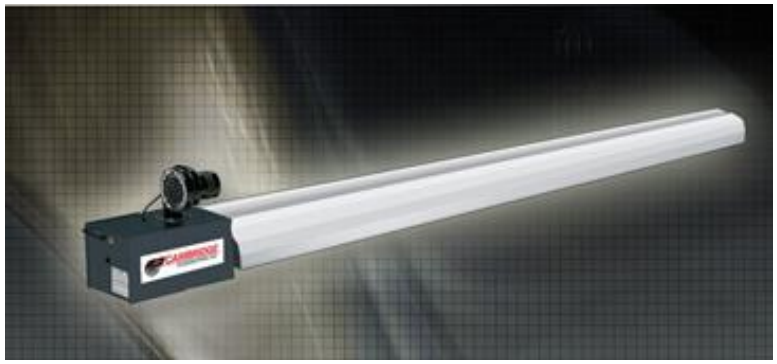
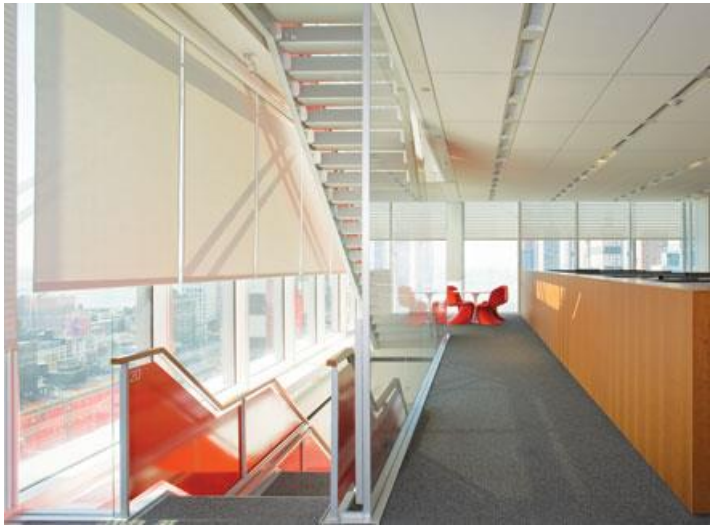
CBI Technology Impact Framework

2014 Building Technologies Office Peer Review





Images courtesy CREE, True Manufacturing, A.O. Smith, Bernstein Associates, Cambridge Engineering, Alliance Laundry Systems, NREL

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

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Project Summary

Timeline:

Start date: December 2013

Planned end date: TBD (annual go/no-go)

Key Milestones

1. Initial tech sweep completed; Feb 2014
2. Release of RFI; Mar 2014
3. Finalize HIT list internally; Sept 2014
4. Select deployment channels; Oct 2014
5. Publish HIT list; Dec 2014

Budget:

Total DOE $ to date: ~$85,000 (12/13 – 3/14)

Total future DOE $: ~$375,000 / year

Target Market/Audience:

Commercial building owners, operators, design professionals, technology providers, utilities, governments.

Key Partners:

BBA Members	Building Owners
Equipment OEMs	Trade Associations
National Labs	Professional Societies
Research Organizations	Utilities

Project Goal:

- Catalyze the voluntary uptake of cost-effective, high-impact, underutilized energy-saving technologies.

This is a new project!

Purpose and Objectives

Goal: The High Impact Technology (HIT) Catalyst is designed to help identify and prioritizing cost-effective, underutilized, energy-efficient technologies so that we can focus resource development and deployment activities.

Key Improvements and Changes:

- Quantitative, foundational criteria supports a transparent, collaborative and consistent method for directed decision-making (including two-way communication between internal, inter-agency, market stakeholders, manufacturers, etc.);
- Cohesive step-by-step strategy to move techs from newly commercialized to full scale adoption;
- Each step in the tech-to-market pipeline has a purpose and connection to the next step; all are integrated into our existing deployment networks (stakeholder programs);

Target Market and Audience: We deploy HITs through partnerships with the commercial buildings industry via the Better Buildings Alliance (BBA), federal leaders, regional non-profits and efficiency organizations.

Purpose and Objectives (Cont'd)

Outcomes: The HIT Catalyst provides commercial building stakeholders with resources and proven deployment paths to accelerate implementation and market acceptance of HITs.

Short Term

- A standardized and transparent process and map of the building technology landscape (pipeline).
- Technology stakeholders are engaged and informed
- The pipeline is market-facing to set expectations and ensure consistency in order to achieve enduring impact.

