach*: With CBC, CEE, BBA members
- Our next steps focus on promotion
  - Conduct field evaluations
  - Update business case data
  - Promote via conferences
  - Partner with utilities in order to develop incentives
  - Coordinate with Technology Performance Exchange and Sustainable Facilities Tool.