



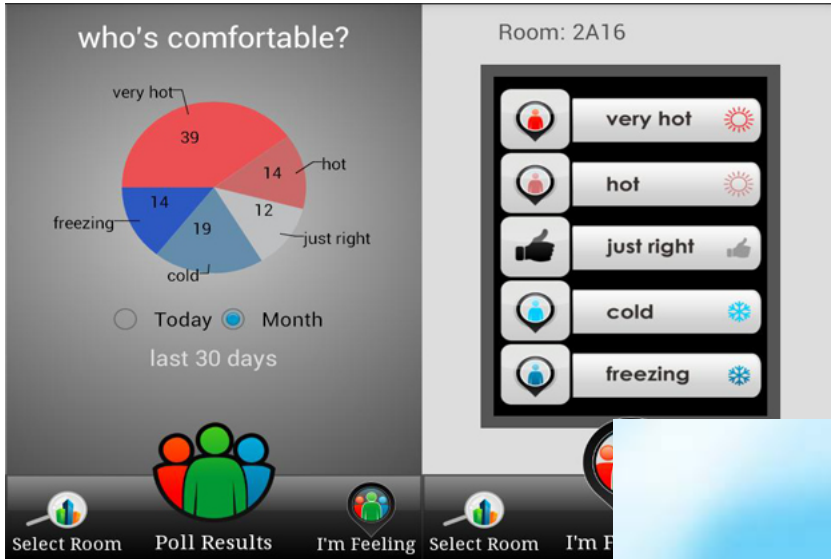
High Impact Technologies Forum

Harnessing American
Ingenuity and
Innovation to Catalyze
Building Efficiency

Some places are nearly perfect



And some places need some help



There's an **energy hog** lurking in your restaurant. Do you know where he is?

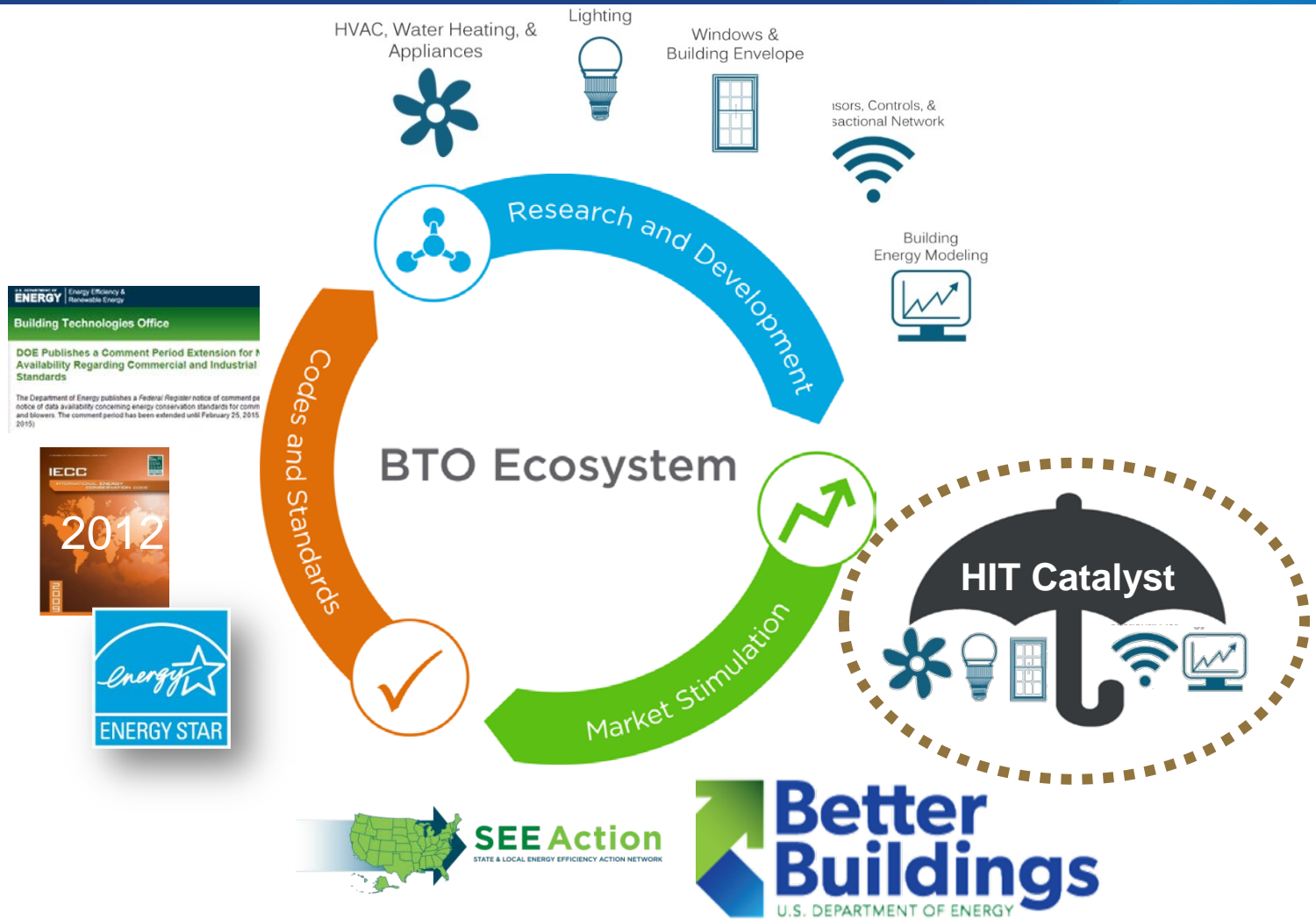
TODAY'S SPECIAL



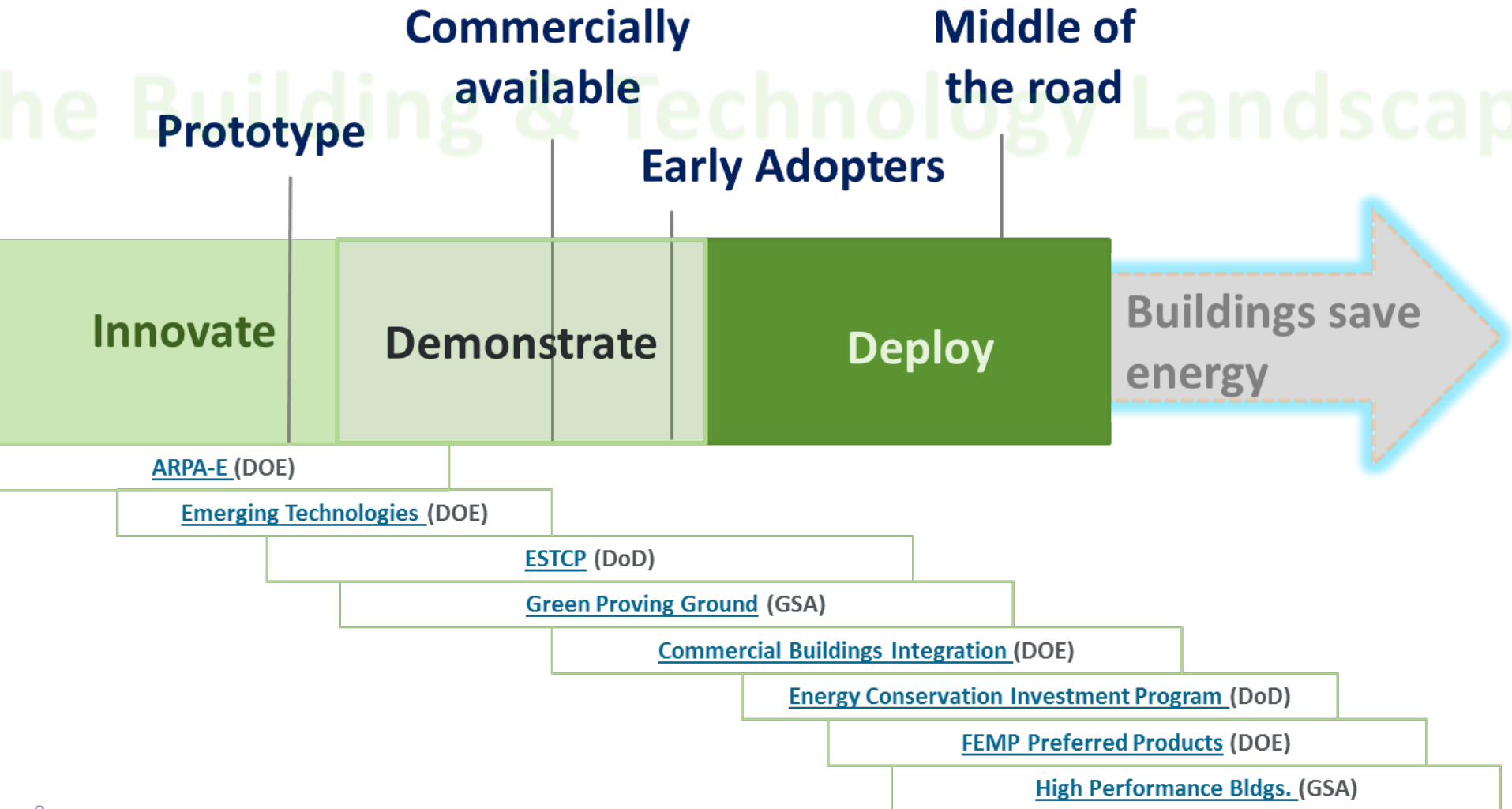
**BETTER TECHNOLOGY
BETTER PERFORMANCE
BETTER SAVINGS**

BETTER BUILDINGS

Building Technologies Office (BTO)



Federal Technology Framework



OBJECTIVES FOR TODAY

Learn how to engage:

1. Programs
2. Partners
3. Innovation

Take advantage for **Better Buildings** with **Bigger Savings...FASTER!**



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Energy Efficient Product Procurement

May 29, 2015



Saralyn Bunch (FEMP)

Christopher Payne, Ph.D
(LBNL)



Federal Energy Management

- Over 20 year history of encouraging procurement of energy efficient products
- "One stop shop" for procurement information
- Information includes energy performance requirement, cost-effectiveness example, and buyer/user information specific to product

Buying Efficient Products

- Cost-effective, commercially available products
- Approximately \$500 million in energy cost savings annually
- Purchases *already occurring*
- Change your buying habits, change your bottom line

DOD's Environmental Security Technology Certification Program (ESTCP)

Better Buildings Summit

Glen R. DeWillie, P.E.

May 29, 2015

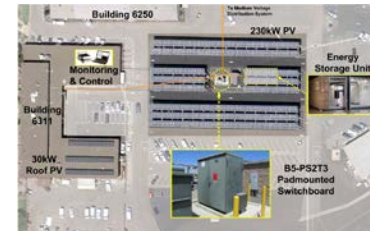


Environmental Security Technology Certification Program

- **PURPOSE:** Demonstrate Innovative Cost-Effective Environmental and Energy Technologies
- Five Program Areas: Munitions Response; Resource Conservation/Climate Change; Environmental Restoration; Weapons Systems & Platforms; **Energy/Water**
- Promote Implementation
 - ◆ Direct Technology Insertion
 - ◆ Partner with DoD End User and Agency Stakeholders



Renewable
Energy



Microgrids &
Cyber Security



Building
Technologies,
S/W & Controls



Water
Conservation

ESTCP Process

- Competitive selection based on DoD needs
- Formal Demonstration Plan
- Projects occur on military installations to gather data
- Written reports on cost and performance
- Support for transition
 - ◆ Regulatory and end-user acceptance
 - ◆ Guidance and training
 - ◆ Interagency collaboration
 - ◆ Technology Transfer

Current Funding Opportunity closed;
next solicitation early 2016



To learn more...