Mid-Term

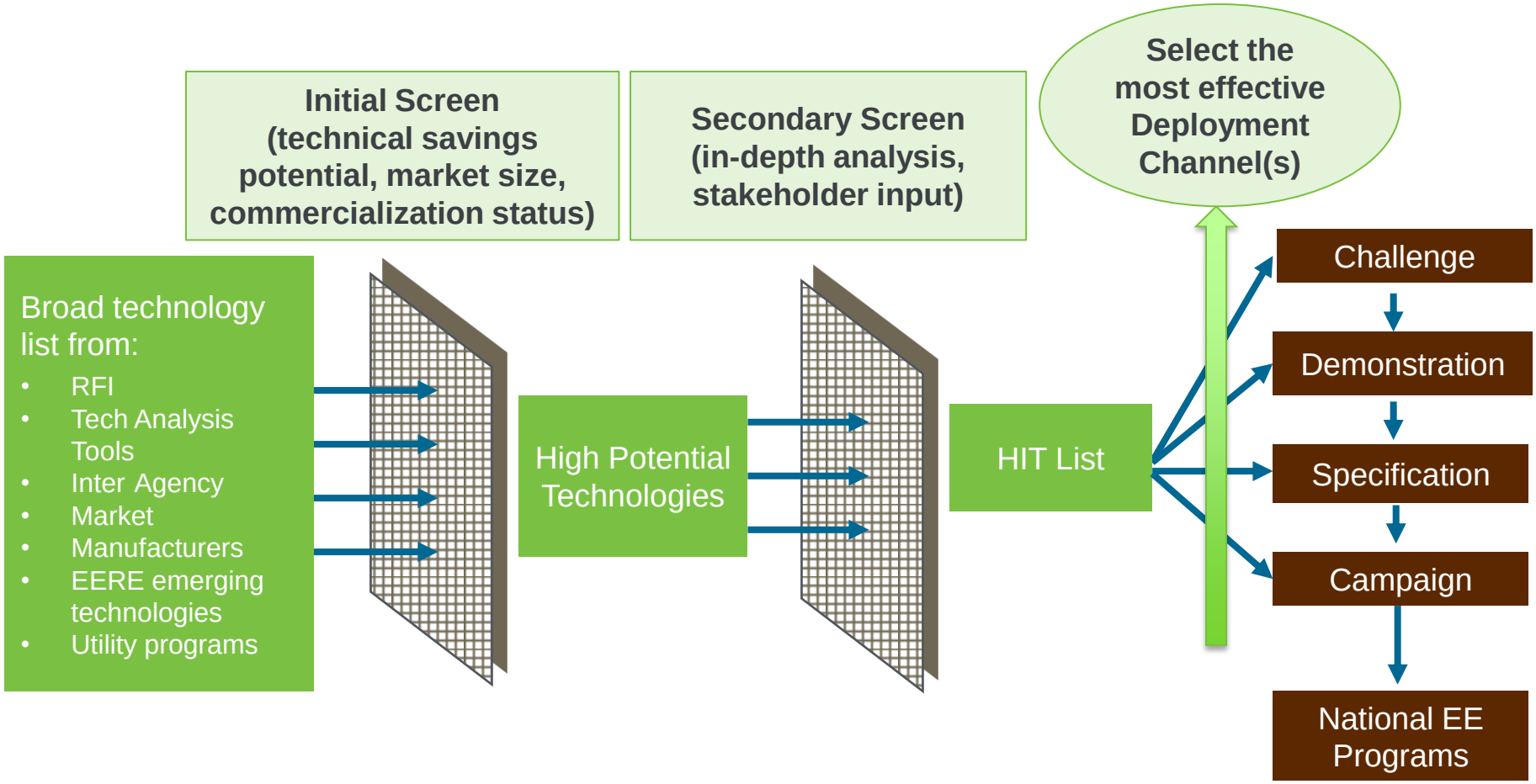
- Targeted resources support stakeholder needs, are easy to access and anticipate market barriers
- Effective use of laboratory expertise
- Leverage and streamline activities with other programs
- Track Impact

Long-Term

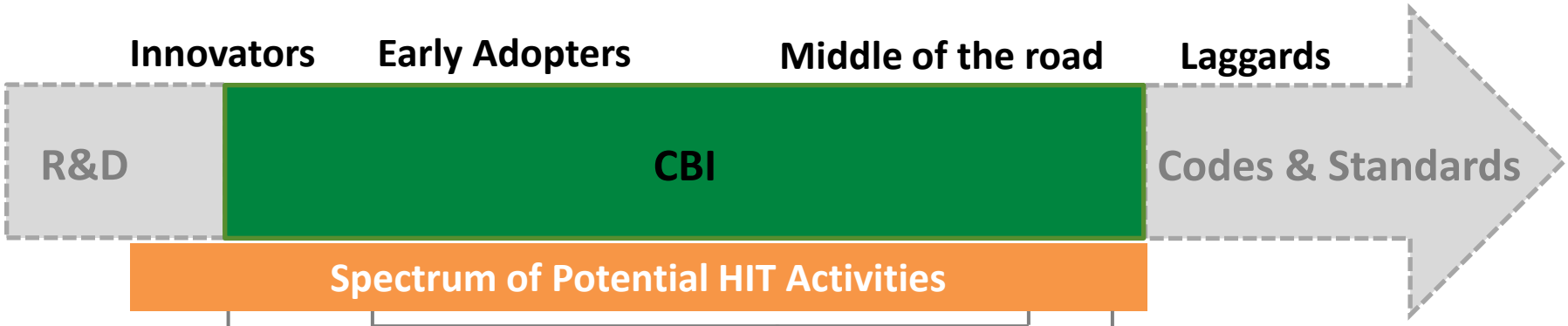
- Link to national energy efficiency programs
- Collect data through HIT deployment activities on market uptake to support voluntary programs, codes and standards

Approach

Identify HITs through a rigorous prioritization process; characterize HITs based on their stage in the product life cycle; develop appropriate resources, and evaluate the most appropriate and effective deployment activities.



