Better Buildings
U.S. DEPARTMENT OF ENERGY

Working with DOE National Labs: Opportunities for Collaboration

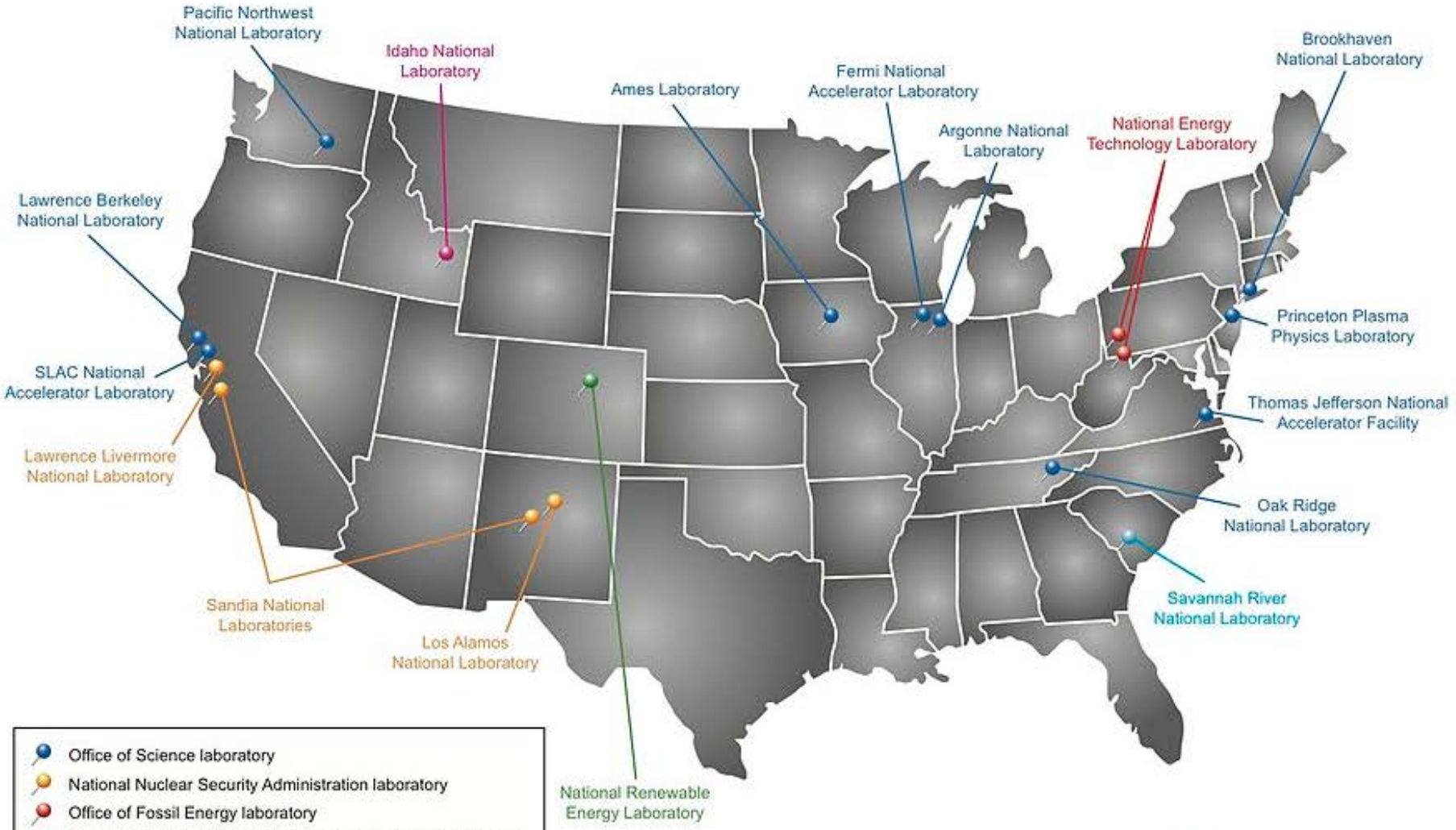
U.S. DEPARTMENT OF ENERGY

Department of Energy's National Labs: Opportunities for Collaboration on Clean Energy Technologies

Jetta Wong, Acting Director
Office of Technology Transitions

May 28, 2015

DOE National Labs



U.S. DEPARTMENT OF ENERGY

Why partner with DOE Labs?

DOE National Labs have a wealth of resources to help industry develop new products and services that will contribute to energy independence, enhance our national security, protect our environment, and increase our economic prosperity.

- World class laboratories
- Top-notch scientists
- One-of-a-kind User Facilities
- Science , Technology, & Innovation Integrators

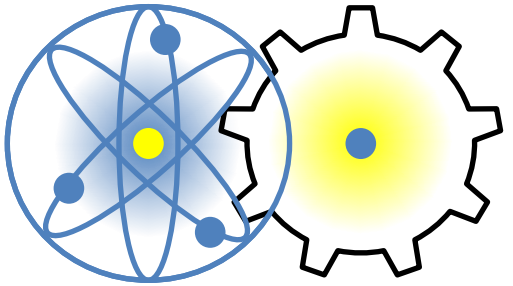
Technologist in Residence Pilot:

LAB CALL FOR PROPOSALS CLOSES JUNE 21

Vision: Catalyze strong Lab-Industry relationships that result in significant growth in high-impact collaborative research and development

Goals:

- Increase collaborative research and development between National Laboratories and private sector companies
- Develop a streamlined method for companies to establish long term relationships with laboratories that result in collaborative research and development



Funds: $2.3M (FY15) from Advanced Manufacturing Office

Successful precedent: LANL partnerships with Chevron and Proctor & Gamble

Pilot Design:

- DOE will provide $400k for the pairs to work for up to two years
- Up to 5 pairs will be selected to participate
- The pilot will support pairs of senior technologists from a lab and industry to work together to identify technical challenges that can be solved with resources from the National Lab enterprise and develop an umbrella agreement and specific scopes of work
- The pilot will create best practices for industry to replicate this work with the lab enterprise moving forward

Small Business Vouchers Pilot: Coming Soon!!

Vision: SBV will increase small business access to the expertise, competencies, and infrastructure of DOE's national laboratories.

Goals:

- Increase small business accessibility to lab capabilities
- Broaden lab awareness of small business needs and technologies
- Encourage labs to develop outreach strategies to showcase capabilities
- Make lab business practices more compatible with private sector timelines

***Funds*: $20M =** ~100 small businesses served at ~$175,000/entity

***Successful precedents*:** PNNL, NREL and INL Technology and Commercialization Assistance Programs, NM Small Biz Assistance

Program Design:

- DOE lab call used to select 3-5 pilot labs to complete outreach, merit reviews, and to execute voucher work scopes
- Single one-stop shop IT platform with clear lab capabilities explained, uniform IP terms, and application process
- High Impact small businesses selected through lab announcements of voucher opportunities to fill assistance gap

OTT Request for Information

Request for Information: Seeking input from public and private sector stakeholders on how OTT can most effectively accomplish its mission over the short, medium, and long-term.

- **Key areas of interest:**
  1. Technology Commercialization Fund
  2. Cross-R&D Linkages and Innovation Cycle Transitions
  3. Central Policies and Procedures
  4. DOE National Laboratory Technology Transitions
  5. Extramural Technology Transitions
- **Closing Date: June 10, 2015**
- **DE-FOA-001346 Issued 5/6/15**
  - All stakeholders welcome to submit responses

Thank You!

Contact Information

Jetta Wong

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U.S. Department of Energy

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DOE National Labs

- Ames Laboratory, Ames, Iowa
- Argonne National Laboratory, Argonne, Illinois
- Brookhaven National Laboratory, Upton, New York
- Fermi National Accelerator Laboratory, Batavia, Illinois
- Lawrence Berkeley National Laboratory, California
- Oak Ridge National Laboratory, Tennessee
- Pacific Northwest National Laboratory, Washington

DOE National Labs (cont.)

- Princeton Plasma Physics Laboratory, New Jersey
- SLAC National Accelerator Laboratory, California
- Thomas Jefferson National Accelerator Facility, Virginia
- Sandia National Laboratory, California and New Mexico
- Los Alamos National Laboratory, New Mexico
- Lawrence Livermore National Laboratory, California
- National Renewable Energy Laboratory, Colorado
- Idaho National Laboratory, Idaho
- National Energy Technology Laboratory, Pennsylvania
- Savannah River National Laboratory, Georgia

Opportunities for Collaboration with ORNL

Presented by
Dr. Johney Green, Jr.
Director,
Energy and Transportation Science Division

Presented to
Better Buildings Summit
Washington, D.C.

May 28, 2015

ORNL is managed by UT-Battelle
for the US Department of Energy

OAK RIDGE National Laboratory

ORNL's mission

Deliver scientific discoveries and technical breakthroughs that will accelerate the development and deployment of solutions in clean energy and global security, and in doing so create economic opportunity for the nation

Signature strengths

- Energy and environmental sciences
- Computational science and engineering
- Materials science and engineering
- Neutron science and technology
- Nuclear science and technology

OAK RIDGE National Laboratory

The Energy and Transportation Science Division provides solutions to pressing energy challenges

Sustainable transportation

Energy efficiency in buildings

Advanced manufacturing

Building Technologies Research and Integration

R&D focus areas

Envelope: Develop component technologies that are more resistant to heat flow, airtight, and moisture-durable than existing technologies

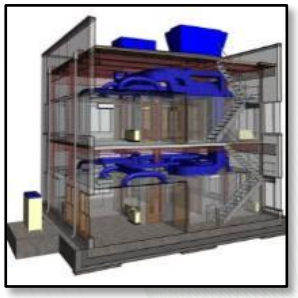
Equipment: Develop component technologies that deliver the same amenities while using significantly less energy than existing technologies

System/building integration: Verify that advanced component technologies deliver what they promise and are durable and reliable in real buildings








Three mechanisms used to collaborate with BTRIC

Active CRADAs	Active WFOs	Active UA Projects	Active Industry Partners	Active University Partners	2014 Invention Disclosures
18	39	9	94	12	25

BTRIC offers world-class facilities and capabilities

TRANE NORDYNE SAMSUNG LENNOX Honeywell Hillphoenix CLIMATEMASTER GE Whirlpool DOW 3M

OAK RIDGE National Laboratory

CFTF/MDF working with industry

7001 Visitors
1249 Organizations

129 NDAs
Non-Disclosure Agreement

27 MOUs
Memorandum of Understanding

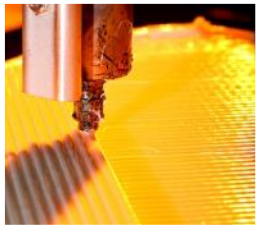
13 MTAs
Material Transfer Agreement

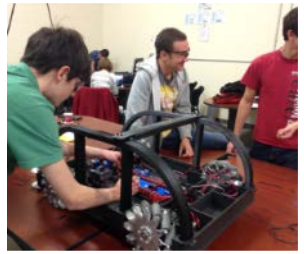
17 UFAs
User Facility Agreement

>38 CRADAs
Cooperative Research & Development Agreement

41 WFO
Work for Others

We partner extensively with industry to enable demonstration of next-generation materials and manufacturing technologies for advancing the US industrial economy.





