



The American Council for an Energy-Efficient Economy
and Financial Research Associates
proudly presents

The 5th Annual

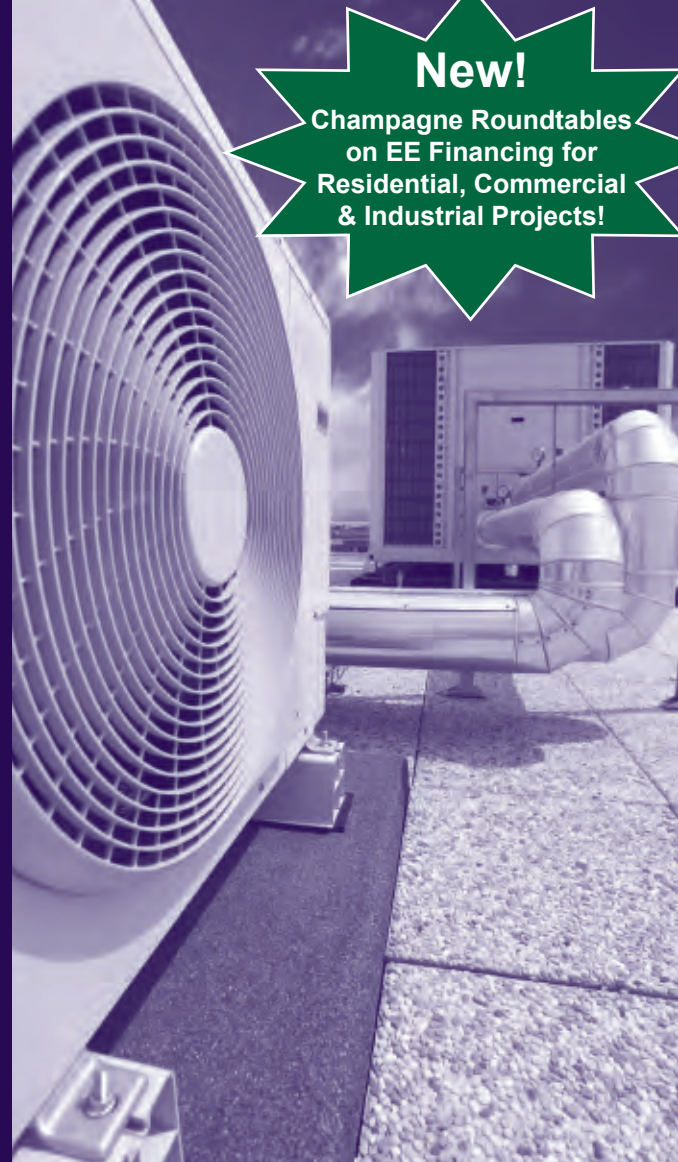
Energy Efficiency Finance Forum

Tapping into a Trillion-dollar Market:
Financing, Capital & Deal Sourcing for
Energy Efficiency

May 3-4, 2011

The Union League of Philadelphia

“Virtually every speaker provided information that will be of use to me.”



Highlights of the 5th Annual Energy Efficiency Finance Forum

- What's worked and what hasn't in EE financing?
- How new technology will impact financing
- New EE financing mechanisms through private equity
- Public-private partnerships: which models work and why?
- Using revolving loans and loan-loss reserves for private capital financing
- Energy conservation bonds and other tax-credit financing tools
- Secondary market options for EE loans
- The future of federal and state EE programs & policies
- On-bill financing case studies

Featuring 50 top-level faculty and unparalleled networking opportunities! This is the one EE financing event you simply can't miss!

To Register: Call 800-280-8440 or visit us at www.frallc.com



Thank you for attending the conference!

American Council for an Energy-Efficient Economy and Financial Research Associates are an accredited institution and we pride ourselves on the cutting edge presentations delivered at our conferences. We make every effort to secure advance copies of these presentations for your continued review following the close of the conference.

From time to time due to proprietary concerns or internal legal constraints, speakers are unable to submit presentations for duplication and distribution. In this rare case, we encourage you to utilize the contact details provided in their biography to request a single copy of the presentation.



*The American Council for an Energy-Efficient Economy and
Financial Research Associates proudly presents*

The 5th Annual Energy Efficiency Finance Forum

May 3-4, 2011
The Union League of Philadelphia

DAY ONE: Tuesday, May 3, 2011

7:45-8:20 **Registration & Continental Breakfast & Exhibitor Set-Up**

8:20 **Chairperson's Opening Remarks:**

Steven Nadel, Executive Director
American Council for an Energy-Efficient Economy

Joyce M. Ferris, Managing Partner
Blue Hill Partners, LLC

Greg Kats, President of Capital E and Venture Partners
Good Energies

8:45 – 9:30 **Opening Keynote Panel:**
Tapping into a Trillion Dollar Industry:
How to Increase Energy Efficiency Financing by 2015

John J. Christmas, Senior Vice President
Hannon Armstrong

*Iain Campbell, Vice President & General Manager, Global Energy and
WorkPlace Solutions Building Efficiency*
Johnson Controls

Paul M. Sotkiewicz, Ph.D., Chief Economist, Markets
PJM Interconnection, LLC

9:30 –10:15 **Technology Panel:**
Emergence of New Technology & Its Impact on Financing

Moderator:

Rick Counihan – Vice President Regulatory Affairs
EnerNOC, Inc.

Panelists:

Alex Laskey, President & Founder
OPOWER

David Struhs, Council Chair
C3

*Iain Campbell, Vice President & General Manager, Global Energy and
WorkPlace Solutions Building Efficiency*
Johnson Controls

10:15 – 11:00 **Private Equity Investors' Roundtable:**
**Evaluating Financial Options & Exploring New Financial Mechanisms Using
Private Equity**

Ben Weinberg, Senior Associate
Element Partners

Tucker Twitmyer, Managing Director
Enertech Capital

Joseph E. Lipscomb, Partner
Arborview Capital LLC

11:00 – 11:15 **Morning Break**

11:15 – 12:00 **Public-Private Partnership Case Study:**
**Effectively Developing Public-Private Partnerships:
Pitfalls, Triumphs, and Lessons Learned**

Moderator:

Liz Robinson, Executive Director
Energy Coordinating Agency

Panelists:

Greg Hale, Senior Finance Policy Specialist, Center for Market Innovation
Natural Resources Defense Council

Katherine Gajewski, Director of Sustainability
City of Philadelphia

Don Gilligan, President
NAESCO

12:00 – 1:15 **Luncheon for all attendees & speakers**

1:15 – 2:15 ***A Two-Part Private Debt Discussion:***
**Part I: Exploring the Effectiveness of Private Capital Financing Options
through Revolving Loans and Loan-Loss Reserves**

Jeff J. Pitkin, Treasurer
New York State Energy Research and Development Authority (NYSERDA)

Private Debt Part II:
Qualified Energy Conservation Bonds & Other Tax-Credit Financing Tools

Elizabeth Bellis, Counsel & Tax Attorney
Energy Programs Consortium

Linda Schakel, Partner
Ballard Spahr

Bill Nesmith, Senior Energy Advisor
NASEO

2:15 –2:30 ***Afternoon Break***

2:30 –3:15 **Creating Proper Secondary Market Options for Energy Efficiency Loans**

Jeff J. Pitkin, Treasurer
New York State Energy Research and Development Authority (NYSERDA)

Keith Welks, Deputy Treasurer for Fiscal Operations & Senior Policy Advisor
Pennsylvania Treasury Department

Mark Wolfe, Executive Director
Energy Programs Consortium

3:15 –4:30

**A Three-Part Champagne Roundtable:
Chose A-B-C for Financing Commercial/Institutional vs. Residential vs.
Industrial Projects**

**Part A: Financing Residential Projects: Strength & Weaknesses of
Keystone HELP Loan**

*Keith Welks, Deputy Treasurer for Fiscal Operations & Senior Policy Advisor
Pennsylvania Treasury Department*

*Stockton Williams, Senior Advisor for Energy Efficiency Markets, Office of
Sustainable Homes and Communities
U.S. Department of Housing and Urban Development*

*Peter J. Krajsa, Chairman & CEO
AFC First Financial Corp.*

**Part B: Financing Commercial Projects, The Reinvestment Fund & PACE
Updates**

*Roger Clark, Manager for Technology & Policy
The Reinvestment Fund*

*Bob Hinkle, President & CEO
Metrus Energy, Inc.*

Part C: Financing Industrial Projects

*Nels Andersen, Vice President of Engineering
Franklin Energy Services*

*Toby Rittner, EDFP, President & CEO
Council of Development Finance Agencies*

Cocktail Reception Immediately Following

DAY TWO: Wednesday, May 4, 2011

7:45-8:30 **Continental Breakfast**

8:30 – 8:45 **Recap of Day One**

Steven Nadel, Executive Director
American Council for an Energy-Efficient Economy

Joyce M. Ferris, Managing Partner
Blue Hill Partners, LLC

Greg Kats, Senior Director
Good Energies

8:45 – 9:30 ***Voice of Property Owners:***
A Case Study for Property Owners

Moderator:
Joyce M. Ferris, Managing Partner
Blue Hill Partners, LLC

Panelists:
Daniel Garofalo, Director of Sustainability
University of Pennsylvania

Randy Haines, CEM, Energy Manager
Thomas Jefferson University

Kinga Porst, CEM, LEED-AP, Sustainability and Green Buildings Program
Advisor
US General Services Administration

Steve Gossett Jr.
Transcend Equity

9:30- 10:00 **Evaluating Financial Options & Exploring New Financial Mechanisms**

Greg Kats, Senior Director
Good Energies

Dan Reicher, Professor of the Practice of Law, Executive Director of the Steyer-Taylor Center for Energy Policy & Finance
Stanford Law School

10:00-11:00 **Case Study from Multiple Utilities:
Utility On-Bill Financing: Exploiting a Tool with Great Potential –
Lessons Learned from the Pros**

Moderator:
Charles Gray, Executive Director
NARUC

Utility Case Study #1:
Nancy Brockway, Principal
NBrockway & Associates
Former Commissioner
New Hampshire Public Utilities Commission

Utility Case Study #2:
Frank Spasaro, Energy Efficiency Partnership Manager
Southern California Gas Company

Panelist #3:
Steve Cowell, Chairman & Chief Executive Officer
Conservation Services Group

11:00-11:15 **Morning Break**

11:15 – 12:15 **Federal & State Efficiency Programs & Policies: What Does the Future
Hold?**

Steven Nadel, Executive Director
American Council for an Energy-Efficient Economy

*Stockton Williams, Senior Advisor for Energy Efficiency Markets, Office of
Sustainable Homes and Communities*
U.S. Department of Housing and Urban Development

Jeff Genzer, Counsel
National Association of State Energy Officials

Gilbert P. Sperling, Senior Advisor for Policy and Programs
Office of Energy Efficiency and Renewable Energy

Dian Grueneich, Former Commissioner
California Public Utilities Commission

12:15 – 1:00 **Luncheon for all attendees & speakers**

1:00 –1:45 **PACE Updates & Setbacks:
What's the Latest & What's Next for Commercial Projects?**

Francisco DeVries, President
Renewable Funding

Mark Zimring, Senior Research Associate
Lawrence Berkeley National Laboratory

John McNeill, CEO
Renovate America

1:45 – 2:30 **Searching for Scalable & Proven Results:
Performance Measurement Verification & Emerging Trends**

Joshua Wolfe, Principal
PES Group

Ben Bixby, CEO
Earth Aid

Chris Kaiser, Senior Account Executive
Noresco

Working Afternoon Break

2:30 –3:15 **Smart Grids for Energy Efficiency**

Audrey Zibelman, President and CEO
Viridity Energy, Inc

Ivo Steklac, Executive Vice President, Sales & Strategy
Tendril Inc.

Jim Sinopoli, PE, LEED AP, RCDD, Managing Principal
Smart Buildings

3:15 – 4:00 **China's Investments in Energy Efficiency & U.S. Collaborations**

Moderator:

Bill Nesmith, Senior Energy Advisor

NASEO

Panelists:

William Chandler, President

Transition Energy

Research Director, Energy Transition Research Institute

*Bo Shen, PhD, China Energy Group, Environmental Energies Technology
Division*

Lawrence Berkeley National Laboratory

Alisa Valderrama, Finance Policy Analyst, Center for Market Innovation

Natural Resources Defense Council

Xiadong Wang, PhD, Senior Energy Specialist

The World Bank

4:00

End of Conference



Dear Conference Participant:

On behalf of the American Council for an Energy-Efficient Economy and Financial Research Associates, LLC, I would like to cordially welcome you to this industry event.

We have developed this event based on extensive industry research, structuring the topics and gathering together the speaker faculty based on feedback from numerous industry participants. Our goal is to provide you with the most up to date industry information possible, along with top-notch networking opportunities. Every effort has been made on our part to obtain the speakers presentations to be included in the PDF link that you have received via email. If a speaker's presentation is not included in the PDF link, we would ask that you contact the speaker directly. If we have failed to meet your expectations in any way, please let us know by completing the evaluation form provided at this event. Of course, we would like to hear positive feedback as well!

We appreciate that you have chosen to spend your time and training dollars with us, and we're committed to satisfying your informational needs. Again, welcome to this event and thank you for your participation – we truly value your business.

Sincerely,

Lori Medlen, President
Financial Research Associates, LLC



If you have any additional questions or requests for information beyond what is in this document book, please feel free to contact us at any time.

A link with final speaker presentations will be forwarded via email
approximately
1 – 2 weeks after the conference.

Lori Boothe
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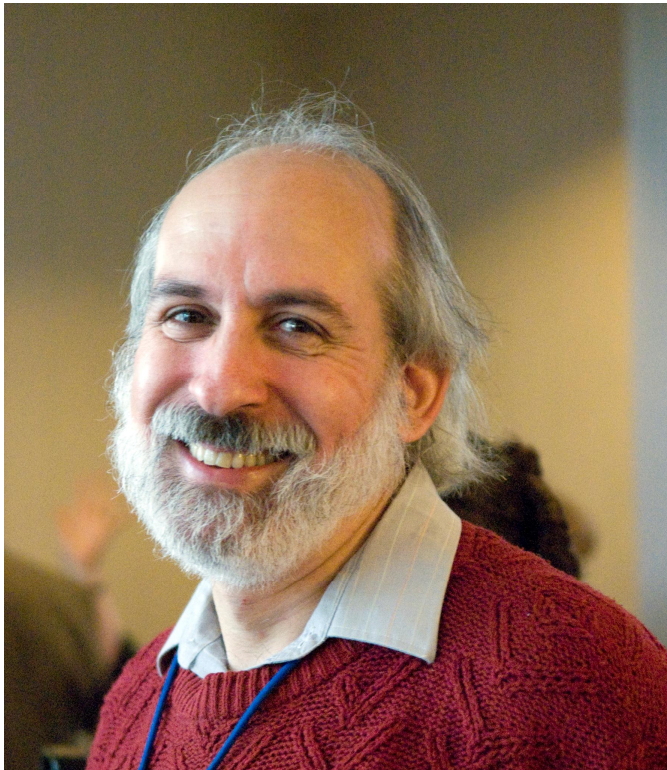
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Greg Kats, President of Capital E and Venture Partners
Good Energies

Steven Nadel

Steven Nadel is the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a non-profit research organization that works on programs and policies to advance energy-efficient technologies and services. Steve has been at ACEEE for 20 years serving as Deputy Director of the organization and Director of ACEEE's Utilities and Buildings programs prior to his promotion to Executive Director in 2001. Prior to ACEEE he planned and evaluated energy efficiency programs for New England Electric, a major electric utility; directed energy programs for the Massachusetts Audubon Society, Massachusetts's largest environmental organization; and ran energy programs for a community organization working on housing rehabilitation in the poorest neighborhoods of New Haven, CT. Steve has worked in the energy efficiency field for 30 years and has over 100 publications on energy-efficiency subjects. He has testified many times before Congress on energy efficiency subjects and also testified before multiple state legislatures. He was a major contributor to national energy legislation passed by Congress in 1987, 1992, 2005, 2007, and to energy legislation now pending before Congress. His current research interests include utility-sector energy efficiency programs and policies, state and federal energy and climate change policy, and appliance and equipment efficiency standards. He has a M.S. in Energy Management from the New York Institute of Technology, and a M.A. in Environmental Studies and B.A. in Government from Wesleyan University in Connecticut.



Joyce M. Ferris



Joyce M. Ferris, is a Founder and Managing Partner of Blue Hill Partners LLC, a private investment firm focused exclusively in the Green Technology sector. Blue Hill has built an investment portfolio around energy efficiency technologies and services for application in commercial and industrial buildings. The portfolio includes companies with technologies and services related to reducing the costs of lighting, air conditioning, monitoring and control and providing cost effective solutions for on-site power generation.

Joyce has over 24 years of experience in building and financing green technology companies and projects. She has had principal roles as an investor, technology and equipment provider, financial advisor and as a project developer. Joyce's project experience includes energy efficiency and on-site generation projects, biomass and agricultural waste fired energy projects, industrial waste disposal facilities, waste-coal fired power plants, geothermal, and hydroelectric projects. Joyce was a senior founding executive of Reading Energy Company where she managed financial transactions totaling over \$500 million. Joyce was a major shareholder and Director of Business Development for Energy Products of Idaho, a combustion technology firm specializing in the conversion of a wide variety of solid waste material. Joyce has held numerous board positions and is currently on the board of Princeton Energy Systems, E3 Bank and Aircuity Inc. She is a frequent speaker at industry conferences in the US and Europe. Joyce is a member of the Advisory Board of the Pennsylvania Green Growth Partnership, the National Wildlife Federation Business Council and the Cleantech Venture Network. Joyce is also on the board of Philadelphia Outward Bound. She holds a B.A. from Reed College and an M.S. from the University of Pennsylvania in Energy Management and Policy.

Gregory Kats



Gregory Kats is Venture Partner at Good Energies a multi billion-dollar global clean energy investor, where he leads investments in the energy efficiency and green building areas, and is President of Capital E, a national clean energy advisory practice. He recently introduced and helped negotiate \$100 million strategic investment by St. Gobain in Sage. Greg developed a partnership with TIAA-CREF establishing \$50 million VC investment vehicle within TIAA's real estate group to invest behind Good Energies' energy efficiency and green building investments. Greg also guides Good Energy's portfolio firms on leveraging legislation and programs at DOE, DOD and EPA, including recently guiding a portfolio firm in securing a \$90 million DOE loan guarantee. He serves on a half dozen boards and is Sustainability Advisor to CalPERS.

Greg served for 5 years as the Director of Financing for Energy Efficiency and Renewable Energy at the U.S. Department of Energy where he led national programs to develop and deploy renewable energy, energy efficiency and advanced building technologies. He initiated and led DOE's successful effort to persuade the SEC to lift key restrictions on domestic and international expansion of US energy service companies. He was the Founding Chair of the International Performance Measurement & Verification Protocol (IPMVP), which has served as the technical basis for \$10 billion in building upgrades and been translated into 10 languages. Earlier in his career, Greg held senior management and marketing positions in London, Paris and Geneva.

Greg is a founder of the American Council on Renewable Energy (ACORE), and the New Resource Bank. He is the Founding Chair of the Energy and Atmosphere Technical Advisory Group for LEED, and is the Founding Chair of the National Chapter of the US Green Building Council. He was the Principal Advisor in developing Green Communities, now the national green affordable housing design standard, used as the green design basis for over 20,000 units of green affordable housing.

Greg earned a MBA from Stanford University and, concurrently, an MPA from Princeton University (where he studied with Ben Bernanke) and a BA from UNC with highest honors as a Morehead Scholar. He is a Certified Energy Manager and a LEED AP. Greg was a principal author of *Green Office Buildings: A Practical Guide to Development* (JLI, 2005), and is the author of the *Greening Our Built World: Costs, Benefits and Strategies* (Island Press, 2010). He is a frequent keynote speaker at national clean-energy technology, venture capital, and real estate conferences.

Opening Keynote Panel:
Tapping into a Trillion Dollar Industry:
How to Increase Energy Efficiency Financing by 2015

John J. Christmas, Senior Vice President
Hannon Armstrong

Iain Campbell, Vice President & General Manager, Global Energy and WorkPlace Solutions
Building Efficiency
Johnson Controls

Paul M. Sotkiewicz, Ph.D., Chief Economist, Markets
PJM Interconnection, LLC

John Christmas, Senior Vice President, Hannon Armstrong Capital

Mr. Christmas combines twenty (20) years of investment and commercial banking experience and serves as SVP of Hannon Armstrong. Included in his energy development and financing background is over \$2.0 billion of energy efficiency and renewable energy projects for a variety of government agencies, national energy service companies (ESCOs) and over fifteen (15) major investor-owned utilities. His renewable energy project background and current development focus includes wind, solar, geothermal, and ocean-thermal. Mr. Christmas holds a B.S. in economics and an MBA in finance.

FINANCING ENERGY EFFICIENCY IN THE COMMERCIAL BUILDING SECTOR

Is There Hope Post-PACE?

Spring 2011



DISCUSSION CONTEXT

- Federal, State, Local and Institutional already addressed.
- Newly-constructed commercial already addressed.
- Deep reductions in energy intensity in existing commercial investment properties are the challenge.
- Efficiency in public/institutional buildings is “policy-driven”, while efficiency in commercial buildings is “market-driven”.
- Focus is addressing market barriers to retrofit financing in the existing commercial sector.

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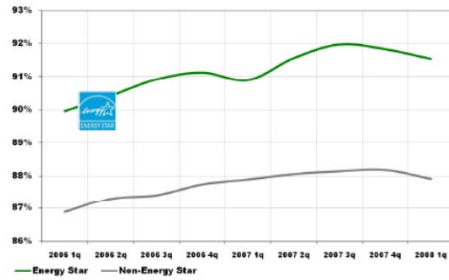
HANNON
ARMSTRONG

ENERGY STAR AND INCREASED TENANCY

Co-Star study shows higher occupancy rates for ENERGY STAR buildings

Multiple other studies show similar results

National average comparison of occupancy rates of Energy Star-labeled buildings vs. non-labeled buildings over a two-year period.



- Lower operating costs/increased cash flow
- Potential increase in occupancy
- Potential increase in property value/sales valuation
- Federal tax deduction

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AVAILABILITY OF ENERGY EFFICIENCY FINANCING

• **Markets that Work**

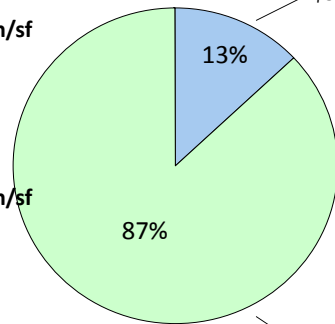
- Federal
- MUSH

12 billion/sf

• **Markets that Don't Work**

- Residential
- Office Buildings
- Retail / Food Service
- Hospitality

80 billion/sf



• **Key Differences**

- Owners not credit-worthy
- Assets are Pledged

← **The Focus of PACE Financing**

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CURRENT STATUS

On-Bill Financing not broadly applicable

ARRA funds unable to be leveraged

With PACE stuck in the regulatory mud, does the industry have a Plan B?

One possibility: expanding the federal Title XVII program to create a commercial performance contracting market, using the Federal ESPC market as a model

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Creating a Commercial Performance Contracting Market, using Federal ESPC as a Model

Goal is target and remove the point of market failure: LLC counter-party risk.

Solution is to simulate the hybrid credit structure of a Federal ESPC.

Critical elements -- back-stop property LLC with a Federal guarantee.

-- confine guaranty to LLC default, not performance.

This would effectively simulate the hybrid credit structure of a Federal ESPC:

Contractor guarantees performance
Government guarantees property default

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The Argument for Performance Contracting

Primary financing tool utilized in the Federal/MUSH markets

PC effectively parses counterparty and performance risk, allowing the former to be singled out for a guaranty.

The value in EE retrofits is not the equipment cost, but the creation of ongoing savings over time. It is clear that the realization of long-term savings is tied to verification and liability*.

The capital markets have accepted performance contracting.

Option A (M&V) will facilitate lending to small-sized contractors and properties.

** Performance contracting is the best means of assuring energy consumption and GHG emissions reductions will endure.*

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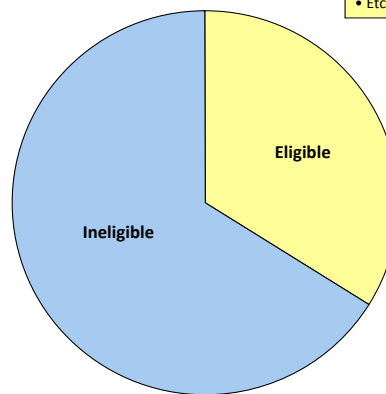


Exposure to the Taxpayer

Structural goal: Large, widely-diversified pool of PC loans to high-performing commercial properties.

- Geography
- Building purpose
- Building size
- Building age
- Etc.

Credit Subsidy Rate: Assessed based on broad market average (i.e. 5%), while exposure is limited to high-performing buildings.



- High-occupancy
- Moderate debt
- Strong cash flow
- Etc.

All large commercial buildings

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Critical Success Factors

The Owner's Perspective

Make it simple !!!!!

Streamlined contract

Cost of capital

Efficient approval process with DOE

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Efficient Implementation

Lenders/contractors screen projects according to published eligibility criteria*

Owner/contractor/lender screen candidate properties against the criteria

Lenders aggregate projects into portfolios of critical mass.

DOE may issue single guarantee covering entire portfolio.

DOE due diligence focused on government exposure: property profile.