Web site

www.serdp-estcp.org



Follow us on:





Green Proving Ground Program | U.S. General Services Administration | 2015

GPG Program Overview



FEDERAL MANDATES SET THE PACE

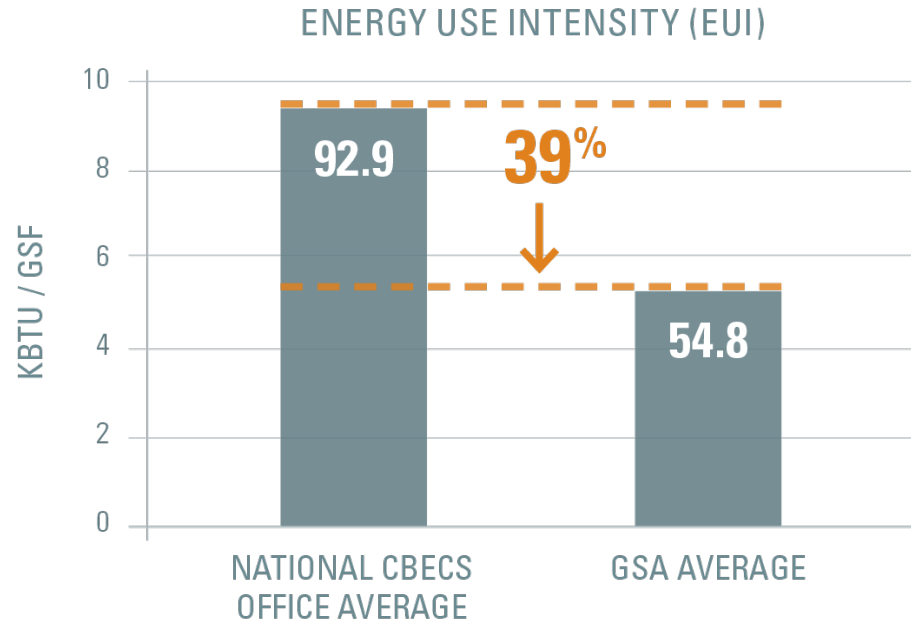
Efficiency results from innovation and policy

Energy Independence and Security Act,
2007
30% reduction in energy use intensity
(EUI) by 2015, over 2003 levels

Executive Order 13693, 2015
2.5% annual reduction in EUI through
2025, over 2015 levels

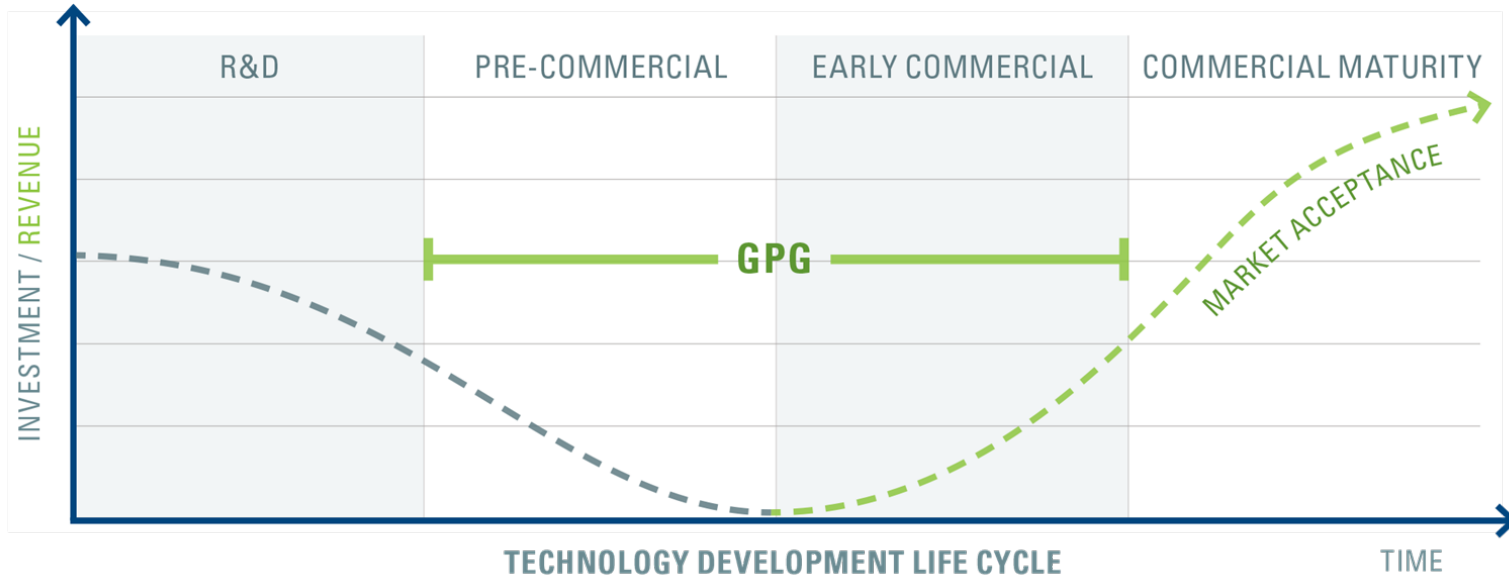
GSA FOSTERS OUTSTANDING BUILDING PERFORMANCE

GSA buildings are **39%** more efficient than typical U.S. commercial buildings.



GPG SUPPORTS DEVELOPMENT OF INNOVATIVE TECHS

GPG assumes first-use risk and accelerates market acceptance by objectively assessing innovative sustainable building technologies in real-world environments.



HOW DOES GPG WORK?



Identify promising technologies at the edge of commercialization



Pilot technology installations within GSA's vast real estate portfolio



Partner with Department of Energy national laboratories to objectively evaluate real-world performance



Recommend technologies with broad deployment potential

GREEN PROVING GROUND, 2011-2015

Received	450	technology applications
Selected	42	technologies for M&V
Published	23	DOE laboratory assessments
Identified	13	broad deployment potential

Google

Ranking

GPG Technology

Findings consistently appear within the top

5 Google search results



ENERGY IMPACT OF FOUR DEPLOYED TECHNOLOGIES

ANNUAL ENERGY REDUCTION

154,000 MMBtu/yr

EUI REDUCTION

1.6% 66% of Annual Goal

(As of March 2015)





For more information: gsa.gov/GPG



GPG PROGRAM INVESTMENTS, 2011-2014

ENERGY MANAGEMENT

Advanced Power Strips*†
Wireless Sensor Networks *†
Socially Driven HVAC
Passive Thermal Storage Platform
Predictive HVAC Optimization
Central Plant Optimization Strategy
Variable-Speed Chiller Plant Control

LIGHTING

Integrated Daylighting Systems *
Occupant Responsive Lighting *
Wireless Lighting Controls
LED Lighting with Integrated Controls
LED Replacement Lamp for CFLs
T-LED Retrofit for Fluorescent
Luminaires
Networked Lighting

BUILDING ENVELOPE

Applied Solar Control Retrofit Films*
Vacuum Insulated Panels
Chromogenic Windows
High R-Value Windows *
Electrochromic Windows for LPOEs *
Electrochromic Windows with Dynamic
Controls
Low-Emissivity Window Film

HVAC

Wireless Pneumatic Thermostat *
Multistaged Indirect Evaporative Cooler
Synchronous and Cogged Fan Belts*
Variable Speed Maglev Chiller *‡
Variable Refrigerant Flow
Condensing Boilers*‡
Variable Speed Screw Chiller
High Efficiency HVAC
Modular Absorption Chiller

ON-SITE POWER & RENEWABLES

Photovoltaic-Thermal Hybrid System
Wood-Pellet-Fired Biomass Boilers
PV Guidance
Photovoltaic Systems
Honeycomb Solar Thermal Collector

WATER

Wireless Moisture Sensing Irrigation System
Catalyst-Based Non-Chemical Water Treatment *
Weather Station for Irrigation Control *

More information available at gsa.gov/GPG

M&V STATUS *(as of May 2015)*

Completed — 23

Continuing Evaluation — 15

* Identified for Broad Deployment — 13

† Deployed via CAPX

‡ Deployed via ESCO



Technology Transition

Acquisition, Technology and Logistics

❑ Goal:

- Transition promising new technologies out of test bed programs and into real world projects

❑ Challenges:

- Resource availability - \$, people, time, expertise
- Highly distributed energy efficiency technology acquisition
- Acquisition regulations – sole sourcing issues
- Risk
- Identifying the “right” technologies

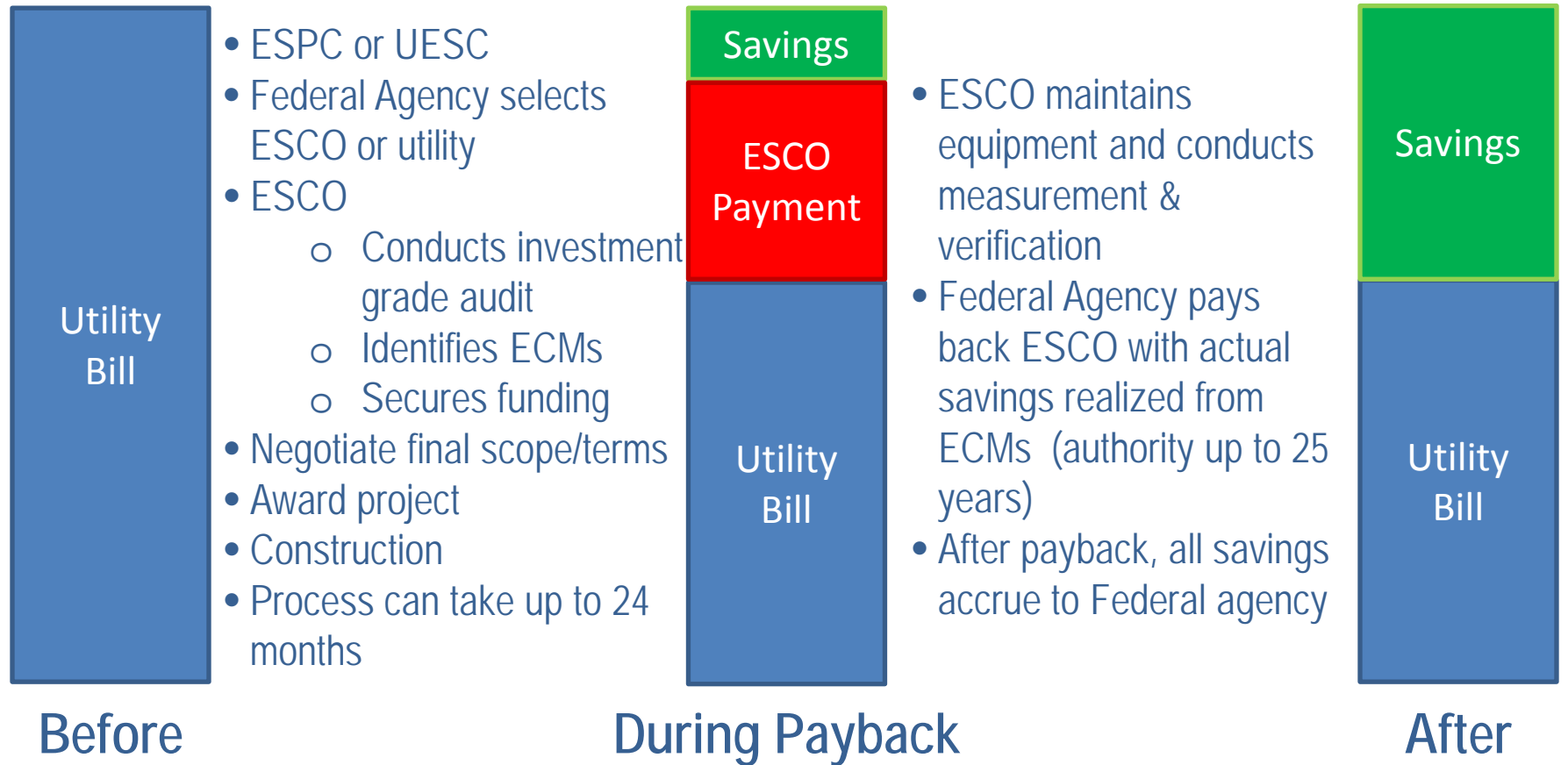
❑ Possible Solutions:

- Marketing, Education & Awareness
- Standardized metrics
- Consistent reporting
- Leveraging performance contracting vehicle
 - ESCO technology evaluation process
 - Communication/Negotiation table
 - Risk sharing



Performance Contracting

Acquisition, Technology and Logistics



Performance contracting allows Federal Agencies to fund energy efficiency projects without appropriated funds by leveraging private capital

DOE Building Technologies Office: Emerging Technologies (ET)