OAK RIDGE National Laboratory

Low-cost wireless sensors monitor for better energy efficiency in buildings

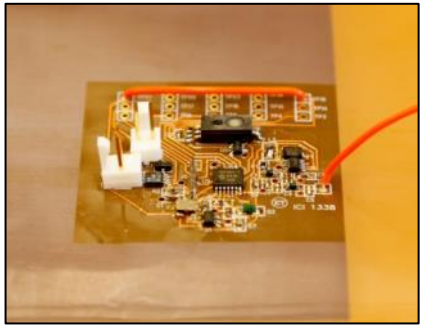
Self-powered “peel-and-stick” low-cost wireless sensors enable control system upgrades that could potentially reduce energy consumption of buildings by up to 20-30%

ORNL-developed sensor platform has potential to reduce cost from $150-300/node to $1-10/node while also reducing installation cost.*

**Price points may vary based on market conditions.*

Provide information for optimal control of energy-consuming systems (HVAC, lighting), fault detection and diagnostics

molex®



Low-cost wireless sensor prototype on flexible substrate

Supporting deployment of environmentally friendly technologies

Hillphoenix
Advansor System

First HFC-free CO_2 transcritical refrigeration system to be UL listed in North America

~25% energy savings, 75% less GHG emissions

12 US applications to date

Honeywell
N40 (ASHRAE designation: R-448A)

~67% global warming potential (GWP) reduction compared to R-404A

Improves system efficiency by 10%

Commercialized in Jan 2015

By leveraging CO_2 refrigerant systems and new refrigerant molecules, ORNL researchers mediate and minimize conventional refrigeration's environmental footprint

Lab → Market

Working with industry to enable energy-efficient, rapidly adopted envelope solutions

Dow

LIQUIDARMOR: One-step, sprayable water-based liquid flashing that adheres to most typical construction surfaces and can bridge gaps as wide as 0.25 in.

Up to 3× faster to install than traditional peel-and-stick tapes

3M

3015 membrane: Self-adhered air, liquid, and water vapor membrane that installs in half the time needed for membranes that require priming

Adheres to most typical construction surfaces, even at temperatures ~0°F

DOW®

Lab to market

3M

Air leakage is responsible for 4 quads of energy use per year or ~4% of the total energy used in the US.

OAK RIDGE National Laboratory

Connecting researchers, industry, stakeholders through crowdsourcing website

Advancing Tech2Market strategies by connecting innovative technical design concepts with partnership efforts and rapid technology prototyping capabilities

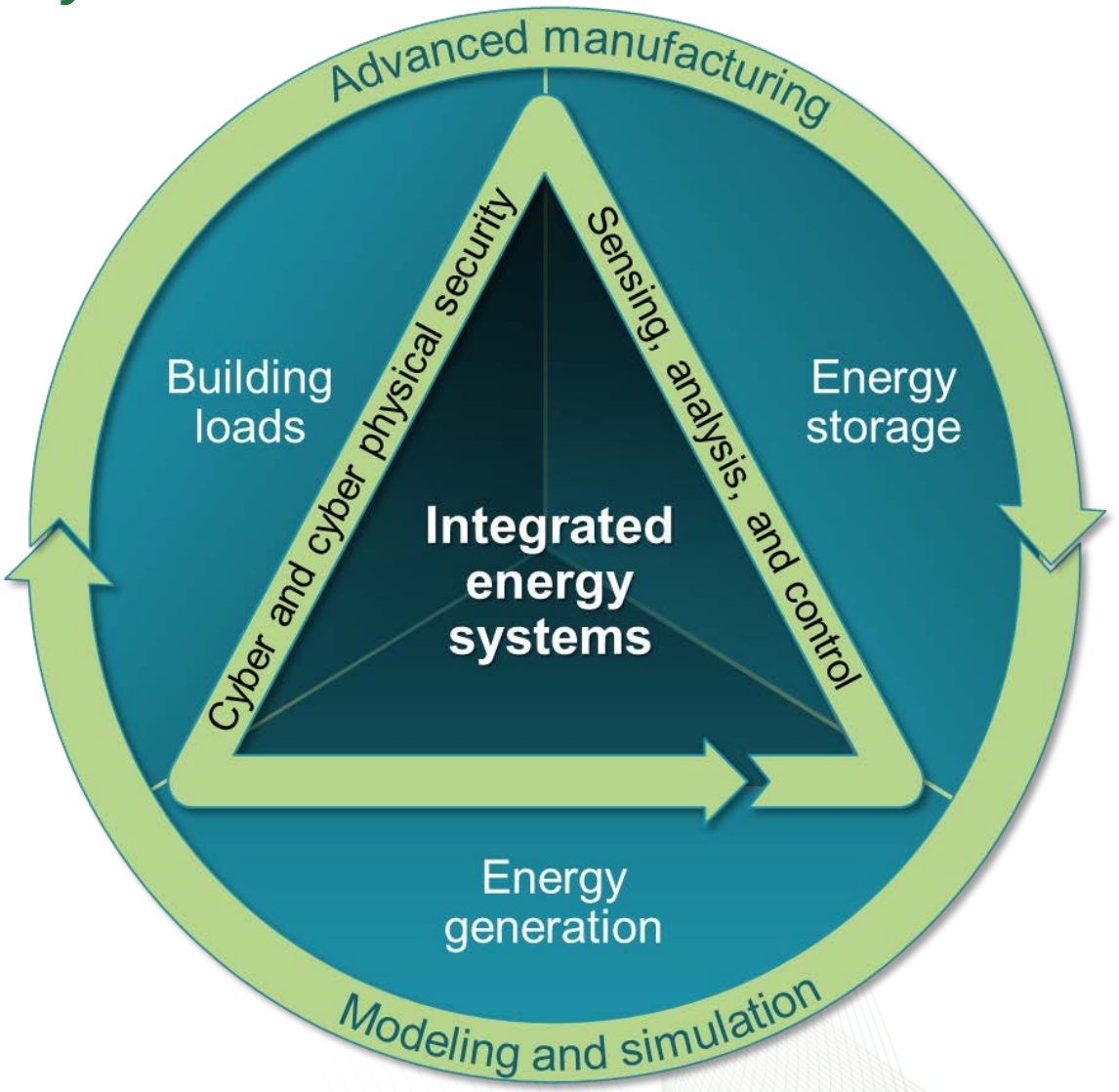
330+ users, ~65 ideas posted

3 topics: Equipment, envelope, and sensors & controls

http://buildings.ideascale.com

Framework to develop, innovate, and integrate energy systems

- Vision: Sustainable communities with full access to energy, where they need it, when they need it
- Collaboration between industry, OE, and EERE offices (AMO, BTO, VTO)



Rapid innovation applied to new technologies

January 2014

First printed go-cart structure

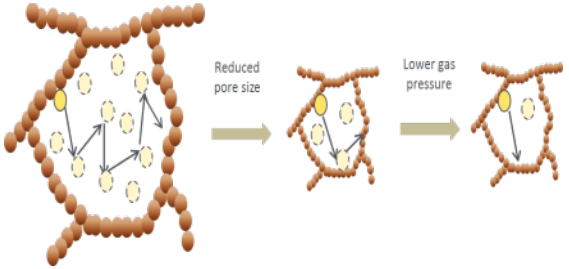
September 2014

First printed car, created in collaboration with industry

January 2015

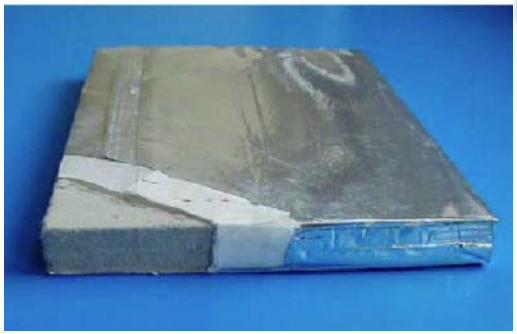
3D-printed Shelby Cobra

Apply the Science



MAI panels achieve vacuum insulation performance at half the cost

Develop the Technology



Twice the energy savings of IECC 2012 at half the thickness

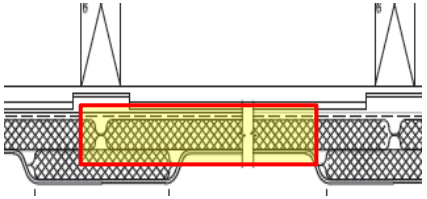
Demonstrate Energy Savings

Demonstration will feature MAI enabled by 3D printing technology

OAK RIDGE National Laboratory

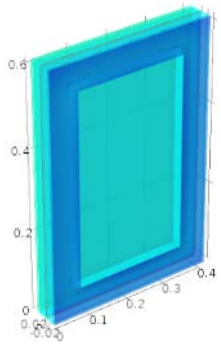
Rapid innovation in building technologies

Initial design



New design reduces thermal bridging

Modeled Performance



Increases thermal performance from ~R-15 to ~R-30

Prototype

From design to prototype < 3 hours

Extreme innovation demo: BTO Industry Day

Sept. 23-24, 2015

OAK RIDGE National Laboratory

ORNL's Vision for a Sustainable Community

Green Intelligent Buildings

- Commercial and residential integration
- Envelopes
- Appliances
- Cool roofs

Industrial

- Energy efficient processes
- Advanced manufacturing

Smart Grid

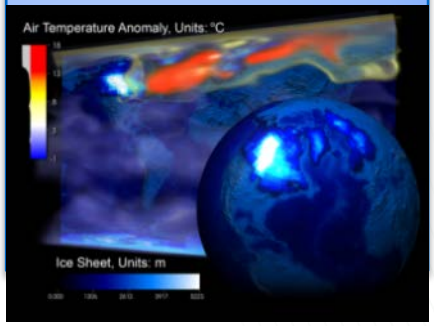
- Situational awareness
- Advanced communications and controls
- Energy storage

Renewables

- Bioenergy
- Solar
- Geothermal systems
- Wind

Climate and Sustainability

- Large scale environmental experiments
- Climate modeling



Intelligent Transportation Systems

- Integrated land use planning
- Public transit friendly
- Alternate mobility choices (incl. freight)
- Clean fuels
- Intelligent vehicles and infrastructure

OAK RIDGE National Laboratory

Better Buildings Summit

Working with DOE's National Labs: Opportunities for Collaboration on Clean Energy Technologies