DOE may outsource initial review process to a property management firm (JLL, CBRE, C&W, etc.) or a management consulting firm (BAH, Bearing Point, Accenture etc.)

** Current appraisal, historical occupancy, debt service coverage, debt-to-value, etc. With largely objective criteria, there will be three levels of industry vetting – owner, contractor and lender. Four if review is outsourced.*

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Biographies



Iain A. Campbell

*Vice President & General Manager
Global Energy & WorkPlace Solutions
Johnson Controls Inc.*

Iain A. Campbell is responsible for the Global Energy & WorkPlace Solutions businesses within the Building Efficiency division of Johnson Controls Inc. These businesses employ over 20,000 employees with revenues in excess of \$5.0 Billion p.a.

Iain joined Johnson Controls through its acquisition of York International Corporation in December 2005. Iain joined the former York International Corporation in January 1983 holding a number of positions most notably as President of the Americas.

In addition to his current responsibilities Iain acted as the co-leader in developing the Corporations Environmental Sustainability positions and policies.

Iain is a frequent speaker and panelist on Energy Efficiency in the built environment and associated funding mechanisms and testified to the US Congress subcommittee on energy & environment regarding complimentary policies for climate legislation. Iain holds a BS in Finance.

About Johnson Controls

Johnson Controls (NYSE: JCI) is a global diversified technology and industrial leader serving customers in more than 150 countries. Our 142,000 employees create quality products, services and solutions to optimize energy and operational efficiencies of buildings; lead-acid automotive batteries and advanced batteries for hybrid and electric vehicles; and interior systems for automobiles. Our commitment to sustainability dates back to our roots in 1885, with the invention of the first electric room thermostat. Through our growth strategies and by increasing market share we are committed to delivering value to shareholders and making our customers successful. For additional information, please visit <http://www.johnsoncontrols.com/>.

ACEEE Energy Efficiency Finance Forum

Tapping into a Trillion Dollar Industry How to Increase Energy Efficiency Financing by 2015



Iain Campbell
VP-GM, Global Energy and Workplace Solutions
May 3rd 2011



Johnson Controls

Ranked 83rd of U.S. Corporations & 280th Globally (2010)
Fortune

#1 - 100 Best Corporate Citizens List
Corporate Responsibility Magazine

#14 - America's Greenest Companies (2010)
Newsweek



Automotive



Power



Buildings

- Building Technologies & Systems
- Building Services & Facility Management
- Energy Services Contracting



Tapping into a Trillion Dollar Industry

The Market Drivers are significant.... by the numbers

42 percent

Worldwide, buildings consume 42% of all energy —more than any other asset

65 percent

Estimated percentage of buildings that exist today that will still be in use in 2050

6 percent

Increase in effective rents commanded by LEED and Energy Star green buildings

1.5 percent

Annual new construction space added as a percent of existing buildings in use

20% – 40% savings

Energy savings available on existing buildings over 5 years old (favorable NPV)

51 percent

of the global 500 have publically declared GHG reduction goals – of these the majority identify energy efficiency of their buildings as their priority



Tapping into a Trillion Dollar Industry

Effective models exist for part of the market but not the mass market

The market for deep Energy Efficiency Retrofits in the Public Sector is already active and growing

Performance Contracting is an effective mechanism meeting the needs of long term owners focused on managing within constrained operating budgets

Deep energy retrofits can meet the requirements of the Private sector when part of an overall building renovation and repositioning



38% Energy Savings, Guaranteed

Simple Payback Period under 3 Years

Anticipate **LEED Gold** certification

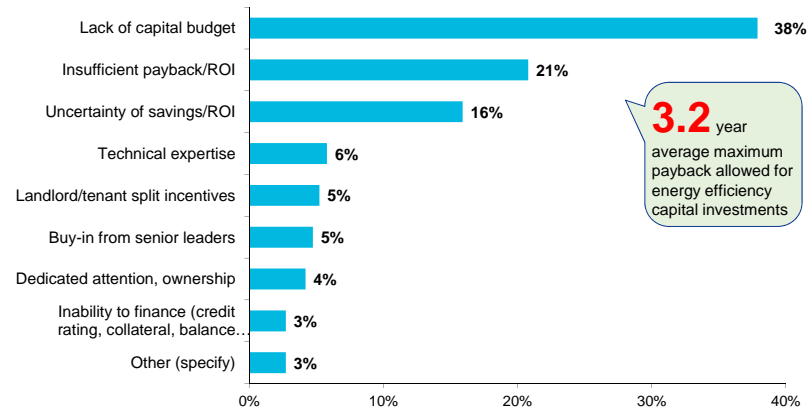
Savings of **\$4.4 Million** Annually

What about the rest of the market , the mass market?



Tapping into a Trillion Dollar Industry

Traditional barriers to private sector investment



3.2 year
average maximum
payback allowed for
energy efficiency
capital investments



Tapping into a Trillion Dollar Industry

We know what it will take to unlock the mass market

- The market needs cost efficient financing, this will require credit enhancement mechanisms:
 - PACE
 - DOE Loan Guarantee
 - Standardized contracts allowing effective aggregation
- The market will embrace financing structures with off-balance sheet potential, shared savings and ESA models where the Financier / ESCO can clearly demonstrate asset control have the greatest potential to achieve this.
- The market requires paybacks in the 3-5 year range. FIM's will need to be limited to rapid payback measures that can be simply Measured and Verified
- Deployment of real time Measurement & Verification and Autonomic Demand Response will allow capture of Utility incentives



Tapping into a Trillion Dollar Industry

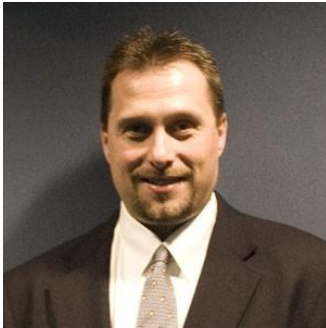
But we need some help

- Legislative support of effective credit enhancement mechanisms:
 - PACE
 - DOE Loan Guarantee
 -

- Support from the accounting standards bodies and the practioners that energy savings are a tangible output of an energy retrofit and that ownership of that output and control of the assets that deliver that output should determine asset ownership.

- With funding partners we, and companies like us, can do the rest





Paul M. Sotkiewicz

Chief Economist

Paul M. Sotkiewicz, Ph.D. Chief Economist in the Market Services Division at the PJM Interconnection, provides analysis and advice with respect to PJM's market design and market performance including demand response mechanisms, scarcity pricing, intermittent and renewable resource integration, market power mitigation strategies, capacity markets and the potential effects of climate change and other environmental policies on PJM's markets.

Currently Dr. Sotkiewicz is leading initiatives to reform scarcity pricing and compensation for demand resources in PJM's energy market. Dr. Sotkiewicz also led the teams that developed the recent whitepapers examining transmission cost allocation and the potential effects of climate change policy on PJM's energy market.

Prior to joining PJM, Dr. Sotkiewicz served as the Director of Energy Studies at the Public Utility Research Center (PURC), University of Florida. At PURC Dr. Sotkiewicz designed and delivered executive education and outreach programs in electric utility regulatory policy and strategy for professionals in government, regulatory agencies, and industry.

From 1998-2000 Dr. Sotkiewicz served as an economist in the Office of Economic Policy and later on the Chief Economic Advisor's staff at the United States Federal Energy Regulatory Commission (FERC) where he conducted research, analysis, and advice on market design issues related to the ISO/RTO markets.

As an Instructor in the department of Economics at the University of Minnesota from 1992-1998 Dr. Sotkiewicz earned the Walter Heller Award for Outstanding Teaching of Economic Principles four times.

Dr. Sotkiewicz received a master of arts (1995) and doctoral degree (2003) in economics from the University of Minnesota, and a bachelor of arts in history and economics (1991) from the University of Florida.

PJM Interconnection ensures the reliability of the high-voltage electric power system serving 51 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM coordinates and directs the operation of the region's transmission grid, which includes 6,038 substations and 56,350 miles of transmission lines; administers a competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion.



Energy Efficiency in PJM's Markets: Opportunities and Trends

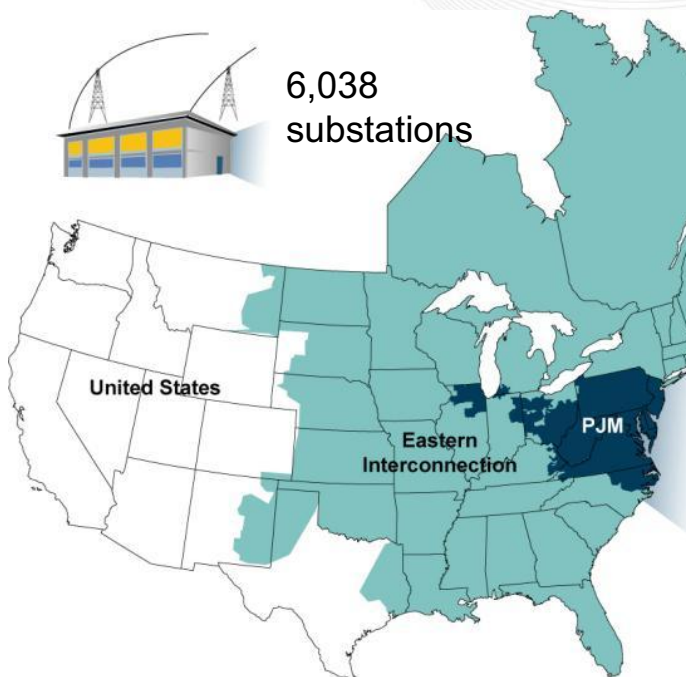
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Paul M. Sotkiewicz, Ph.D.
Chief Economist
PJM Interconnection



PJM as Part of the Eastern Interconnection



KEY STATISTICS

PJM member companies	600+
millions of people served	51
peak load in megawatts	144,644
MW of generating capacity	164,905
miles of transmission lines	56,250
GWh of annual energy	729,000
generation sources	1,310
square miles of territory	164,260
area served	13 states + DC
Internal/external tie lines	250

- 26% of generation in Eastern Interconnection
- 23% of load in Eastern Interconnection
- 19% of transmission assets in Eastern Interconnection

19% of U.S. GDP produced in PJM

- RPM
 - 3-year forward capacity market designed to work in concert with energy market outcomes
 - Up to three additional incremental auctions to transact capacity
 - Supply offers from generation resources are capped at avoidable costs (fixed costs including costs of needed investment) less expected net energy market revenues
 - Offers can include the costs of environmental retrofits
 - Demand resources and energy efficiency are not subject to offer caps
 - Capacity beyond the installed reserve margin is purchased when cost-effective to do so
 - On an RTO-wide basis today PJM has more capacity resources than needed to meet the installed reserve margin
 - **Value of capacity is transparent for all to see!**

EE is only eligible to be a capacity resource for four years...
after which the value is in saving from reduced capacity obligations

Installation Period	Fully Installed for Summer	Eligible Delivery Years
June 2007 – May 2008	2008	2011/2012
June 2008 – May 2009	2009	2011/2012, 2012/13
June 2009 – May 2010	2010	2011/2012, 2012/13, 2013/14
June 2010 – May 2011	2011	2011/2012, 2012/13, 2013/14, 2014/15
June 2011 – May 2012	2012	2012/13, 2013/14, 2014/15, 2015/16

EE is subject to rigorous M&V based on protocols developed in ISO-NE and by DOE.

Delivery Year	MAAC	Rest of PJM RTO
2011/2012	\$110.00	\$110.00
2012/2013	\$133.37	\$16.46
2013/2014	\$226.15	\$27.73

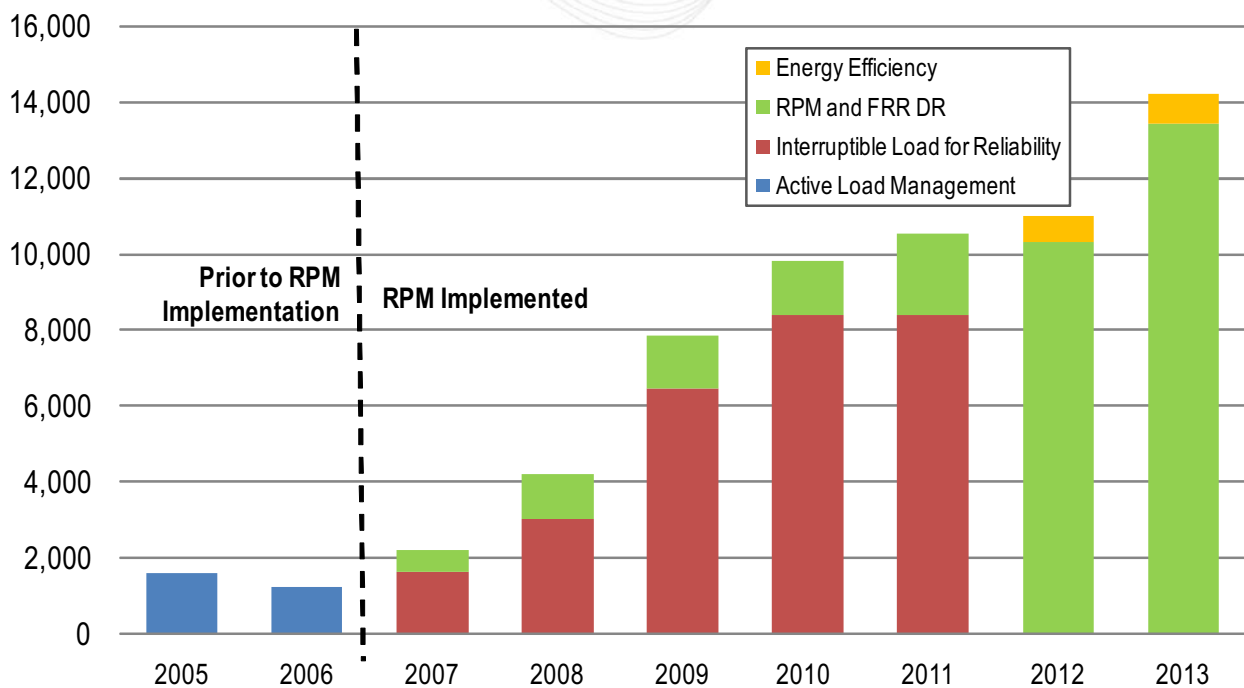
Net Cost of New Entry in MAAC \$227.20/MW-day UCAP

Net Cost of New Entry in RTO \$317.95/MW-day UCAP

Cleared 2754.6 MW UCAP more than needed to just meet the installed reserve margin in 2013/2014

RPM prices and the Net Cost of New Entry indicate new entry of generation capacity resources has not been needed, except in the eastern part of PJM

Offers of Demand Resources and Energy Efficiency as Capacity in PJM by Delivery Year



	GHG Tailoring Rule	Clean Air Transport Rule	HAP MACT	CWA 316(b)	High Electricity Demand Day	Renewable Portfolio Standards
Pollutant or target issue	CO ₂ and other GHG	SO ₂ and NO _x	Mercury and Acid Gases	Cooling water intake structures	Ozone formation from NO _x on hot days	Ensure a certain percentage of renewables
Relevant Dates	1/1/2011	1/1/2012 1/1/2014	2011 rulemaking, 1/1/2015	2011 2015-2018	NJ currently 2015-2018	various
Units impacted	All fossil units	All fossil units Primarily coal	Coal and oil, primarily coal	All existing units	Oil and gas peaking	All units
Standard	BACT case-by-case, state-by-state	Limited cap & trade. Use of FGD and SCR likely	MACT to be defined, likely FGD, ACl, fabric filter	BTA to be defined, likely not once thru cooling	NO _x rate standard. Use of SCR and other controls likely	Mandated percentage of electricity sales from renewables
Impact on Units	Mostly fixed costs	Fixed and variable costs	Mostly fixed costs	Mostly fixed costs	Mostly fixed costs	Reduced net energy market revenues

- Monetized value of energy efficiency is in the RPM Capacity Market
 - Value in the Energy Market is in the form of avoided energy costs
- If EE follows DR in its evolution, then much more capacity will be made available in subsequent auctions
- Other environmental policies and market trends may increase the value of capacity, including that from energy efficiency
 - EPA rulemakings and state policies
 - Renewable portfolio standards
 - Natural gas prices

Technology Panel:
Emergence of New Technology & Its Impact on Financing

Moderator:

Rick Counihan – Vice President Regulatory Affairs
EnerNOC, Inc.

Panelists:

Alex Laskey, President & Founder
OPOWER

David Struhs, Council Chair
C3

Iain Campbell, Vice President & General Manager, Global Energy and WorkPlace Solutions
Building Efficiency
Johnson Controls

Rick Counihan is Vice-President of Regulatory Affairs for EnerNOC, Inc., a leader in demand response and energy management services for the commercial and industrial sectors. In that capacity he is responsible for regulatory relationships in the Western United States and with the Federal government in Washington DC.

Rick has 25 years experience in the energy and utility fields, with employment stints in state, local and federal government, as well as the private sector. Prior to joining EnerNOC Rick was Vice President at the Electricity Innovation Institute (E2I), a nonprofit research institute created to build public/private partnerships to improve the nation's electricity systems and an early research center on the Smart Grid. Rick has also been Vice President at Green Mountain Energy Company, a retail energy service provider selling renewable power. Rick worked in regulatory affairs for five years with Southern California Edison and was a professional staffer for the Energy and Power Subcommittee of the U.S. House of Representatives for six years.

Rick has a Bachelors degree in Economics from Pomona College and a Masters in Public Policy from Harvard University. Rick sits on the boards of the Center for Resource Solutions, the Demand Response and Smart Grid Coalition and the Business Council for Sustainable Energy.



David B. Struhs

David Struhs is part of the founding management team of C3, which provides advanced analytical solutions for optimizing resource efficiency and financial performance.

Mr. Struhs was previously Vice President of Environmental Affairs at International Paper, the world's largest forest products company. He was also Vice President of The Canyon Group, where he provided strategic consulting to leading North American electric and gas utilities.

Mr. Struhs' public service began at the Environmental Protection Agency. He subsequently served as Chief of Staff of the President's Council on Environmental Quality, as Commissioner of the Massachusetts Department of Environmental Protection and as Florida's Environmental Secretary, where he was recognized for helping launch and accelerate restoration of America's Everglades, the largest habitat restoration, flood control and water supply project ever undertaken.

Mr. Struhs has led teams that developed new solutions for optimizing environmental, energy and economic performance, including the nation's first Generation Performance Standard, which rationalized regulation and incentivized efficiency by basing emission standards on the amount of electricity generated by power plants rather than the amount of fuel consumed. He also advised two of the earliest international projects for proving the concept of cost-effectively offsetting electric utility carbon dioxide emissions.

Mr. Struhs has served on the National Electricity Advisory Board and the National Advisory Council on Environmental Technology and Policy. He has advised the Wharton School's Initiative for Global Environmental Leadership, and currently serves on the board of Duke University's Center for Energy, Development, and the Global Environment.

Mr. Struhs holds degrees from Indiana University and Harvard Kennedy School and was a Fulbright Fellow at the University of Nairobi.

Biographies



Iain A. Campbell

*Vice President & General Manager
Global Energy & WorkPlace Solutions
Johnson Controls Inc.*

Iain A. Campbell is responsible for the Global Energy & WorkPlace Solutions businesses within the Building Efficiency division of Johnson Controls Inc. These businesses employ over 20,000 employees with revenues in excess of \$5.0 Billion p.a.

Iain joined Johnson Controls through its acquisition of York International Corporation in December 2005. Iain joined the former York International Corporation in January 1983 holding a number of positions most notably as President of the Americas.

In addition to his current responsibilities Iain acted as the co-leader in developing the Corporations Environmental Sustainability positions and policies.

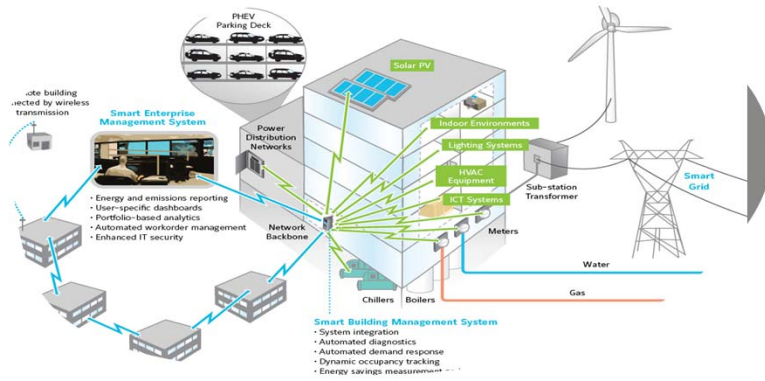
Iain is a frequent speaker and panelist on Energy Efficiency in the built environment and associated funding mechanisms and testified to the US Congress subcommittee on energy & environment regarding complimentary policies for climate legislation. Iain holds a BS in Finance.

About Johnson Controls

Johnson Controls (NYSE: JCI) is a global diversified technology and industrial leader serving customers in more than 150 countries. Our 142,000 employees create quality products, services and solutions to optimize energy and operational efficiencies of buildings; lead-acid automotive batteries and advanced batteries for hybrid and electric vehicles; and interior systems for automobiles. Our commitment to sustainability dates back to our roots in 1885, with the invention of the first electric room thermostat. Through our growth strategies and by increasing market share we are committed to delivering value to shareholders and making our customers successful. For additional information, please visit <http://www.johnsoncontrols.com/>.

Building Energy Technology

Emergence of New Technology & Its Impact on Financing



Iain Campbell
 VP-GM, Global Energy and Workplace Solutions
 03 May 2011



Leveraging Technology to Improve Building Management and Control

Measuring, verifying and reporting energy savings and demand reductions

- | | | |
|-------------------------|---|---|
| Enterprise Level |  | <ul style="list-style-type: none"> • Manage energy usage and demand; aggregate energy/carbon savings |
| Campus Level |  | <ul style="list-style-type: none"> • Optimize energy management, energy storage, distributed generation, PHEV charging, central plant systems across a campus |
| Building Level |  | <ul style="list-style-type: none"> • Integrate control of building systems; optimize energy management, energy storage, distributed generation, central plant systems; connection to smart grid |
| Tenant Level |  | <ul style="list-style-type: none"> • Visualize energy/utility usage; enable tenant-scale demand response; measure and verify tenant level energy savings |



Tenant Energy Management

Tapping into the commercial building market

- Enterprise Level
- Campus Level
- Building Level
- Tenant Level

- **Tenant Energy Management Portal is a key element of the ESB Retrofit**
 - Real-time monitoring of energy use
 - Tenant billing based on actual usage
 - Comparison of performance over time
 - Comparison with peer organizations
 - Advice on energy savings strategies

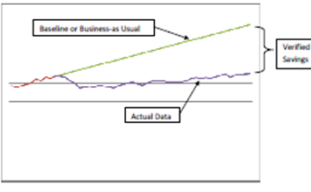


Building Performance Measurement and Verification

Monetizing energy savings and demand reduction


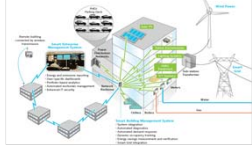


- Enterprise Level
- Campus Level
- Building Level
- Tenant Level

- **Automated measurement and verification (M&V)**
 - Automated baseline determination
 - Automated baseline change detection
 - Subsystem/building level verification
 - Hourly/weekly/monthly tracking
- **Support for Energy Performance Contracting**
 - Improved M&V accuracy and productivity (ASHRAE 14 and IPMVP compliance)
 - Early warning of savings short-falls
- **Financial solution enabler**
 - Virtual "negawatt" meter for selling efficiency services
- **Fault Detection and Diagnostics**



Campus-scale Energy Management


Building systems integration and optimization

Enterprise Level	<ul style="list-style-type: none"> • Systems Integration <ul style="list-style-type: none"> ▪ Renewable energy ▪ Thermal and electrical energy storage ▪ Smart PHEV charging ▪ High performance building components, systems and equipment • Systems Optimization <ul style="list-style-type: none"> ▪ Central plant optimization ▪ Building performance optimization ▪ Demand response • Remote Operations <ul style="list-style-type: none"> ▪ Continuous commissioning and remote system monitoring 	
Campus Level		
Building Level		
Tenant Level		



Virtual “Negawatt” Power Plant

Aggregating large-scale energy efficiency and demand response savings

Enterprise Level	<ul style="list-style-type: none"> • Aggregation of energy efficiency savings and distributed generation <ul style="list-style-type: none"> ▪ Energy efficiency projects ▪ Retro-commissioning projects ▪ Renewable energy generation • Supervisory monitoring and control of distributed demand response <ul style="list-style-type: none"> ▪ Coordination of automated demand response in buildings and campuses ▪ Day ahead/hour ahead dispatch ▪ Dispatchable distributed energy storage ▪ Enterprise-level control 	
Campus Level		
Building Level		
Tenant Level		



Private Equity Investors' Roundtable:
Evaluating Financial Options & Exploring New Financial Mechanisms Using Private Equity

Ben Weinberg, Senior Associate
Element Partners

Tucker Twitmyer, Managing Director
Enertech Capital

Joseph E. Lipscomb, Partner
Arborview Capital LLC

Ben Weinberg
Investment Professional

Ben joined Element in 2008 where he focuses on growth equity and buyout investments in technology and service businesses providing energy and resource efficiency solutions. He has experience in private equity and investment banking with a focus on infrastructure, energy, and telecommunications companies.

Prior to joining Element, he was an Associate in the Investment Banking Division of Citigroup Global Markets, where he worked with companies in the Global Telecoms M&A, Industrials and Latin America M&A advisory groups. Ben has also worked in buy-side equity research with MFS International in London and in infrastructure-focused private equity with Tata Capital in Bombay.