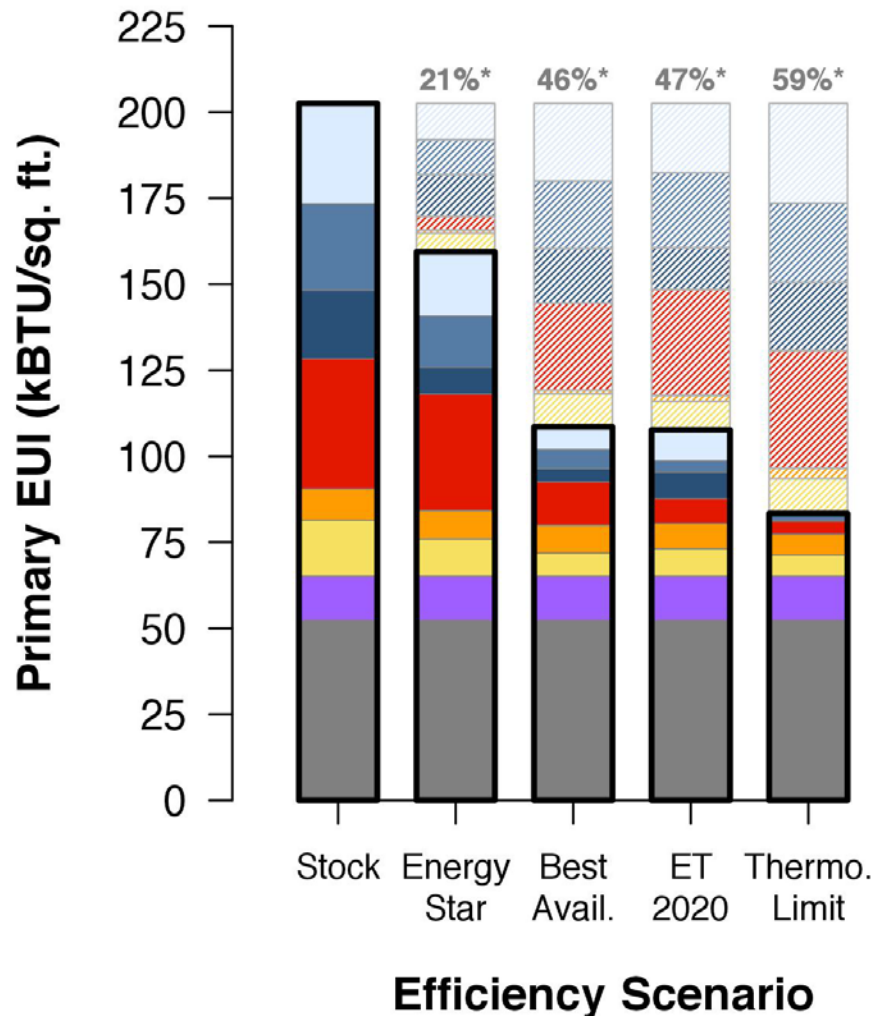
U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Pat Phelan (patrick.phelan@ee.doe.gov)
May 29, 2015

Potential Limits of Building Energy Efficiency

Commercial Energy (Composite, All Regions)



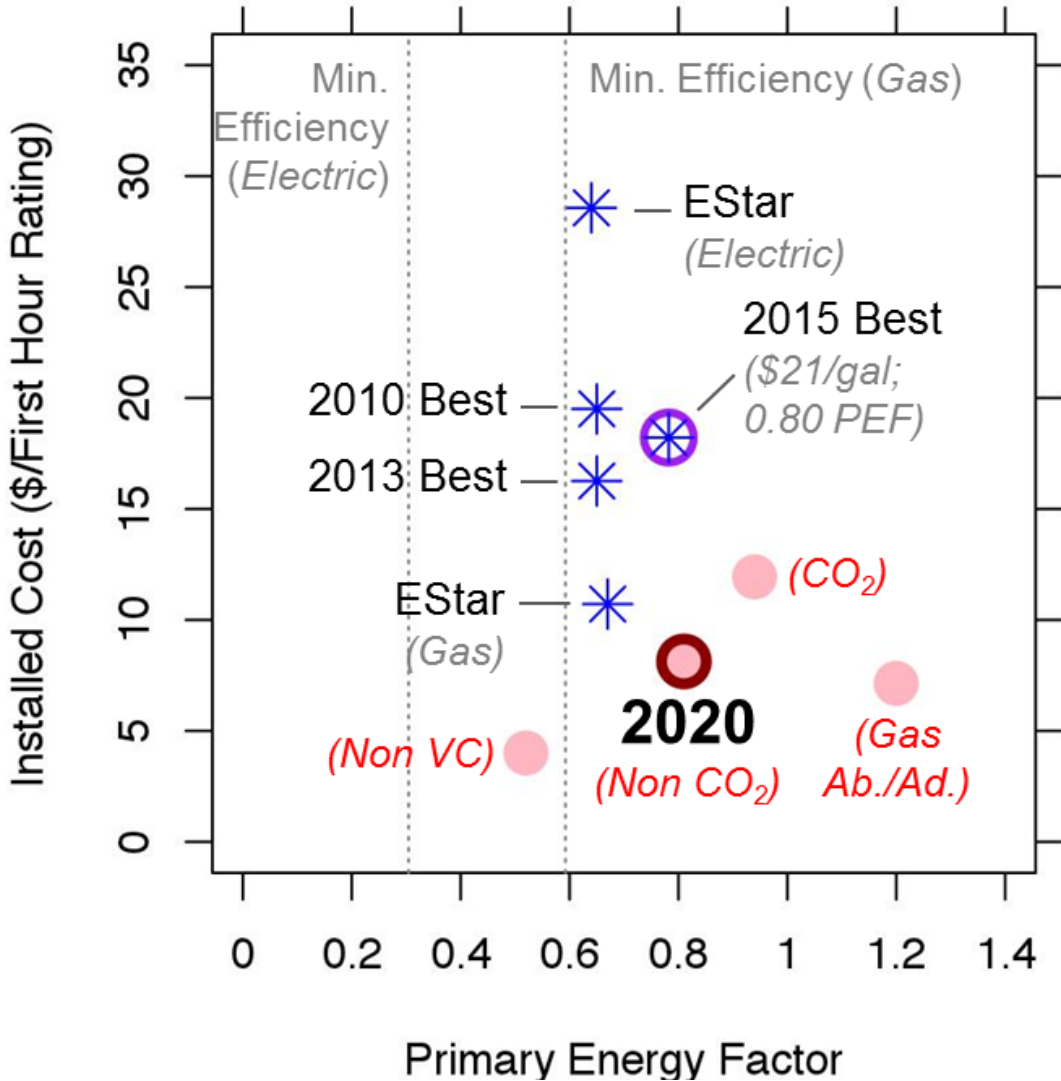
*Energy Savings %



“Other” dominates in future:
Transformers, medical imagers,
elevators, escalators, pumps, laundry
equipment, pumps, fume hoods, CHP,
etc.

Best available does not consider cost
ET 2020 includes cost effectiveness

Tracking Progress on Efficiency & Cost: Water Heaters



2020 R&D targets are shown for:

Electric

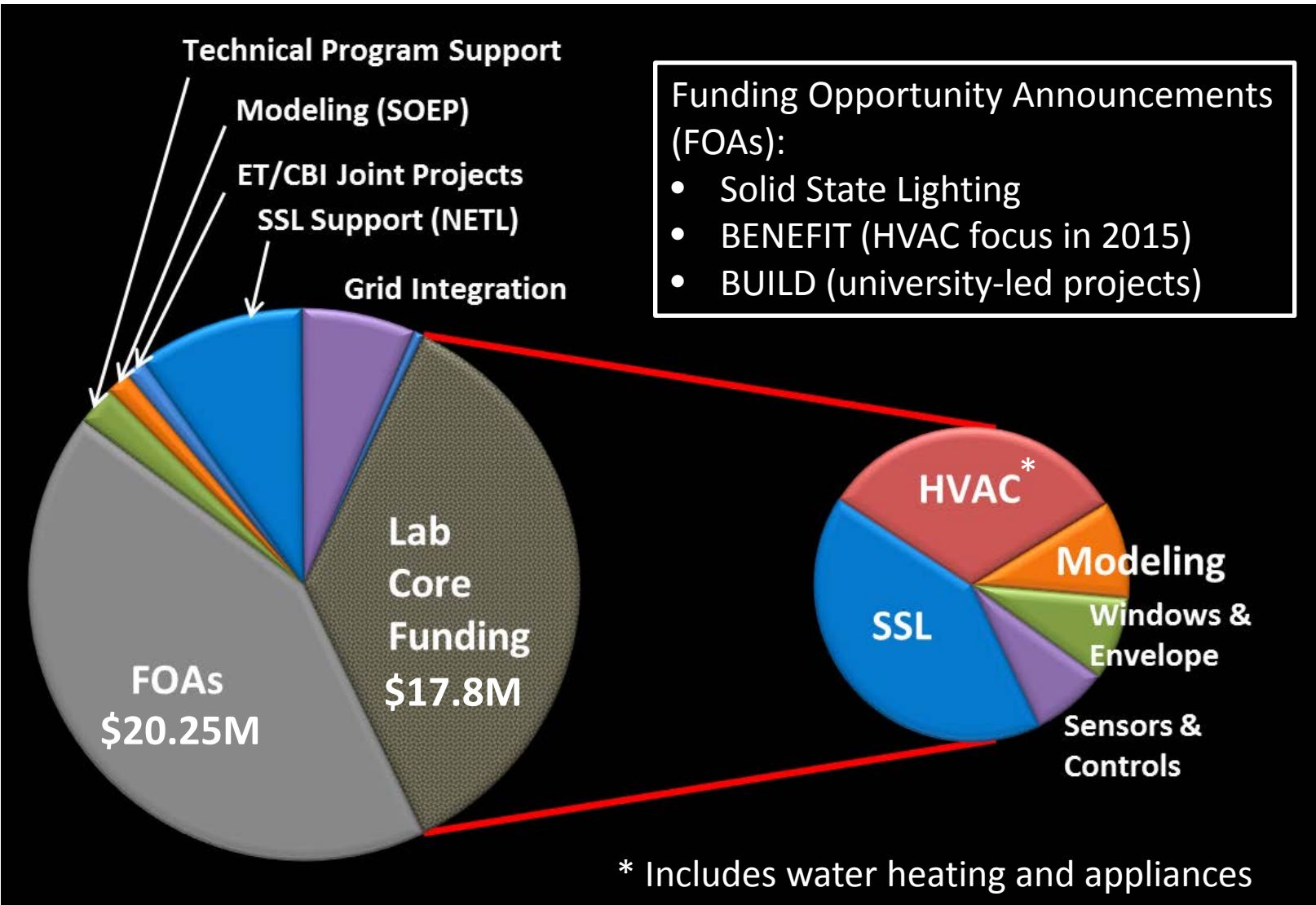
- Non-CO₂ vapor compression
- CO₂ vapor compression
- Non vapor compression

Gas-Fired

- Absorption/Adsorption

2015 Best Source: Lowe's, Home Depot, & Sears product data for ~50-60 gallon residential heat pump water heater
 Energy Star Source: http://www.energystar.gov/index.cfm?c=water_heat.pr_crit_water_heaters
 Fed. Min. Std. Sources: *Electric* - http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/27#recentupdates ;
Gas - http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/27#recentupdates

Fiscal Year 2015 Emerging Technologies Funding Distribution



ET FY15 Budget: \$49.9M

Getting Involved with BTO Emerging Technologies

Funding Opportunity Announcements:

- Solid-State Lighting (SSL): R&D advances in LEDs and OLEDs
- BENEFIT FOA (BENEFIT = Building ENergy Efficiency Frontiers and Innovation Technologies):
 - Topics focused on Multi-Year Program Plan targets
 - “Open” topic
 - BUILD topic (BUILD = Buildings University Innovators and Leaders Development)
- SBIRs (Small Business Innovation Research)
 - Generally one SSL topic and one non-SSL topic each year

Workshops, Roadmaps, Technical Reports

Website: <http://energy.gov/eere/buildings/emerging-technologies>

Email List: <http://www1.eere.energy.gov/buildings/newsletter.html>

Apply to a FOA (or become a reviewer)!