Ashok Gadgil, Lawrence Berkeley National Lab

May 2015

BERKELEY LAB

Revolutionizing Lab Engagement with Industry

- Energy Technologies Area at LBNL
- Cyclotron Road
- FLEXLAB
- Global Partnership Alliance (GPA)
- SBV Pilot Program – LabSTAR

BERKELEY LAB

We're testing a new model for energy R&D

- Cyclotron Road overview

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BERKELEY LAB

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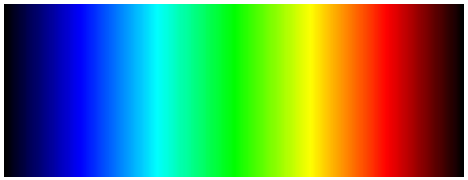


Take the fundamentals of a startup

- Entrepreneurial innovators
- High-intensity, market-aware culture
- Urgency

Couple with a world-class R&D facility

- Reduce startup cost
- De-risk technology

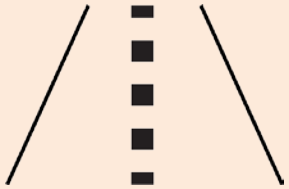
Enable a full spectrum of outcomes

- Business model-agnostic seed funding
- Aligned innovator/investor incentives
- Optimized for maximum impact

BERKELEY LAB

A different kind of start-up

Cyclotron Road overview



Runway to get started

- $500,000 seed funding over two years
- lab space
- Support obtaining additional funds

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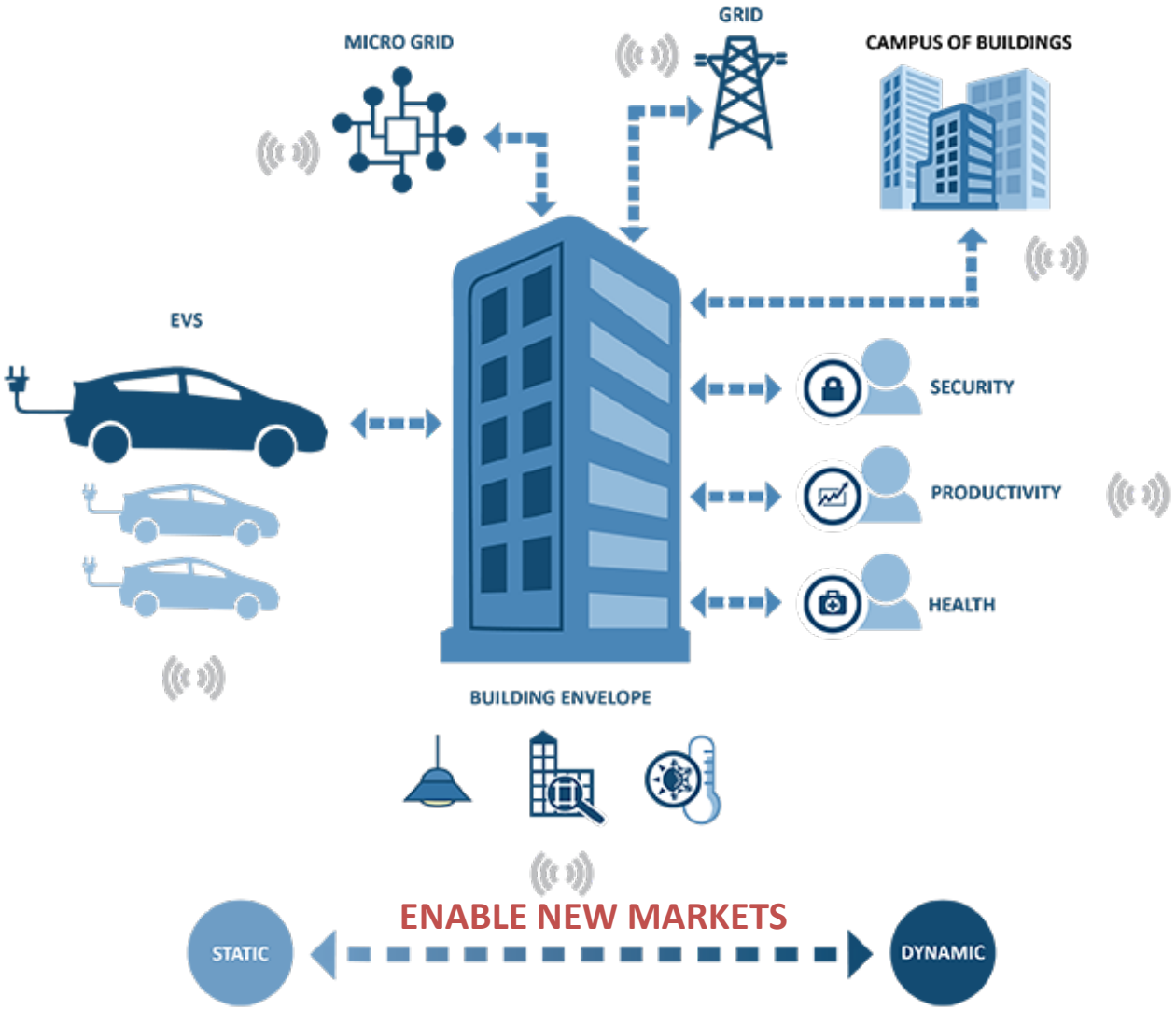
Berkeley Lab's world-class R&D

- $820 million annual budget
- 13 Nobel laureates
- ~100 National Academy members

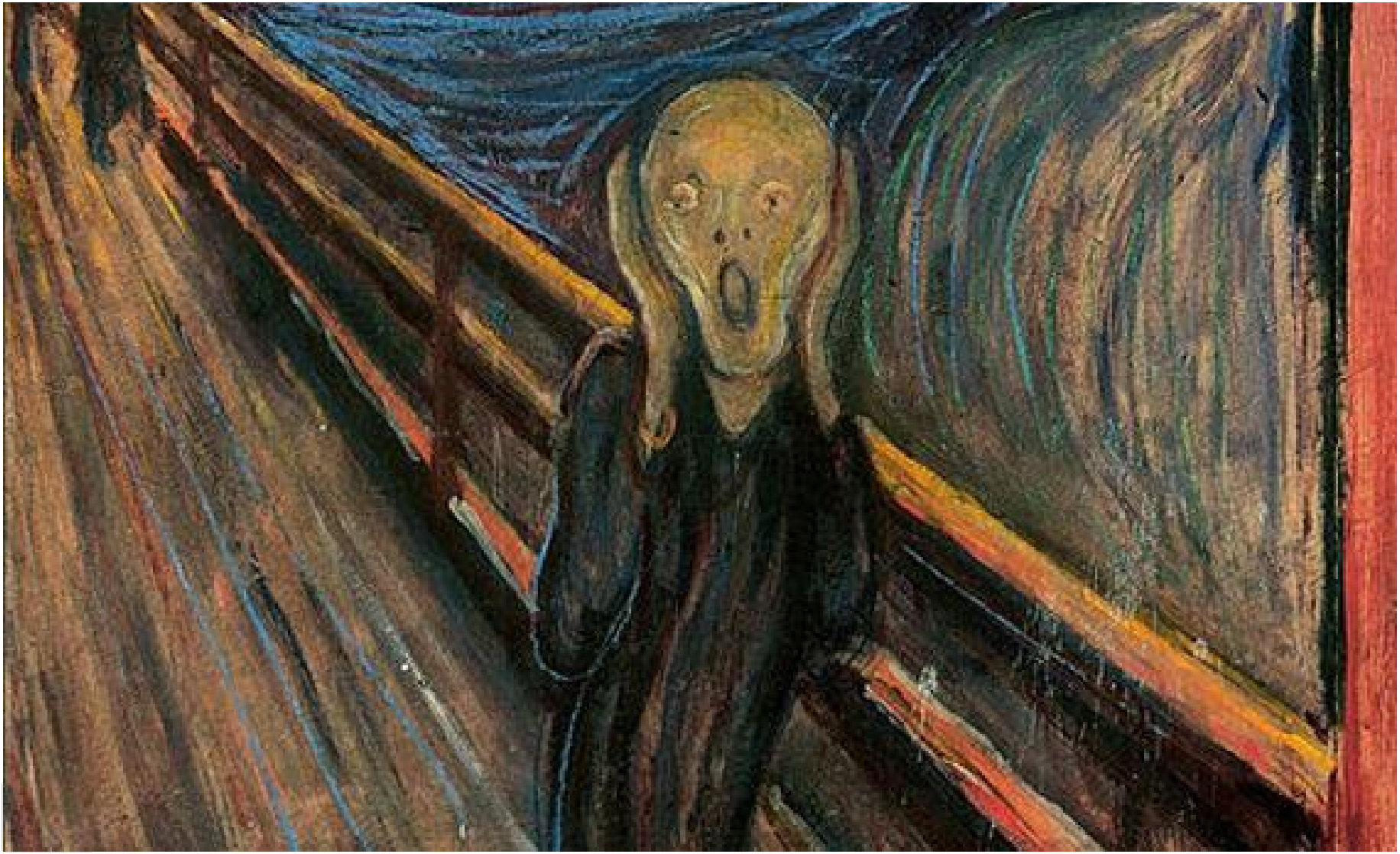
Mentorship, network, and culture

- Business and project coaching
- Engagement with potential partners
- Community of like-minded entrepreneurs

Challenges of Super Efficient Buildings

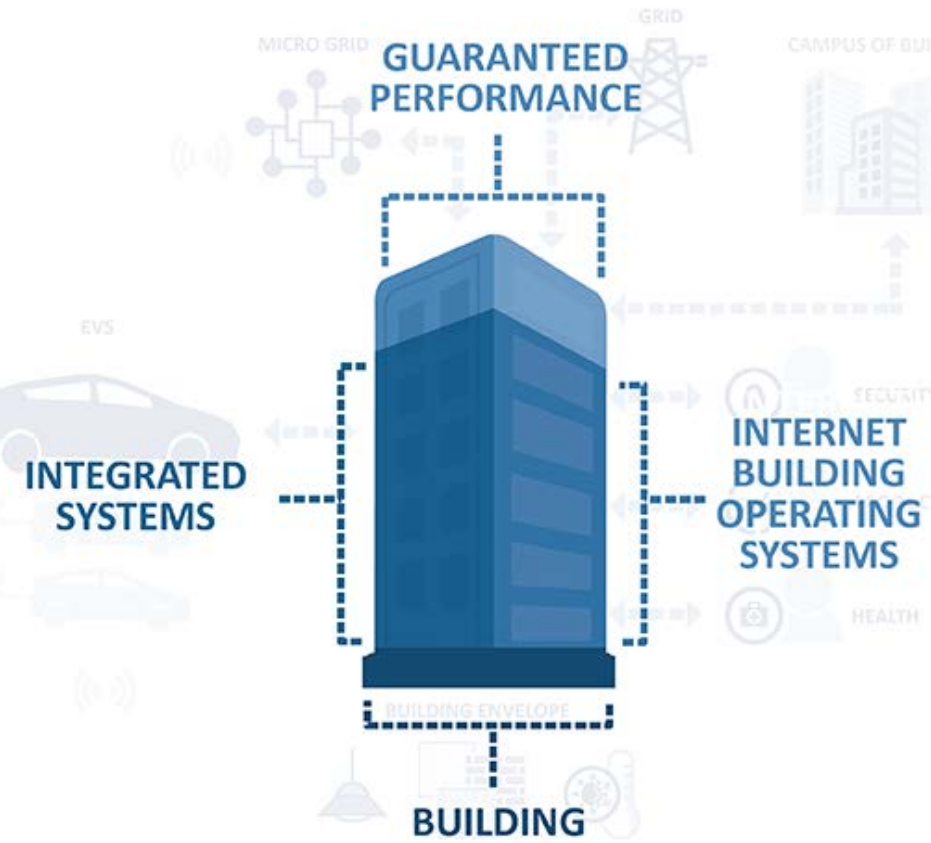


Oh My!