Ben earned his MBA from Harvard Business School and a BA in Economics from Yale University. He is also a CFA charterholder.

Tucker Twitmyer, Managing Director; Tucker has been investing in energy and clean energy companies and projects for 10 years. Tucker covers the alternative energy (solar, wind, and algal fuel), oil and gas, and smart grid and energy efficiency sectors.

Prior to EnerTech, Tucker was a co-founder and Managing Director of Katalyst LLC, a private equity services firm and a Senior Manager at Andersen Consulting, now Accenture. Tucker began his career in finance and IT operations with MultiServ, a provider of material handling and recycling services to the steel industry.

Tucker currently sits on the boards of OwnEnergy and Tangent Energy Solutions. He previously sat on the boards of Enerwise and FuelQuest and was an observer to Comverge and Altela. He is a member of the CleanTech Venture Network Advisory Board and former co-President of Wharton Private Equity Partners.

Tucker received a BA in Political Science from the University of Pennsylvania and an MBA from the Wharton School of the University of Pennsylvania.

Joseph E. Lipscomb, Co-Founder and Partner

Joe is a founder of Arborview Capital, co-heads the investment team and co-manages the operations of the firm. Prior to founding Arborview Capital, he had nine years experience identifying, consummating and managing private equity investments, first as a managing director at the Carlyle Group and then with the Maryland-based firm, Global Environment Fund. He has a long track record of working closely with high quality management teams to build successful, leading companies in high growth sectors. Prior to that, Joe had a nine year career at BT Alex Brown and First Boston, providing financing and advisory services to growth companies.

Joe currently serves on the boards of directors of Lighting Retrofit International, Paragon Airheater Technologies, and Drexel Metals and previously served as a board member of numerous companies, both private and public. He also currently is the Chairman of the Board of the Nature Conservancy-Washington DC/Maryland Chapter, is a trustee and member of the Investment Committee of Kenyon College and is a member of the advisory board of the School of Advanced International Studies at Johns Hopkins University (SAIS). Joe received an undergraduate degree from Kenyon (1987), an MA from SAIS (1991) and an MBA from the Wharton School of the University of Pennsylvania (1992).

Public-Private Partnership Case Study:
Effectively Developing Public-Private Partnerships:
Pitfalls, Triumphs, and Lessons Learned

Moderator:

Liz Robinson, Executive Director
Energy Coordinating Agency

Panelists:

Greg Hale, Senior Finance Policy Specialist, Center for Market Innovation
Natural Resources Defense Council

Katherine Gajewski, Director of Sustainability
City of Philadelphia

Don Gilligan, President
NAESCO

Liz Robinson
Biographical Sketch

Liz Robinson has served as the Executive Director of the Energy Coordinating Agency (ECA) since its inception in 1984. She has over 30 years of experience in energy services, community development, and education. Prior to joining ECA she directed Peoples Emergency Center, an emergency shelter for homeless families and adolescents, taught in inner city schools, and worked as a community organizer. Liz graduated from Goucher College, Phi Beta Kappa with a degree in International Relations. She has an MFA from Wayne State University in Michigan.

ECA is a non-profit organization which helps people conserve energy and works toward a sustainable and equitable energy future for all in the Philadelphia region. ECA and its network of Neighborhood Energy Centers serve more than 40,000 low income households every year, providing a full range of energy conservation, education, home repair and bill payment assistance programs for low income households. ECA increases the energy efficiency and affordability of new construction as a provider in both the ENERGY STAR Homes and LEED for Homes Programs. In partnership with the City of Philadelphia, the Commonwealth of Pennsylvania, federal agencies and many key stakeholders, ECA is working to increase the energy efficiency of all new and existing homes. ECA provides a continuum of green jobs training in weatherization, energy efficiency, and solar thermal technologies at its Knight Green Jobs Training Center, www.ecasavesenergy.org

Greg Hale Bio

Greg Hale is a Senior Financial Policy Specialist at NRDC's Center for Market Innovation, where he is focused on developing a large-scale market for energy efficiency building retrofits. Greg works closely with many financial institutions, governmental entities, real estate owners and managers, energy services and technology companies, and non-profit organizations to help build the energy efficiency retrofit market in the commercial and multi-family residential property sectors, by: (i) making the retrofit business case clear to building owners and occupants; and (ii) developing, promoting and scaling various innovative financing mechanisms for the retrofit marketplace. Greg's work also includes an emphasis on energy efficiency leasing practices. Greg is a founding board member of the New York City Energy Efficiency Corporation, and serves on the steering committee of the PACENow Coalition. Greg is a frequent speaker at national conferences on energy efficiency retrofit and finance issues.

Prior to joining NRDC, Greg spent 17 years in the real estate industry, first as a real estate lawyer at Skadden, Arps, Slate, Meagher & Flom, and then as co-owner and general counsel of Cirque Property L.C., a real estate investment company which acquired, financed, managed and sold a portfolio of properties throughout the western United States. Greg is a graduate of Dartmouth College and The University of Michigan Law School.

KATHERINE LORENE GAJEWSKI **BIO**

Katherine Gajewski is the Director of Sustainability for the City of Philadelphia. She leads the Mayor's Office of Sustainability and is responsible for overseeing the City's sustainability agenda and for implementing *Greenworks Philadelphia*, the City's comprehensive and ambitious sustainability plan.

Previously, Katherine served as Special Assistant to the Chief of Staff in the Mayor's Office. In this role she managed a number of major citywide projects, including the Philly Spring Cleanup, and led a number of the Nutter Administration's community outreach efforts, playing a major role in the public engagement process during the budget crisis. She has served as an advisor to Mayor Nutter, Chief of Staff Clay Armbrister, and senior members of the Nutter Administration on a wide range of policy issues.

Prior to joining the Administration, Katherine worked on the Nutter for Mayor campaign and then played a key role in Nutter's transition, coordinating transition teams and searches for senior personnel.

From 2004-2006, Katherine was the Campaign Coordinator for the Breathe Free Philadelphia Alliance, the coalition that led the successful grassroots campaign to pass smoke-free legislation in Philadelphia. She also worked as an aide in then Councilman Nutter's office in 2006.

Before arriving in Philadelphia, Katherine worked for land conservation organizations in Vermont and Seattle. She holds a B.A. from Wesleyan University.

Donald Gilligan is the President of NAESCO. He is responsible for coordinating NAESCO's federal and state advocacy activities as well as its relationships with other national and regional energy efficiency organizations. Mr. Gilligan has worked in the energy efficiency industry since 1975, as a consultant, entrepreneur, and state government official. He is the author and co-author of a number of reports on energy efficiency and the growth of the ESCO industry, which have been published by NAESCO and the Lawrence Berkeley National Laboratory, and is a graduate of Harvard University.

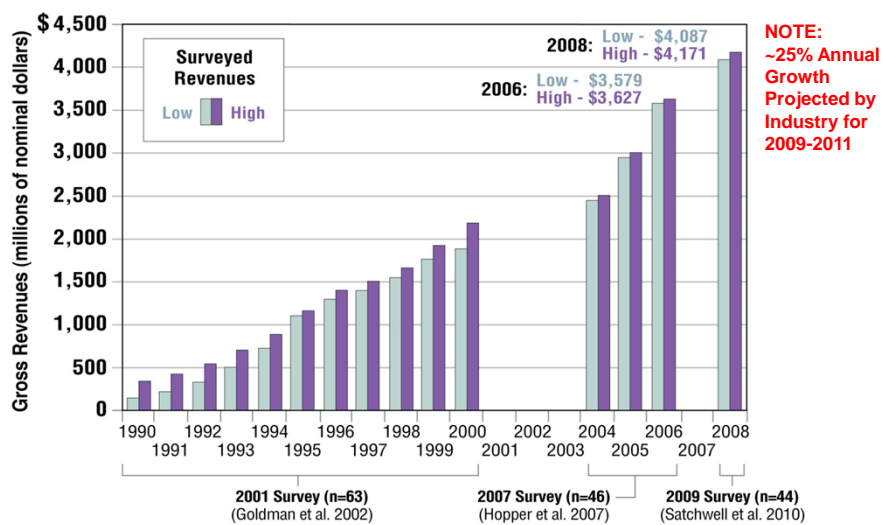
Quick Overview U.S. ESCO Industry

Insights from NAESCO
and the
Lawrence Berkeley National Laboratory



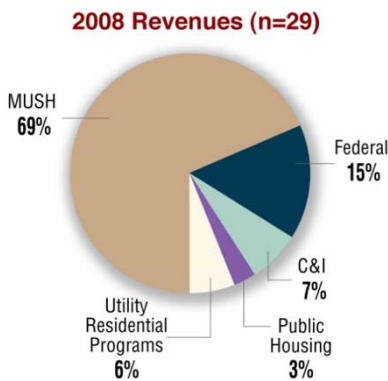
Energy Analysis Department ▪ Electricity Markets and Policy Group

Estimated Size of U.S. ESCO Industry



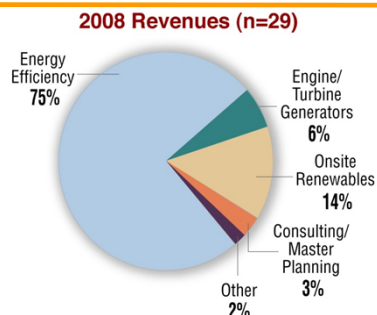
ESCO Market Activity: Industry Revenues by Market Segment

- MUSH markets account for \$2.8 billion in ESCO revenues in 2008; about 69% of total ESCO industry activity



3

ESCO Market Activity: Industry Revenues by Project/Technology Type



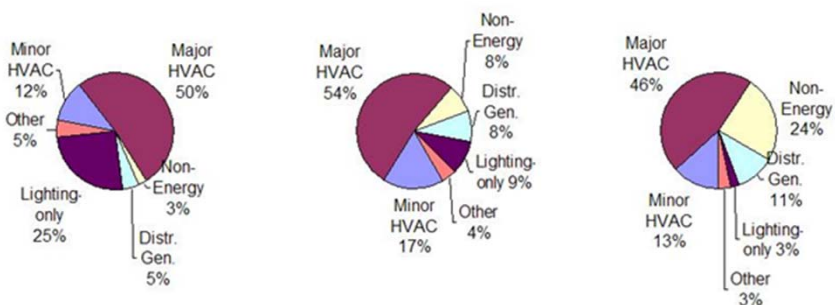
- Onsite renewable generation accounts for 14% of ESCO industry revenues in 2008 (~\$570 million)
- Contributing factors to increased deployment are:
 - ESCOs leveraging publicly-funded incentives
 - bundling renewable energy with energy efficiency improvements to help customers meet various goals (e.g., energy independence, environmental footprint reductions)

4

Market Penetration - EE “Retrofit Strategies”

- We group these technologies into major retrofit strategies (e.g., lighting-only, major HVAC, minor HVAC);
- Share of lighting-only projects is declining over time, but share of comprehensive, capital intense installations (e.g., onsite generation) is increasing over time.

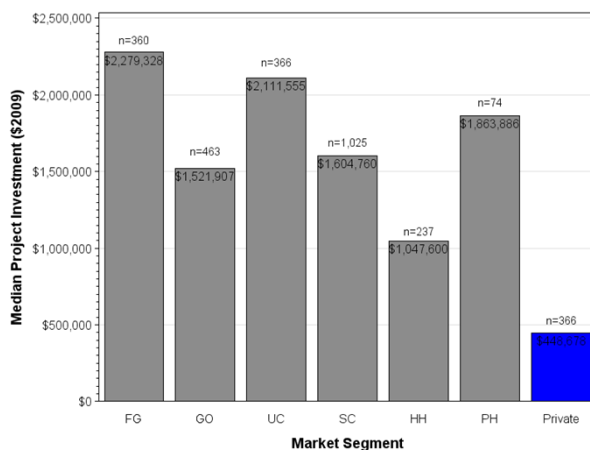
1990-1997 (n=464) 1998-2004 (n=1,467) 2005-2008 (n=656)



5

Project Investment Levels by Market Segment

- Per-project investment levels are typically highest in federal government projects. Overall, public-sector project investment levels are significantly higher than private-sector investment levels.



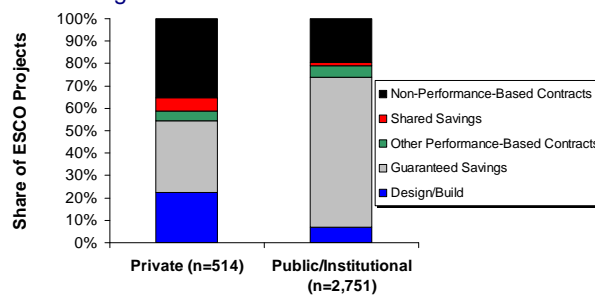
FG = Federal govt.
 GO = State/local govt.
 UC = Universities/colleges
 SC = K-12 schools
 HH = Healthcare
 PH = Public housing

6

“Guaranteed Savings” Contracts Dominate

U.S. ESCOs prefer guaranteed savings for 3 reasons:

- Third party financier is more qualified in credit assessment than ESCOs;
- Guaranteed savings keeps ESCO balance sheet clear of project debt;
- Customer has incentive to resolve ongoing project issues, because they bear ongoing debt service obligations



7

Opportunities for Financiers?

- Pending Federal Regulations may upset the *status quo*
- FASB 13
 - End of operating leases?
 - Who will hold the liability for ESCO projects?
- SEC Dodd-Frank Implementation
 - Registration of ESCOs as Municipal Financial Advisers?
 - Need knowledgeable parties to advise customers on the full range of available project financing

8

For More Information...

- Download reports here:
<http://eetd.lbl.gov/ea/emp/ee-pubs.html>
- LBNL Contacts:
Charles Goldman, CAGoldman@lbl.gov, (510) 486-4637
Peter Larsen, PHLarsen@lbl.gov, (510) 486-5015
Andrew Satchwell, Asatchwell@lbl.gov, (510) 486-6544

9

Questions?

Donald Gilligan
NAESCO
dgilligan@naesco.org
978-740-8820

10

A Two-Part Private Debt Discussion:

**Part I: Exploring the Effectiveness of Private Capital Financing Options through Revolving
Loans and Loan-Loss Reserves**

Jeff J. Pitkin, Treasurer

New York State Energy Research and Development Authority (NYSERDA)

Jeff Pitkin is Treasurer of the New York State Energy Research and Development Authority (NYSERDA), a position he has held since 2001, and served as Controller and Assistant Treasurer since 1991. He is responsible for accounting and financial reporting, budgeting, contract management, and information technology, and the Authority's bond financing program, which has issued \$3.6 billion in tax-exempt bonds to finance qualifying investor-owned utility capital expenditures. He is currently leading the effort to create financing structures to support financing for energy efficiency improvements for residential, small business/not-for-profit and multifamily buildings under the Green Jobs-Green New York program, using funding provided through the authorizing legislation, federal grant funding, and funds anticipated to be leveraged through capital markets financing using Qualified Energy Conservation Bonds and other structures. Previously, Mr. Pitkin was Controller for Trans World Music Corporation and was a Senior Accountant for Ernst & Young. He is a certified public accountant, and received a BBA in Accounting from Siena College.

Email contact information: jjp@nyserda.org

ACEEE Energy Efficiency Financing Forum

Exploring the Effectiveness of Private Capital Financing Options through Revolving Loans and Loan-Loss Reserves

May 3, 2011

Jeff Pitkin, Treasurer
New York State Energy Research and Development Authority



Green Jobs Green New York Act of 2009

(enacted Oct 2009)

The Act directs NYSEERDA to:

- Establish a revolving loan fund and innovative financing mechanisms to provide loans to finance energy efficiency improvements for:
 - Residential 1-4 family dwelling (up to \$13,000)
 - Multifamily buildings (program limit \$5,000/unit or \$500,000 per building)
 - Small commercial (<101 employees) and not-for-profit structures (up to \$26,000)
- Solicit constituency-based organizations to connect community members to the program
- Establish standards for energy audits and energy retrofit contractors
- Establish a schedule of fees for residential energy audits
 - Waived for households with income less than two times county median income
 - Prorated fee if income between two and four times county median
 - Consumer pays full fee if over four times county median
- Provide employment and training services to support the program.



GJGNY Funding

From Regional Greenhouse Gas Initiative (RGGI)
auction allowance proceeds

Workforce Development	\$8,000,000
Outreach and Marketing	\$10,000,000
Energy Audits and Implementation Costs	\$12,596,000
- Residential (1-4 family)	\$4,400,000
- Multifamily	<u>\$10,400,000</u>
- Small Commercial/NFP	\$27,396,000
Financing:	
- Residential (1-4 family)	\$26,692,533
- Multifamily	\$11,292,550
- Small Commercial/NFP	<u>\$13,274,917</u>
	\$51,260,000
Program Administration & NYS Fee	\$9,744,000
Program Evaluation	\$5,600,000
Total	\$112,000,000

nyserda
Energy Innovation Solutions

Additional GJGNY Funding

US DOE EECBG Better Buildings (Retrofit Rampup) Grant

- \$40M award, largest in nation
- Partnership award
 - \$21.4M NYC Financing Program (large commercial)
 - \$5M Long Island Green Homes consortium
 - \$13.6M NYSERDA - Statewide Finance Program (integrated with GJGNY)
- Grant allows use of 50% of funding for loan loss/debt service reserve
- 60% of State funding (\$13.6M) must be subgranted to small local governments not EECBG formula eligible

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Energy Innovation Solutions

NYSERDA Better Buildings Grant Funding

\$3M	Subgrant to Long Island Green Communities 7 Towns – outreach
\$2M	Subgrant to Long Island Green Communities used as loan loss/debt service reserve
\$1.2M	Subgrant – Town of Bedford/Westchester County Communities – pilot secondary lien PACE financing
\$7.0M	Competitive subgrants to small local governments (proposals due 5/22) - One for each of 9 economic development regions, for either: - a) Serve as GJGNY host community for region – use up to 10% for outreach and re-grant the balance to the GJGNY fund for loan loss reserve and revolving loans - b) Administer an energy efficiency financing program for the region
\$1.7M	Subsidies for free energy audits for small commercial/NFP through GJGNY program
\$1.98M	Loan loss/debt service reserve for GJGNY program
\$400k	Utility billing system upgrades for pilot on-bill recovery financing with National Grid
\$1.36M	Program Administration



Strategy: Multiple Forms of Financing

1. Property-assessment financing

- Original approach: create statewide aggregation working through participating municipalities under Municipal Sustainable Energy Loan Program legislation
- On hold due to FHFA/OCC notices



2. On-bill recovery financing

- Pilot program with National Grid in upstate gas market
- Pursuing legislation to authorize statewide: on-meter tariff obligation; shutoff provisions for failure to pay



3. Direct loans

- A. Unsecured residential loans
- B. Participating loans – small commercial/NFP Multifamily
- C. PowerSaver secured loans



Multiple forms of financing allow consumer to select method that best fits their needs and will inform on consumer receptivity.



Program Guidelines

Residential

- Based on existing Home Performance with ENERGY STAR® program
- Comprehensive energy audits and retrofits completed by BPI-accredited contractors
- 171 actively participating contractors
- Finance cost effective prequalified measures – Total Savings to Investment Ratio (SIR) > 1
- Extensive program QA/QC provides consumer safeguards
 - Independent review and approval of work scopes pre-implementation
 - Independent post-implementation inspection of 15% of projects
 - Dispute resolution process; contractor debarment
- 2010: 6,123 completed retrofits; 35,784 since program inception
 - Expect significant increase with GJGNY CBO outreach and marketing
- Average retrofit cost: \$7,700; average annual savings: \$660

nyserda
Energy Innovation Solutions

Program Guidelines

Residential

- Assisted Home Performance with ENERGY STAR® Program provides 50% cost subsidy to income-eligible participants (80% of State/Area Median Income)
- Contractors receive 5% incentive for comprehensive work scopes
- Consumers may also receive incentives available from NYSERDA (10% of cost) or utilities for certain measures, but all incentives must be used to reduce the amount financed

nyserda
Energy Innovation Solutions

Program Guidelines

Small Commercial/NFP

- Energy audits/studies delivered through existing network of Flexible Technical Assistance (FlexTech) contractors and Business Partner contractors.
 - Full walkthrough audit
 - Technology/equipment specific audit
- Free audits if energy demand less than 100kW
- Prequalified measures; custom measures can also be included with approval
- Installation of measures by certified contractors where third-party certifications exist; expanding pool of certified contractors

nyserda
Energy Innovation Solutions

Program Guidelines

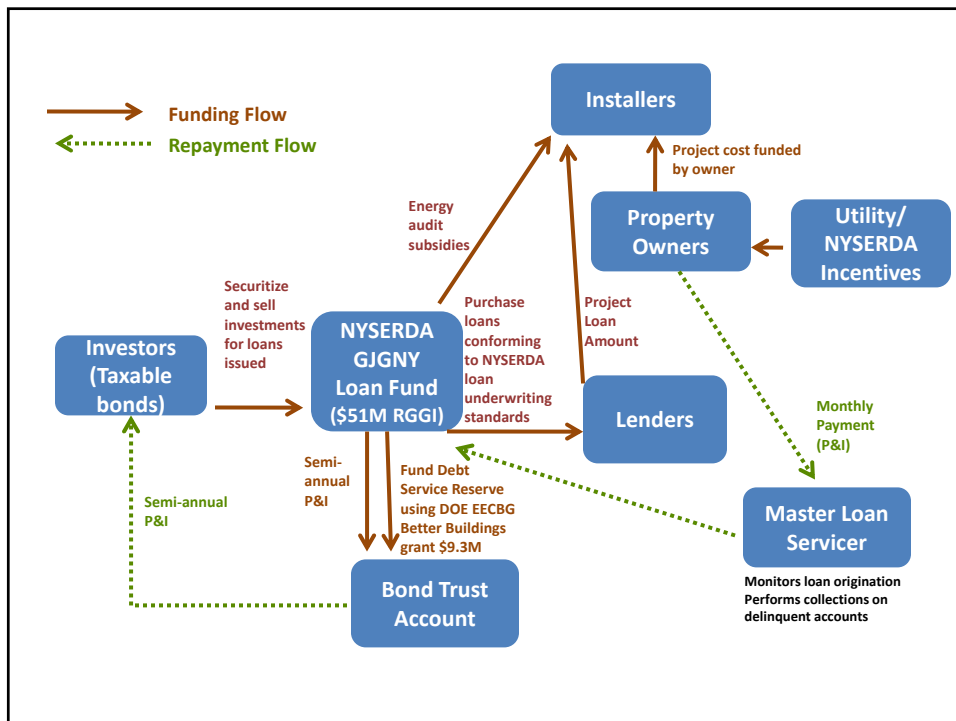
Multifamily

- Administered through existing Multifamily Performance Program (MPP)
- Network of approved MPP Partner energy service contractors
- Implementation contractor and QA contractor provide oversight of MPP Partners
- Energy Audit develops Energy Reduction Plan
- Can finance cost-effective measures with SIR > 1

nyserda
Energy Innovation Solutions

Financing Approach Residential

- Financing launched November 15, 2010
- Loans originated through participating financial institutions
 - Launched using single originator, Wisconsin Energy Conservation Corp d/b/a Energy Finance Solutions - current FNMA loan originator
 - Open up to multiple lenders in 2011
- Loans originated using NYSERDA loan underwriting standards
- Lender closes on loan and then loan purchased by NYSERDA using \$26M RGGI program funds
- Lender paid \$175 origination fee by NYSERDA; can charge additional fee (financeable) to borrower if needed to cover costs
- Loans serviced by NYSERDA Master loan servicer, Concord Servicing Corporation)
 - Experienced 3rd-party loan servicer with over 650,000 accounts managed
 - Monitors loan origination to ensure conformance with standards, and services the loans



Loan Underwriting Standards

Two Loan Tiers:

- Tier1 loans: loans meet standards that can be financed in capital markets (FNMA standards)
 - These loans will be aggregated and financed through capital markets
- Tier2 loans: loans originated under alternate criteria (utility bill paying history) and slightly relaxed debt-to-income criteria
 - Initially issued as revolving loan fund
 - Monitor loan performance over time and added to pool of loans financed through capital markets



Green Jobs-Green New York Program Residential Loan Underwriting Standards

"Tier 1"	"Tier 2"
Credit score 640 or higher (680 or higher if self-employed for 2yrs or more; 720 or higher if self-employed less than 2yrs)	<ul style="list-style-type: none"> • Utility bill payments must be current for two consecutive months during each of the last two years; • No utility or mortgage payments more than 60 days late in the last two years; • Current on mortgage payments for the last year
Debt-to-income ratio < 50%	Debt-to-income ratio < 55%
No bankruptcy within last 7 yrs	
No outstanding collections, judgments or tax liens > \$2,500	



Loan Terms

- Unsecured loan
- 5,10,15 yr loan term
 - Term can't exceed life of measures
- ½% interest rate reduction for automated payment – improves payment performance
- Interest Rate 3.99%/3.49% for loans supported by QECB bonds
- After QECB bond volume cap exhausted, expected rate of 5.99%/5.49%



Capital Markets Financing Approach

- Aggregate loans and issue bonds using master trust structure
- Bonds supported by loan repayments and loan loss/debt service reserve (\$9.3M from DOE EECBG Better Buildings grant)
- Proceeds used to fund additional program loans
- First issuance \$25M (2011)
- Subsequent issuances will increase scale
- Anticipate A rating; ~5.7% (300 bps/3% over Treasury); ~10-12yr term
- Issue as Qualified Energy Conservation Bonds



Qualified Energy Conservation Bonds

- Tax subsidy bonds - ~70% federal interest subsidy
- Bond volume cap authorization under ARRA –
 - \$86.7M allocated to NYC
 - \$95.4M to 38 large munis (varying amounts \$600k-\$7.8M)
 - \$20.1M State purposes
- No expiration on cap - ARRA authorized – use it or lose it
- Specific eligible purposes – public facility energy efficiency
- Green Community Program purpose allows proceeds to fund loans for energy efficiency – including private homes/facilities
- State authorized \$20.1M allocation to be used
- Several local governments have reallocated their allocation back to the State – current total bond cap of \$28M
- Net Interest Cost after federal subsidy ~2%
- Interest rate on loans set at 3.99%/3.49% to recover costs of loan origination, servicing, and financing costs without triggering arbitrage rebate



Financing Approach

Small Commercial/NFP and Multifamily

- Loans originated through participating financial institutions
- Lender originates loan using its normal credit standards
- NYSERDA participates in loan by providing 50% of loan capital at no interest to lender
- Lender offers loan to borrower at 50% of normal rate
- Lender pays NYSERDA/Master Loan Servicer its prorata share of interest payments received
- NYSERDA and Lender share pro-rata on loan defaults
- Expected launch 2nd Qtr 2011



PowerSaver Loan Pilot

- Selected in partnership with Energy Finance Solutions to offer financing as part of 2yr HUD pilot program
- 90% federally-insured loan for residential owner-occupied energy efficiency improvements
- Will integrate with GJGNY - same program standards
- Loan will be offered on secured basis (mortgage with not less than secondary lien) to complement current unsecured loan
- Loan limit \$13,000 based on GJGNY funding (HUD allows up to \$25,000)
- Loan underwriting standards
 - FICO score 660+ (compared to GJGNY 640)
 - Debt:income < 45% (compared to GJGNY 50%/55%)
 - Property LTV up to 100%
- HUD grant to EFS to cover added costs of origination
- Offered at .5% reduction to unsecured loan – 3.49%/2.99%
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Progress to Date

(As of 4/17/2011, Since 11/15/2010 Launch)

- 997 applications for financing received
 - 588 (59%) Pre-approved; 409 denied
- 126 loans approved awaiting closing (\$967,000)
- 188 loans closed/purchased (\$1,519,000)
 - Average loan \$8,080
 - Average term 11.5 yrs
 - Weighted average coupon – 3.64% (72% of loans select automatic payment 3.49% rate)
 - Weighted average FICO score – 747
 - All accounts current
- 16 Tier 2 loans approved; 3 closed/purchased



Questions

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Private Debt Part II:
Qualified Energy Conservation Bonds & Other Tax-Credit Financing Tools

Elizabeth Bellis, Counsel & Tax Attorney
Energy Programs Consortium

Linda Schakel, Partner
Ballard Spahr

Bill Nesmith, Senior Energy Advisor
NASEO

Elizabeth Bellis directs the qualified energy conservation bond program at Energy Programs Consortium (EPC) in conjunction with the National Association of State Energy Officials (NASEO). She is also managing the legal and related program design work to create a secondary market for residential energy efficiency loans (the "WHEEL" program) for Energy Programs Consortium. Prior to joining EPC, Elizabeth was an associate in the tax department at Debevoise & Plimpton LLP in New York. She holds a J.D. from Harvard Law School.