An Overview of the Advanced Research Projects Agency – Energy (ARPA-E)

Sven Mumme

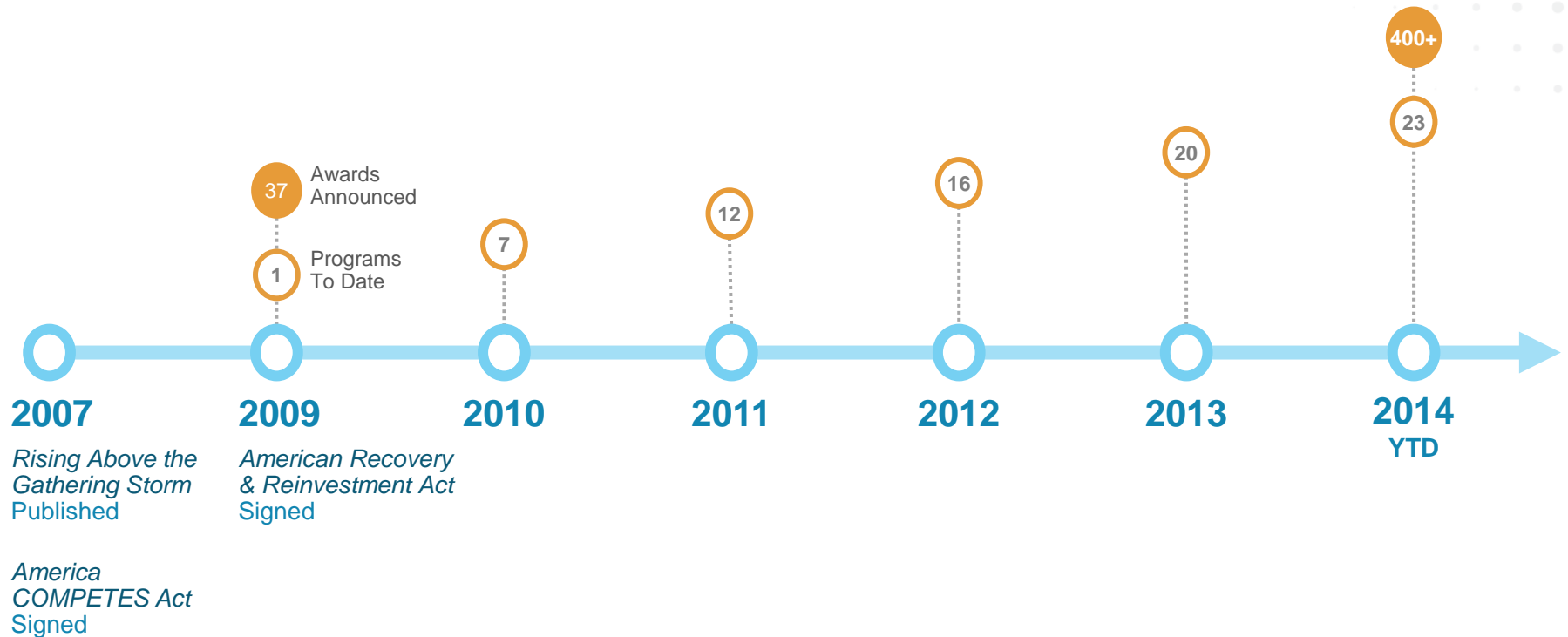
ARPA-E Technology to Market Advisor

Better Buildings Summit
May 29, 2015



The Brief History of ARPA-E

ARPA-E was envisioned in *Rising Above the Gathering Storm*, authorized by Congress in the America Competes Act, and implemented with ARRA funding.

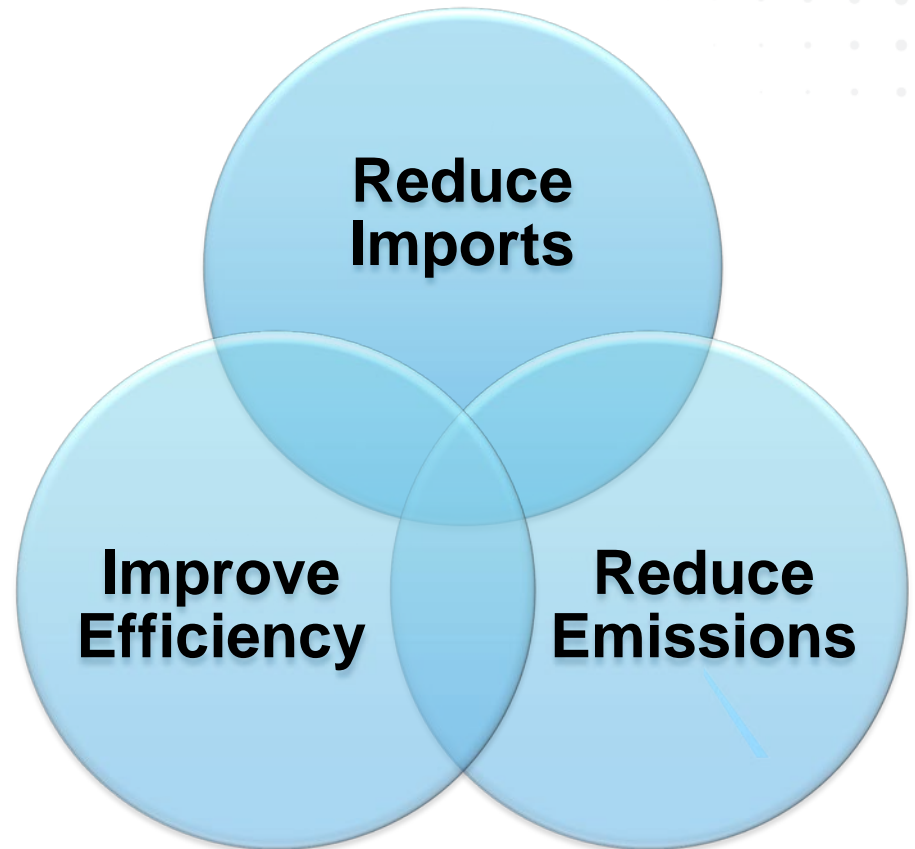


The ARPA-E Mission

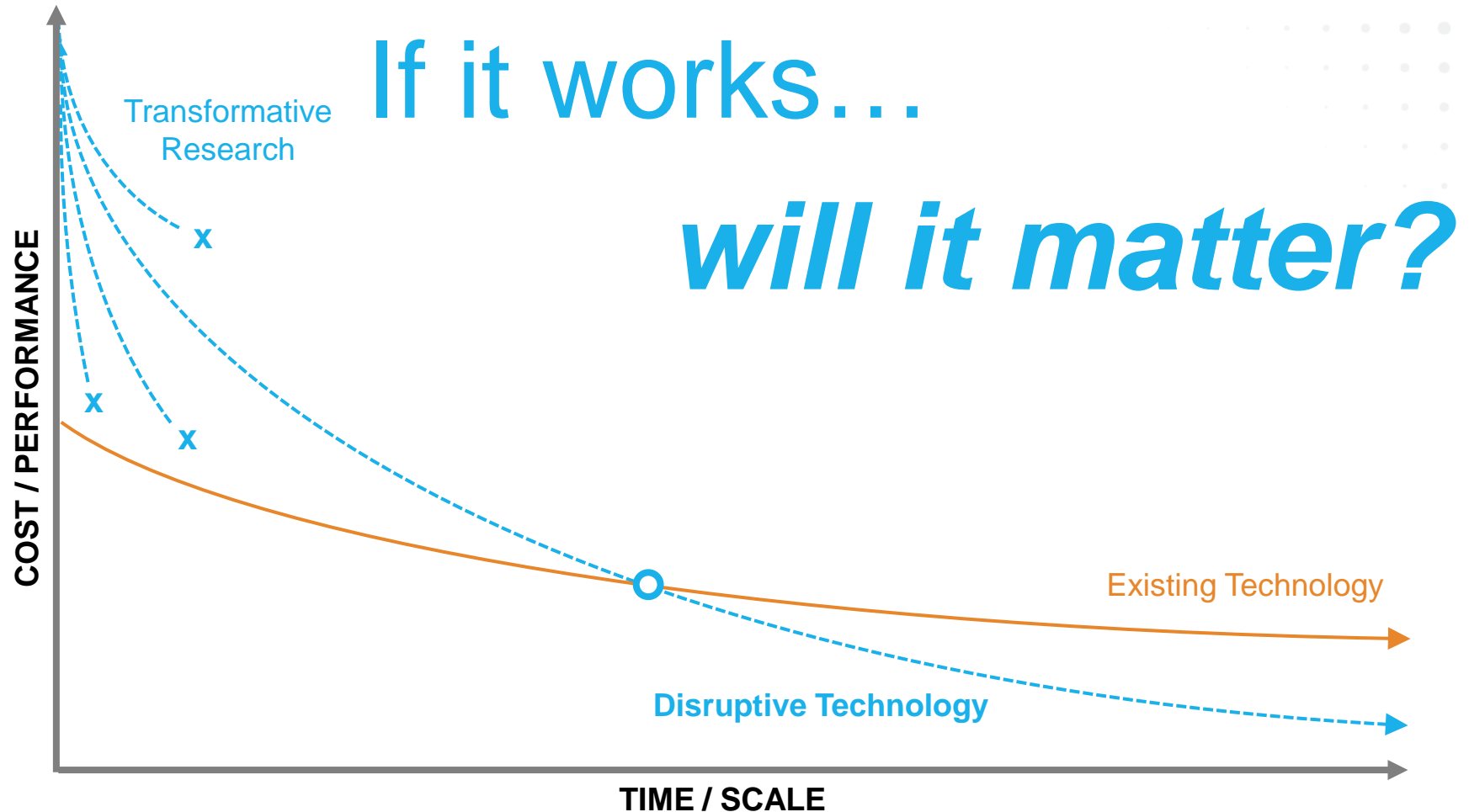
Catalyze and support the development of transformational, high-impact energy technologies

Ensure America's

- National Security
- Economic Security
- Energy Security
- Technological Lead

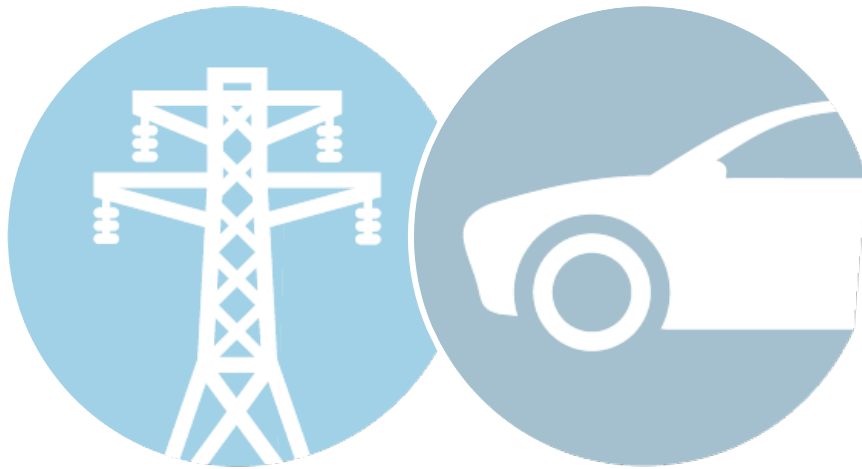


Funding Disruptive Approaches to Innovation



The ARPA-E Portfolio

As of March 2015, ARPA-E has funded over 400 projects, investing \$1.1 billion across 25 focused programs and open funding solicitations



Stationary Energy Technologies

Solar ADEPT GRIDS IMPACCT GENSETS (NEW)	BEETIT GENI FOCUS	REBELS DELTA MONITOR
--	-------------------------	----------------------------

Transportation Energy Technologies

BEEST PETRO	Electrofuels MOVE	RANGE REMOTE
----------------	----------------------	-----------------

Stationary & Transportation Energy Technologies

ADEPT HEATS SBIR/STTR	AMPED REACT METALS	SWITCHES
-----------------------------	--------------------------	----------

Open

OPEN 2009	OPEN 2012	IDEAS
OPEN 2015 (NEW)		

*ARPA-E Building Technologies Portfolio



U.S. DEPARTMENT OF
ENERGY

www.arpa-e.energy.gov

HIGH IMPACT TECHNOLOGY FORUM: POSTER SESSION INTRODUCTIONS

Retro-commissioning Sensor Suitcase: Project Summary

Project Goal:

Enable retro-commissioning in small buildings, realizing ~10% whole-building energy savings, by reducing implementation costs so that servicing this sector is cost effective with acceptable ROI. Work with both manufacturing/vendor and deployment partners to transform market.