Here's What We Say!

New Initiatives Will Deliver, Guarantee and Maintain Performance



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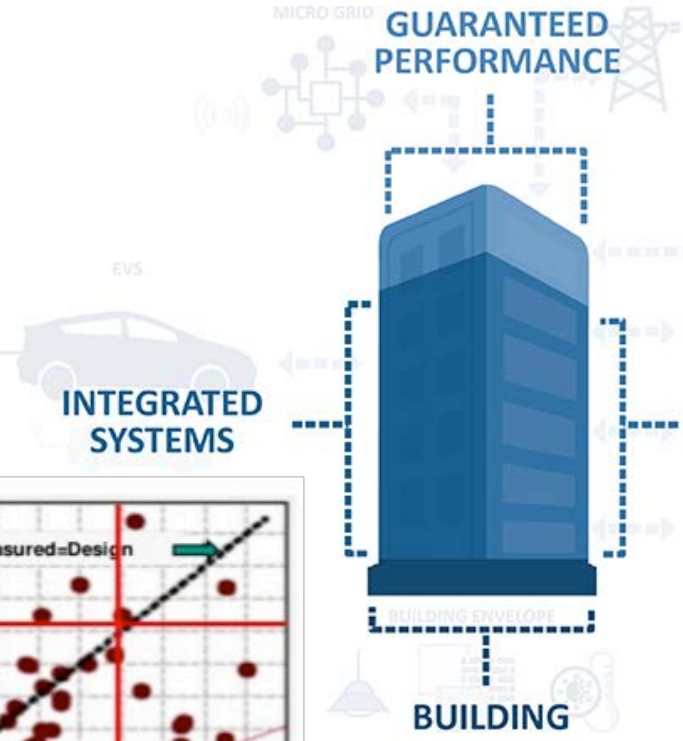
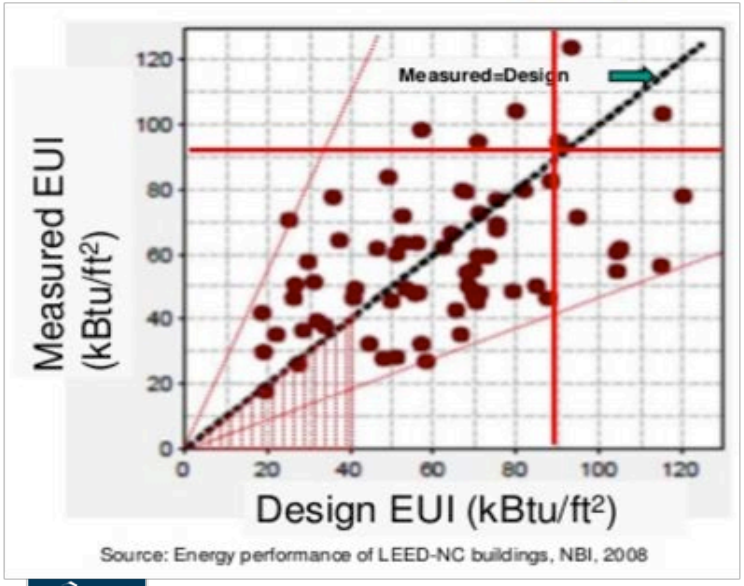
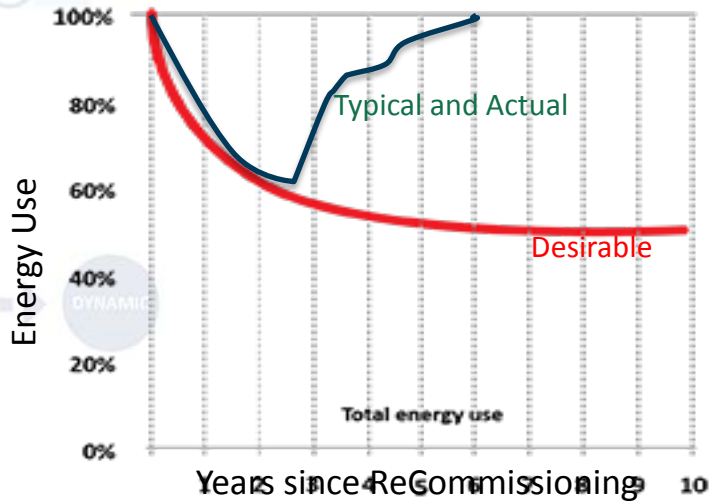




Source: Energy performance of LEED-NC buildings, NBI, 2008



Persistence of Value = Market Impact

Standardized Practices for Risk Analysis and Management

Performance monitoring and uncertainty analysis

Business and financial modeling and risk analysis

Legal and contractual frameworks

ENABLING GUARANTEES FOR EVERYONE

enables

NEW CAPITAL
LOW TRANSACTION COSTS
NEW BUSINESS MODELS
NEW REVENUE

A Vast New Market of Products and Services for Guaranteed Performance

Hedging products for energy savings — ESPCs for everyone, not just MUSH market

Performance insurance for vendors and service providers — *and more…..*

resulting in

Increased Investment in Building Performance + **Better Performance Persistence and Assurance**

Internet Building Operating System

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BERKELEY LAB

FLEXLAB™: THE WORLD'S MOST ADVANCED BUILDING EFFICIENCY TEST BED

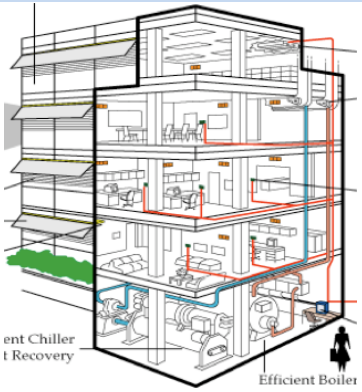
FLEXLAB CLOSES THE ENERGY-EFFICIENCY ACHIEVEMENT GAP FOR BUILDINGS

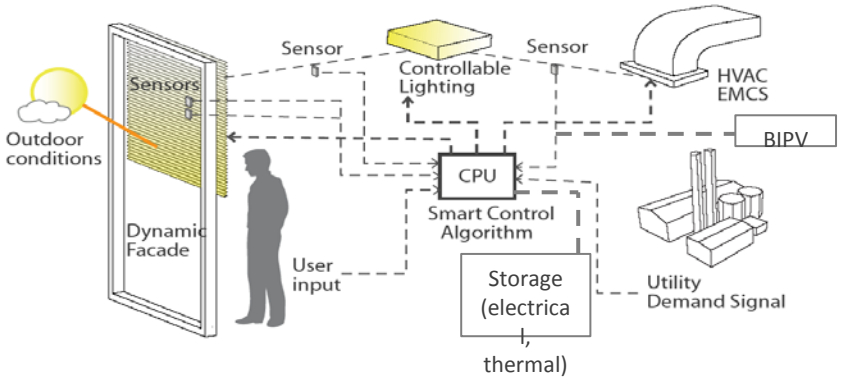
FLEXLAB.LBL.GOV

This facility could be the most important building in the country.

Jes Pedersen
CEO, WEBCOR Builders

Integrated Systems – Systematic Approach





Technology

Develop, test and validate IS technologies

- Deployable packages of IS technologies and controls
- Adaptive, flexible, networked controls strategies for DSM, DR, grid and building service management

Develop, test and validate Integrated networked sensors and sub-metering

- Serve multiple system needs, measurement of building services, quality of environment
- Sensing and measurement strategies, data analysis methods and algorithms

Delivery

Develop and validate simplified methods for deployment

M&V strategies for utilities and regulators

Evaluation tools for utility DSM programs and REEOs

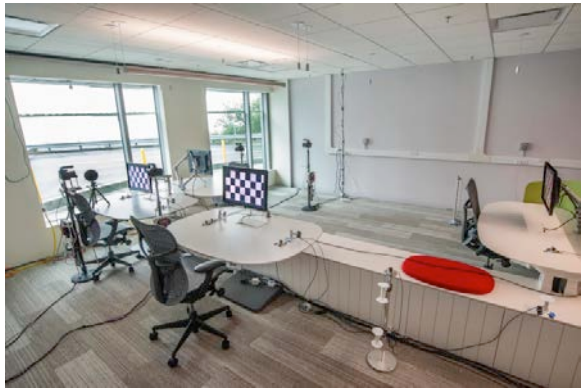
Design and delivery methodologies and practices for large and SMBs

BERKELEY LAB

Making it Possible - FLEXLAB™ @ LBNL

FLEXLAB™, DOE's unique facility

- Developing and applying new test methods and solutions for **highly-efficient, integrated building systems** under realistic operating conditions
- Our focus
  - **Systems integration** at end use, whole building, and grid interaction levels
  - **End use integration and component interactions** (e.g., HVAC, lighting, windows, envelope, plug loads control systems)
  - **Controls hardware and sensors**
  - **Simulation and tools** for design through operations
- Commercial buildings focus, with applications relevant to retail, educational, multi-family
  - New construction and retrofit
- Energy efficiency studies, including thermal and visual comfort and occupant engagement



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FLEXLAB Comparative Testing Made Possible

Controlled environment

- Capabilities to simulate other climates, sun angles
- Controlled internal loads

Well instrumented and metered facility

- High granularity of power measurement
- High accuracy sensors – temperature, pressure, air and water flow, heat flux, etc.

Highly flexible test-beds – interior and exterior

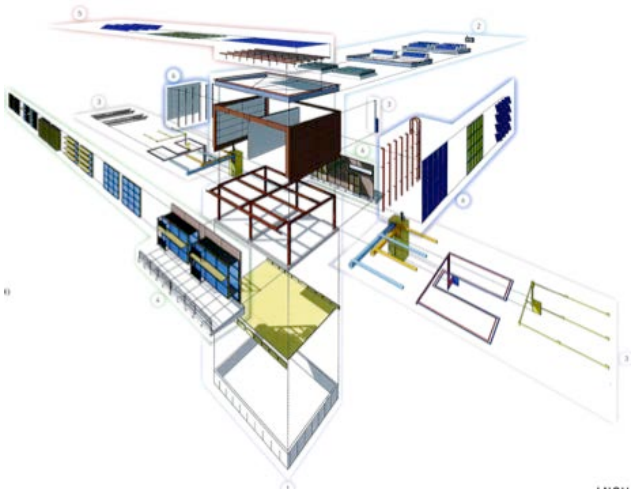
- HVAC, lighting, glazing, skylights, shading, etc.