QECCB Issuance Trends & Data

Elizabeth Bellis
Energy Programs Consortium
May 3, 2011

IRS Circular 230 Disclosure: This presentation was not intended or written to be used, and it cannot be used by any taxpayer, for the purpose of avoiding penalties that may be imposed on the taxpayer under U.S. Federal tax law.



Energy Programs Consortium

- The Energy Programs Consortium (EPC) is a joint venture of the four national associations that represent state energy officials: NASCSP, NASEO, NARUC & NEADA.
- The purpose of the QECCB program is to assist government officials interested in issuing bonds, facilitate partnerships between issuers and the private sector, and to gather and analyze information about issuances.



QECB Data Sources

- There is currently no official compilation of QECB issuances and uses available.
- IRS requires issuers to submit a Form 8038-TC regarding each issuance but considers this data confidential taxpayer information that cannot be shared.
- The EPC QECB program has gathered data available from EMMA, MSRB, Bloomberg, Wells Fargo, issuer websites and interviews, to provide some sense of QECB issuances thus far.



Overview of Issuances to Date

- At least 40 projects have been funded with QECBs in 15 states to date.
- The first known issuance was in February 2010.
- Issuance sizes range from as small as \$1m (numerous) to as large as \$131m.
- Two states, Kansas and Kentucky, have already issued bonds in an amount close to or equal to their volume cap allocations.
- California, Colorado, Connecticut, Illinois, North Dakota and Washington have issued significant portions of their volume cap allocations but have millions in allocation remaining.



Energy Efficiency QECBs

- The most common project type so far (60-65% of known issuances by dollar amount and 90-95% of known issuances by number of issuances) is energy efficiency improvements to publicly-owned buildings.
- Many of the energy efficiency issuances are performed by energy services companies that guarantee energy savings sufficient to meet the QECB eligibility guideline and, in some cases, pay the debt service on the QECBs.
- Questions remain about the method of calculating energy savings for purposes of the eligibility requirement, so issuers may require guaranteed savings in excess of the 20% mark.



The Future of QECBs

- Wells Fargo data on public placements indicates issuances may have slowed in recent months.
- Many states and jurisdictions have large unused allocations.
- A number of potential issuers are exploring their options for issuing these bonds and may be looking to place them in the next year.
- EPC is not aware of any issuance audits thus far, or any revocation of Treasury subsidy payments.
- As much as \$2.7 billion of funding may remain out of the original \$3.2 billion allocation.





Linda B. Schakel
Partner

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FAX 202.661.2299
WASHINGTON, DC

- PRACTICE AREAS

Public Finance, Exempt Organizations, Higher Education, Housing, Municipal Recovery, Tax, Tax Credits

- BACKGROUND & EXPERIENCE

Linda B. Schakel is a partner in the Public Finance Department and a member of the Tax, Tax Credits, Exempt Organizations, Housing, and Higher Education Groups, as well as the Municipal Recovery Initiative.

Ms. Schakel served as an attorney adviser in the Office of Tax Policy of the U.S. Treasury (May 1995 to August 1997) after practicing with Ballard Spahr for nine years. At the Treasury Department, she had primary responsibility for tax legislative and regulatory projects in the areas of tax-exempt bonds, Low Income Housing Tax Credits, empowerment zones and enterprise communities, work-opportunity tax credits, and welfare-to-work tax credits. Ms. Schakel returned to Ballard Spahr after her work with the Treasury Department. Before law school, she taught gifted elementary-school students and teachers of gifted students at the University of South Florida and

several universities in the Washington, D.C., area.

Ms. Schakel has done numerous tax-exempt bond financings for 501(c)(3) organizations, including charter schools, colleges and universities, hospitals, continuing-care facilities, independent schools, museums, and cultural institutions. She has served as tax counsel for empowerment zone financings in the District of Columbia and other jurisdictions. Most recently, Ms. Schakel has been active in the New Markets Tax Credit (NMTC) Program as a natural extension of her work with empowerment zone tax incentives. She has given speeches and published papers on NMTC and has served as counsel to various participants in these transactions.

Representative Matters

- Assisted in the structuring of the bond financings for the Wheeler Creek Estates HOPE VI project, Washington, D.C.
- Assisted in the structuring of the bond financings for the Henson Ridge HOPE VI project, Washington, D.C.
- Assisted in the structuring of the bond financings for the Victory Street Apartments mixed-finance project, Houston
- Assisted the Housing Authority of Portland, Oregon, in structuring a New Markets Tax Credit transaction to finance a new public school and community center

- PROFESSIONAL HIGHLIGHTS

Professional Activities

American Bar Association

District of Columbia Bar Association

Maryland Bar Association

National Association of Bond Lawyers, past President

Recognition & Accomplishments

The Best Lawyers in America, public finance law, 2008-2011

Recipient, National Association of Bond Lawyers' Frederick O. Kiel Distinguished Service Award, Fall 2010, for her long record of service to NABL, including serving as its President, a faculty member, and panelist on many seminars, and authoring the tax column in *The Bond Lawyer*

Publications

Co-author, "Build America Bonds: A New Tool to Finance Government-Owned Affordable and Workforce Housing," *Tax Credit Advisor*, August 2009

"Washington Update (2000 Tax Legislation)," *Municipal Finance Journal*, Summer 2001

"Tax Law Developments: Guidance on the New Markets Tax Credit," *Municipal Finance Journal*, Spring 2002

Speaking Engagements

"Tax Credits and Other Tax Benefits – New Markets Tax Credit," Tax and Securities Institute, National Association of Bond Lawyers, February 20, 2004

"Linking Local Collaborations to Venture Capital: New Markets Tax Credits," Tax Incentives Workshop, U.S. Department of Housing and Urban Development, April, June, October, and November 2003

"The Pennsylvania Downtown Tool Kit – Using Tax Credits Effectively," Pennsylvania League of Cities and Municipalities, June 26, 2003

"Using New Markets Tax Credits Effectively," Annual Conference, Community Action Program Legal Services, Inc. (CAPLAW), June 12, 2003

"New Markets Tax Credit: An Opportunity for your CDFI," Coalition of Community Development Financial Institutions National Institute, January 24, 2002

"New Markets Tax Credits," 2001 National Community Capital Association Conference, October 25, 2001

"Preparing Your Bank to Raise Capital with NMTC: Legal Aspects and Documentation," National Community Investment Fund Network Conference, May 29, 2001

Board Memberships

National Association of Bond Lawyers

- EDUCATION

Georgetown University Law Center (J.D. 1986, *cum laude*)

University of South Florida (M.S. 1976; Ph.D. 1984)

Iowa State University (B.S. 1970, with honors and distinction)

- ADMISSIONS

District of Columbia

Maryland

Qualified Energy Conservation Bonds & Other Tax-Credit Financing Tools

Presentation for:

Energy Efficiency Finance Forum

May 3, 2011

Linda B. Schakel
Ballard Spahr LLP
schakel@ballardspahr.com
202.661.2228

DMEast 13651893 v1

General Provisions for Tax Credit Bonds

- Tax Credit Bonds Are Taxable Bonds
 - Broader market than tax-exempt bonds - pension funds, 501(c)(3) foundations, foreign taxpayers
 - More attractive for bank placements because not subject to interest expense disallowance
 - No longer required to sell only to banks and insurance companies (old rule for Qualified Zone Academy Bonds (QZABs))
- Two alternate methods for delivery of Federal Subsidy
 - Tax credit to holder or
 - Direct subsidy payment to issuer

Categories of Tax Credit Bonds

- Qualified Energy Conservation Bonds
- New Clean Renewable Energy Bonds
- Qualified School Construction Bonds
- Qualified Zone Academy Bonds
- All under different volume cap limitations and allocation methods

Holder Receives Tax Credit

- Bondholder receives return as a quarterly credit against its federal tax liability
- Tax credit = principal x credit rate
- Bondholder required to treat credit amount as taxable interest also on tax return
- Bondholder can carry unused credit forward without time limit

Credit Stripping

- Tax credits may be stripped from the tax credit bonds, permitting tax credit and principal strip to be held by different parties
- IRS guidance on stripping rules released in 2010 with various IRS filings to protect against fraud and underreporting

Direct Subsidy Payment Bonds

- Issuer pays taxable interest to holder, files form with IRS to receive direct subsidy payment
- The subsidy is the lesser of the interest that would be payable at the tax credit rate or interest actually payable on the tax credit bonds
- **Example:** If the tax credit rate applicable to an issue is 5%, and the actual interest on the bond is paid at 6%, then the subsidy will be based on the 5% credit rate; if the actual interest rate had been 4.5%, then the subsidy is paid at 4.5%
- Subsidy payment is not treated as federal guarantee and issuer must file for subsidy on each interest payment date
- Direct subsidy payment bonds cannot be sold with more than de minimis premium

Credit Rates

- Credit rate established by US Treasury and published daily
- Credit rate determined on date bonds are sold
- Credit rate ranged between 4.69% to 5.79% over past year
- Depending on creditworthiness of issuer or transaction, for the credit alternative, issuers may have to pay supplemental interest coupon or bond may be sold at original issue discount if tax credit alone is insufficient

Bio for WILLIAM NESMITH

William Nesmith is currently the Senior Energy Advisor for the National Association of State Energy Officials (NASEO) located in Alexandria, Virginia. In this position William provides expert advice and consultation to NASEO on a variety of energy efficiency, renewable energy, sustainable development, and international programs.

William's background includes a Master of Science degree and over twenty-five years experience in the field of energy efficiency and renewable energy. He has worked as a land use planner for local government, been a program manager with state government, served as a public utilities specialist with the US Department of Energy, Bonneville Power Administration, and served as the Assistant Director for Energy Efficiency at the Oregon Department of Energy.

Career highlights include:

- Received the Energy Advocate of the Year award from the Northwest Energy Efficiency Alliance, in October 2007.
- Serve as special advisor to the City of Shanghai, China, for Sustainable Development and Energy Conservation from 2003 to present. Recipient of City of Shanghai's highest civilian award, the "Silver Magnolia", in 2005.
- Served as Vice Chair of the National Association of State Energy Officials (NASEO), participated on the Executive Committee and served as Chair of Industrial Committee, from 2005 to 2008.
- Serve as Secretary on the Board of Directors, Earth Advantage Program, a non-profit entity promoting sustainable housing, from 2005 to present.
- Served on the Board of Directors, Energy Trust of Oregon, Oregon's largest non-profit entity that distributes Oregon's energy related public benefits charge, from 2003 to 2008.
- Served on the Board of Directors, US Department of Energy, State Energy Advisory Board, from 2002 to 2006.
- Served as Special Assistant to Oregon Governor Goldschmidt's Senior Advisor on Natural Resources in 1999.
- Recipient of Oregon State Management Association's "Manager of the Year" award, 1992.



ACEEE 5th Annual Energy Efficiency Finance Forum

Presentation on Oregon Business Energy Tax Credit Program

Philadelphia, PA
May 3-4, 2011

William Nesmith, Senior Energy Advisor
National Association of State Energy Officials

Oregon's Business Energy Tax Credit

Encourages investments in:

- Energy Efficiency
- Renewable energy
- Transportation
- Rental dwelling weatherization
- Sustainable buildings
- Recycling
- Renewable energy manufacturing

Objectives of the Business Energy Tax Credit

To cut energy use and save money

To reduce pollution and the production of
greenhouse gases, especially CO₂

To promote economic growth with a smaller
environmental footprint

NASEO International Program

Business Energy Tax Credit

Tax credit is 35% of approved project costs

Tax credit is taken over a 5-year period

10% the first two years

5% the next three years

Revenue impact spread over 5 years

Certain renewable energy and
manufacturing projects can receive a 50%
credit

NASEO International Program

Business Energy Tax Credit

Project Eligibility criteria

Energy projects must be 10% more efficient than energy code or standard industry practice

Lighting projects must be 25% more efficient

Projects must have a simple payback of 1 to 15 years (Solar projects – 30 year payback)

NASEO International Program

Business Energy Tax Credit

Applicant eligibility

Project owners:

Business

Rental property owner

Non-profit

Public entity

Pass through Partners

Individuals

Businesses

NASEO International Program

Business Energy Tax Credit Facts

Began in 1980

More than 11,000 tax
credits issued*

Total project costs of about \$848.5 million*

Projects saved and generated about 2% of
Oregon's total energy use in 2001

NASEO International Program

Business Energy Tax Credit Facts

An estimated 80% of projects would not
have been completed without the program.

Completed projects lead to decreased
energy use.

Investments in projects stimulate the economy.

NASEO International Program

Business Energy Tax Application Process

- 1) The project owner completes a project-specific application form and pays the review fee **BEFORE** project start-up
- 2) Department of Energy staff reviews the application and issues a preliminary certification if project meets requirements

NASEO International Program

Business Energy Tax Credit Application Process

- 3) The project owner begins the project. When the project is complete, the project owner files for final certification. The owner must include receipts, invoices or a CPA letter to verify final eligible costs of the project.

NASEO International Program

Business Energy Tax Credit Application Process

- 4) Department of Energy staff reviews the final application form and issues a tax credit certificate for 35 percent of the final eligible costs
- 5) Applicant claims a dollar for dollar credit against state taxes owed.

NASEO International Program

Business Energy Tax Credit Quality Control

Department of Energy conducts post-installation verification site visits on a sampling of installed projects.

Site visits are targeted based on final project cost. Cost categories are established and a percentage of projects are randomly selected for verification.

Selected projects are compared to ensure a variety in system type, business classification, and geographic location

NASEO International Program

Business Energy Tax Credit

Special Provisions

Monetization

LEED Buildings

NASEO International Program

Business Energy Tax Credit Monetization

The pass-through option allows a project owner to transfer their tax credit eligibility to a business or individual with a tax liability in exchange for a lump-sum payment

For a 5 year, 35% tax credit the present value lump sum pay is 25% -- effectively converting the tax credit to a grant

NASEO International Program

Business Energy Tax Credit for High Performance Buildings

Tax credit based on LEED® certification - existing, recognized national program

LEED easily adapted to tax credit and requires minimal staff time

Building must receive silver, gold or platinum rating and minimum 1 energy point, 1 commissioning point

NASEO International Program

Business Energy Tax Credit

Final Thoughts

Investment Credit

Must have limits to optimize effectiveness

NASEO International Program

Business Energy Tax Credit

Oregon's tax credit is based on the project owner's investment in an energy project.

The investment or eligible costs are the incremental costs of the system or equipment that exceed code or standard practice.

The project owner must show how much energy will be saved from the system/equipment.

The project is not based on PERFORMANCE due to uncontrolled site specific variables

NASEO International Program

Business Energy Tax Credit

Oregon's tax credit is currently in danger of being allowed to expire because of overly generous credits made available for manufacturing and generating renewable resource projects, primarily wind projects.

This has created a situation where the revenue impacts have been far greater than projected and are having a significant impact on the state's general fund budget.

NASEO International Program

Business Energy Tax Credit

William P. Nesmith

503.580.4499

wnesmith@naseo.org

www.naseo.org

NASEO International Program

Creating Proper Secondary Market Options for Energy Efficiency Loans

Jeff J. Pitkin, Treasurer

New York State Energy Research and Development Authority (NYSERDA)

Keith Welks, Deputy Treasurer for Fiscal Operations & Senior Policy Advisor

Pennsylvania Treasury Department

Mark Wolfe, Executive Director

Energy Programs Consortium

Jeff Pitkin is Treasurer of the New York State Energy Research and Development Authority (NYSERDA), a position he has held since 2001, and served as Controller and Assistant Treasurer since 1991. He is responsible for accounting and financial reporting, budgeting, contract management, and information technology, and the Authority's bond financing program, which has issued \$3.6 billion in tax-exempt bonds to finance qualifying investor-owned utility capital expenditures. He is currently leading the effort to create financing structures to support financing for energy efficiency improvements for residential, small business/not-for-profit and multifamily buildings under the Green Jobs-Green New York program, using funding provided through the authorizing legislation, federal grant funding, and funds anticipated to be leveraged through capital markets financing using Qualified Energy Conservation Bonds and other structures. Previously, Mr. Pitkin was Controller for Trans World Music Corporation and was a Senior Accountant for Ernst & Young. He is a certified public accountant, and received a BBA in Accounting from Siena College.

Email contact information: jjp@nyserda.org

ACEEE Energy Efficiency Financing Forum
**Creating Proper Secondary Market
Options for Energy Efficiency Loans**
May 3, 2011

Jeff Pitkin, Treasurer
New York State Energy Research and Development Authority



Green Jobs Green New York Program

- Created by legislation enacted in October 2009
- Established revolving loan fund and innovative financing mechanisms to provide loans to finance energy efficiency improvements for:
 - Residential 1-4 family dwelling (up to \$13,000)
 - Multifamily buildings (program limit \$5,000/unit or \$500,000 per building)
 - Small commercial (<101 employees) and not-for-profit structures (up to \$26,000)
- Solicit constituency-based organizations to connect community members to the program
- Free/reduced cost residential energy audits
 - Waived for households with income less than two times county median income
 - Prorated fee if income between two and four times county median
 - Consumer pays full fee if over four times county median
- Provide employment and training services to support the program.



GJGNY Funding

Funded with \$112 million from Regional Greenhouse Gas Initiative (RGGI) auction allowance proceeds

\$51.26 million used to fund revolving loan fund:

- \$26.7 million residential
- \$11.3 million multifamily
- \$13.3 million small commercial/NFP

\$40 million US DOE EECBG Better Buildings Grant

- \$21.4M NYC Financing Program (large commercial)
- \$5M Long Island Green Homes consortium
 - \$2 million used for GJGNY loan loss/debt service reserve
- \$13.6M NYSERDA - Statewide Finance Program
 - Up to 50% may be used for loan loss/debt service reserve

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Energy Innovation Solutions

Strategy: Multiple Forms of Financing

1. Property-assessment financing

- Original approach: create statewide aggregation working through participating municipalities under Municipal Sustainable Energy Loan Program legislation
- On hold due to FHFA/OCC notices



2. On-bill recovery financing

- Pilot program with National Grid in upstate gas market
- Pursuing legislation to authorize statewide: on-meter tariff obligation; shutoff provisions for failure to pay



3. Direct loans

- A. Unsecured residential loans
- B. Participating loans – small commercial/NFP Multifamily
- C. PowerSaver secured loans



Multiple forms of financing allow consumer to select method that best fits their needs and will inform on consumer receptivity.

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Energy Innovation Solutions

Program Guidelines

Residential

- Based on existing Home Performance with ENERGY STAR® program
- Comprehensive energy audits and retrofits completed by BPI-accredited contractors
- 171 actively participating contractors
- Finance cost effective prequalified measures – Total Savings to Investment Ratio (SIR) > 1
- Extensive program QA/QC provides consumer safeguards
 - Independent review and approval of work scopes pre-implementation
 - Independent post-implementation inspection of 15% of projects
 - Dispute resolution process; contractor debarment

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Energy Innovation Solutions

Program Guidelines

Residential

- Assisted Home Performance with ENERGY STAR® Program provides 50% cost subsidy to income-eligible participants (80% of State/Area Median Income)
- Contractors receive 5% incentive for comprehensive work scopes
- Consumers may also receive incentives available from NYSERDA (10% of cost) or utilities for certain measures, but all incentives must be used to reduce the amount financed

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Energy Innovation Solutions

Financing Approach

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Elements for Successful Secondary Markets Financing

- Diversification
 - Sufficient scale on statewide basis
 - Multiple financing approaches
- Strong program standards
- Segregation of functions
 - Loan origination using experienced financial institutions
 - Experienced loan servicing – monitoring loan origination
 - Funding - NYSERDA bond issuance - experienced issuer (\$3.6B bonds tax-exempt utility facility bonds outstanding)
- Funding approach – funded RLF - loan loss/debt service reserve – leverage through capital markets bond issuance



Questions

Jeff Pitkin, Treasurer
NYSERDA
(518) 862-1090 x3223
jjp@nyserda.org




KEITH WELKS is the Deputy Treasurer For Fiscal Operations for the Pennsylvania Treasury Department. He is responsible for overseeing more than 60 million Commonwealth payments each year to vendors, employees, grant recipients and beneficiaries. He is also responsible for development and implementation of special programs for Treasury that will allow the Commonwealth's assets to produce greater returns. Greater returns mean reasonable earnings on investment along with community development, job creation, economic growth, environmental protection and energy conservation. Mr. Welks led the creation of Treasury's alternative to predatory payday loans (Better Choice). He previously served as Special Counsel to Treasurer Robert P. Casey, Jr.

Mr. Welks is a 1975 graduate of the University of Pennsylvania Law School. He created and served as the first chief of the Pennsylvania Environmental Crimes Section in the Office of Attorney General. Following that, he served as Chief Counsel of the Department of Environmental Protection from 1987 until 1994. Mr. Welks then created and was President of Phoenix Land Recycling Company, a Pennsylvania nonprofit organization that facilitated the reuse of brownfield sites by removing clouds to title, performing environmental assessments and locating new owners who would bring community-supportive uses to the properties. He joined the Treasury Department in 2005.

Mr. Welks was involved in the development of Pennsylvania's energy-efficiency loan program (Keystone HELP). HELP has made more than 5000 loans to homeowners in the last several years worth more than \$35 million. HELP now offers graduated financing options designed to encourage greater energy savings and promote whole-house auditing practices. Pending program modifications will extend financing to geo-thermal improvements through a combination of traditional HELP loans and short-term financing designed to monetize anticipated federal tax credits.

Mr. Welks is a co-chair of the Finance Working Group of the State Energy Efficiency Action Network.




Pennsylvania Treasury and the Effort to Develop a Secondary Market for Energy Efficiency Loans


Presented to the 5th Annual Energy Efficiency Finance Forum
American Council for an Energy-Efficient Economy

Philadelphia, Pennsylvania
May 3, 2011

Keith Welks
Deputy Treasurer
Pennsylvania Treasury Department




Robert M. McCord, State Treasurer | www.patreasury.org




A Public/Private Partnership Leveraging Public Capital and Private Delivery

- **Keystone HELP I 2006 - 2008**
 - Unsecured loans to \$10K for ES improvements
 - Fixed interest rate for maximum 10-year term (2006: 7.99%; 2007-08: 8.99%)
 - Consumer oriented, contractor-centric program design
 - Housing Finance Agency introduces complementary program for secured loans to \$35,000
- **Keystone HELP II 2009 - 2010**
 - Unsecured loans to \$15K for ES improvements (6.99% for maximum 10-year term)
 - Unsecured loans to \$15K for advanced ES improvements (5.99% for maximum 10-year term)
 - Unsecured loans to \$15K for improvements recommended by whole-house audit (4.99% for 10-year term)
 - Housing Finance Agency enhances complementary program for secured loans to \$35,000




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Production To Date (through March 2011)



PENNSYLVANIA
TREASURY
Earn. Learn. Invest.