Timeline:

Start date: Oct. 2013

Planned end date: Sept. 2017

Key Milestones

- Recruited manufacturing/vendor partner, 2015-01-30
- Recruit deployment partners, 2015-06-30
- Complete 3 real-building demos, 2015-08-30

Key Partners:

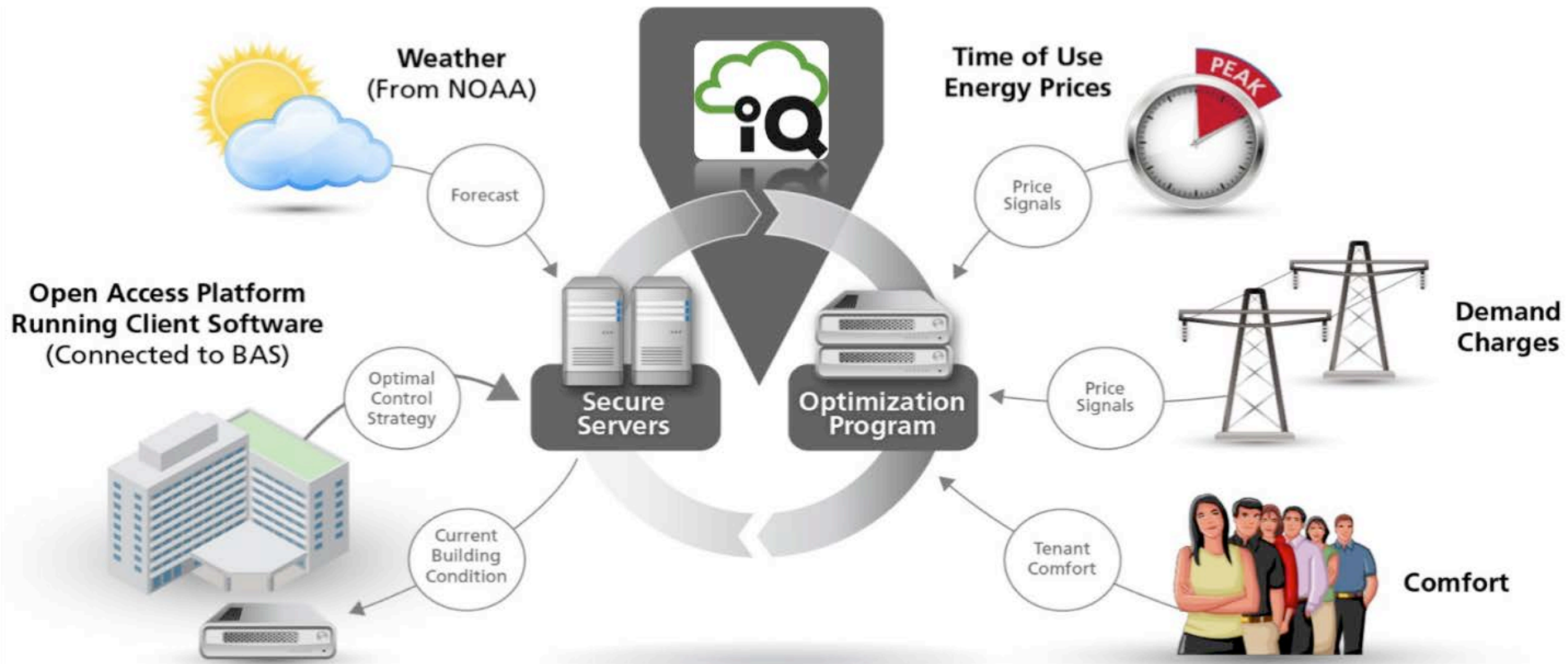
PNNL	Deployment Partner 1, TBD
LBNL	Deployment Partner 2, TBD
ORNL	Deployment Partner 3, TBD
Leviton	Deployment Partner 4, TBD

Target Market/Audience:

- Overall: Commercial Buildings < 50,000 ft²
- 1st Wave: Energy services & commissioning providers
- 2nd Wave: small building portfolio owners



BuildingIQ Platform



Persistent HVAC Energy Optimization & Control

BuildingIQ Confidential

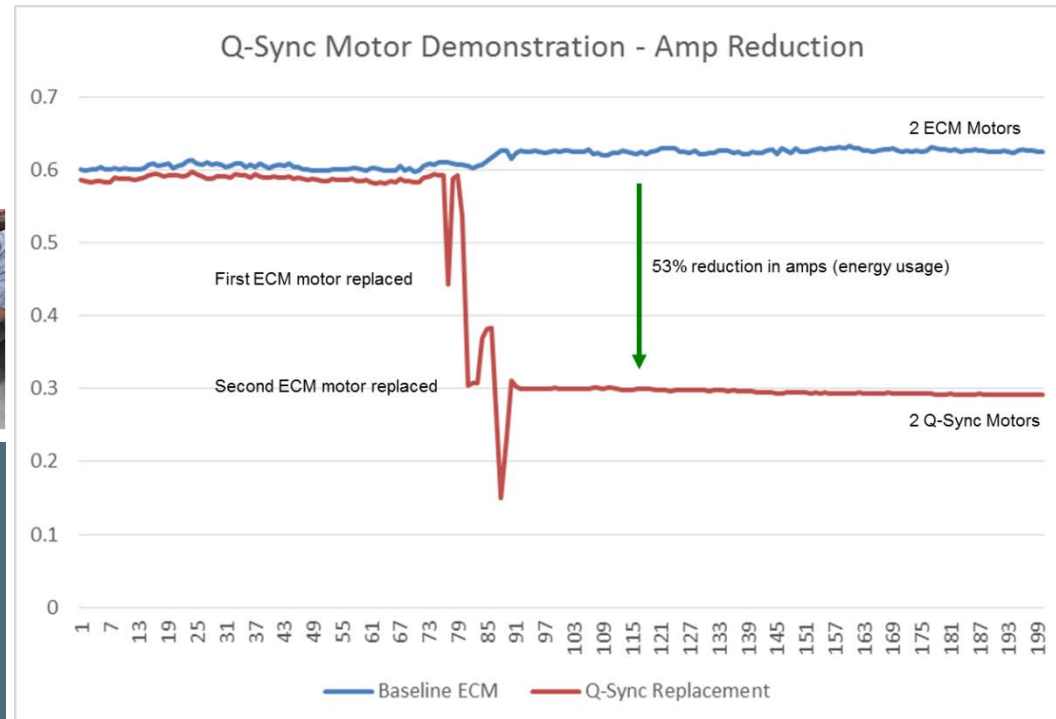
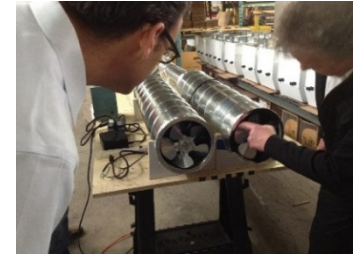
QM POWER

“Using Q-Sync technology instead of Electronically Commutated Motors (ECMs) would be the energy equivalent of taking one of every two motors off the grid.”

- Dr. Bryan Becker, former Chairman of ASHRAE’s Technical Committee for Commercial Refrigeration



U.S. DEPARTMENT OF
ENERGY



Making Buildings Smarter

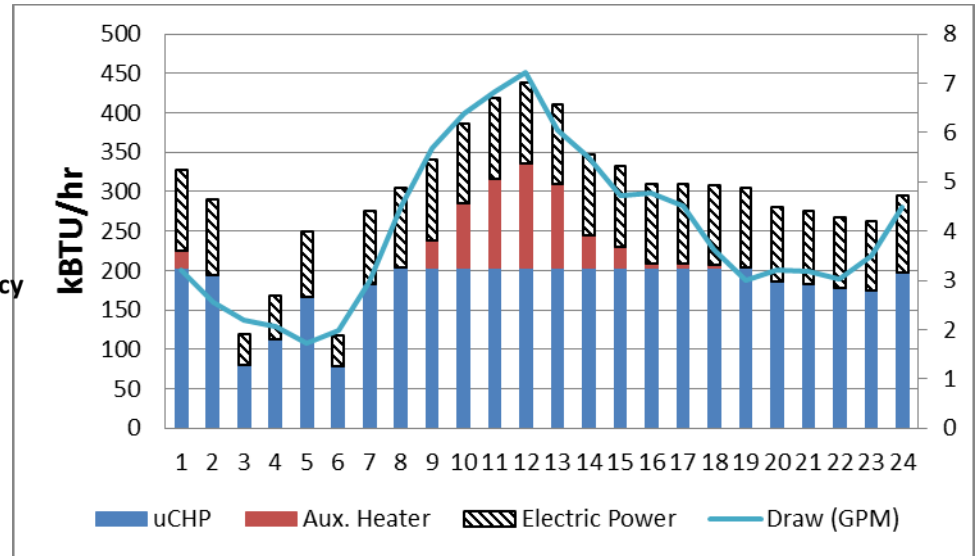
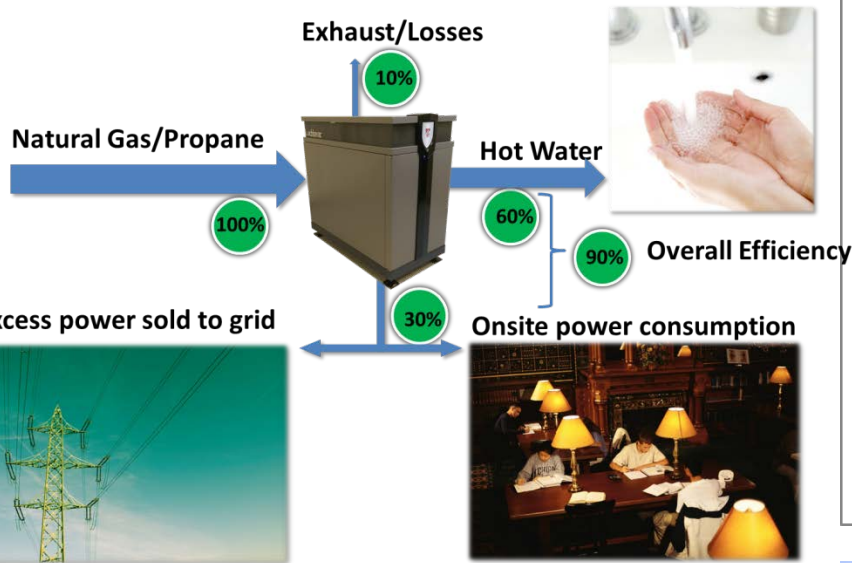
Learn more

www.qmpower.com



Demonstration of μ CHP in Light Commercial Hot Water Applications

Kris L. Jorgensen, A.O. Smith Corporation
 kjorgensen@aosmith.com





Commercial Advanced Lighting Controls Project



Advanced Control
Demonstration
Projects
(DOE Funded)

Utility EE Program
Specs and Qualified
Products List

Training Programs for
Designers and
Installers
(DOE Funded)

Advanced Control
Savings Calculator

New Nationally
Adopted EE Program
Offerings
(DOE Funded)

Support for Industry
Standards

With Funding Support From:



The United Illuminating Company



Pacific Gas and
Electric Company[®]



PSEG LONG ISLAND
We make things work for you.



Natural Resources
Canada

Ressources naturelles
Canada

Canada



U.S. DEPARTMENT OF
ENERGY

High Performance Data Centers, LBNL: Dale Sartor

Energy Audit Demonstrations

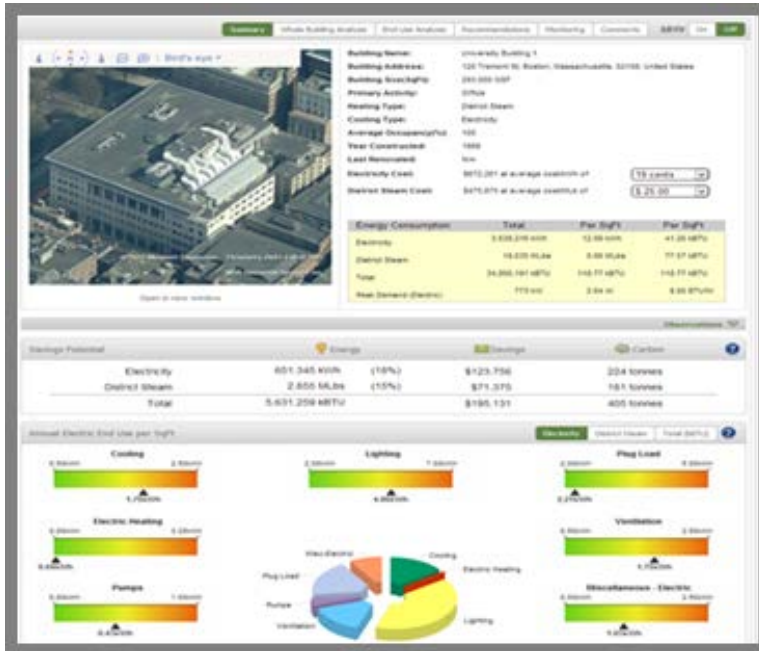


1. Traditional energy audits are expensive and time consuming.

2. Demo showed that tablet-based software improved the quality and reduced the cost of energy audits by 28%.



EW-201260



EW-201261

3. An ESTCP demonstration showed that a “touchless” energy audit using Remote Building Analytics reduced the costs of conventional audits by 6X and performed the analysis 5X faster