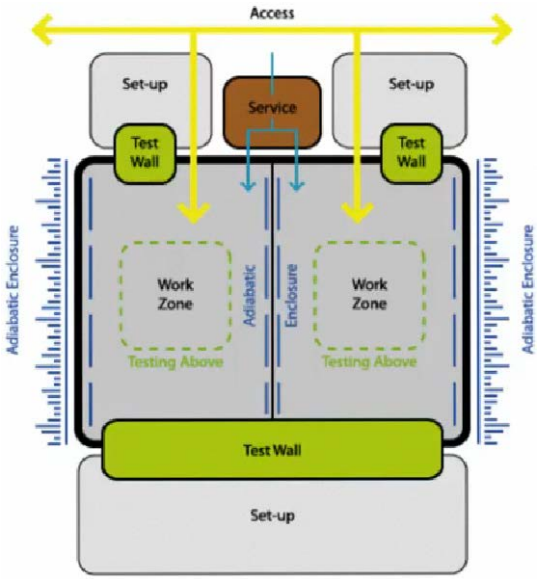
Mockup new construction and retrofit conditions

- First fit outs represent 1980s, current code and net zero

Provides access to multiple flexible systems

- Many manufacturers don't have testing facilities to integrate controls with other systems





BERKELEY LAB

Engagement – Genentech & Webcor

- Performance based mockup of 250k sf building
- **Optimization** of shading, lighting, controls systems, interiors design for **energy use, visual and thermal comfort**
- Pre-vetting of O&M needs of systems, opportunities for improvement
- Pre-Cx system review – accelerate the commissioning process in construction
- Constructability experience with systems

Getting Comfortable with Energy Efficiency

Genentech

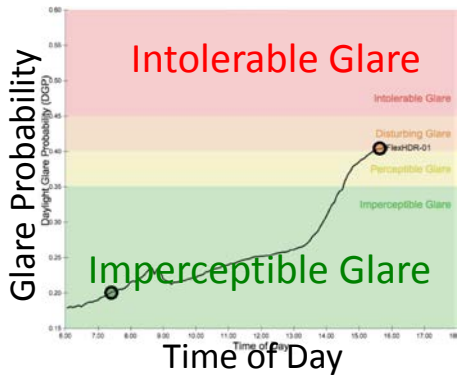
Subscribe 3,844

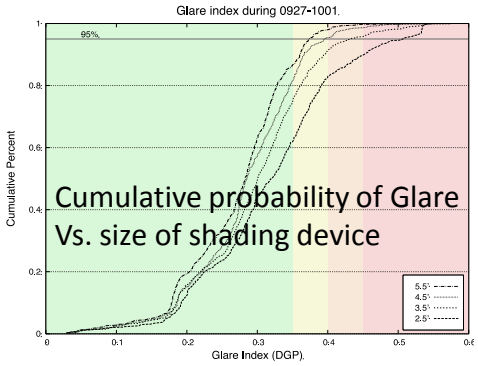
68,012

https://www.youtube.com/watch?v=hZ_5sJswyz4

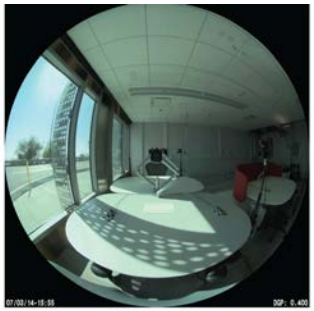
What Did We Learn – Genentech & Webcor

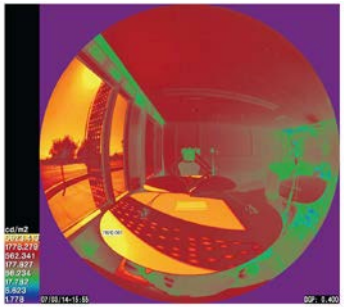
- Lower energy building design, **optimized comfort**, **lowered** construction and operating costs – **Real estate and space Recovery**
- **Thermal comfort** improvements – related to shading, interior layout, occupancy
- **Light quality and visual comfort – multi-vendor**

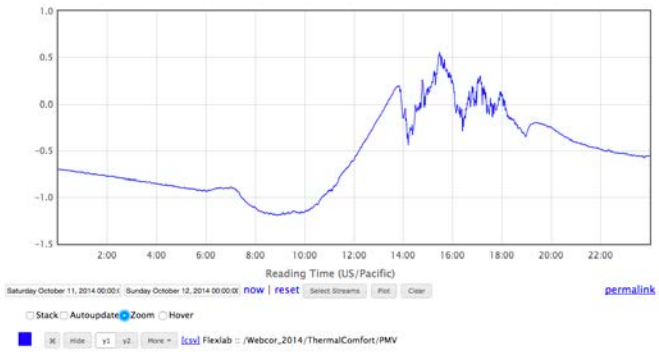




East Facing, Automatic Shading





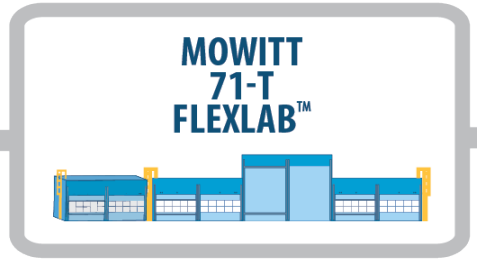


GPA – Transforming All Buildings

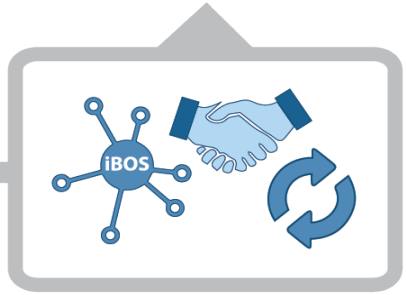
Public Private **Partnership** for Sector Transformation, a new **market enabling** business model

OUR FUTURE

PARTNERING WITH INDUSTRY TO ACCELERATE SOLUTIONS



LBNL WORLD CLASS RESOURCES



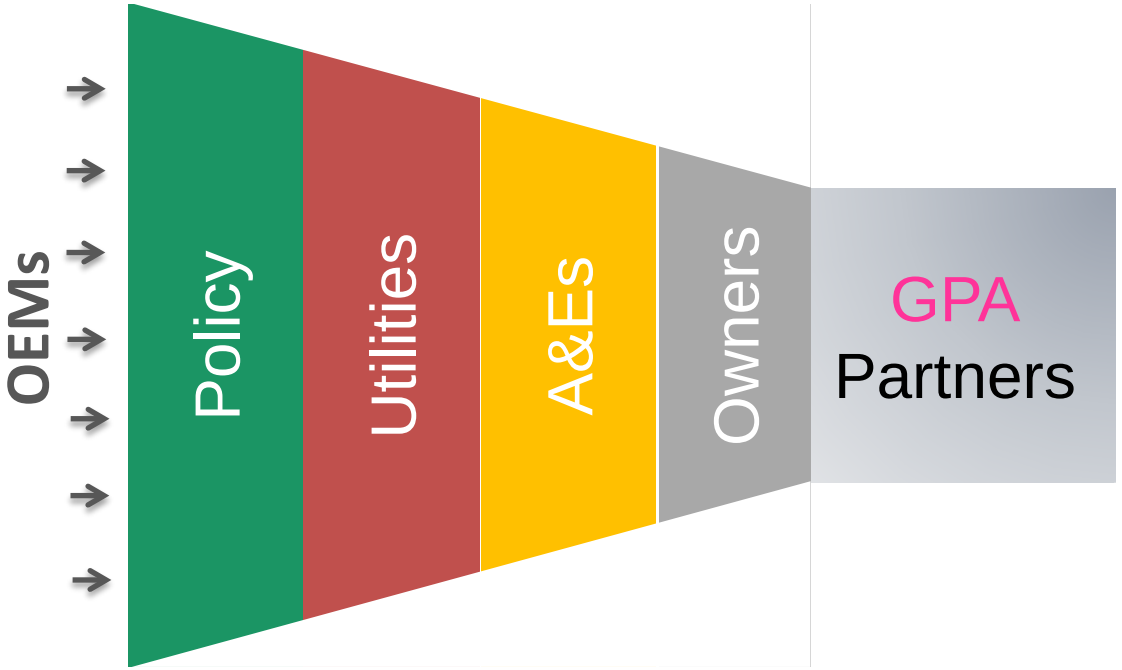
MARKET MOVING INITIATIVES

CURRENT PROBLEM

Opportunity to lower energy costs is **$1.2 Trillion*** **Energy Efficiency** holds the **most promise** for GHG reduction: 10 – 15% of US emissions.
For **Market Transformation**, we cannot be Business as Usual

BERKELEY LAB

GPA – Accelerating Depth Speed Scale



"We need to add momentum to new technology adoption"
— Stephanie Rico, VP, Environment, Wells Fargo

"FLEXLAB is about improving certainty and reducing risks"
— Jes Pedersen, CEO, Webcor

"13% as Class A Commercial stock is green, we need to address the rest of 87%"
— David Pogue, Head of Global Sustainability,CBRE

Multi discipline, Multi vendor market forum
for Sector transformation from slow, fragmented, expensive to

Faster, Better, Cheaper

BERKELEY LAB


LabSTAR

DOE Small Biz Voucher Pilot Program

- Solicitation released in March
  - $19.3M in prospective funding
  - 3-5 Labs will be awarded “pilot lab” status
- Funding per lab will be $2M – 7.5M
  - This will fund research up to $300k per research project
  - 20% cost-share is required
- Timing
  - Deadline for submission was Monday 4/27
  - Proposal Review/Determinations: Mid-June 2015
  - Launch of successful labs between Aug/Oct 2015

BERKELEY LAB

Thank you!