- Loans made: 7966 (with secured: 8775)
- Dollars lent: \$52.4M (with secured: \$69.8M)
- Loss Reserve: approximately 8% of unpaid balance)
- Original Average term approximately 7 years, with actual expected loan life closer to 5 years
- Loan charge-offs to date of 1.45%, with late accounts totaling less than 1%



Keystone HELP
HOME ENERGY LOAN PROGRAM
powered by AEC FIRST
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
PENNSYLVANIA TREASURY DEPARTMENT
PENNSYLVANIA HOUSING FINANCE AGENCY

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Keystone HELP Portfolio Sale




PENNSYLVANIA
TREASURY
Earn. Learn. Invest.

- Managed by Bostonia Partners, LLC
- Final Term Sheet distributed just after Thanksgiving
- Senior Notes in principal amount of \$24.7M
- Subordinated Notes in principal amount of \$2.74M
- P&I from Subordinated Notes pledged to benefit of Senior Note holders in event of any defaults
- Bond equivalent yield of approximately 7% offered
- Weighted average life (0 prepay, 0 loss): 3.79 years

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HELP: To Boldly Go




PENNSYLVANIA
TREASURY
Earn. Learn. Invest.

- Desired retrofit economy requires massive capital supply
- 120 million homes at \$5000/home = \$600 Billion
- Capital at that scale requires a high-functioning secondary market, involving sales of securities at \$100M or more per offering
- No current adequate secondary market for retrofit loans
- Two inter-related obstacles:
 - * No aggregation/warehouse facilities for loans in existence
 - * No institutional buyers currently expressing interest in purchasing these kinds of securities (unfamiliarity, inadequate transaction sizes)

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HELP: Still Going, Boldly



PENNSYLVANIA
TREASURY
Earn. Learn. Invest.

- Most originators do flow sales of loans to small group of specialty purchasers, who are able to wield unusual power over terms and pricing
- Vision: create a bridge or transitional loan warehouse facility that has sufficient capital to aggregate loans at a scale large enough to attract interest of true secondary market institutional investors
- Enter WHEEL – the Warehouse for Energy Efficiency Loans
- WHEEL being developed by Treasury, EPC, Forsyth Advisors to aid creation of functional secondary market
- WHEEL now in preliminary discussions with a possible senior capital supplier about key terms and relationships

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BIO OF MARK WOLFE

Mr. Wolfe directs the activities of the Energy Programs Consortium (EPC), an energy policy research organization sponsored by the four national organizations representing state energy program and regulatory officials. As part of his responsibilities, he is currently directing a national project to develop options for states to support residential energy efficiency loan programs, including secondary market options. The project is sponsored by the National Association of State Energy Officials, National Energy Assistance Directors' Association and the National Association of Regulatory Utility Officials.

Mr. Wolfe also serves as the Executive Director of the National Energy Assistance Directors' Association (NEADA), representing the state directors of the Low Income Home Energy Assistance Program (LIHEAP). NEADA is the primary educational and policy organization representing state low-income energy directors.

Mr. Wolfe has testified before Congress and is frequently cited in the national media on energy issues. Previous positions have included serving as a Senior Advisor to the US Treasury Department, Deputy Director for the Coalition of Northeastern Governors and Senior Analyst for the Congressional Research Service.

Mr. Wolfe holds an MS in Public Policy from the State University of New York and a BA in Urban Studies from Antioch College. He also serves on US Department of Energy's State Energy Efficiency Action Network and several boards including the National Home Performance Council and the National Low Income Energy Consortium.

A Three-Part Champagne Roundtable:

Chose A-B-C for Financing Commercial/Institutional vs. Residential vs. Industrial Projects

Part A: Financing Residential Projects: Strength & Weaknesses of Keystone HELP Loan

Keith Welks, Deputy Treasurer for Fiscal Operations & Senior Policy Advisor
Pennsylvania Treasury Department

*Stockton Williams, Senior Advisor for Energy Efficiency Markets, Office of Sustainable Homes
and Communities*
U.S. Department of Housing and Urban Development

Peter J. Krajsa, Chairman & CEO
AFC First Financial Corp.

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Mr. Welks is a co-chair of the Finance Working Group of the State Energy Efficiency Action Network.

Stockton has recently joined the U.S. Department of Energy as Senior Advisor for Urban Policy. He will be responsible for strengthening the partnerships between the department and urban/metropolitan areas to expand clean energy solutions and identifying new opportunities for collaboration on policy development, program delivery and evaluation between DOE and local communities.

Stockton has served in the Obama Administration since 2009 as Senior Advisor in the Office of Sustainable Housing and Communities at the U.S. Department of Housing and Urban Development. At HUD he was primarily responsible for developing new initiatives that expand the benefits of energy efficiency and renewable energy in affordable homes and helped develop new energy financing programs, including FHA PowerSaver, the Green Refinance Plus program and the HUD Energy Innovation Fund, among other initiatives.

Prior to joining HUD, Stockton was Senior Advisor and Director of Green Economy Initiatives for Living Cities, a consortium of global foundations and financial institutions that makes catalytic investments to improve prospects for low-income people and communities, where he managed philanthropic investments in sustainable development activities in 17 cities. Stockton was previously Senior Vice President and Chief Strategy Officer for Enterprise Community Partners, where he led government affairs, fundraising and communications for the national nonprofit and had executive responsibility for the Green Communities® initiative, the largest nongovernmental effort in the U.S. to bring the benefits of green development to residents, builders and investors in affordable housing.

Stockton's recent affiliations include being a member the Urban Land Institute's Advisory Group on Climate Change, Land Use and Energy; the Trust for Public Land Real Estate Council; and the Board of Directors of CNT-Energy. Stockton has a Master of Science Degree in Real Estate Development from Columbia University and a Bachelor of Arts Degree in Religion from Princeton University.



FHA PowerSaver

FHA HOME ENERGY IMPROVEMENT LOAN PILOT PROGRAM
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

APRIL 21, 2011

HOW THE PROGRAM WAS DEVELOPED

- ✘ Proposed rules, request for public comment and solicitation of lenders: November 9, 2010.
- ✘ Lenders were required to describe how they were working with well established state and local home energy performance programs.
- ✘ Final rules released: March 31, 2011.
- ✘ Lenders announced: April 21, 2011.

PARTICIPATING LENDERS

<u>Lender</u>	<u>Target Markets</u>
✘ Admirals Bank	DOE Better Buildings locations
✘ AFC First Financial Corp.	PA, ME
✘ Bank of CO	CO
✘ City of Boise	Boise, ID
✘ Energy Finance Solutions	NY state
✘ Enterprise Cascadia	OR, WA
✘ HomeStreet Bank	OR, WA ,HI
✘ Neighbors Financial Corp	CA, MI, TX
✘ Paramount Equity	AZ, CA, OR, UT, WA, CO, TN

3

PARTICIPATING LENDERS

<u>Lender</u>	<u>Target Markets</u>
✘ Quicken Loans	DOE Better Buildings locations
✘ SOFCU Community Credit Union	Southern Oregon
✘ Stonegate Mortgage Corp.	DOE Better Buildings locations
✘ Sun West Mortgage Co.	DOE Better Buildings locations
✘ The Bank at Braodmoor	Pikes Peak region (CO)
✘ University of Virginia Credit Union	Central VA
✘ Viewtech Financial Services, Inc.	CA
✘ WinTrust Mortgage	Chicago region
✘ WJ Bradley Mortgage Capital Co.	DOE Better Buildings locations

4

TITLE I - POWERSAVER INSURANCE BASICS

Co-insurance Feature

- ✘ Federal insurance covers up to 90% of loan against default.
- ✘ Lender is accountable for the remaining 10% balance of each loan.

Portfolio Cap (Reserve Account)

- ✘ Maximum federal insurance coverage of 10% in aggregate of the total amount of a lender's Title I loan portfolio.

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TITLE I - POWERSAVER PROGRAM BASICS

Use of Loan Proceeds

Proceeds generally must be spent on eligible energy improvements

- + No cash out
- + No partial insurance (i.e., \$20,000 of \$40,000 loan)
- + No debt consolidation
- + Up to 25% of the loan may be used for unrelated measures

6

PROGRAM BASICS CONT'D

Security Requirements

- + Lien required if loan over \$7,500.00
- + Mortgage or Deed of Trust
- + Lien position must be 1st or 2nd (with a few exceptions)

Written Description of Work

- + Must have a detailed description of the work to be done by the contractor including a breakdown of materials and labor
- + Lender must use judgment regarding the reasonableness of the description of the work

7

PROGRAM BASICS CONT'D

Eligible Properties

- ✘ Single family (principal) residences only. Can include detached, semi-detached and attached single family residences.
- ✘ Condominiums that meet the criteria for eligible single family properties are also eligible.

8

PROGRAM BASICS CONT'D

Loan Maturities

- ✘ Loan terms will generally be limited to 15 years to align them with the useful life of most energy improvements.
- ✘ Loan terms of 20 years can be used but only for certain improvements.

9

PROGRAM BASICS CONT'D

“Direct Loans” Only

- ✘ The borrower must make application directly to an approved lender.
- ✘ No retail sales installment contracts etc.
- ✘ Contractors can market PowerSaver loans.

10

PROGRAM BASICS CONT'D

Property Valuation

- ✘ Combined Loan to Value (CLTV) cannot exceed 100%.
- ✘ Lenders may use Fannie Mae or Freddie Mac Form 2055 Exterior-Only Inspection Report to establish property value.
- ✘ Other valuation methods – e.g. AVMs – as approved by HUD.

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PROGRAM BASICS CONT'D

Conditions for Disbursement

- ✘ Loan proceeds shall be disbursed in two increments.
 - + Up to 50% of the proceeds disbursed at loan funding/closing.
 - + The remaining proceeds disbursed after completion of improvements (and inspection if over \$7,500.00).

12

PROGRAM BASICS CONT'D

Underwriting Requirements

- × 45% debt to income limit
- × Borrower must be solvent and an acceptable credit risk
- × 45% debt to income limit
- × Credit report (decision credit score of at least 660 for all borrowers)
- × Employment and income verification (2 year history)

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RESOURCES

On the Title I Home Page

http://www.hud.gov/offices/hsg/sfh/title/ti_home.cfm

- × Industry Fact Sheet
- × FAQ for Lenders
- × FAQ for Consumers
- × Federal Register Notice containing all program details

HUD Forms

http://portal.hud.gov/hudportal/HUD?src=/program_offices/administration/hudcli
[ps/forms](#)

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PETER J. KRAJSA is Chairman/CEO of AFC First Financial Corporation, a national specialty energy efficiency lender founded in 1947 which operates programs association with states, municipalities, utilities, manufacturers and contractors. Mr. Krajsa has over 25 years experience in consumer lending and mortgage banking, and was responsible for creation of AFC First's EnergyLoan® program, the Keystone Home Energy Loan Program in cooperation with the Pennsylvania Treasury Department an DEP and the CT Solar Lease program in cooperation with the Connecticut Clean Energy Fund among others. He is a second generation owner of AFC First. Mr. Krajsa is also a principal in Franklin Acquisition Advisors, a middle market merger and acquisition firm and a director of EnergyWeb Solutions, a provider of websites to energy companies.

Mr. Krajsa joined AFC First in 1978 and became President in 1982. He holds a B.S. in Economics from the Wharton School of the University of Pennsylvania. Professionally, Mr. Krajsa has served as Chairman of the Board of the American Financial Services Association (AFSA) Independents Section and as a member of the national AFSA Board of Directors. He has also has served as Chairman of the Board and Executive Committee of the Pennsylvania Financial Services Association and the Pennsylvania Home Equity Mortgage Association. He is a frequent presenter and panelist at energy finance industry conferences.



What Drives Consumer Borrowing for Energy Efficiency?

Keystone HELP Overview 2011

Peter Krajsa
Chairman & CEO

AFC First Financial Corporation



AFC First – A National Leader In Energy Efficiency Lending

- **AFC First Financial Corporation is an experienced specialty energy efficiency lender and the provider of the EnergyLoan® program.**
 - Founded in 1947 in Allentown, PA. AFC has processed over 50,000 energy efficiency loan applications.
 - Retail contractor-driven energy lending to consumers has been primary business since 1999.
 - AFC First is one of only three Fannie Mae approved Energy Lenders in the nation.
 - Currently lending in 24 states with over 3,000 Approved Contractors, Manufacturer, Utility and State and Municipal Partners



AFC First – A National Leader In Energy Efficiency Lending

- **AFC First Financial's key energy efficiency services**

- Contractor Recruitment, Screening and Training
- Loan Application Intake and Processing
- Loan Servicing, Off and On Bill
- Rebate Processing
- Payments to Approved Contractors including Verification of Satisfactory Completion

- Installed Equipment and Energy Savings tracking

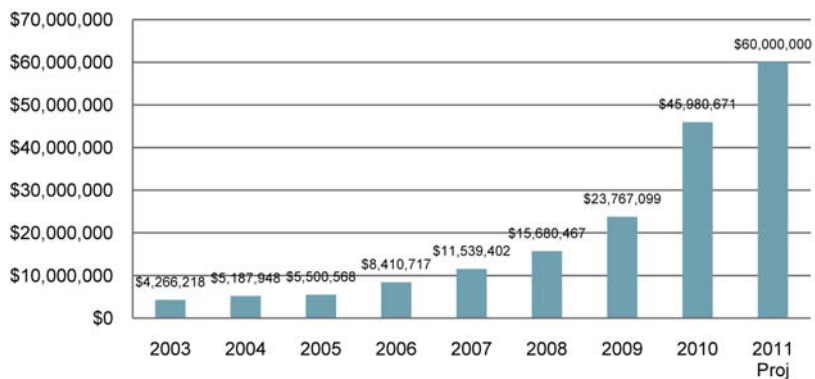
BPI, RESNET and Contractor Certification through new Green Energy Training Center programs (Awarded Rockefeller Foundation Grant)

- Home Performance Program Management (PA Home Energy)



Rapid and Sustained Growth in Energy Lending

AFC First Energy Loan Volume



AFC's National Programmatic Expansion

- National EnergyLoan Platform
- PA's Keystone HELP
- CT Solar Lease
- CT Energy Efficiency Loan Program
- Energize Delaware
- Maryland EnergyLoan
- Greater Cincinnati Energy Alliance
- Illinois On Bill Finance Program
- Kentucky Home Performance Finance
- Efficiency Maine
- Progress Energy
- National Grid
- Arizona



AFC First – A National Leader In Energy Efficiency Lending

AFC FIRST KEYSTONE HELP CONTACTS

Tessa Shin	Director, Keystone HELP Program Manager
Ken Yeager	VP of Business Development
Bob Groegler	Business Development Manager
Jeff Kadas	Director, Marketing & Programs
Peter Krajsa	Chairman and CEO
John Hayes	President and COO
Julie Unger	VP of Operations

(610) 433-7486

keystonehelp.com

Successful Consumer Energy Efficiency Programs....

- **Assists consumers in making better decisions regarding the energy efficiency of their home improvements** by providing affordable monthly payment options.
- **Recruits and trains contractors on how to better utilize special financing and monthly payment plans** to increase both their closing rates and market penetration for more energy efficient home improvements.
- **Utilizes state-of-the-art technology to provide maximum efficiency and customer service to both consumers and contractors** in loan origination, administration and loan servicing.
- **Provides consumers with efficient, knowledgeable and exceptional personal service** as it relates to the financing of their energy efficient home improvements.
- **Provides customers with a *special financing* program** that encourages them to choose higher efficiency improvements over lower efficiency items.
- **Provides measurable results** on energy savings resulting from improvements



PA's Keystone HELP (Home Energy Loan Program)

- **One of the most successful state sponsored consumer energy efficiency finance programs in the nation**
- Over 8,000 loans and close to \$65 million funded since 2006 with rapidly increasing consumer demand
- A model DOE and EPA program and a principal prototype for the proposed federal Home Star program as it addresses both "reactive" and "proactive" energy improvement needs
- Based on a pilot started by the West Penn Power Sustainable Energy Fund it has involved into a unique public-private partnership which leverages loan capital provided by **PA Treasury** and **PHFA** with **DEP** (ACT 1 and ARRA) funds to provide greatest incentives



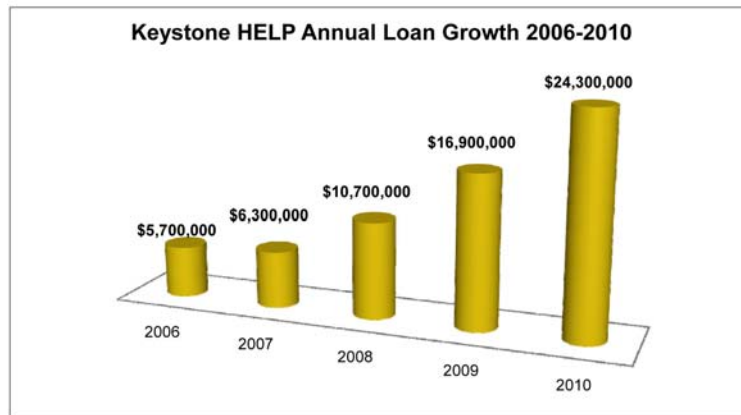
Keystone HELP Loans by County 2006-2010



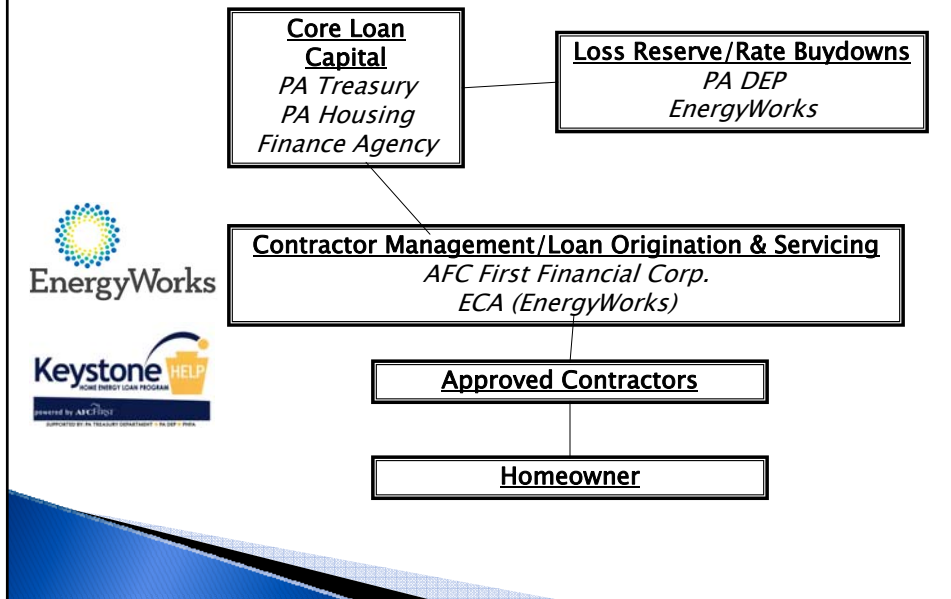
County	Loans	Dollars
Adams	84	\$360,762
Allegheny	596	\$3,887,877
Armstrong	7	\$24,156
Beaver	122	\$841,196
Bedford	14	\$144,028
Berks	551	\$4,160,578
Bleu	72	\$640,619
Bradford	15	\$162,776
Bucks	858	\$4,122,443
Butler	41	\$256,068
Cambria	41	\$316,055
Carbon	54	\$549,722
Centre	70	\$648,024
Chester	345	\$3,631,530
Clinton	12	\$85,520
Clearfield	61	\$508,262
Clinton	28	\$217,411
Columbia	7	\$77,430
Crawford	126	\$883,048
Cumberland	202	\$1,694,911
Dauphin	202	\$2,318,944
Delaware	319	\$2,968,003
Elk	15	\$63,188
Elze	219	\$1,293,612
Fayette	70	\$490,364
Forest	6	\$51,845
Franklin	96	\$873,023
Fulton	2	\$35,408
Greene	6	\$29,700
Huntingdon	19	\$203,296
Hudson	23	\$212,547
Jefferson	29	\$229,668
Juniata	6	\$28,712
Lackawanna	46	\$300,533
Lancaster	905	\$7,565,108
Lancaster	17	\$124,224
Lancaster	141	\$1,173,623
Lefgh	457	\$3,308,524
Lehigh	59	\$500,238
Lycoming	31	\$266,976
Mifflin	14	\$105,786
Monroe	28	\$173,628
Mifflin	49	\$365,900
Monroe	75	\$661,841
Montgomery	651	\$4,972,714
Montour	28	\$235,324
Northampton	382	\$2,922,745
Northumberland	67	\$448,966
Franklin	13	\$120,790
Philadelphia	200	\$1,633,117
Pike	29	\$226,765
Potter	4	\$29,350
Schuylkill	60	\$465,811
Snyder	6	\$62,480
Somerset	27	\$201,242
Sullivan	20	\$183,049
Susquehanna	24	\$106,644
Tioga	1	\$3,190
Union	39	\$354,782
Venango	32	\$229,211
Warren	15	\$107,776
Washington	104	\$716,289
Wayne	24	\$238,770
Westmoreland	162	\$1,050,362
Wyoming	20	\$187,238
York	370	\$3,386,030
Grand Total	8168	\$66,139,472



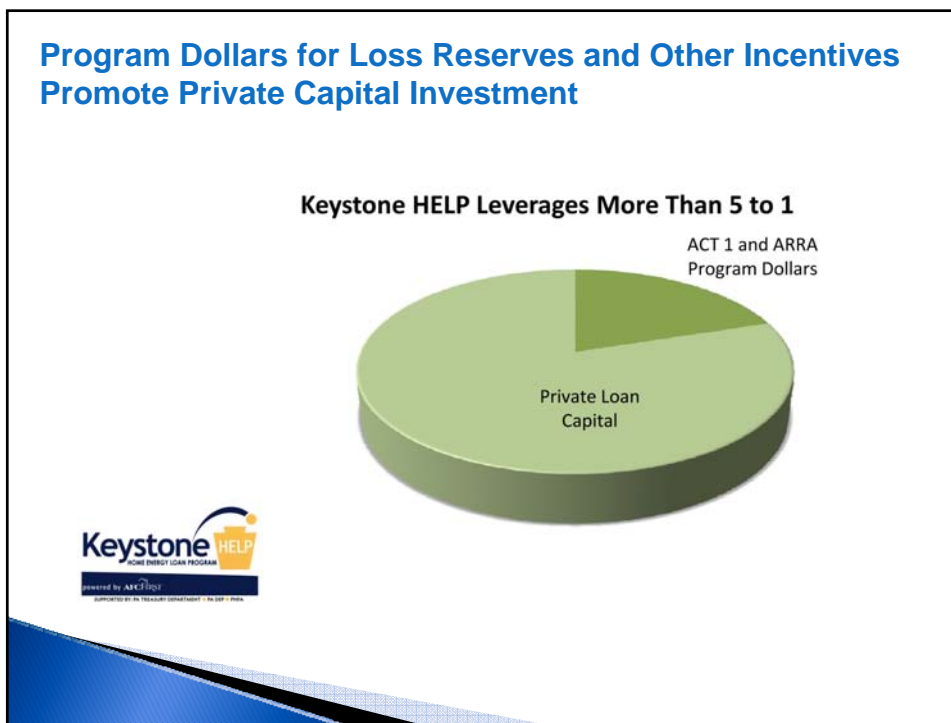
Keystone HELP Annual Loan Growth 2006-2010



Pennsylvania's Keystone HELP Enhanced By EnergyWorks



Program Dollars for Loss Reserves and Other Incentives Promote Private Capital Investment



How Do Americans Pay to Improve Their Homes' Energy Efficiency?