HIT Pathway: Program Strategy



Newly-commercialized

- Technology Challenges, early-stage demonstrations, seed the market for new technologies, commercialization plans

Commercialized, under-utilized

- Technology Demonstrations & Case Studies, Purchasing Specifications, Training / O&M resources, add to BCL/TPE/EnergyPlus, Campaigns
- Voluntary incentives (via partnerships such as ENERGY STAR, CEE, EE incentive programs)

- DOE may pursue any of the listed activities for an identified HIT. We have developed decision criteria identifying when to pursue an activity.
- Activities are based on market needs as well as opportunities for regulatory handoff and are aimed at accelerating market acceptance by breaking down barriers to adoption at each stage of the technology life cycle.

Approach (Cont'd)

Key Issues: The HIT Catalyst primes the market for new, emerging or underutilized technologies by offering information on early stage technologies, addressing gaps in deployment pathways and activities to accelerate market-uptake including:

- Transparency and consistency
- Inter-program coordination and stakeholder input pathways
- 3rd party performance verification and data
- Procurement templates and specifications
- Technical assistance and application guidance
- Operations and maintenance strategies and data
- Demonstration of non-energy benefits
- Impact quantification

Distinctive Characteristics: Integrates resources with input from collaborators to move high-potential technologies from initial market introduction or underutilization to broader market acceptance.

Progress to Date

- Several technologies addressed through other CBI/BBA activities are now being consolidated under the HIT program.
- Past HITs have used different deployment pathways, based on their position in the market and the level of technology development, as indicated in the examples below.

HIT Name	Challenge	Demo	Spec	Supporting Resources	Campaign
Rooftop Units	FY12	FY14/15 for Challenge Units	FY13	Decision Tree, RTU Inventory and Field Evaluation Checklist, RTU Comparison Calculator, Webinars	FY14-FY16 for CEE Tier 2 RTUs
Ultra-low Temp Lab Freezers	Not required	FY13/14	Fy14	Comparison Calculator, Webinar	TBD
Exterior Lighting	Not required	FY12	FY12	Fact sheet, Application Guidance, Case Studies, Webinars	FY13-FY15
Wireless Meters	In process	TBD	TBD	TBD	TBD

How a HIT moves through the Pipeline…

CBI DEPLOYMENT STRATEGY	Direct resource development and demonstration	Market stimulation via leading organizations	Deployment through leaders' portfolios and consideration for voluntary standards	Data feeds into codes and standards efforts
ACTIVITIES	FY11-12: Produced parking light **SPECIFICATION** via BBA. FY12: Conducted **DEMONSTRATION** via Caliper program.	FY13-15: Campaign for uptake through the Lighting Energy Efficiency in Parking (LEEP) **CAMPAIGN** with market partners and BBA.	FY14-15: Utilities, REOs and OEMs reference specs to deploy efficiency levels broadly through voluntary programs and/or certification.	FY15-16: Hand off findings to BTO codes and standards teams.
IMPACTS	Measurement from demos prove average savings and reduce risk for owners; case studies help make the business case. By end of 2012, 10 BBA members representing <5% of US parking space were using spec.	Campaign provides resources to help others by quantifying actual energy savings, market uptake trajectory, and adoption by market leaders	- Measure penetration rates with market leaders - Confirm tech penetration via market research - Demonstrate sufficient uptake for codes and standards consideration	If 100% of parking lots and structures nationwide switched to spec-level lighting, we would save over .85 quads and $4 billion/year.

Project Integration and Collaboration

The HIT program is built upon two-way communication with a diverse set of collaborators to generate ideas for the program, which then creates data and deployment tools for stakeholders.

Next Steps and Future Plans

HIT List Refresh:

- Collect inputs from RFI and other sources
- Prioritize
- Collect stakeholder feedback
- Select HITs for focus

Evaluate and update each year to reflect evolving market conditions and advances in technology.

Deployment Plan and Resource Development:

- Evaluate existing resources, gaps, barriers and potential partners
- Determine most effective deployment channels

Select & Execute Deployment:

- Campaigns
- Strategic Partnerships
- Better Buildings Technology Solutions Teams

REFERENCE SLIDES

Project Budget

Project Budget: See table below
Variances: None.
Cost to Date: See table below
Additional Funding: None.

Budget History					
FY2013 (past)		FY2014 (current)		FY2015 (planned)	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
N.A.	N.A.	$375K	N.A.	TBD	N.A.

Project Plan and Schedule