Dr. Ashok Gadgil

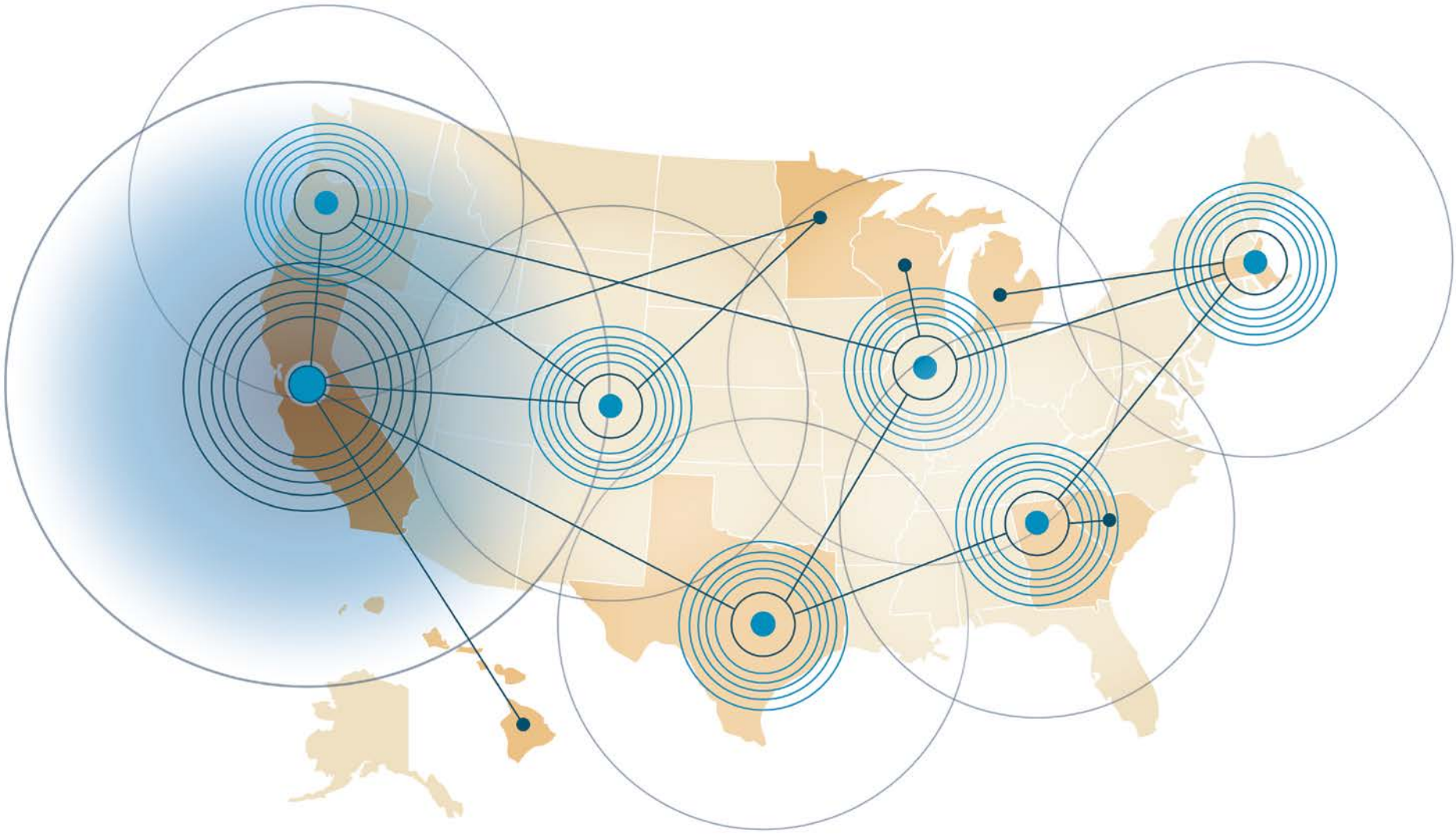
Energy Technologies Area

Lawrence Berkeley National Laboratory

ajgadgil@lbl.gov

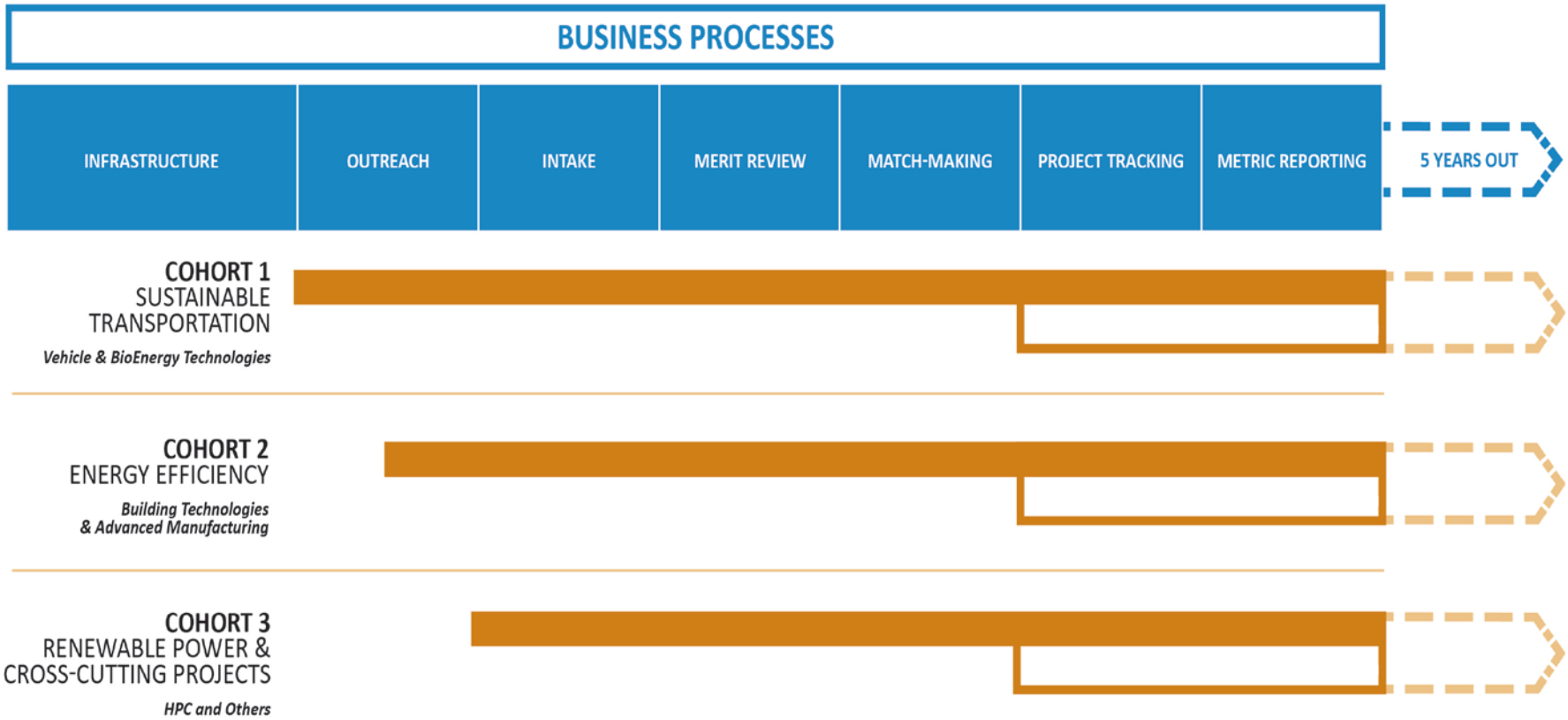
BERKELEY LAB

LabSTAR



BERKELEY LAB

Timeline of Activities for Cyclotron Road Start-up Cohorts



NREL
NATIONAL RENEWABLE ENERGY LABORATORY

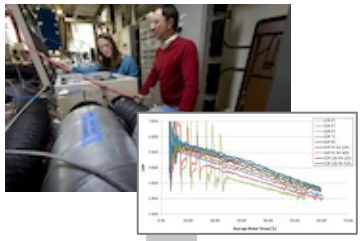
Working with DOE's National Labs: Opportunities for Collaboration on Clean Energy Technologies

Better Buildings Summit

Bill Farris

May 28, 2015

Buildings Capabilities



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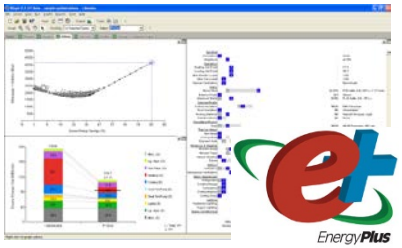
Lab Measurement Data



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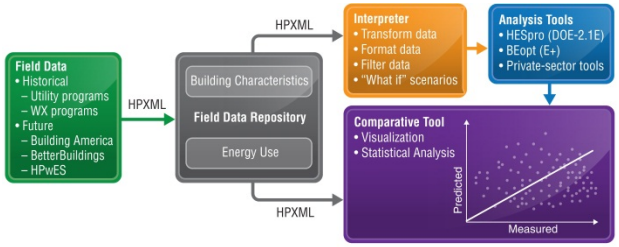
Field Measurement Data



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Energy Monitoring Data

CAPABILITIES

- Modeling and simulation
- Whole-building energy performance
- Market transformation strategies
- Grid integration
- Component development/integration
- Measurement, data collection and analysis

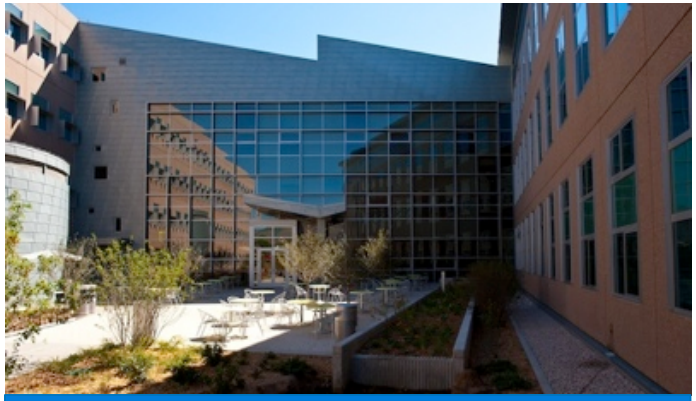
ACCOMPLISHMENTS

- Multiple WFO/CRADA agreements
- Technologies licensed to external partners for commercialization
- Building component/system model development
- Campus energy tools

Performance-Based Acquisition

Best Practices Based on RSF and ESIF

- Define a building lifecycle process that allows for a continued focus on an energy goal
- Select a single, measurable energy goal
- Require energy goals be substantiated through contract-defined calculation methods at each design phase
- Compare results to model predictions and leverage design team to correct installation or mistakes that inhibit energy performance
- Learn more at https://buildingdata.energy.gov/cbrd/energy_based_acquisition/