The Facts About Financing

- In the current “Perfect Storm” of Energy Crisis and Credit Contraction, consumers more than ever need simple financing options to make energy improvements
- 70% of all Home Improvements up to \$15,000 are financed in one way or another, 90% of improvements greater than \$15,000 are financed
- Most consumers are motivated by necessity when it comes to energy efficiency (the *Reactive* consumer who needs to replace a broken furnace) – this is 90% of the energy efficiency market and can't be ignored
- *Proactive* improvements are growing, but contractor and auditor base most grow faster to support this market
- Successful programs address both Reactive and Proactive Consumer
- Energy-efficiency improvements are most often sold, not bought
- Keep it simple for contractor and consumer – the goal is work performed and energy savings, not the number of audits conducted

Two Types of Energy Efficiency Customers

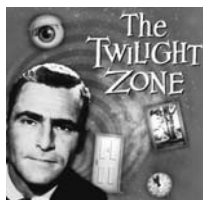


PROACTIVE



AFCFIRST
SINCE 1947

REACTIVE Consumer - Welcome to the "Twilight Zone"



- Typical "urgent" HVAC or home repair installations (\$3,000 to \$15,000) are the consumer's financing "twilight zone" - too big for a credit card, too small for a home equity loan.
- The vast majority of energy efficiency improvements
- Customer doesn't want a lien on their home
- Time sensitive – consumer needs work done ASAP
- Contractor-Driven
- "Come-on" or "Teaser" (0% for 6 months type) Financing is not the answer for a major capital purchase and can hurt contractor credibility
- Borrower wants longer term or lower rate than he can get from bank
- Solution: Unsecured point of purchase loan programs with (lower rates based on simple product qualification – ENERGY STAR)

PROACTIVE Consumer - The “Thinker”



- “Whole house” improvements up to \$15,000 may be applicable for a streamlined on-bill finance program because they can be addressed with an unsecured loan
- More project driven, less time sensitive
- More customer thought, engagement and foresight
- Loans above \$15,000 typically involve home equity financing which may be difficult in today’s economy without a special program
- Solution: “Home Performance” model with Energy Audit, recommendations and lower rate than “Reactive” financing

Like Home Star, Financing Programs Should Not Exclude, But Rather Incent

- Consider “Tiered” Financing Approach which accommodates both Reactive and Proactive Consumers
- Don’t exclude the consumer who wants to install an ENERGY STAR or high efficiency improvements but doesn’t have time to go through the whole audit protocol
- But...provide lower interest rate to the consumer who will do the “Whole house” improvement program
- Contractors have to “buy in” to the ease of the program and can’t be put off by complexity – need to accommodate their customers
- Use simple, consumer recognized national standards such as ENERGY STAR for equipment standards – no need to “reinvent the wheel” or confuse the market



Monthly Payment Affordability is often the KEY for both REACTIVE and PROACTIVE Consumers

- Customers may have an interest in more efficient systems or improvements but may be put off by higher price.
- Average American current available cash is \$3,000 to \$7,000.....What is your average installation cost?
- If a contractor's closing ratio is 40%, what's happening to the other 60% - why aren't they buying?
- Is it the Contractor's reputation?
- Is it the Price?
- In today's economy are they scared of "gimmick" financing?
- **Or – is it simply that they are not being given an affordable monthly payment option that comfortably fits their budget and can be offset by energy savings?**



Keystone HELP® Addresses Both Reactive and Proactive

FOR THE REACTIVE ENERGY IMPROVEMENT

- Low Rate Unsecured Loan - 8.99, 10 Year Term to \$15,000 for ENERGY STAR Improvements
- Lower Rate Unsecured Loan – 7.99, 10 Year Term to \$15,000 for Advanced Performance Improvements

FOR THE PROACTIVE ENERGY IMPROVEMENT

- Lowest Rate Loans – 2.99% Unsecured BPI Only loan emulates Home Star Gold- **Improvements with Air Sealing**
- Secured Loans Up to \$35,000 with both BPI and RESNET **PA Home Energy** Protocol – state HPwES program



Keystone HELP® Special Loan Features

Unsecured Keystone HELP Loans \$1,000 - \$15,000

- Lower rates (from 2.99%) and longer terms (up to 10 years) than available from banks or credit unions
- Fixed rate and fixed payment for term – not adjustable like most credit cards – no surprises!
- No pre-payment penalty – pay off whenever you like
- Fast, simple, no fees or charges to consumer or contractor

Secured Keystone HELP Loans \$5,000 - \$35,000

- Lowest rates (from 3.875% for Whole House Improvements) – better than bank home equity rates
- Up to 120% of home's value – most banks stop at 75%
- Fixed rate and fixed terms up to 20 years
- First, Second or Third Lien



Keystone HELP's Low Monthly Payment Drive Sales

Compare Keystone HELPs monthly payments to a typical consumer's options

	Credit Card or other Unsecured Financing	FannieMae EnergyLoan for Non ENERGY STAR	Keystone HELP Loan for ENERGY STAR
	18% to 26 %	13.99%	6.99%
\$2,500	\$62	\$39	\$29
\$5,000	\$125	\$77	\$58
\$10,000	\$250	\$155	\$116
\$15,000	\$375	\$232	\$166



Pennsylvania KEYSTONE HELP QUALIFYING CONTRACTOR STANDARDS –JANUARY 2011		
LOAN PROGRAM	QUALIFYING IMPROVEMENTS	CONTRACTOR QUALIFICATIONS
ENERGY EFFICIENCY LOAN PROGRAMS		
Unsecured Loans for Improvements Only <ul style="list-style-type: none"> From \$1,000 to \$15,000 ENERGY STAR 8.99 (5.99 in SE PA "EnergyWorks") ADVANCED PERFORMANCE 7.99 (4.99 in SE PA) 	Qualifying HVAC, Insulation, Windows etc.	<ul style="list-style-type: none"> Current minimum is "Approved" status which comprises a program review of contractor for financial and ethical stability and required sales training on financing programs. Additional certification may be required to participate in SE PA "EnergyWorks" Later in 2011 (time to be determined), the minimum standard for participation in this program will be "Trained" which will also require completion of Home Performance 101
Unsecured Loans for Improvements with BPI Blower Door Directed Air Sealing <ul style="list-style-type: none"> From \$1,000 to \$15,000 CAPP 2.99 (0.99 in SE PA "EnergyWorks") 	Qualifying HVAC, Insulation etc when coupled with BPI energy audit and Blower Door Directed Air Sealing. Must meet CAPP and/or EnergyWorks protocols.	<ul style="list-style-type: none"> "Certified" Status which requires BPI BA-1 Certification Additional certification may be required to participate in SE PA "EnergyWorks"
Secured Loans for Whole House Improvements with BPI and RESNET Audit <ul style="list-style-type: none"> From 3.875% depending on equity and LTV 	Qualifying whole house energy improvements that are recommended by a Certified BPI/RESNET Energy Audit with HERS score	<ul style="list-style-type: none"> "Certified" Status which requires BPI BA-1 Certification Or "Trained" contractors (who have completed Home Performance 101) and are working under the on-site oversight of a BPI/RESNET Certified Auditor
GEOHERMAL HEAT PUMP LOAN PROGRAMS		
Unsecured Loans for Geothermal <ul style="list-style-type: none"> From \$1,000 to \$15,000 plus optional "Tax Credit Anticipation Loan" for up to \$10,000 4.99 for base loan Keystone HELP makes first 12 payments on Tax Loan 	Qualifying CLOSED LOOP Geothermal Heat Pump Systems and Installation	<ul style="list-style-type: none"> "Trained" Status which requires completion of Home Performance 101 Also certified as an Accredited Loop Installer by the International Ground Source Heat Pump Association (IGSHPA) or working under contract with an Accredited Loop Installer for the project
Secured Loans for Geothermal and Whole House Improvements with BPI/RESNET Audit <ul style="list-style-type: none"> From 2.875% depending on equity and LTV 	Qualifying whole house energy improvements that are recommended by a Certified BPI/RESNET Energy Audit with HERS score	<ul style="list-style-type: none"> "Certified" Status which requires BPI BA-1 Certification plus Loop Installer requirements as outlined above Or contractors certified as an Accredited Installers by the International Ground Source Heat Pump Association (IGSHPA) and are working under the on-site oversight of a BPI/RESNET Certified Auditor

Who is Eligible?

•Pennsylvania homeowners who:

- Own and are making qualifying improvements to their primary residence located in Pennsylvania and;
- Whose combined annual household income is \$150,000 or less
- The Keystone HELP R&R ENERGY STAR Loan, Geothermal Loan (or other AFC First non Keystone HELP loans) **may be available for homeowners whose income exceeds \$150,000** – please contact us for details.
- Improvements must be made to 1 to 2 unit owner-occupied dwellings. Work under the secured "Whole House Improvement Loan" or Renovate and Repair ENERGY STAR Loan programs must be done on a 1-2 unit owner occupied, deeded property.



If you are applying for financing under the Keystone HELP program, you must meet the credit eligibility standards of the program.

Who Can Perform the Work?

Approved Contractors have been reviewed for financial and ethical stability and are currently authorized to perform work under all rebate and loan programs except the “Whole House Improvement Loan” programs. **Will end in 2011.**

Trained Contractors are Approved Contractors who have undergone additional training on building science and “Whole House” energy improvements (HP 101) , and are currently authorized to perform work under all rebate and loan programs. If they are performing work under the “Whole House Improvement Loan” program, they must be working under a Certified Auditor who provides on-site oversight of their work. **Will be minimum standard in late 2011.**

Certified Contractors are Approved Contractors who have achieved BPI (Building Performance Institute) certification or accreditation. BPI is the nationally recognized designation for building and energy professionals who have undergone rigorous training on “Whole House” energy improvements. Certified Contractors are authorized to perform work under all rebate and loan programs.



Who Can Perform the Work?

Certified Auditors are Approved Contractors certified by both BPI (Building Performance Institute) and RESNET (Residential Energy Services Network) to conduct home energy audits and must have a HERS rater number, be operating under a HERS provider, or be an approved audit provider under the PA Home Energy Home Performance with ENERGY STAR program. Certified Auditors may work independently from the contractor or they may be Certified Contractors who have also met the qualifications to perform as Certified Auditors.



What Improvements Are Eligible?

- ENERGY STAR rated Heating and Cooling (All Fuels)
- ENERGY STAR Water Heaters, Fans, Thermostats
- ENERGY STAR Closed Loop Geothermal

Above must be listed on energystar.gov or ARI certified as ENERGY STAR

- Solid Fuel Indoor Furnaces (Wood, Coal etc.) – 78% AFUE
- Air Sealing (Whole House) and Insulation to Program Standards
- ENERGY STAR Windows and Doors
Must have a NFRC label with U-Factor <= .30
- Recommendations of a Certified Energy Audit with sufficient predicted energy savings



Entire job can be financed if at least 75% of the work is for eligible improvements. Improvements not qualifying for Keystone HELP may be eligible for other financing programs at different rates and terms.

Statewide Energy Efficiency Loan Programs

Including NEW BPI- Only CAPP program



KEYSTONE HELP® ENERGY EFFICIENCY LOANS		
Unsecured Loan for Energy Improvements with Air Sealing (CAPP)		\$1,000 to \$15,000
HEATING, COOLING, INSULATION and other qualifying improvements that are ENERGY STAR qualified and are part of a comprehensive project of blower door directed AIR SEALING and other energy saving measures as recommended by a Certified Contractor (BPI) and meet minimum program qualifications utilizing the CAPP Scorecard.	2.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - \$150,000 Max Household Income
Unsecured Loan for ENERGY STAR Improvements		\$1,000 to \$15,000
HEATING, COOLING, WINDOWS, DOORS, INSULATION and other qualifying improvements that are ENERGY STAR qualified or meet program standards.	8.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - \$150,000 Max Household Income
Unsecured Loan for ADVANCED PERFORMANCE Improvements		\$1,000 to \$15,000
HEATING, COOLING, INSULATION and other qualifying improvements that exceed ENERGY STAR or meet program ADVANCED PERFORMANCE standards.	7.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - \$150,000 Max Household Income
Secured Loan for Whole House Improvements with BPI /RESNET Audit		\$5,000 to \$35,000
HEATING, COOLING, INSULATION and other qualifying Whole House energy improvements that are recommended by a Certified BPI/RESNET Energy Audit. Predicted minimum energy savings of 15% to 25% required, depending on home's energy profile.	3.875% to 6.375% Based on Home's Equity and Loan Term 10,15 or 20 Year Term Plus \$325 Energy Audit Credit	- Up to 120% of Home's Value - 1 st , 2 nd or 3 rd Lien - No Pre Payment Penalty - \$150,000 Max Household Income



Special Rates for Southeast Pennsylvania



And Also City of Allentown

ENERGYWORKS / KEYSTONE HELP® ENERGY EFFICIENCY LOANS

For Qualifying Homeowners in Bucks, Chester, Delaware, Montgomery and Philadelphia Counties

GOLD

Unsecured Loan for Energy Improvements with Air Sealing (CAPP) \$1,000 to \$15,000

HEATING, COOLING, INSULATION and other qualifying improvements that are ENERGY STAR qualified and are part of a comprehensive project of blower door directed AIR SEALING and other energy saving measures as recommended by a Certified Contractor (BPI) and meet minimum program qualifications utilizing the CAPP Scorecard and EnergyWorks process guidelines.	0.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - \$150,000 Max Household Income
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SILVER

Unsecured Loan for ENERGY STAR Improvements \$1,000 to \$15,000

HEATING, COOLING, WINDOWS, DOORS, INSULATION and other qualifying improvements that are ENERGY STAR qualified or meet program standards.	5.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - \$150,000 Max Household Income
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Unsecured Loan for ADVANCED PERFORMANCE Improvements \$1,000 to \$15,000

HEATING, COOLING, INSULATION and other qualifying improvements that exceed ENERGY STAR or meet program ADVANCED PERFORMANCE standards.	4.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - \$150,000 Max Household Income
--	-------------------------------------	--

Special Geothermal Loan Program



KEYSTONE HELP® GEOTHERMAL LOANS

Unsecured Loan for GEOTHERMAL HEAT PUMP SYSTEMS No Income Limits \$1,000 to \$15,000

CLOSED LOOP GEO-EXCHANGE SYSTEMS that meet ENERGY STAR Tier 2 specification and other qualifying improvements that are ENERGY STAR qualified or meet program standards.	4.99% 3.5 or 10 Year Term	- Unsecured, No Lien - No Pre Payment Penalty - NO INCOME LIMITS
---	-------------------------------------	--

Optional Additional Unsecured GEOTHERMAL Tax Credit Anticipation Loan No Income Limits \$2,500 to \$10,000

Available only when made in conjunction with an Unsecured Loan for Geothermal Heat Pump Systems

An optional, additional unsecured loan, with no payments for 12 months, for the estimated amount of the borrower's Federal Income Tax Credit for the purchase and installation of a qualifying geothermal system, subject to eligibility, calculated at 30% of the cost of the system, maximum \$10,000.	Keystone HELP Makes the First 12 Monthly Payments 10 Year Term Only Current interest rates 14.99% to 15.99%	- Unsecured, No Lien - No Pre Payment Penalty - NO INCOME LIMITS
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Secured Loan for GEOTHERMAL HEAT PUMP SYSTEMS plus Whole House Improvements with BPI/RESNET Audit No Income Limits \$5,000 to \$35,000

CLOSED LOOP GEO-EXCHANGE SYSTEMS that meet ENERGY STAR Tier 2 specification and other qualifying Whole House energy improvements that are recommended by a Certified BPI/RESNET Energy Audit. Predicted minimum energy savings of 15% to 25% required, depending on home's energy profile.	2.875% to 5.375% Based on Home's Equity and Loan Term 10, 15 or 20 Year Term Plus \$25 Energy Audit Credit	- Up to 120% of Home's Value - 1 st , 2 nd or 3 rd Lien - No Pre Payment Penalty - NO INCOME LIMITS
--	--	---

Specification Sheet and Completion Certificate

Keystone HELP Energy Efficiency Loan and Rebate Installation

DO NOT SIGN THIS FORM UNTIL WORK IS COMPLETED

Keystone HELP Atty. AFC First Financial Corporation PO Box 3908 Harrisburg, PA 17109	Contractor Name and Address
Customer's Name and Address	Certified Auditor Name and Address (if not Contractor)

Buyer/Customer Certification

I, the undersigned, certify that I have read and understand the terms and conditions of the loan and rebate program and I agree to accept the loan and rebate program as a condition of my participation in the program. I understand that the loan and rebate program is subject to the terms and conditions of the loan and rebate program and I agree to accept the loan and rebate program as a condition of my participation in the program.

Contractor Certification to Lender & Mechanics Lien Waiver

I, the undersigned, certify that I have read and understand the terms and conditions of the loan and rebate program and I agree to accept the loan and rebate program as a condition of my participation in the program. I understand that the loan and rebate program is subject to the terms and conditions of the loan and rebate program and I agree to accept the loan and rebate program as a condition of my participation in the program.

Program Delivery

Keystone HELP
Home Performance Loan Program

Contact AFC First • (800) AFC FIRST

What's Keystone HELP?

- Eligible Improvements
- Find a Contractor
- Apply Now Online
- Apply By Phone (800) AFC FIRST

Accept Applications Online via program website

Through Integrated App on Contractors Website

Call Center and Toll Free Numbers

Utility Link and Call Center Direction

Marketing Materials, Brochures and Posters



Keep it Simple

• Don't Get Caught in Red Tape



- Energy Efficiency lending programs are competing against credit cards.
- Most Consumers (and Contractors) will follow the path of least resistance even if it is more costly
- Accomplish your goal (helping consumers install energy efficiency improvements) without overburdening contractors or consumers with complexity



A National Leader in Energy Efficiency Lending

Peter Krajsa, Chairman and CEO
John Hayes, President and COO
Ken Yeager, VP of Business Development
Julie Unger, VP of Operations
Tessa Shin, Director, Home Performance & Renovation Lending

(888) 232-3477

afcfirst.com energyloan.net keystonehelp.com ctsolarlease.com



(888) 232-3477 (888 - AFC FIRST)
keystonehelp.com



Part B: Financing Commercial Projects, The Reinvestment Fund & PACE Updates

Roger Clark, Manager for Technology & Policy
The Reinvestment Fund

Bob Hinkle, President & CEO
Metrus Energy, Inc.

Biographical Statement

Roger E. Clark

Roger works for The Reinvestment Fund in Philadelphia, Pennsylvania, a progressive, results-oriented community investment group with over \$1 billion in community development lending across the Mid-Atlantic region. As Manager for Technology and Policy, Roger provides technical assistance and energy analysis for TRF's building energy lending capitalized with \$20.5 million of federal ARRA dollars plus another \$60 million of private and public capital that TRF is leveraging. Roger also provides program, policy and legal services to TRF and its Sustainable Development Fund, a \$32 million fund created by the PECO electric utility restructuring case to support the expansion of renewable energy, energy conservation and sustainable energy businesses. SDF's wind, solar, public education and core grant programs are managed by Roger and he also serves as SDF's attorney in various proceedings before the Pennsylvania Public Utility Commission and other Commonwealth agencies.

Roger's prior experience includes working for the Clean Energy States Alliance, an association of seventeen clean energy funds around the country. He also represented many environmental organizations in the various electric utility restructuring proceedings in Pennsylvania. Roger also created the Nonprofits Energy Savings Investment Program to help nonprofit organizations reduce their energy bills through energy conservation improvements and served as Chief Counsel for the Pennsylvania Energy Office.

Roger has a B.A. from Carleton College and a J.D. from George Washington University Law School.



TRF's History of Energy Finance

- **Nonprofits Energy Savings Investment Program** – \$4.5 million energy revolving loan fund to finance energy efficiency measures for non-profit organizations
 - Seeded with \$2.25 million from The Pew Charitable Trusts
 - Managed by TRF since 1993
- **Sustainable Development Fund** – \$32 million of funding to promote renewable energy and energy efficiency projects and market development
 - Funded by settlements in PECO's restructuring and merger cases
 - Managed by TRF since 1998



TRF's Two Building Energy Loan Funds

1. **Pennsylvania Green Energy Loan Fund**
For energy projects throughout Pennsylvania
www.PAGreenEnergyLoanFund.com
2. **EnergyWorks Loan Fund**
For energy projects in Bucks, Chester, Delaware and Montgomery counties and the City of Philadelphia
www.EnergyWorksNow.com



Different sources of capital and different geographic eligibility, but otherwise identical.



Eligible Building Energy Projects

Financing for four types of building energy projects -
Projects must reduce energy by **25%** from baseline

1. Single or limited energy retrofits or the replacement of a single piece of equipment or system in an existing occupied building

New system/equipment must use 25% less energy than existing

2. Extensive whole building energy retrofits in an existing occupied building

Energy use of whole building must be cut by 25%



Eligible Building Energy Projects (cont.)

3. Energy efficient gut rehab of an existing building that is either currently unoccupied or will be renovated for a different use

25% reduction from an assumed baseline based on average energy consumption for similar building use per DOE's CBECS

4. Energy efficient new construction of a building or addition

25% reduction from building if built according to current building energy code



Financing Terms

- Pricing as low as **3.5%** fixed
- Term – up to 15 years – longer amortization possible
- Financing ranges from \$100,000 - \$2,500,000
- Eligible buildings include:
 - commercial
 - nonprofit
 - institutional
 - government
 - industrial
 - multifamily residential



Financing Terms (continued)

- Financial products include:
 - construction loans
 - term loans
 - lease financing (TRF Leasing)
- Applications accepted from owners, developers and tenants
- Security for loans determined on a case-by-case basis





The Loan Application Process

1. Visit the loan fund website* and review the *Loan Application Instructions and Important Information* document
2. Submit an *Initial Financing Request* form (see website*)
3. TRF will contact the applicant to discuss the project. If TRF finds a good fit, the applicant will be asked to submit a complete *Loan Application* form (see website*)
4. TRF then underwrites the loan based on both the financial strength of the financing request and the ability of the project to satisfy the 25% energy savings goal

* www.trfund.com/energyloans



Issue #1: The Federal/State Regulations

- The creative tension between advancing energy goals and other social goals:
 - Davis-Bacon Act
 - Historical Preservation
 - NEPA
 - minority employment
 - reporting
 - etc.
- These requirements are OK for a large project and loan, but more onerous for smaller projects
- Huge difference in acceptance of these requirements between grants (no other source) and loans (often alternative lenders, albeit with higher interest rates)



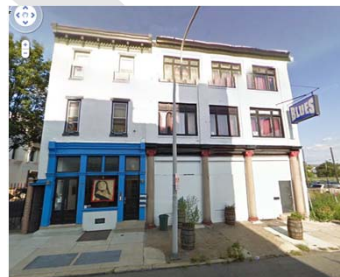
Issue #2: The New EECBG Structure

- EnergyWorks is being restructured to comply with recent new US DOE interpretation of the 20% cap on revolving loan funds (EISA §545(b)(3)(B)) applies to RLFs established by non-governmental entities
- City of Philadelphia is now restructuring the TRF portion of the EnergyWorks loan fund to use ARRA/EECBG funding for a loan loss reserve and an interest rate buydown
- LLR becomes TRF's capital with one pass-through (though permanently restricted for energy lending)
- IRB is a grant that is spent and done with the first round of supported loans



Issue #3: The Need for Patient Capital

- Energy projects often require longer (7+ years) loan terms, especially with gut rehab and new construction
- TRF was offering loans up to 15 years under structure
- The term of the loan will be a major issue as TRF seeks private capital, even with LLR





Issue #4: The Need for Attractive Rates

- TRF started with 5% interest, but moved to 3.5% for strong credits in order to move the money faster
- The two extremes: The committed green borrower vs. the applicant who is bellying up to the trough for cheap public money
- The cost of private capital will be a big issue – how much IRB will TRF need to spend to make loans attractive



Issue #5: The Need to Play Nice with Others

- Because our loans can finance only energy measures, EnergyWorks loans must often take a subordinated position
- This requires creativity in designing the security for the loan
- Also require inter-creditor agreements – not usually a problem but sometimes

- Process for calculating and verifying energy savings estimates has some impacts:
 - time (TRF's and the Borrower)
 - money (TRF's and the Borrower)
 - Applicant's relationship with its design team
- How much should we increase the energy saving goals for different projects?
- Are we right to insist on whole building approach with gut rehab and new construction, even when we are funding a modest piece of the overall project?

- The Scarlett O'Hara response:
 - “I'll think about that tomorrow.
Tomorrow is another day.”
- Business owners are worried about serious economic challenges other than their energy costs



- City was concerned about lost opportunities and need to influence design decisions in gut rehab and new construction
- Developers do not make money unless these projects happen, so we are seeing more of these projects in our pipeline than simple energy retrofits



Bob Hinkle, President and CEO, Metrus Energy

Bob established Metrus in 2009 and created the Efficiency Services Agreement (ESA) structure that the company has utilized to finance and close large-scale efficiency retrofit projects. He currently also serves as a Board member for the California Energy Efficiency Industry Council. Previously, Bob was vice president of energy efficiency (EE) at MMA Renewable Ventures where he directed the company's overall EE financing business and identified and negotiated investment opportunities with ESCOs and large commercial and industrial energy users. He has more than 17 years of experience in the energy industry and worked for 10 years at Nexant (formerly part of Bechtel Corporation). He has developed and implemented over \$200 million of large-scale energy projects and programs in the U.S. and in emerging overseas markets for utilities, energy end-users, government agencies, and international donors. Bob previously served as entrepreneur in residence for the California Clean Energy Fund (CalCEF) focusing on the identification of new business models for EE. Bob has an MA degree in international business from the Fletcher School, Tufts University and a BA degree in international politics and economics from Middlebury College.

Bob.Hinkle@MetrusEnergy.com

www.MetrusEnergy.com



SAVED IS EARNED

FINANCING ENERGY EFFICIENCY IN PRIVATE COMMERCIAL BUILDINGS

ACEEE Energy Efficiency Finance Forum

Philadelphia, Pennsylvania

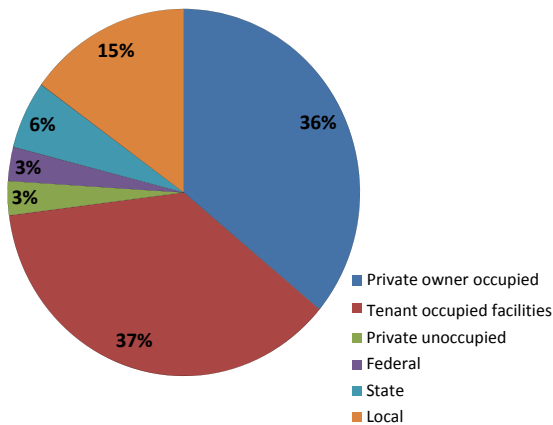
May 3, 2011

www.MetrusEnergy.com



Private Commercial Buildings...

Market Opportunity & Characteristics



Source: US Department of Energy, Commercial Building Characteristics

- \$250 billion investment market
 - High volume of attractive projects with 3-7 year paybacks
 - >75% of commercial buildings are privately owned
- Current market opportunity
 - **Bad news...**Major obstacles to funding retrofits in many private tenant facilities
 - **Good news...**Large market for owner occupied; initiatives underway to support commercial real estate



Private Commercial Buildings...