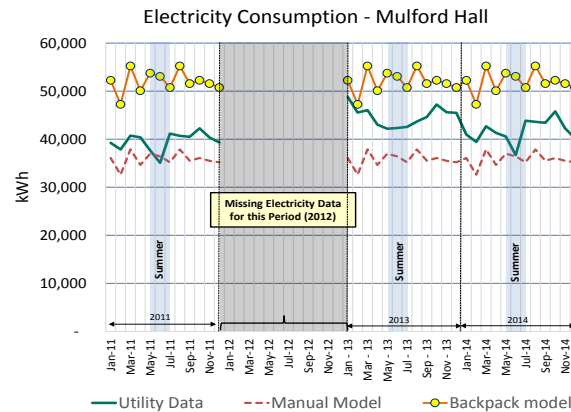
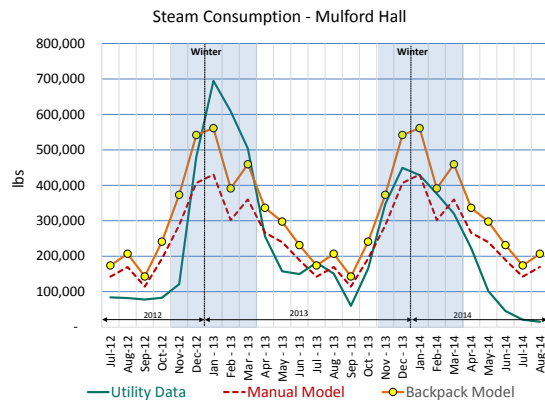
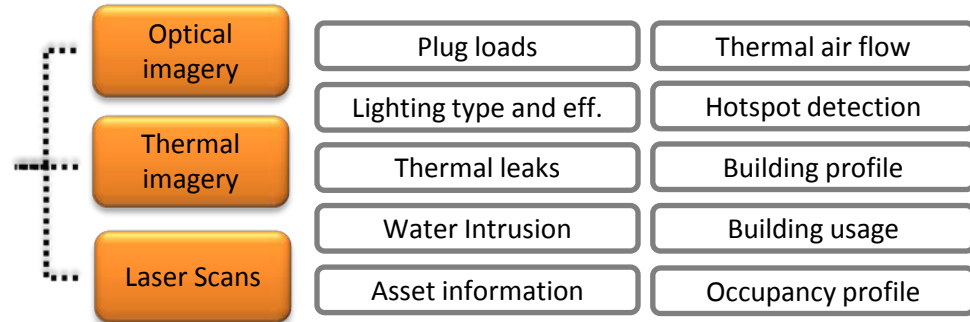
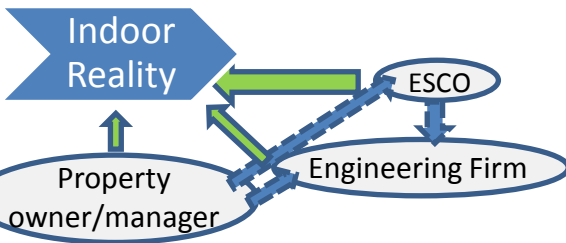
Product A fast automated service for (a) energy audit (b) as built documentation of large commercial buildings

Innovation A human operator wearing a backpack of sensors walks through buildings capturing data to be automatically processed:

- ➔ Energy saving measures
- ➔ As built schematics
- ➔ Indoor StreetView

Customer Problem Energy audits are slow, laborious, expensive, require skilled labor, error prone;

Indoor Reality Differentiator First and only (a) fully automated energy audit system, 5x cheaper, 10x faster, 2x more accurate; (b) fast, automatic as built documentation; (c) remote visualization of building interiors



Attribute	Traditional On-site Audit	Indoor Reality Backpack
Speed	Days to weeks	< 1 hour
Audit details	Low	High
Data Accuracy	Estimated	Measured, quantified
Repeatability	Low: paperclip	High: electronic
Skill labor	High	Low
Cost (per ft ²)	\$ 0.50	\$0.10

Better Buildings Summit - High Impact Technologies

3M Air Barrier Technologies that are Changing the Status Quo

Francis Tate

3M

Diana Hun, PhD

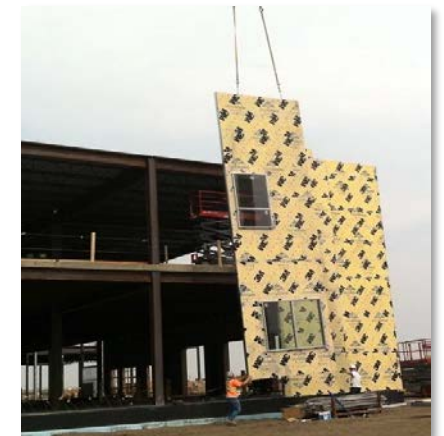
Oak Ridge National Laboratory

Leveraging 3M Core Technology Platforms for Construction



3M Air & Vapor Barrier #3015

- No primer required for faster installation
- Low temperature application – 0°F
- No compatibility issues with other materials
- Translucent film for visual inspection
- Light weight and easy to handle
- Fire code compliance (NFPA 285)



Based on Proprietary 3M Technology

Typical Self-Adhered Membranes vs. 3M 3015

Polyethylene backing with asphalt/bitumen adhesive



Priming required



36" x 75' roll = 60 lb (27 kg)



> 80°F: membrane can slide / peel away



< 40°F: too stiff, no adhesion or tack

Proprietary backing with specially formulated acrylic adhesive - 3M Air and Vapor Barrier 3015



Does not require priming



36" x 75' roll = 20 lb (9 kg)



Installs at 120°F



Installs at 0 °F

3M Liquid Air Barrier #2085VP

- One pass application – high coverage rate
- Single component : standard spray equipment
- Application in extreme conditions (Cold / Rain)
- 93% solids: fast drying & low shrinkage
- Low VOC
- High permeability (~30 perms)
- Durable against thermal and moisture cycles



Based on Proprietary 3M Technology

Typical Liquid-Applied Membranes vs. 3M 2085VP



STPE

3M

Silyl-Terminated Polyether
(STPE) Technology

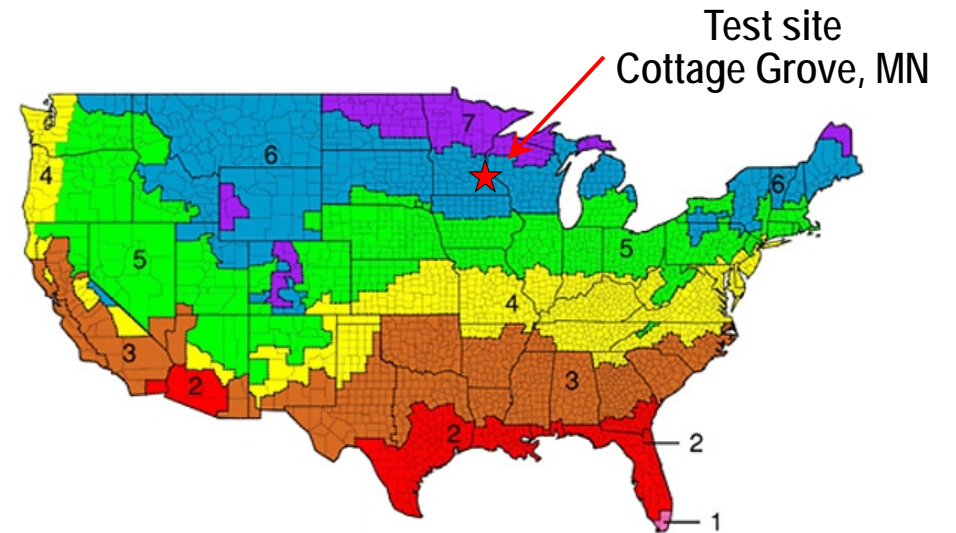
Latex

Water-Based Latex

1 week at 100°F exposed to
continuous mist in a rain chamber.

ORNL / 3M Airtightness Project

- **Quantify decrease in energy use due to improvements in airtightness**
- **Built and instrumented 8 test facilities**
 - (2) 3M™ 3015
 - (2) 3M™ 2085VP
 - (1) 3M™ 3015VP (new technology)
 - (2) Competing technologies
 - (1) Baseline → water-resistive barrier
- **Monitor energy consumption and air barrier performance for two years**
- **Data collection will begin in July 2015**
- **Estimate US energy reductions through calibrated models**



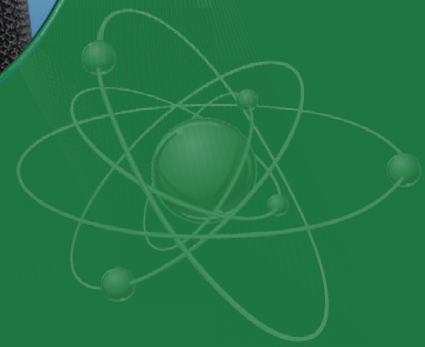
Rapid Innovation to Market Incubator (RIMI)

Better Buildings Summit

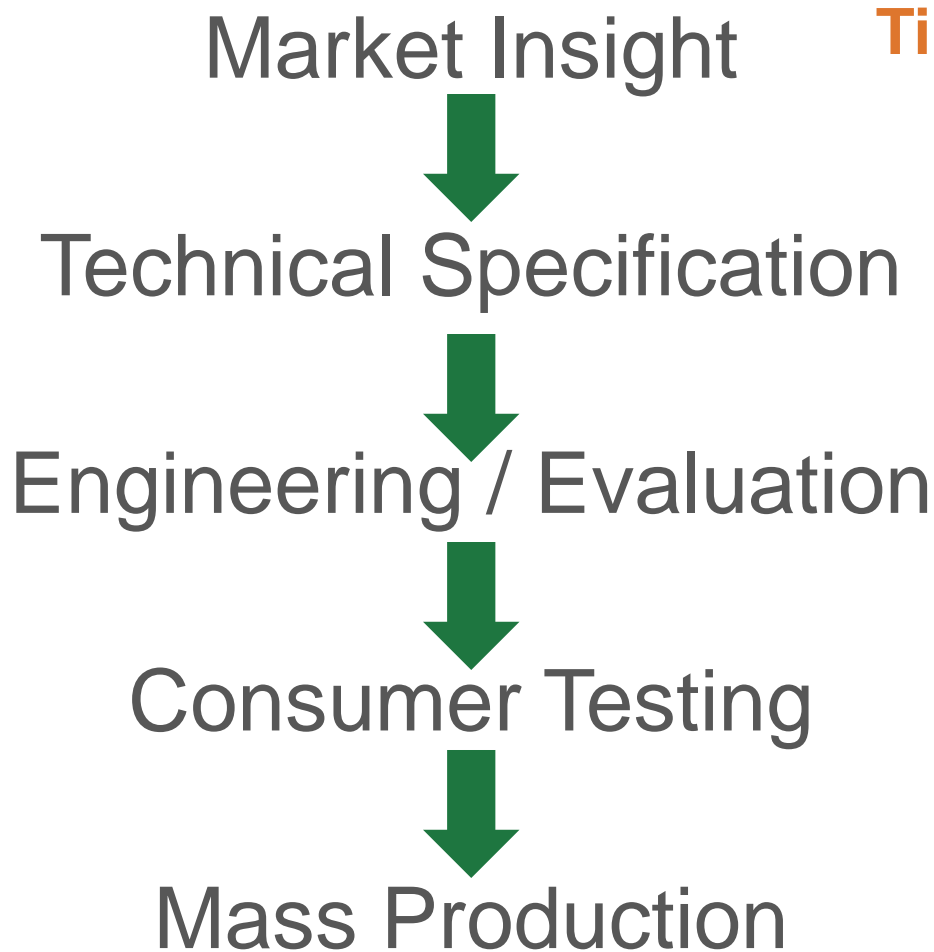
Ed Vineyard

Director, Building Technologies Research
and Integration Center (BTRIC)

May 29, 2015



Traditional Innovation to Market Path



Time / Money

It can take up to five years or more for a new product to enter the market and cost tens of millions of dollars

New products have a success rate of 50%

What if the cycle and cost could be significantly reduced?