Research Support Facility

Energy Systems Integration Facility

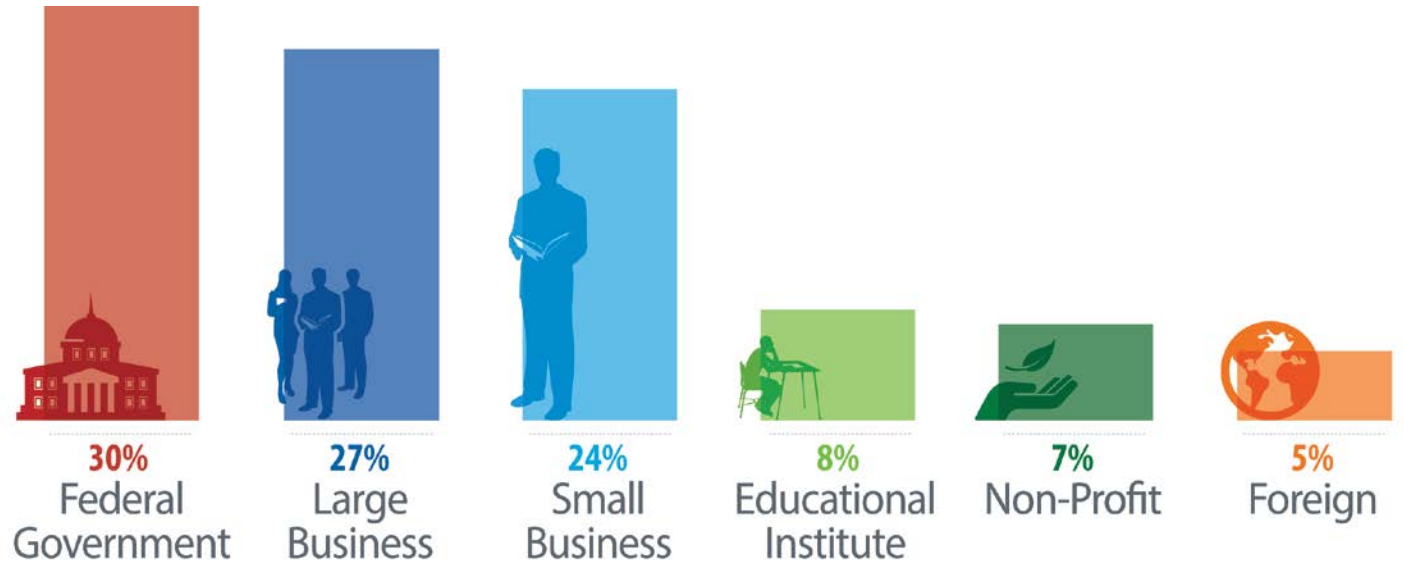
Partnering with NREL

NREL researchers work with a variety of partners to conceive innovative ideas, develop concepts into prototypes, improve and integrate multiple technologies, engineer entire systems, and provide technical assistance and tools that span the energy sector.

AGREEMENT TYPES

- Agreements for Commercializing Technology (ACT)
- Bailments (BAE)
- Cooperative Research & Development Agreements (CRADA)
- Funds-in Agreements (FIA)
- Interagency Agreements (IAG)
- Material Transfer Agreements (MTA)
- Memoranda of Understanding (MOU)
- Non-Disclosure Agreements (NDA)
- Technical Services Agreements (TSA)

Partnering with NREL



FY14 PARTERSHIP STATS

657	Active partnership agreements	100	Unique new partners
$60M	New project value	12%	of NREL's annual budget

* NREL had the most CRADAs in FY14 among all DOE laboratories.

NREL's Market Impact Activities

Marketing

Energy Innovation Portal

- One-stop shop for identifying DOE Laboratory clean energy technologies to license
- Visual patent search: Patent-based capability map

www.techportal.eere.gov

Integration

National Incubator Initiative for Clean Energy (NIICE)

- Network of best practices and metrics for clean energy incubators
- Listing of incubators, test beds, accelerators, etc., for entrepreneurs

www.incubatenergy.org

Entrepreneurial Education

Lab-Corps Pilot Program

- Node for new program to teach DOE Laboratory scientists about entrepreneurial activity
- Based on modified NSF I-Corps
- 10 DOE teams in Pilot
- Two cohorts before end of CY15

Funding and Support

Small Business Vouchers (SBV)

- Upcoming initiative to provide small business technical assistance
- Up to $300K voucher to access unique DOE lab capabilities
- Much larger version of NREL's Commercialization Assistance Program (NCAP)

Energy Systems Integration Facility (ESIF)

Designed to meet crucial research objectives for integrating clean energy technologies into the grid in a way that is safe, efficient, cost-effective, and respectful to the surrounding environment.

- The Energy Systems Integration Facility houses an unparalleled collection of state-of-the-art capabilities that supports the development, evaluation, and demonstration of innovative clean energy technologies.
- Specialty research capabilities include:
  - Systems integration
  - Prototype and component development
  - Manufacturing and material diagnostics
  - High-performance computing and analytics.

Peregrine high-performance computing system

Wells Fargo Innovation Incubator (IN^2)

OBJECTIVE

To advance clean energy startups in the built environment through technical assistance at NREL and funding for business-related support.

- Agreement between Wells Fargo Foundation and Alliance for Sustainable Energy, LLC
- $10M, five-year program
- $250,000 to selected companies
- Invitation-only for rounds 1 and 2
- Potential to pilot on Wells Fargo buildings portfolio

Wells Fargo Innovation Incubator (IN^2)

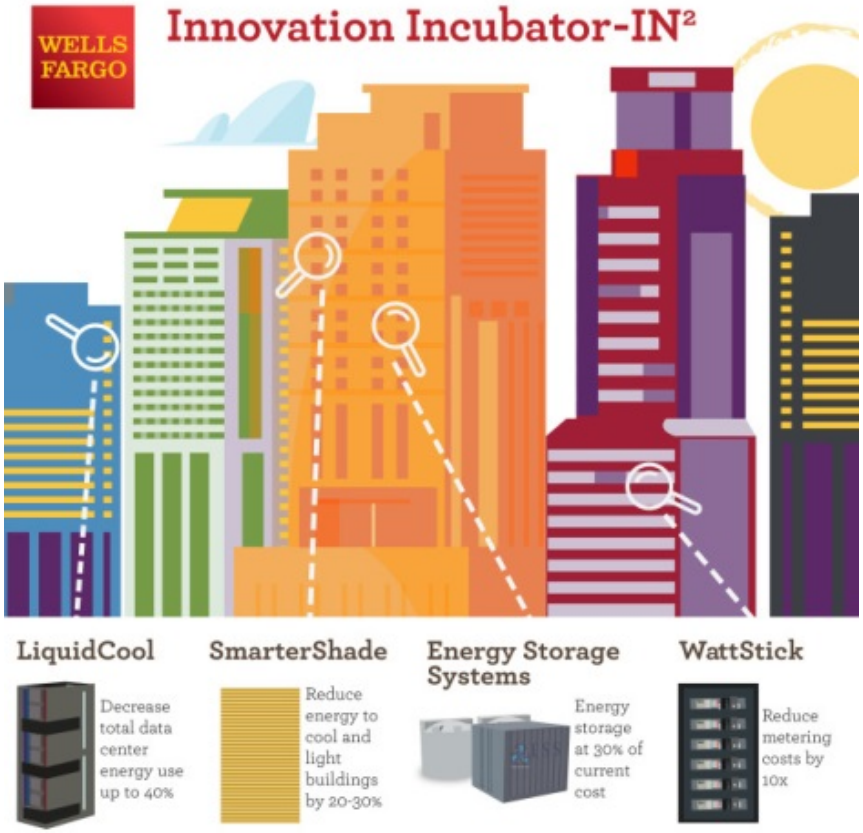
Round 1 Awardees

Energy Storage Systems (Portland, OR) is developing an advanced flow battery that utilizes earth-abundant iron as its energy storage medium.

LiquidCool Solutions (Rochester, MN) is developing two forms of total immersion electronics cooling technology for large-scale data centers.

SmarterShade (Chicago, IL) delivers on the promise of smart glass: Significant energy savings, glare reduction and enhanced privacy impact – all in a seamless user-controlled shading interface that lasts 4-5 times longer than blinds and shades.

WattStick Systems (San Francisco, CA) is developing peel-and-stick electricity metering technology that can be safely and easily installed by nontechnical staff.



Wells Fargo Innovation Incubator (IN^2)

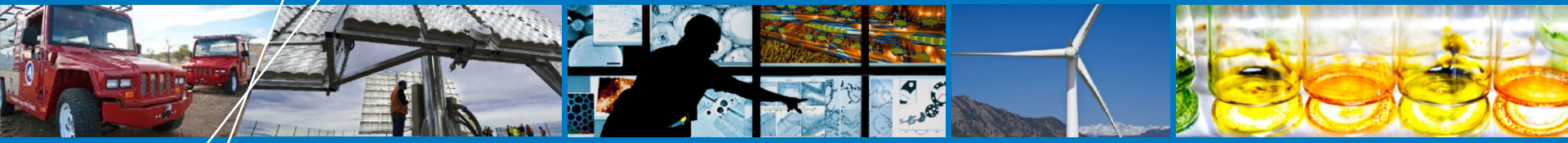
Scaling

Round/ Technology Focus	# Awardees
Round 1 Energy efficient commercial building technologies	4
Round 2 Energy efficient commercial building technologies	6
Round 3 Possible expansion to residential technologies	10

Round 2

Finalists from Round 2 will be invited to attend **NREL's Industry Growth Forum** Nov. 3-4 in Denver.

NREL
NATIONAL RENEWABLE ENERGY LABORATORY



Thank you!

Exceptional service in the national interest

Sandia National Laboratories

energy.sandia.gov

Better Buildings®
U.S. DEPARTMENT OF ENERGY

Opportunities for Collaboration on Clean Energy

Marianne C. Walck, Ph.D.
Vice President, California Laboratory
Vice President, Energy & Climate Program

U.S. DEPARTMENT OF ENERGY

NNSA National Nuclear Security Administration

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Myth: Labs Are Difficult to Access

Center for Collaboration & Commercialization (C3)

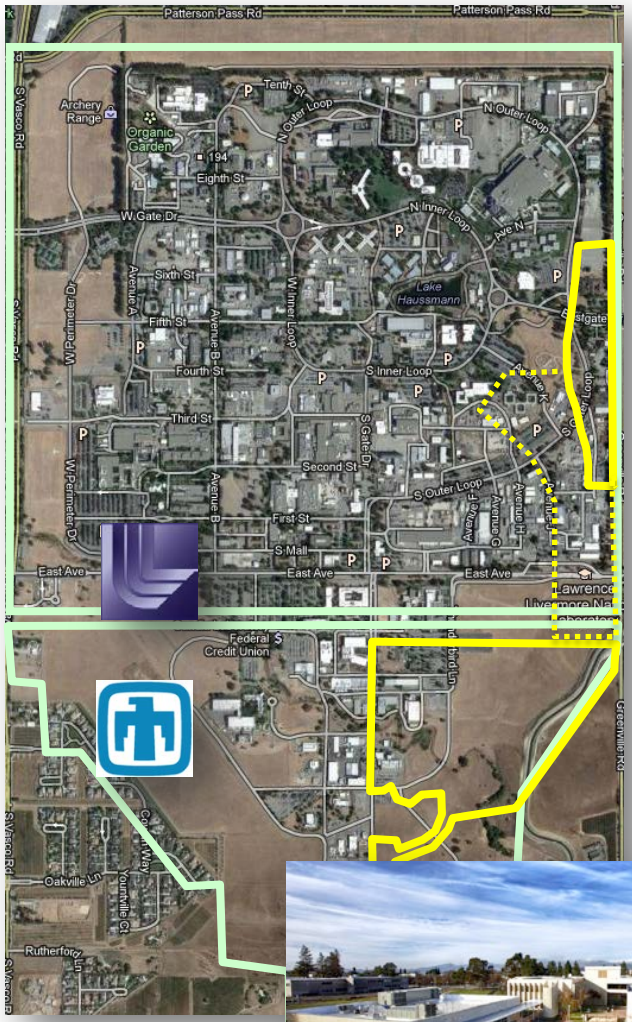
- The City of Albuquerque, University of New Mexico, and Sandia working together to help promote economic growth for the region
- Designed to stimulate innovation, cultivate entrepreneurs, and generate jobs

i-GATE Innovation Hub

- Founded in 2010 by the City of Livermore, Lawrence Livermore National Laboratory, and Sandia National Laboratories' California site
- Supports technology entrepreneurs with work space, mentoring, tools and services