Commercial Real Estate Conundrum



- Challenges to financing commercial real estate EE retrofits, include:
 - First cost hurdles
 - Credit risk of single purpose LLCs
 - Securing project-level debt
 - Existing mortgage constraints
 - Split incentives
 - Limited tax benefits for efficiency

2



Private Commercial Buildings...

Strategies for Commercial Real Estate

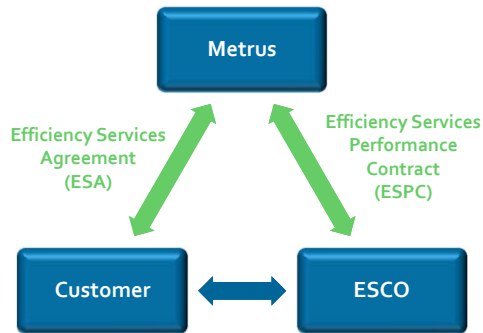
<u>CHALLENGES</u>	<u>SOLUTIONS & STRATEGIES</u>
First Cost Hurdle	<ul style="list-style-type: none"> • Fund 100% of up-front project costs
Credit Risk of Building LLCs	<ul style="list-style-type: none"> • Finance deals in top-tier markets; owner occupied or with stable rent rolls • Federal/DOE loan guarantee program to support EE projects • Tap into existing state-level programs that offer credit support
Securing Project-level Debt	<ul style="list-style-type: none"> • Make permanent equity investment in each project along side debt • Pursue project-level debt from the existing lender on a building
Existing Mortgage Constraints	<ul style="list-style-type: none"> • Work to obtain mortgagee waiver on new EE property; seek participation at project level from existing lender
Split Incentives	<ul style="list-style-type: none"> • Set customer payments based on units of energy savings (akin to utility bill)
Limited EE tax benefits	<ul style="list-style-type: none"> • Provide commercial EE with tax benefits on par with renewable energy

3



Private Commercial Buildings...

No-First-Cost Efficiency Solutions



- Provide 100% funding for EE projects
- Redirect current spending on utility costs to fund efficiency upgrades
- Under the Metrus program:
 - Partnership with customers who only pay for realized energy savings
 - Dynamic services program that adds incremental savings as they emerge
 - Metrus contracts with ESCOs to install and maintain efficiency measures



Private Commercial Buildings...

Case Study – Multiple Facility Program

Completed projects with BAE Systems at multiple sites



BAE SYSTEMS

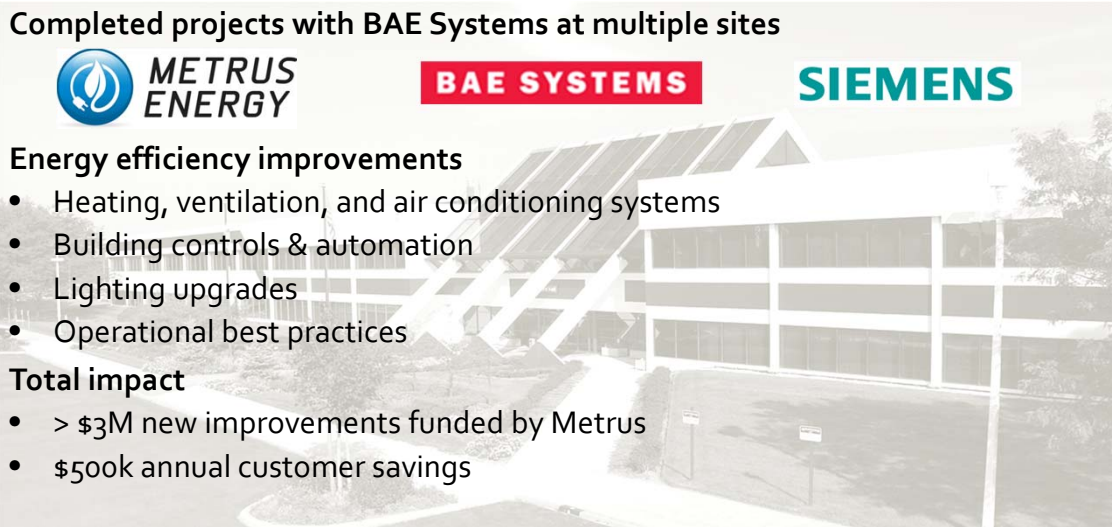
SIEMENS

Energy efficiency improvements

- Heating, ventilation, and air conditioning systems
- Building controls & automation
- Lighting upgrades
- Operational best practices

Total impact

- > \$3M new improvements funded by Metrus
- \$500k annual customer savings





Contact Information

Bob Hinkle
info@MetrusEnergy.com
www.MetrusEnergy.com

Part C: Financing Industrial Projects

Nels Andersen, Vice President of Engineering
Franklin Energy Services

Toby Rittner, EDFP, President & CEO
Council of Development Finance Agencies

Nels Andersen, Vice President – Engineering & Information Services

Nels Andersen was named Vice President of Engineering and Information Services in February 2009. He is responsible for oversight of the company's technical staff that provides support and review of energy efficiency projects for Franklin Energy utility clients and their end-use customers. In his role, he ensures that continuity and integrity is maintained among his staff's approach to energy savings calculations and use of deemed savings data. Additionally, he is charged with coordinating the company's information infrastructure and systems including program tracking and staff time and materials tracking. He keeps abreast of emerging technologies and their ability to provide energy savings that will endure quality assurance and evaluation scrutiny.

During his eleven years with Franklin, he has managed traditional incentive, performance contracting and request for proposal (RFP) programs. He previously managed engineering and Quality Assurance functions in the industrial sector.

Nels earned both a B.S. and Masters in Mechanical Engineering from Marquette University. He frequently presents the company's best practices to industry professionals at national conferences.

Toby Rittner, EDFP
President & CEO
Council of Development Finance Agencies (CDFA)
Email: trittner@cdfa.net

Mr. Rittner runs the day-to-day operations of the Council of Development Finance Agencies (CDFA), which includes management of a 32 member Board of Directors, and the organization's various educational, advocacy and research initiatives. Rittner is a frequent speaker at local, state and national conferences and events focused on economic development finance. He has been featured extensively in The Bond Buyer and other national media publications concerning the advancement of development finance tools. He is the author of CDFA's highly acclaimed Practitioner's Guide to Economic Development Finance and is a Certified Economic Development Finance Professional (EDFP) through the National Development Council (NDC). Rittner has also advised state and federal government leaders, including President Obama's Administration Transition Team, on economic development finance policy and focus.

Prior to joining CDFA, Mr. Rittner was the Director of Legislative Affairs and former Director of Training for the International Economic Development Council (IEDC). Mr. Rittner has also worked for the Franklin County, Ohio Board of Commissioners, Community and Economic Development Department as a Senior Program Coordinator for Economic Development and as an Associate Planner for the City of Gahanna, Ohio.

Mr. Rittner is a member of the Board of Directors for the Mid-America Economic Development Council (MAEDC) a 10 state, regional economic development finance association and is a member of the Advisory Board for Heritage Ohio. Heritage Ohio is a statewide nonprofit organization promoting the revitalization movement in Ohio. Rittner is also an appointed member of City of Cleveland Heights Citizens Advisory Committee (CAC), which oversees the city's annual CDBG program. Mr. Rittner holds a Bachelor of Arts in Political Science and a Master's of City and Regional Planning degree from the Ohio State University.

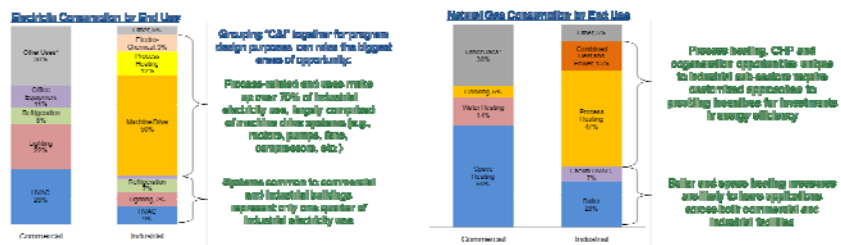
Designing Industrial Sector Energy Efficiency Programs

ACEEE Energy Efficiency Finance Forum
 May 3, 2011
 Nels Andersen
 Franklin Energy Service
 Vice President, Engineering & Information Services

Experience. Delivery. Results.



Energy Consumption Profile by Sector

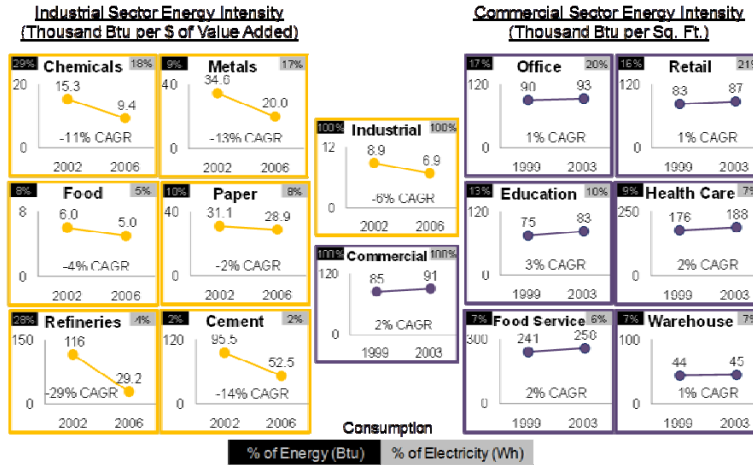


Source: Energy Information Administration

Experience. Delivery. Results.



Sub-Sector Energy Intensity Trends in Recent EIA Surveys

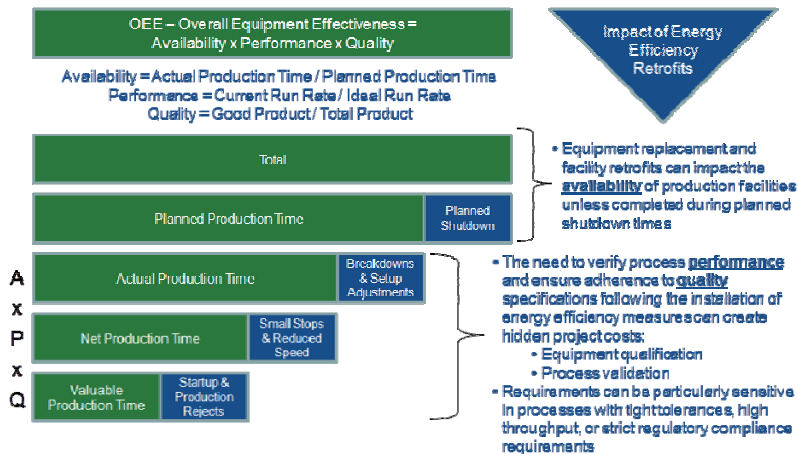


Source: Energy Information Administration

Experience. Delivery. Results.



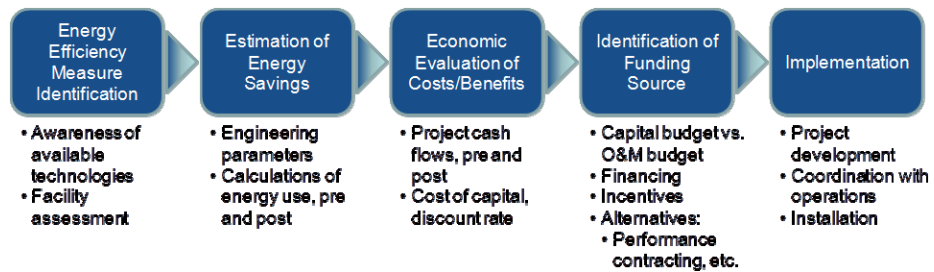
Overall Equipment Effectiveness Model for Plant Performance Measurement



Experience. Delivery. Results.



Energy Efficiency Project Process Flow



Experience. Delivery. Results.



Business Size as a Factor in Pursuing Energy Efficiency Project Opportunities

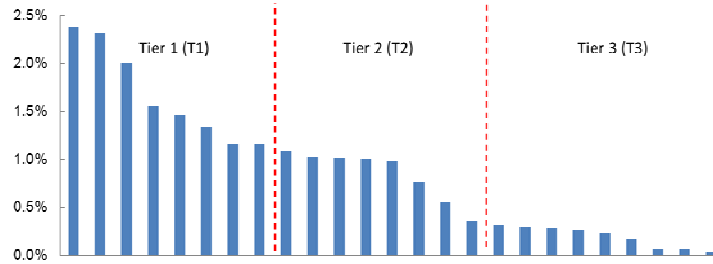
	Enablers	Barriers
Smaller Businesses	<ul style="list-style-type: none"> • Single decision maker (likely) • Absence of formalized energy management practices presents opportunities for O&M efficiencies 	<ul style="list-style-type: none"> • Less likely to have internal technical expertise, resources • Lack of access to capital, ability to self-finance measure costs
Larger Businesses	<ul style="list-style-type: none"> • Greater access to capital, financing options • Internal technical expertise, resources (facilities/energy management, engineering) 	<ul style="list-style-type: none"> • Multiple layers of decision making • Separation of facilities management, finance functions • Focus on core business activities

Experience. Delivery. Results.



Investor-Owned Utility Programs Achieving Greater Than 100 MWh in the Industrial Sector

2008 Industrial Sector Electricity Efficiency Savings as % of Utility Sales
 (Distribution of 100 MWh Industrial Sector Savings, IOU by Source: EIA, Form 860)



Source: Energy Information Administration

Experience. Delivery. Results.



Program Services Offerings among IOUs with >100 MWh of Industrial Sector Savings

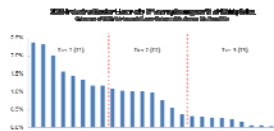
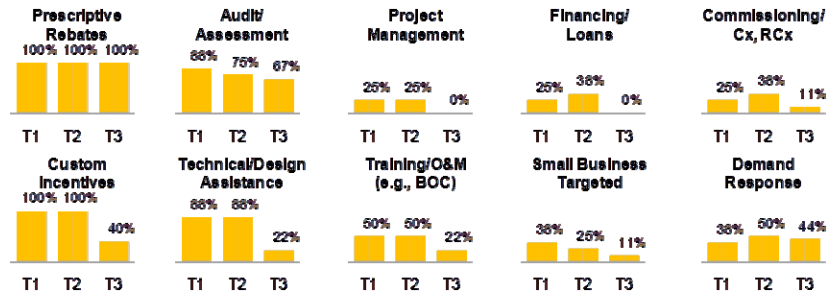
	Prescriptive	Custom	Franklin (Core)	Audit Assessment	Technical/Design Assistance	Project Management	Flagged Small Business	Commissioning/Retest or maintenance	Training (OSHA/EPC/BOC)	Performance Contracting	Defined Ratepayers	Market Services (in addition to defined ratepayers)
Alliant Energy (IA)	•	•	•	•	•	•			•	•	•	•
Alliant Energy (WI)	•	•	•	•	•	•			•	•	•	•
Avista (WA)	•	•	•	•	•						•	•
Connecticut LSP	•	•	•	•	•			•	•	•	•	•
Duke Energy (IN)	•										•	
Duke Energy (NY)	•											
Duke Energy (OH)	•											
Energy (AR)	•	•	•	•	•		•				•	
Idaho Power	•	•	•	•	•							
MidAmerican (IA)	•	•	•	•	•	•			•		•	•
National Grid (MA)	•	•							•			•
National Grid (NH)	•	•		•	•							•
Oter Tail Power (NM)	•	•										•
PacificCorp (UT)	•	•		•	•				•			
PG&E (CA)	•	•	•	•	•		•		•	•	•	•
Progress Energy (FL)	•	•		•								•
SCE (CA)	•	•	•	•	•	•	•			•		•
Tenness Electric (FL)	•			•							•	•
United Illuminating (CT)	•	•	•	•	•		•	•				•
Unitil (NH)	•	•	•	•	•							
We Energies (VT)	•	•	•	•	•				•		•	•
WMECO (MA)	•	•	•	•	•							•
Xcel Energy (CO)	•	•	•	•	•				•			
Xcel Energy (MN)	•	•	•	•	•							•
Xcel Energy (NM)	•	•	•	•					•			

Source: Franklin Energy review of program offerings

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Summary of Program Service Offerings by Savings Tier



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Additional Resources

- 📄 Andersen, Nels and Mark Brown. 2010. "Overcoming Barriers to Achieving Energy Savings in the Industrial Sector." White Paper. Franklin Energy Services. May.
 - <http://www.franklinenergy.com/casestudieswhitepapers.html>
- 📄 Andersen, Nels and Mark Brown. 2010. "Barriers to Energy-Efficiency Adoption in the Industrial Sector." Natural Gas & Electricity, Volume 27, Number 5. December. © 2010 Wiley Periodicals, Inc.
- 📄 Andersen, Nels and Mark Brown. 2011. "Successful Approaches for Conservation Programs for Industrial End-Users." Natural Gas & Electricity, Volume 28, Number 1. January. © 2011 Wiley Periodicals, Inc.
- 📄 Chittum, Anna, R. Neal Elliot and Nate Kaufman. 2009. "Industrial Energy Efficiency Programs: Identifying Today's Leaders and Tomorrow's Needs." Report No. IE091. American Consortium for an Energy-Efficient Economy. September.
 - <http://www.aceee.org/research-report/ie091>
- 📄 McKinsey & Company. 2009. "Unlocking Energy Efficiency in the U.S. Economy." June.
 - http://www.mckinsey.com/client/service/electricpower/naturalgas/downloads/US_energy_efficiency_full_report.pdf

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ACEEE 2011

Trends for Financing Industrial Projects

May 3, 2011

Philadelphia, PA

Toby Rittner
President & CEO



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About CDFA

- National non-profit association representing the development finance industry.
- Provide education, advocacy, research, networking and leadership.
- Training Institute – Bond Finance (2), Tax Increment Finance (2), Tax Credit, Revolving Loan Fund Finance, Energy Finance, Innovation Finance and Fundamentals of ED Finance Course.



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About CDFA

- Research – Produce annual State-By-State studies for Bond Volume Cap and Tax Increment Finance Statute changes.
- Resources – Over 2,800 resources in Online Resource Library.
- Federal Financing Clearinghouse – 175 federal financing programs catalogued and detailed by agency, type, etc.
- Advocacy – Active partner with Congress and Administration and had 3 items in the 2009 stimulus bill.



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Understanding Industrial Development from the Public Sector Point of View



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What is Development Finance?

- Development finance is the efforts of local communities to support, encourage and catalyze economic growth through public/private investment in physical development, redevelopment, business and industry.
- It is the act of contributing to a project/deal that causes that project/deal to materialize in a manner that benefits the long term health of the community.
- Industrial development can be encouraged through partnership, cooperation and mutually advantageous programming centered on public finance.



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What Does DF Include?

- Debt, equity, credits, liabilities, remediation, guarantees, collateral, credit enhancement, venture/seed capital, early stage, workforce, technical assistance, planning, short-term, long-term, incentives, gap, etc.
- Proactive approaches that leverage public resources to solve the needs of business, industry, developers and investors.



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Why is DF Important?

- Businesses need working capital and the ability to invest in themselves.
- Developers need assistance to achieve an acceptable ROI.
- Communities need infrastructure and amenities.
- Citizens need opportunities for advancement – jobs, small business, education, etc.
- Regions need economic prosperity.



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Industrial Financing Tools

- Over 200 programs exist to assist with local development finance challenges.
- A host of programs exist that provide public financing mechanisms for private industrial development projects
- Broken down by:
 - Bond Financing Tools
 - Targeted Financing Tools
 - Access to Capital Tools
 - Federal Financing Tools



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Bond Financing Tools



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Bond Financing Tools

- Industrial Development Bonds – IDBs are publicly issued bonds used for private activity aimed at small/medium sized manufacturers.
- IDBs are used for investment in bricks and mortar projects that help the manufacturer produce more goods
- IDBs are the number one form of financing for manufacturers and have been around for over 40 years.
- Each state has a set aside volume cap available for IDBs and every local community can issue these bonds.



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Bond Financing Tools

- IDBs require many participants – issuer (public entity), underwriter (bank), borrower (manufacturer) and bond counsel (for both borrower and issuer)
- A bond is effectively a loan. The borrower is the manufacturer and the lender is bank using tax-exempt bonds through a public entity. The bond holder invest in the bonds by purchasing them on the open market.
- Bond financing is an affordable alternative to traditional bank lending but has a higher level of public disclosure and paperwork.



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Targeted Financing Tools



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Targeted Financing Tools

- Represent fastest growing area of development finance.
- Goal of targeted tools is to catalyze investment and transform the real estate values of a geographic area.
- Two general categories:
 1. **Special assessment district financing**
 2. **Tax increment financing**
- These two categories often overlap and work in conjunction with each other as a layered financing mechanisms.



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Special Assessment District Financing

- Mechanism by which business, industry, commercial districts and governments generate funds by applying special tax assessments on geographic areas.
- Two general structures:
 1. **Business and Neighborhood Districts**
 - Self assessment
 - BID, SID, NID, etc.
 2. **Government Districts**
 - Sometimes self-assessed, often govt. created
 - SSD, SAD, CFD, CDD, TID



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Special Assessment District Financing

- Business and Neighborhood Districts help to support a variety of services:
 - security and safety patrols
 - snow removal
 - promotions, marketing and events
 - graffiti removal
 - beautification and cleanliness programs
 - economic development
 - energy efficiency upgrades



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Special Assessment District Financing

- Government Districts target very specific projects and services:
 - infrastructure such as roads, sewers, tolls
 - transit development
 - community amenities such as schools and public facilities
 - energy efficiency projects – residential & industrial
 - often used in conjunction with TIF



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Tax Increment Financing

- Second and most common targeted form of financing.
- First created in 1952 in California to act as a catalyst for redevelopment areas and smart growth.
- Quickly spread across the country – 49 states and District of Columbia have enabling legislation.
- Referred to by a variety of names:
 - TIF - Tax increment financing (most states)
 - TAD - Tax allocation district financing (GA)
 - TIRZ - Tax increment reinvestment zones (TX)
 - PDF – Project development finance (NC)



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What is TIF?

- Special authority provided to a local governmental jurisdiction which allows them to allocate specific tax revenues towards the redevelopment, development or renovation of the built environment.
- A mechanism used to capture the future tax benefits of real estate improvements to pay the present cost of specific improvements.
- Eligible improvements vary from state to state but brownfield remediation and subsequent infrastructure is often allowed.



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Simple Project Based Example

- Existing property generates \$1,000 a year in real estate taxes.
- Government designates the property as a “TIF” district and tax base is frozen at \$1,000 level.
- New project is proposed for the site and will in effect raise overall tax base generated to \$1,500 (and rising) once completed.
- Developer agrees to make significant investment and seeks TIF funds from gov. for eligible public improvements.



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Simple Project Based Example

- Government conducts “but for” test and agrees to TIF deal and issues tax-exempt bonds to finance proposed improvements.
- Bonds are sold generating cash for the project (several options on actual financing mechanism).
- Once project is complete, new assessment is completed on property (\$1,500 in taxes a year as indicated before).



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Simple Project Based Example

- Frozen base (\$1,000) continues to flow to pre-existing coffers (city, county, schools, state, etc.).
- Increment (additional \$500 plus) goes towards debt service on the bonds that were issued for the project.
- Increment is used to pay back bonds over time, anywhere from 10-40 years.
- Once bonds are paid off, the property taxes are “unfrozen” and the full tax base generated goes to existing coffers
- **THE KEY** - No new taxes are requested and no existing taxes are used in the financing of the project.



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Access to Capital Financing Tools



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Access to Capital Lending Tools

- For the purpose of industrial development, most projects fall into two types of financings:
 - Revolving Loan Funds
 - Loan Guarantees
 - Direct Loans



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Revolving Loan Funds

- Gap financing measure primarily used for development and expansion of small businesses which are unable to obtain financing through traditional sources.
- Uses both public and private sector funds for capitalization (federal resources available).
- Self-replenishing pool of money, utilizing interest and principal payments on old loans to issue new ones.
- RLFs don't compete with convention funding sources, they compliment them.



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Loan Guarantees

- Allows private sector to make loans and investments without carrying higher levels of risk.
- These programs shift risk from private sector to a third party – typically a governmental entity – by “guaranteeing” a portion of a loan or revenue source.
- Federal government operates several programs while states and cities are also now providing guarantees.
- Communities with strong balance sheet should consider building a program for projects that may need additional collateral support.



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SBA 504 Loan Program

- Operated through Certified Development Companies which can work in a state, region or nationally. Approximately 300 CDCs nationwide.
- Provides loans to small businesses for fixed assets and M&E.
- Combination loan structure to mitigate risk of private lender by providing federal resources
 - 50% - Private lender
 - 40% - SBA loan
 - 10% - Borrower equity
- SBA portion is fully backed by SBA guarantee
- Many rules and regulations. Intended for small businesses but definition and limitations can be stretched.



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Federal Financing Tools



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Federal Financing Tools

- CDFA's online Federal Financing Clearinghouse identifies 39 federal programs that assist with energy projects.
- Users often do not know about many of these programs.
- Programs exist at the DOE, Treasury, HUD, IRS, USDA, EPA and EDA
- Understanding the depth and impact of these programs is critical to any good financing strategy.



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Federal Financing Tools

ARPA-E Funding Opportunities

U.S. Dept. of Energy (DOE)

Created at the recommendation of a 2006 National Academies report, "Rising Above the Gathering Storm," the Department of Energy's (DoE) Advanced Research Projects Agency--Energy (ARPA-E) received...