Barriers to Innovation

Barrier 1:

Selection Bias Relies on a Few Decision Makers

Barrier 2:

High Production Cost

Barrier 3:

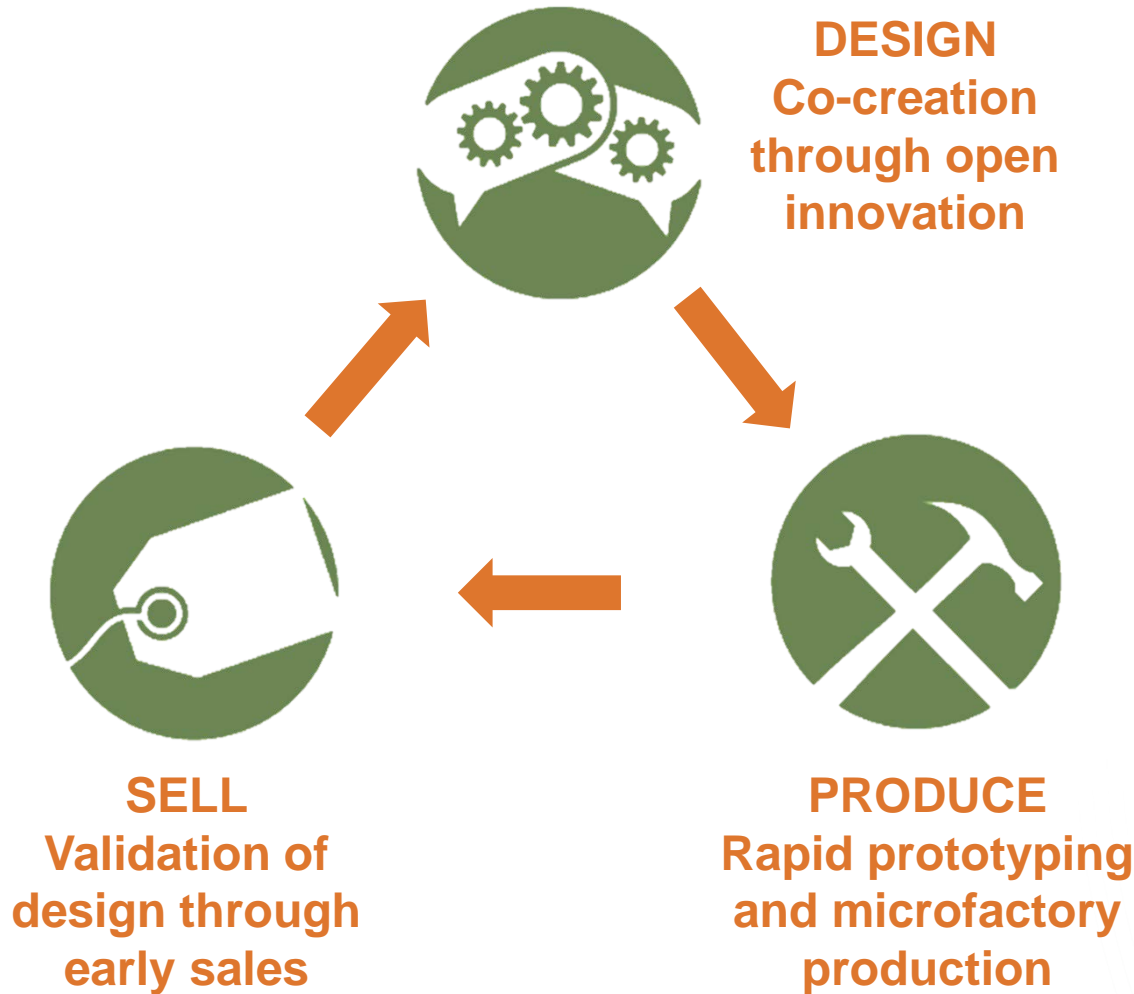
Confidentiality Inhibits Feedback until Years Later

Impacts

- Selling to management is difficult due to large investment (\$30 - \$50 M) and risk
- New product launches are discouraged
- Bias against innovation
- Lost opportunities

How many creative ideas never make it to market?

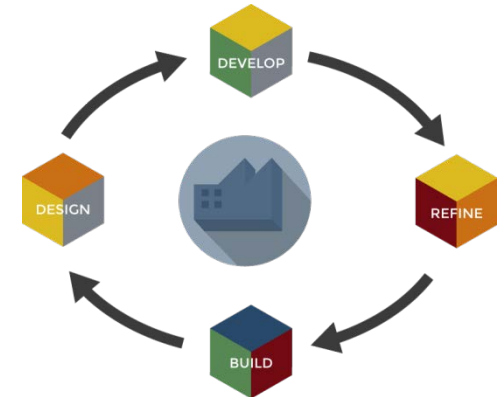
Rapid Innovation to Market Incubator (RIMI)



- Months to market
- Frequent and numerous product launches
- Quick consumer feedback
- Innovation is welcome
- Lower cost
- Reduced risk

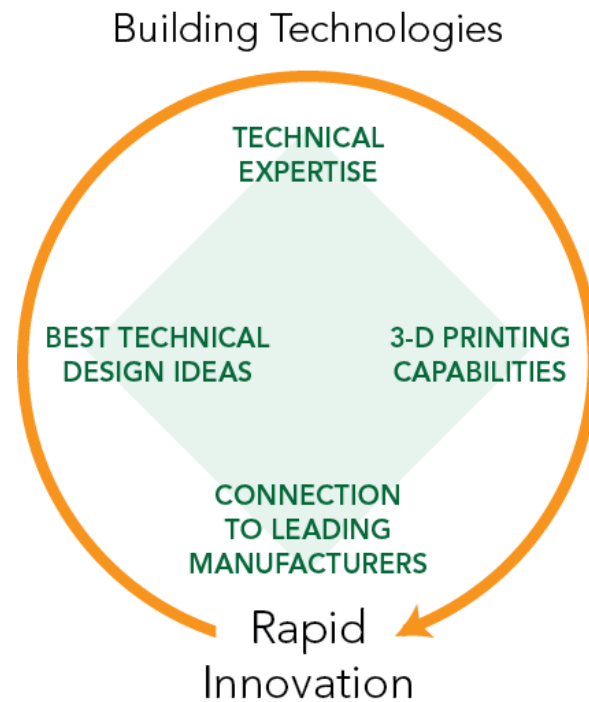
GE FirstBuild Business Model

- Ideas submitted online through FirstBuild site
- Top five ideas selected each month based on online voting
- Team comprised of GE and outside consultants down selects from top five and chooses one or two ideas for prototyping
- A single prototype is constructed at FirstBuild (GE covers all costs)
- Based on successful prototype, a plan is developed to build 20 to 30 units for sale
- Based on success of sales and feedback, GE will promote the unit to the factory for full production



Piloting a Faster Innovative Tech 2 Market Model

- The Seed: Building owners and others can submit ideas on new technology design via the **ORNL crowdsourcing website**
- The Linkage: Integrate the best ideas with ORNL technical building expertise, 3-D printing capabilities, and connections to leading manufacturers
- The Advancement: Opportunity to network and discuss path forward with ORNL scientists and leading manufacturers

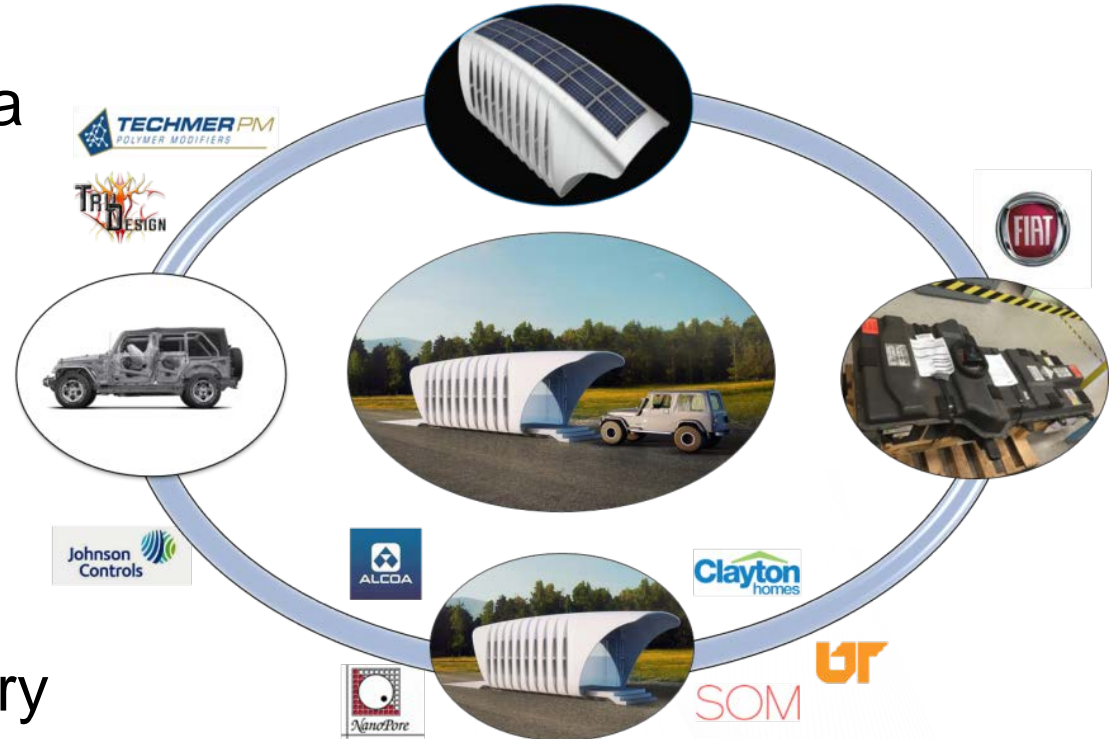


Put Your Ideas to Work at
buildings.ideascale.com

Recognition at Industry Day – Sept 23-24, 2015

- The best ideas will be invited to:

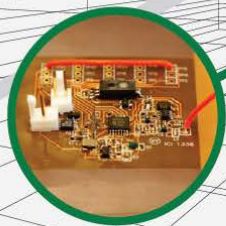
- See a 3-D printed prototype of their idea
- Present ideas to a panel of industry experts
- Witness extreme innovation
- Network with ORNL Scientists and Industry to identify potential collaborations and funding opportunities



Questions & Answers

LET'S PUT OUR IDEAS TO WORK

**SUBMIT YOUR
BEST IDEA**



**GET RECOGNIZED
AT INDUSTRY DAY**



**VOTE & DISCUSS
IDEAS**

ORNL BUILDINGS CROWDSOURCING COMMUNITY

Join Us and Let's Put Our Ideas to Work at
buildings.ideascale.com

Share your ideas, your thoughts, and your votes today!

Attachments Energy Rating Council

Introduction

J. Crowley – Vice President, Rollease



Better Buildings
High Impact Technologies Forum
Washington DC
May 29, 2015

Attachments Energy Rating Council


- Mission:
 - To create **credible rating, labeling, and certification** procedures for fenestration attachments.
 - To **help architects, designers, utilities, building owners and consumers** make informed decisions.
 - Enable end users to assess energy cost/benefits of rated products
- A **independent, public interest, non-profit** organization.

What are Fenestration Attachments?



Attachment	Product Category Major Sub-Types				Product Phase
	Interior	Exterior	Fixed	Operable	
Cellular Shades	X			X	1
Slat Shades	X	X		X	1
Roller Shades	X	X		X	1
Storm Windows	X	X	X	X	1
Solar Screens		X	X		2
Awnings		X	X	X	2
Roller Shutters		X		X	2
Window Quilts	X			X	2
Drapes	X			X	3
Louvered Shutters	X	X		X	3
Surface Applied Films	X	X	X		If needed
Roman Shades	X			X	3
Pleated Shades	X			X	If needed
Sheer Shades	X			X	If needed

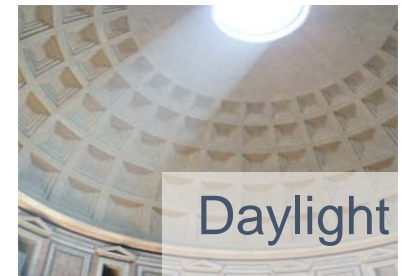
Why did DOE invest?

- Despite the large energy savings opportunity, the market tells us that window replacements are often too expensive.
 - Fenestration attachments are readily available ‘cost effective’ technologies with a **large estimated energy savings potential**.
 - Currently **no consistency in performance rating** protocols and thus no way to identify efficient products.
 - **There was no organization** responsible for creating a **credible, accurate and transparent rating program for fenestration attachments**.
- 
- A decorative graphic at the bottom of the slide consists of two horizontal bars. The top bar is blue and the bottom bar is green, both with a slight 3D effect.