Myth (Continued): Labs Are Difficult to Access

Sandia National Laboratories



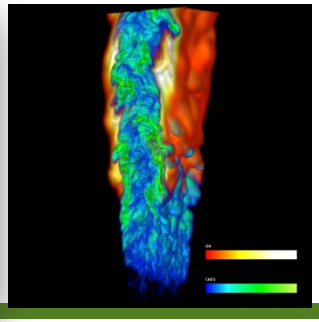
Livermore Valley Open Campus (LVOC)

Over 200,000 square feet of office and laboratory space is now in the Open Campus

Combustion Research Facility (CRF)

- 82,000-square-foot office and laboratory facility
- 36 highly specialized labs
- ~150 permanent and visiting research staff
- Keys to CRF's success:
  - Common scientific purpose
  - Collocation and collaboration
  - Strong ties to application
  - Full spectrum of basic to applied

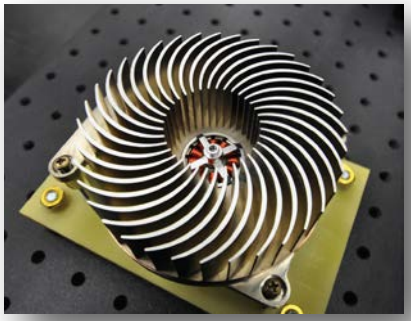
CRF

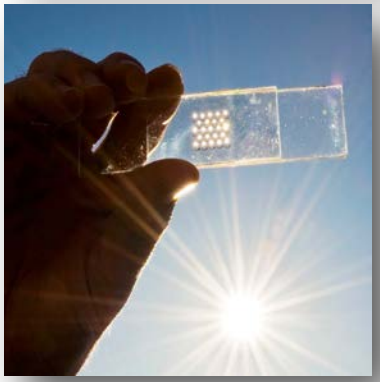


Myth: Labs Do Not Collaborate with Industry

Sandia National Laboratories

Intellectual Property





CRADAs & NFEs

Atlas Copco

THE LINDE GROUP

GM

UOP
A Honeywell Company

SOLARRESERVE®

SANDIA SCIENCE & TECHNOLOGY PARK

ESTT ENTREPRENEURIAL SEPARATION TO TRANSFER TECHNOLOGY

NMSBA
Los Alamos National Laboratory
Sandia National Laboratories
Solving New Mexico's Small Business Challenges

Over 800 Industry Partners Yearly

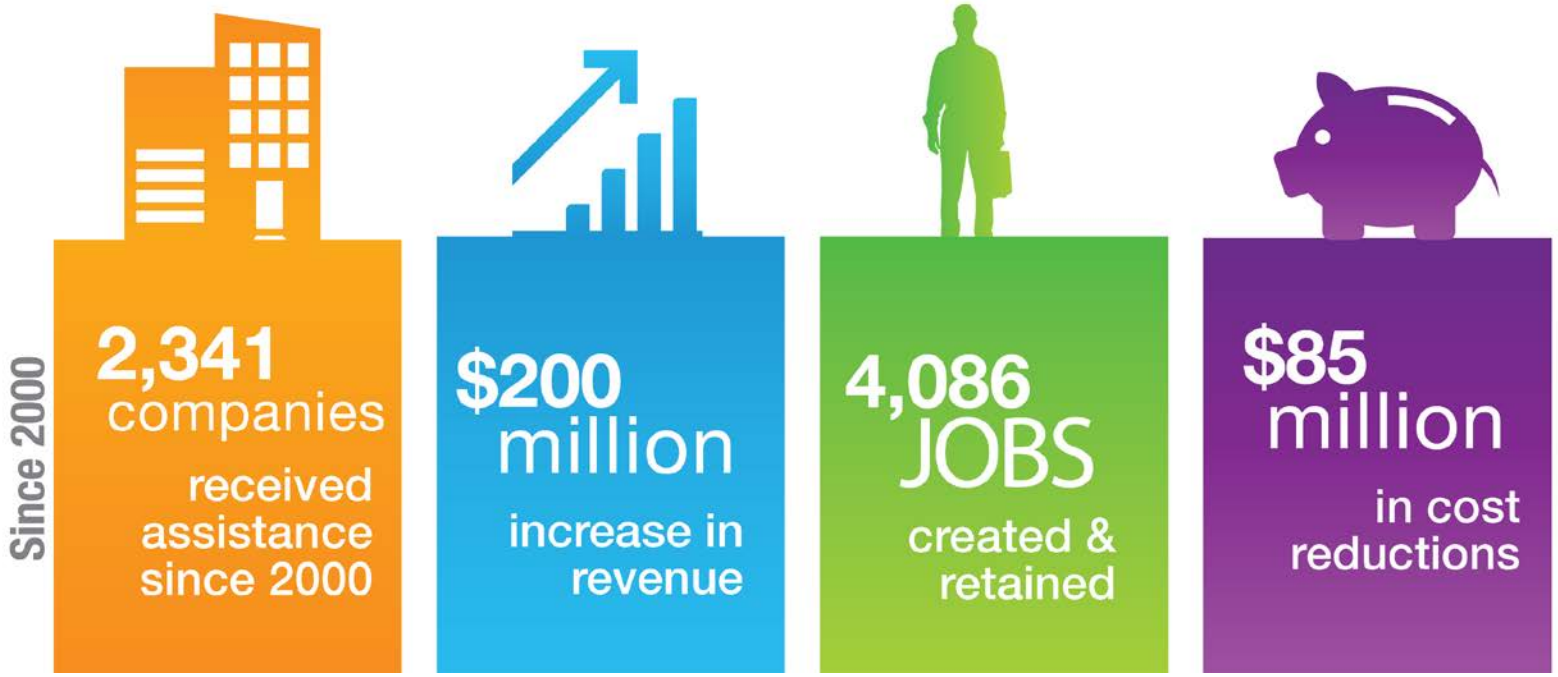
Myth: Labs Do Not Serve Small Businesses

Sandia National Laboratories

NMSBA
Los Alamos National Laboratory
Sandia National Laboratories
Solving New Mexico's Small Business Challenges

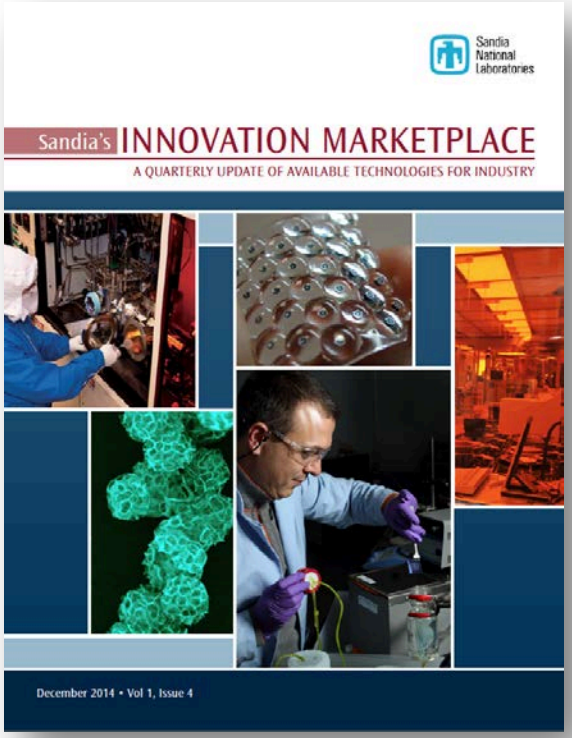
In 2014, the New Mexico Small Business Assistance (NMSBA) program invested $4.7M to assist 352 small businesses in 31 counties

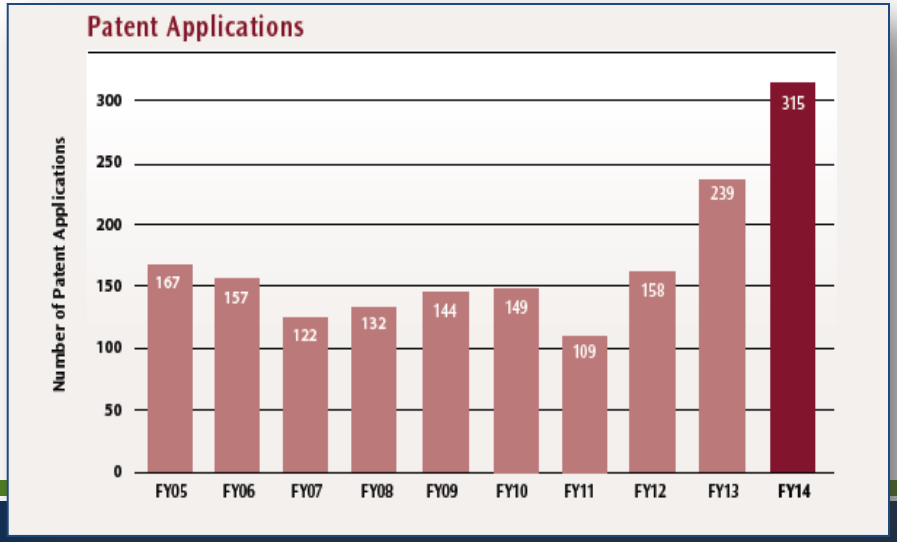
- Solaro Energy
- Algal Nutrient
- Dairy Energy & Water
- Wave Energy



Myth: Labs Do Not Enhance Economic Development

Sandia's intellectual property may be licensed for commercial use (internal or commercial sale), test and evaluation, or execution of a government contract.





All totaled, Sandia has more than 1,200 patents and 500 commercial copyrights, most of which are available for licensing

Sandia National Laboratories

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partnerships@sandia.gov