- Develop **energy performance-based rating and certification standards and procedures** for fenestration attachments
- Coordinate and **interface with LBNL** work on fenestration attachments
- Oversee the **implementation of procedures and certification protocols**
- Develop and maintain a **publicly-searchable database** of fenestration attachment materials and products
- **Educate and inform stakeholders**

Support performance daylight management

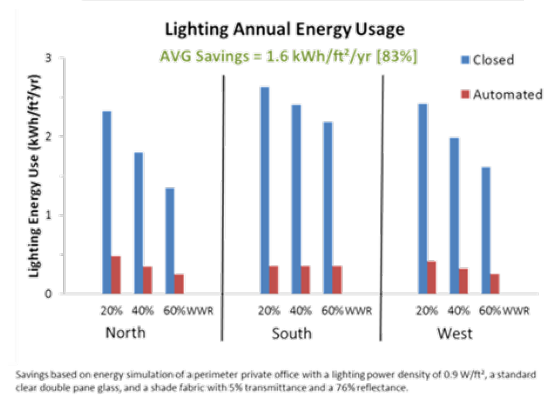
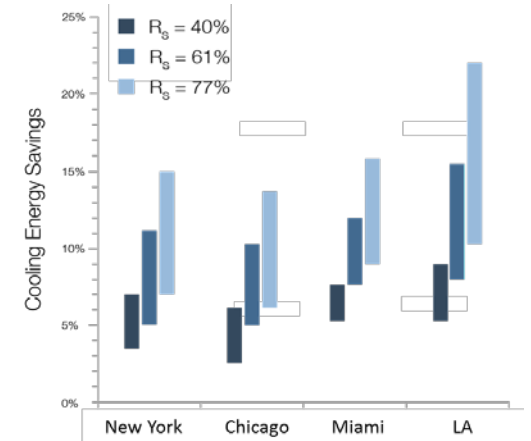
- Daylight and solar shading systems that provide energy performance and human comfort
- Transform window treatments from a furnishing to a performance building system
- How is this achieved?
 - Dynamic daylighting systems
 - Daylighting design tools and metrics
 - **Materials for performance and aesthetics**



Source: Performance Shading, Lutron presentation at Arch Record Innovation Conference, 2015







Predictable shading & energy performance

- Fabric solar reflectance is a key factor in building HVAC energy
- Automation provides a substantial reduction in lighting energy
- Fabric openness and transmittance are critical to performance



Source: Performance Shading, Lutron presentation at Arch Record Innovation Conference, 2015

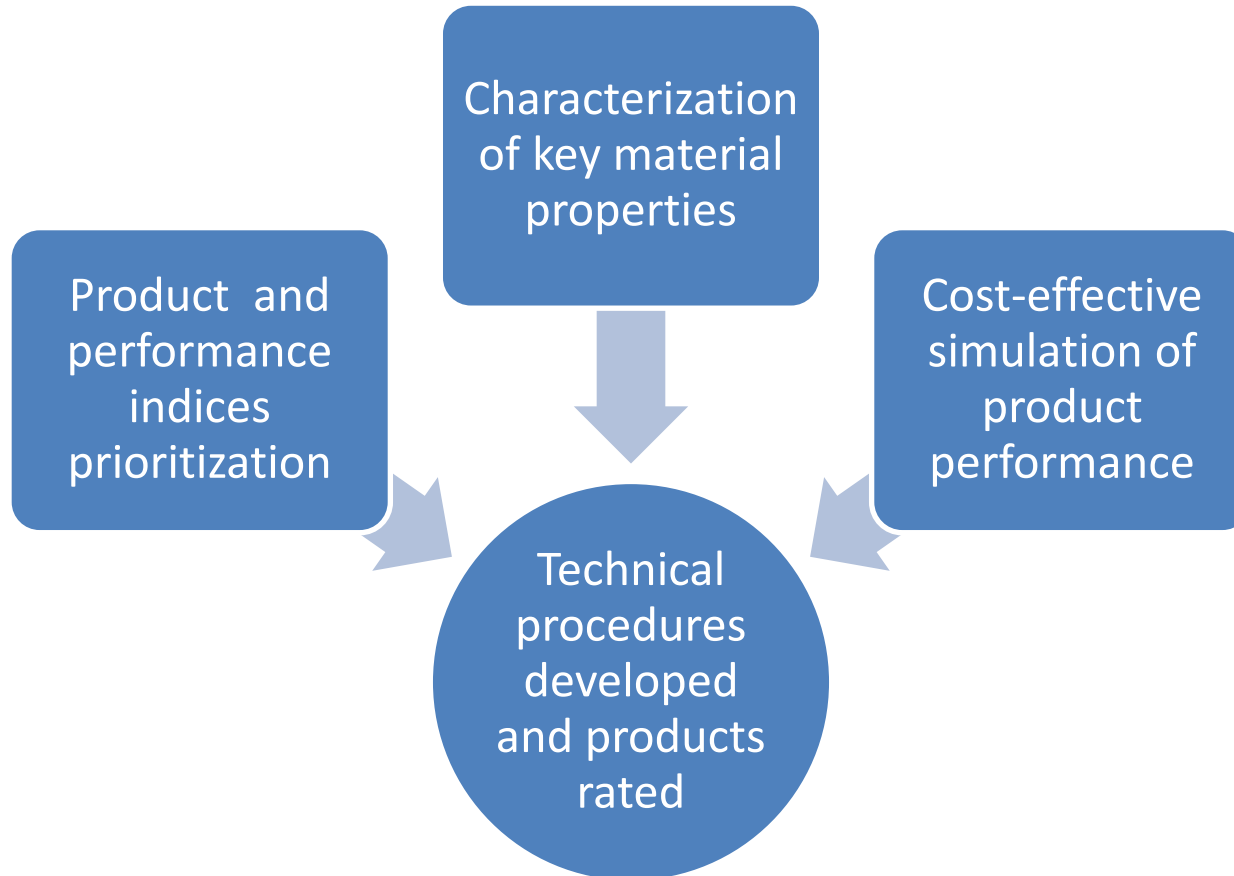
Tools that quantify impact of attachment properties on glare, daylight and views

	OPENNESS FACTOR (OF)	VISIBLE TRANSMITTANCE (Tv)	SOLAR REFLECTANCE (Rs)
GLARE	Use low OF 	Use low Tv 	
DAYLIGHTING		Use high Tv 	
VIEWS	Use high OF 	Use low Tv 	
SOLAR HEAT			Use high Rs 

Source: Performance Shading, Lutron presentation at Arch Record Innovation Conference, 2015



AERC Technical Approach



Other public and private activities

Programs
 Energy Star
 Utility Rebates
 Energy Codes
 Tax Incentives

AERC focus

Ratings/Certification
 U, SHGC, VT, CR, EP
 Certified Product Database

LBL focus

Technical Standards
 ASTM C1199, E1423, E908,
 ISO 15099, 12567, 9050, 18292

Tools for
 WINDOW, THERM, OPTICS
 Hot Box, Solar Calorimeter

Enabling Building Science
 Simulation and Measurement
 Infrastructure
 Field Studies, Validation Data base




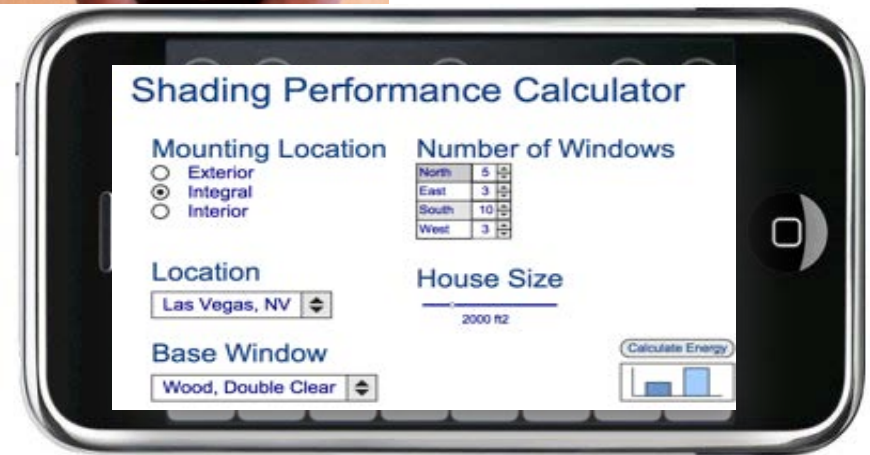
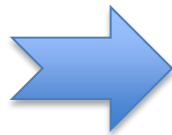
Source: LBNL - R&T presentation, Germany 2015

Supporting portals to design tools and performance metrics

How Would We Communicate “Complex Data” in this visually simple label?

Answer: “invisibly” in the QR code

	
ENERGY PERFORMANCE RATINGS	
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient
0.27	0.36
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Air Leakage (U.S./I-P)
0.38	0.2
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>	



Lutron Performance Shading Advisor

1. Prioritize
2. Simulate
3. Optimize
4. Specify

- Free
- Online
- Simple
- Powerful



Lutron Shading Solutions | Performance Shading Advisor

Home Fabric Wizard Search for Fabrics My Projects Daylight Autonomy Resources

Use the **Fabric Wizard** to select fabrics based on Design, Daylight, Glare and View!

Get Started >

Learn about:

- THEIA™ Performance Specification >
- Glare Reduction >
- Daylight Autonomy >
- View Preservation >
- Thermal Management >

Project Information Show Advanced Reset Form Quick Results Save Project

1 Lutron Fabric 2 Site Info 3 Interior Layout 4 Facade Properties Summary

← Back Next →

2. Site Info ⓘ

Location

United States of America

NY New York

or

Enter ZIP Code

Performance Shading Advisor Video Tutorial >

A work in progress....

- Seated Board of Directors.
- Established committee structure.
- Recruited over 25 member organizations
 - Public Interest
 - Producers & manufacturers
- Held first annual Members' Meeting in April
 - Committee and leadership in-place and have begun work
- Plan to hold “Rapid Prototyping Session” at LBNL in June to speed development.

Identifying the Next Big Thing

Tech to Market Projects for Next Gen Results

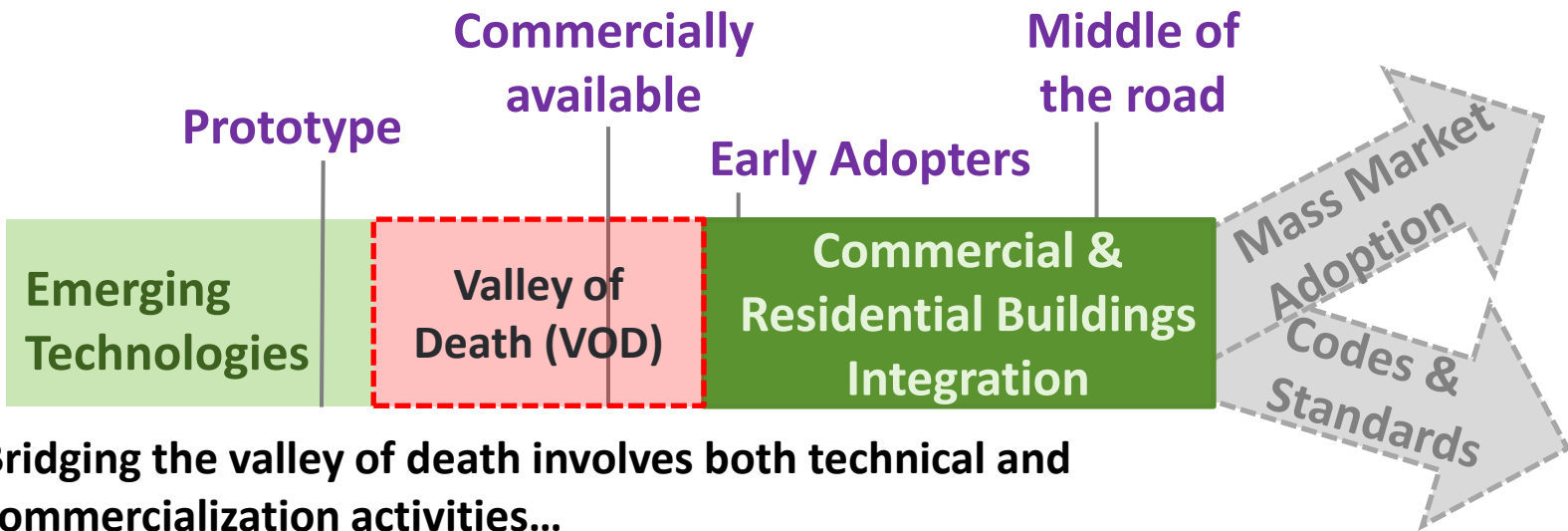


U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Karma Sawyer, Ph.D.
(karma.sawyer@ee.doe.gov)
May 29, 2015

What do you actually need to do to make this work??



Bridging the valley of death involves both technical and commercialization activities...

Technical

Challenges: Technical performance, integration, manufacturing capacity, costs, etc.

Strategies:

- Technology Challenges
- Lab or test bed demonstrations
- Systems integration demonstrations
- Increased manufacturing and the development of larger prototypes for testing

Commercialization

Challenges: Availability of distribution, installation, maintenance and repair, cost, understanding of risks and benefits, etc.

Strategies:

- Commercialization plans
- Investment strategies
- Real building demonstration
- Creation of specifications, training materials and other resources

Today's Roundtable Listening Session



Innovative Indoor Air Treatment

Speaker: Udi Meirav

New Easy to Install Air Sealants

Speakers: Francis Tate (3M) and Diana Hun (ORNL)



Rapid Prototyping Innovation Model,

Speaker: Ed Vineyard (ORNL)



Rating and Certification of Window Attachments

Speaker: John Crowley (AERC)



Udi Meirav - enVerid

- enVerid January 2015 - [click here for video](#)
- URL:
<https://www.youtube.com/watch?v=w7VmvZ45Tss>