Qualified Energy Conservation Bonds (QECBs)

U.S. Dept. of Treasury

U.S. Treasury's Qualified Energy Conservation Bonds (QECBs) finance qualified energy conservation projects. At minimum, 70 percent of a state's allocation must be used for governmental purposes, and...

Energy Efficient Mortgages

U.S. Dept. of Housing & Urban Affairs (HUD)

U.S. Dept. of Agriculture (USDA)

Homeowners can take advantage of energy efficient mortgages (EEM) to finance energy efficiency improvements to existing homes. The U.S. federal government supports these loans by insuring them...



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Federal Financing Tools

Clean Renewable Energy Bond (CREB) Program

U.S. Dept. of Treasury

Internal Revenue Service (IRS)

Prior to the U.S. Treasury's Clean Renewable Energy Bond (CREB) program--signed into law as part of the Energy Policy Act of 2005--only for-profit, investor-owned utilities were eligible to receive...

Modified Accelerated Cost-Recovery System (MACRS) + Bonus Depreciation (2008-2012)

Internal Revenue Service (IRS)

Under the federal Modified Accelerated Cost-Recovery System (MACRS), businesses may recover investments in certain property through depreciation deductions. The MACRS establishes a set of class...

Weatherization Assistance Program

U.S. Dept. of Energy (DOE)

The Department of Energy's Weatherization Assistance Program (WAP) enables low-income families to permanently reduce their energy bills by making their homes more energy efficient. Funds are used to...



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Federal Financing Tools

State Energy Program

U.S. Dept. of Energy (DOE)

The Department of Energy's (DOE) The State Energy Program (SEP) provides financial and technical assistance to states through formula and competitive grants. States use their formula grants to...

Biobased Products and Bioenergy Program (BIOMASS)

U.S. Dept. of Agriculture (USDA)

The goal of the Biobased Products and Bioenergy Program is to finance technologies needed to convert biomass into biobased products and bioenergy in a manner which is cost-competitive in large...

Industrial Technologies Program (ITP)

U.S. Dept. of Energy (DOE)

The Department of Energy's (DOE) Industrial Technologies Program (ITP) is the lead government program working to increase the energy efficiency of U.S. industry, which accounts for about one-third...



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Federal Financing Tools

Environmental Justice Grants and Cooperative Agreements

U.S. Environmental Protection Agency (EPA)

The U.S. Environmental Protection Agency's (EPA) Environmental Justice Grants and Cooperative Agreements provides financial assistance to build collaborative partnerships, to identify the local...

Office of Energy Efficiency and Renewable Energy (EERE) Grants

U.S. Dept. of Energy (DOE)

The Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) grants program is a funding vehicle for businesses, industries, universities, and others. EERE works with...

Office of Energy Efficiency and Renewable Energy (EERE) Continuation and Renewal Awards

U.S. Dept. of Energy (DOE)

The Office of Energy Efficiency and Renewable Energy's (EERE) programs conduct activities in partnership with the private sector, state and local government, DOE national laboratories, and...



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Federal Financing Tools

1703 Loan Guarantee Program

U.S. Dept. of Energy (DOE)

Section 1703 of Title XVII of the Energy Policy Act of 2005 authorizes the U.S. Department of Energy (DOE) to support innovative clean energy technologies that are typically unable to obtain...

1705 Loan Guarantee Program

U.S. Dept. of Energy (DOE)

The American Recovery and Reinvestment Act of 2009 amended authorizing legislation for the Department of Energy's (DOE) Loan Guarantee Program by adding Section 1705 to EPAAct. Section 1705 is a...

ATVM Loan Guarantee Program

U.S. Dept. of Energy (DOE)

The Department of Energy's (DOE) Advanced Technology Vehicles Manufacturing (ATVM) Loan Program, an incentive program established by Section 136 of the Energy Independence and Security Act of 2007,...



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Federal Financing Tools

Office of Energy Efficiency and Renewable Energy (EERE) Unsolicited Proposals

U.S. Dept. of Energy (DOE)

Financial assistance from the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) is awarded on a competitive basis, however, financial assistance can be awarded on...

Community Trade Adjustment Assistance Program

U.S. Economic Development Administration (EDA)

EDA's Community Trade Adjustment Assistance (Community TAA) Program, created by the American Recovery and Reinvestment Act of 2009, is aimed at helping to create and retain jobs by providing project...

Super Energy Savings Performance Contracts

U.S. Dept. of Energy (DOE)

Department of Energy (DOE)'s Federal Energy Management Program (FEMP) assists federal agencies to develop energy savings performance contract (ESPC) projects that help federal agencies meet energy...



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Federal Financing Tools

Tribal Energy Program

U.S. Dept. of Energy (DOE)

The Department of Energy's Tribal Energy Program promotes tribal energy sufficiency and fosters economic development and employment on tribal lands through the use of renewable energy and energy...

Utility Energy Services Contracts

U.S. Dept. of Energy (DOE)

Utility energy service contracts (UESCs) offer the Department of Energy (DOE) an effective means to implement energy efficiency, renewable energy, and water efficiency projects. In a UESC, a...

Section 9005 Bioenergy Program

U.S. Dept. of Agriculture (USDA)

The purpose of this section is to support and ensure an expanding production of advanced biofuels by providing payments to eligible advanced biofuel producers in rural areas. The Agency will...



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Federal Financing Tools

Rural Energy For America Program Grants/Renewable Energy Systems/Energy Efficiency Improvement Program (REAP/RES/EEI)

U.S. Dept. of Agriculture (USDA)

The REAP/RES/EEI Grants Program provides grants for energy audits and renewable energy development assistance. It also provides funds to agricultural producers and rural small businesses to purchase...

1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits

U.S. Dept. of Treasury

Under Section 1603 of the American Recovery and Reinvestment Tax Act of 2009 (Section 1603), the United States Department of the Treasury appropriates funds for grant payments to persons who place...

Biorefinery Assistance Loan Guarantee Program

U.S. Dept. of Agriculture (USDA)

The purpose of USDA's Biorefinery Assistance Loan Guarantee Program is to assist in the development of new and emerging technologies for the development of advanced biofuels, so as to: Increase the...



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Federal Financing Tools

Biomass Crop Assistance Program (BCAP)

U.S. Dept. of Agriculture (USDA)

The Biomass Crop Assistance Program (BCAP), part of USDA's Farm Service Agency (FSA), provides financial assistance to owners and operators of agricultural and non-industrial private forest land for...

Rural Energy for America Program Guaranteed Loan Program (REAP Loan)

U.S. Dept. of Agriculture (USDA)

The REAP Guaranteed Loan Program encourages the commercial financing of renewable energy (bioenergy, geothermal, hydrogen, solar, wind, and hydro power) and energy efficiency projects. Under the...

Global Climate Change Mitigation Incentive Fund

U.S. Economic Development Administration (EDA)

The Global Climate Change Mitigation Incentive Fund (GCCMIF) was established to strengthen the linkages between economic development and environmental quality. The GCCMIF's purpose and mission is to...



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Federal Financing Tools

Business Energy Investment Tax Credit (ITC)

Internal Revenue Service (IRS)

The federal business energy investment tax credit available under 26 USC § 48 was expanded by the 2008 Energy Improvement and Extension Act. The expanded law: Extended the duration of the existing...

Advanced Energy Manufacturing Investment Tax Credit (MTC)

Internal Revenue Service (IRS)

The American Reinvestment and Recovery Act of 2009 (ARRA) authorized the Department of Treasury to award \$2.3 billion in tax credits for qualified investments in advanced energy projects, to support...

High Energy Cost Grant Program

U.S. Dept. of Agriculture (USDA)

The High Energy Cost Grant Program provides financial assistance for the improvement of energy generation, transmission, and distribution facilities serving eligible rural communities with home...



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Federal Financing Tools

Rural Energy For America Feasibility Grant Program

U.S. Dept. of Agriculture (USDA)

The REAP/Feasibility Grant Program provides grants for energy audits and renewable energy development assistance. It also provides funds to agricultural producers and rural small businesses to...

Rural Energy for America Program Grants/Energy Audit and Renewable Energy Development Assist (REAP/EA/REDA)

U.S. Dept. of Agriculture (USDA)

The Rural Energy for America Program Grants/Energy Audit and Renewable Energy Development Assist (REAP/EA/REDA) Grant Program will provide grants for energy audits and renewable energy development...

Energy-Efficient Appliance Manufacturing Tax Credit

Internal Revenue Service (IRS)

The federal Energy Policy Act of 2005 established tax credits for manufacturers of high-efficiency residential clothes washers, refrigerators, and dishwashers produced in calendar years 2006 and...



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Federal Financing Tools

Residential Energy Efficiency Tax Credit

Internal Revenue Service (IRS)

This credit applies to energy efficiency improvements in the building envelope of existing homes and for the purchase of high-efficiency heating, cooling, and water-heating equipment. Efficiency...

Residential Energy Conservation Subsidy Exclusion

Internal Revenue Service (IRS)

If a taxpayer has received any subsidies from a public utilities company for projects completed to improve the energy efficiency of a personal residence, the taxpayer can claim a personal exemption...

Energy Efficiency and Conservation Block Grant (EECBG) Program

U.S. Dept. of Energy (DOE)

The U.S. Department of Energy's (DOE's) Energy Efficiency and Conservation Block Grant (EECBG) Program, funded for the first time by the Recovery Act of 2009, represents a Presidential priority to...



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Federal Financing Tools

Energy-Efficient New Homes Tax Credit for Home Builders

Internal Revenue Service (IRS)

The Federal Energy Policy Act of 2005 established tax credits for builders of all new energy-efficient homes, including manufactured homes. Energy saving requirements for this tax credit are as...

Energy-Efficient Commercial Buildings Tax Deduction

Internal Revenue Service (IRS)

The Federal Energy Policy Act of 2005 established a tax deduction for energy-efficient commercial buildings applicable to qualifying systems and buildings placed in service from January 1, 2006,...

Production Tax Credit (PTC)

U.S. Dept. of Energy (DOE)

The Recovery Act allows a tax credit for the generation of qualified energy from qualified facilities. The Production Tax Credit (PTC) specifies amounts, credit periods, and definitions of qualified...



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Contact CDFA

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Chairperson's Opening Remarks:

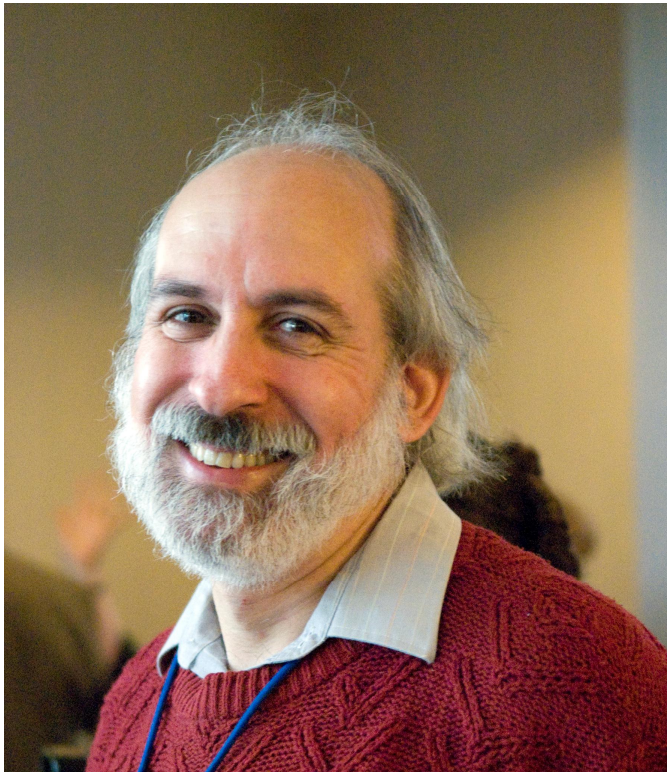
Steven Nadel, Executive Director
American Council for an Energy-Efficient Economy

Joyce M. Ferris, Managing Partner
Blue Hill Partners, LLC

Greg Kats, President of Capital E and Venture Partners
Good Energies

Steven Nadel

Steven Nadel is the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a non-profit research organization that works on programs and policies to advance energy-efficient technologies and services. Steve has been at ACEEE for 20 years serving as Deputy Director of the organization and Director of ACEEE's Utilities and Buildings programs prior to his promotion to Executive Director in 2001. Prior to ACEEE he planned and evaluated energy efficiency programs for New England Electric, a major electric utility; directed energy programs for the Massachusetts Audubon Society, Massachusetts's largest environmental organization; and ran energy programs for a community organization working on housing rehabilitation in the poorest neighborhoods of New Haven, CT. Steve has worked in the energy efficiency field for 30 years and has over 100 publications on energy-efficiency subjects. He has testified many times before Congress on energy efficiency subjects and also testified before multiple state legislatures. He was a major contributor to national energy legislation passed by Congress in 1987, 1992, 2005, 2007, and to energy legislation now pending before Congress. His current research interests include utility-sector energy efficiency programs and policies, state and federal energy and climate change policy, and appliance and equipment efficiency standards. He has a M.S. in Energy Management from the New York Institute of Technology, and a M.A. in Environmental Studies and B.A. in Government from Wesleyan University in Connecticut.



Joyce M. Ferris



Joyce M. Ferris, is a Founder and Managing Partner of Blue Hill Partners LLC, a private investment firm focused exclusively in the Green Technology sector. Blue Hill has built an investment portfolio around energy efficiency technologies and services for application in commercial and industrial buildings. The portfolio includes companies with technologies and services related to reducing the costs of lighting, air conditioning, monitoring and control and providing cost effective solutions for on-site power generation.

Joyce has over 24 years of experience in building and financing green technology companies and projects. She has had principal roles as an investor, technology and equipment provider, financial advisor and as a project developer. Joyce's project experience includes energy efficiency and on-site generation projects, biomass and agricultural waste fired energy projects, industrial waste disposal facilities, waste-coal fired power plants, geothermal, and hydroelectric projects. Joyce was a senior founding executive of Reading Energy Company where she managed financial transactions totaling over \$500 million. Joyce was a major shareholder and Director of Business Development for Energy Products of Idaho, a combustion technology firm specializing in the conversion of a wide variety of solid waste material. Joyce has held numerous board positions and is currently on the board of Princeton Energy Systems, E3 Bank and Aircuity Inc. She is a frequent speaker at industry conferences in the US and Europe. Joyce is a member of the Advisory Board of the Pennsylvania Green Growth Partnership, the National Wildlife Federation Business Council and the Cleantech Venture Network. Joyce is also on the board of Philadelphia Outward Bound. She holds a B.A. from Reed College and an M.S. from the University of Pennsylvania in Energy Management and Policy.

Gregory Kats



Gregory Kats is Venture Partner at Good Energies a multi billion-dollar global clean energy investor, where he leads investments in the energy efficiency and green building areas, and is President of Capital E, a national clean energy advisory practice. He recently introduced and helped negotiate \$100 million strategic investment by St. Gobain in Sage. Greg developed a partnership with TIAA-CREF establishing \$50 million VC investment vehicle within TIAA's real estate group to invest behind Good Energies' energy efficiency and green building investments. Greg also guides Good Energy's portfolio firms on leveraging legislation and programs at DOE, DOD and EPA, including recently guiding a portfolio firm in securing a \$90 million DOE loan guarantee. He serves on a half dozen boards and is Sustainability Advisor to CalPERS.

Greg served for 5 years as the Director of Financing for Energy Efficiency and Renewable Energy at the U.S. Department of Energy where he led national programs to develop and deploy renewable energy, energy efficiency and advanced building technologies. He initiated and led DOE's successful effort to persuade the SEC to lift key restrictions on domestic and international expansion of US energy service companies. He was the Founding Chair of the International Performance Measurement & Verification Protocol (IPMVP), which has served as the technical basis for \$10 billion in building upgrades and been translated into 10 languages. Earlier in his career, Greg held senior management and marketing positions in London, Paris and Geneva.

Greg is a founder of the American Council on Renewable Energy (ACORE), and the New Resource Bank. He is the Founding Chair of the Energy and Atmosphere Technical Advisory Group for LEED, and is the Founding Chair of the National Chapter of the US Green Building Council. He was the Principal Advisor in developing Green Communities, now the national green affordable housing design standard, used as the green design basis for over 20,000 units of green affordable housing.

Greg earned a MBA from Stanford University and, concurrently, an MPA from Princeton University (where he studied with Ben Bernanke) and a BA from UNC with highest honors as a Morehead Scholar. He is a Certified Energy Manager and a LEED AP. Greg was a principal author of *Green Office Buildings: A Practical Guide to Development* (JLI, 2005), and is the author of the *Greening Our Built World: Costs, Benefits and Strategies* (Island Press, 2010). He is a frequent keynote speaker at national clean-energy technology, venture capital, and real estate conferences.

Voice of Property Owners:
A Case Study for Property Owners

Moderator:

Joyce M. Ferris, Managing Partner
Blue Hill Partners, LLC

Panelists:

Daniel Garofalo, Director of Sustainability
University of Pennsylvania

Randy Haines, CEM, Energy Manager
Thomas Jefferson University

Kinga Porst, CEM, LEED-AP, Sustainability and Green Buildings Program Advisor
US General Services Administration

Steve Gossett Jr.
Transcend Equity

Joyce M. Ferris



Joyce M. Ferris, is a Founder and Managing Partner of Blue Hill Partners LLC, a private investment firm focused exclusively in the Green Technology sector. Blue Hill has built an investment portfolio around energy efficiency technologies and services for application in commercial and industrial buildings. The portfolio includes companies with technologies and services related to reducing the costs of lighting, air conditioning, monitoring and control and providing cost effective solutions for on-site power generation.

Joyce has over 24 years of experience in building and financing green technology companies and projects. She has had principal roles as an investor, technology and equipment provider, financial advisor and as a project developer. Joyce's project experience includes energy efficiency and on-site generation projects, biomass and agricultural waste fired energy projects, industrial waste disposal facilities, waste-coal fired power plants, geothermal, and hydroelectric projects. Joyce was a senior founding executive of Reading Energy Company where she managed financial transactions totaling over \$500 million. Joyce was a major shareholder and Director of Business Development for Energy Products of Idaho, a combustion technology firm specializing in the conversion of a wide variety of solid waste material. Joyce has held numerous board positions and is currently on the board of Princeton Energy Systems, E3 Bank and Aircuity Inc. She is a frequent speaker at industry conferences in the US and Europe. Joyce is a member of the Advisory Board of the Pennsylvania Green Growth Partnership, the National Wildlife Federation Business Council and the Cleantech Venture Network. Joyce is also on the board of Philadelphia Outward Bound. She holds a B.A. from Reed College and an M.S. from the University of Pennsylvania in Energy Management and Policy.

Kinga Porst, CEM, LEED-AP

Sustainability and Green Buildings Program Advisor

GSA, Office of Federal High Performance Green Buildings

Kinga Porst serves as an energy and water efficiency expert in the team in particular focus on submetering, energy performance contracting, green data centers, renewable energy, indoor environmental quality and ASHRAE Std 189. Kinga is member of the Interagency Energy Management Task Force, Interagency Energy Efficient Product Procurement Working Group, Federal Partnership for Green Data Centers, CREEA, Building Technology Research and Development, and the GovEnergy Planning Committee.

Kinga has I have over 15 years experience in the public and commercial building industry with extensive knowledge in energy management, energy analysis, air conditioning and green building practices and policies coupled with 10 years experience in sales and marketing management.

Kinga worked for Johnson Controls prior to joining GSA. She sold comprehensive energy performance contracts to local and state government agencies in MD, VA and DC. Kinga was responsible for conducting energy audits and analyzing facility improvement measures.

Last year, Kinga served as the elected President of the National Capital Chapter of ASHRAE for a one year term and was the first woman President of the Chapter.

Kinga has an MBA from Case Western Reserve University and a Masters in Engineering Degree from the Technical University of Budapest. Kinga is a CEM and a LEED-AP.

The Voice of Property Owners

ACEEE | The 5th Annual
Energy Efficiency Finance Forum

May 4, 2011



1

Panel overview

Building portfolio

- Energy reduction targets and drivers
- Total capital requirements
- Progress to date

Financing experience and challenges



2

Blue Hill Partners

Experienced investors in energy efficiency and sustainability technology and service businesses



3

Through our portfolio companies we have extensive experience with large property owners



Office



Higher Education



Government



4

Funding new business models for driving energy efficiency and sustainability



5

GSA

BUILDING PORTFOLIO

Landlord for over 400 federal agencies, space for 1,000,000 + tenants

Portfolio of 362 M rentable ft², 9,624 assets across all 50 states, 6 U.S. territories, and the District of Columbia

56 LEED certifications

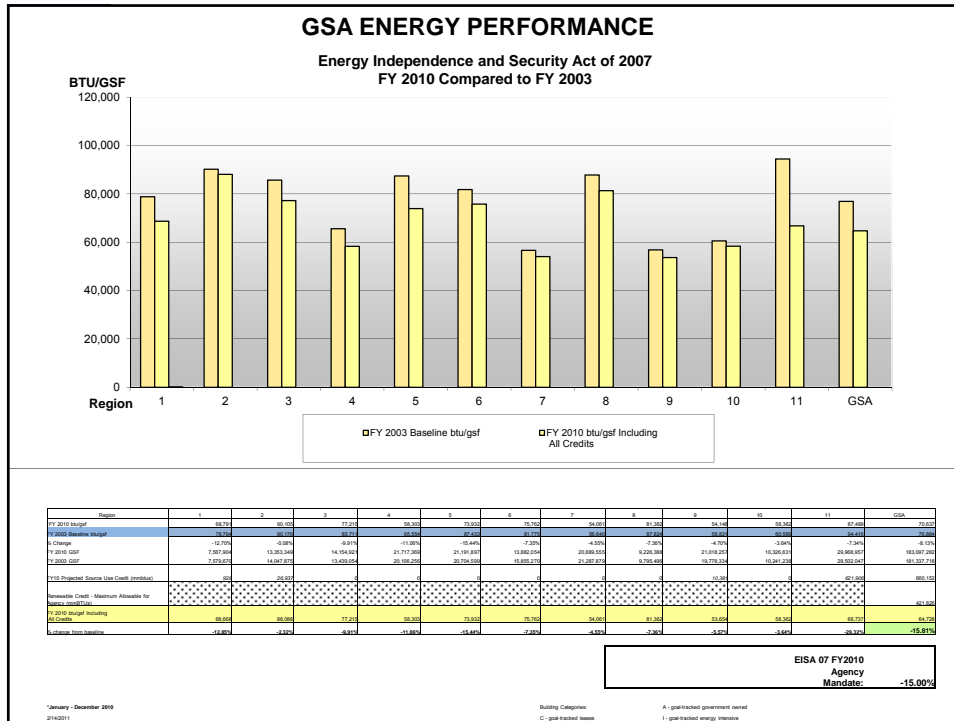


GSA	ENERGY REDUCTION TARGETS
	<p>By FY 2020, GSA will reduce its annual greenhouse gas (GHG) emissions by 30 percent from its FY 2008 levels</p> <p>Reduce energy intensity by 3 percent per year for a total 30 percent reduction by 2015 compared to a baseline of 2003 and reduce water consumption by 2 percent per year to achieve a 16 percent reduction by 2015 compared to a 2007 baseline (EO13423 and 13514)</p> <p>Since FY 2003, GSA has reduced its energy intensity by 14.3 percent in GSA-owned buildings and those leases where GSA is responsible for making utility payments</p> <p>Zero Environmental Footprint</p>

GSA	SUSTAINABILITY & REGULATIONS
	<p>Laws</p> <ul style="list-style-type: none"> • National Environmental Policy Act, 1969 • Clean Air Act, 1970; amended 1990 • Energy Policy and Conservation Act, 1975 • Resource Conservation & Recovery Act, 1976; amended 1994 • National Energy Conservation Policy Act, 1978 • Energy Policy Acts, 1992, 2005 • Energy Independence and Security Act, 2007 <p>Executive Orders</p> <ul style="list-style-type: none"> • 13101 Greening the Government through Waste Prevention, Recycling & Federal Acquisition • 13123 Greening the Government through Efficient Energy Management • 13134 Developing & Promoting Biobased Products and BioEnergy • 13148 Greening the Government through Leadership in Environmental Management • 13327 Federal Real Property Asset Management • 13423 Strengthening Federal Environmental, Energy, and Transportation Management • 13514 Federal Leadership in Environmental, Energy, and Economic Performance

GSA	Executive Order 13514: Environmental, Energy & Economic Performance
	<ul style="list-style-type: none"> • Gas Emissions Toward Agency-defined Targets • Scopes 1 & 2 <i>And</i> Scope3 Targets • 26% Water Reduction By 2020 • 50% Waste Diversion • Net Zero By 2020 • Transit-oriented Design • Fleet & Fuel Reductions • Green Procurement

GSA	ENERGY REDUCTION PROGRESS
	<p>As of FY 2009, GSA had reduced energy intensity in covered buildings by 15.4% over the FY 2003 baseline, well ahead of its target reduction of 12%.</p> <p>In FY 2009, GSA purchased or generated 10.8% of its total electricity from renewable sources.</p> <p>As of September 2010, 56 GSA Federal building projects and leases had achieved some level of LEED certification, including one lease that has achieved a LEED Platinum rating.</p> <p>As of FY 2009, GSA had installed advanced meters at 209 facilities, representing 41% of energy consumed in that year, and re-commissioned 34 covered facilities.</p> <p style="text-align: right;">Portland, OR</p>



ENERGY REDUCTION PLAN

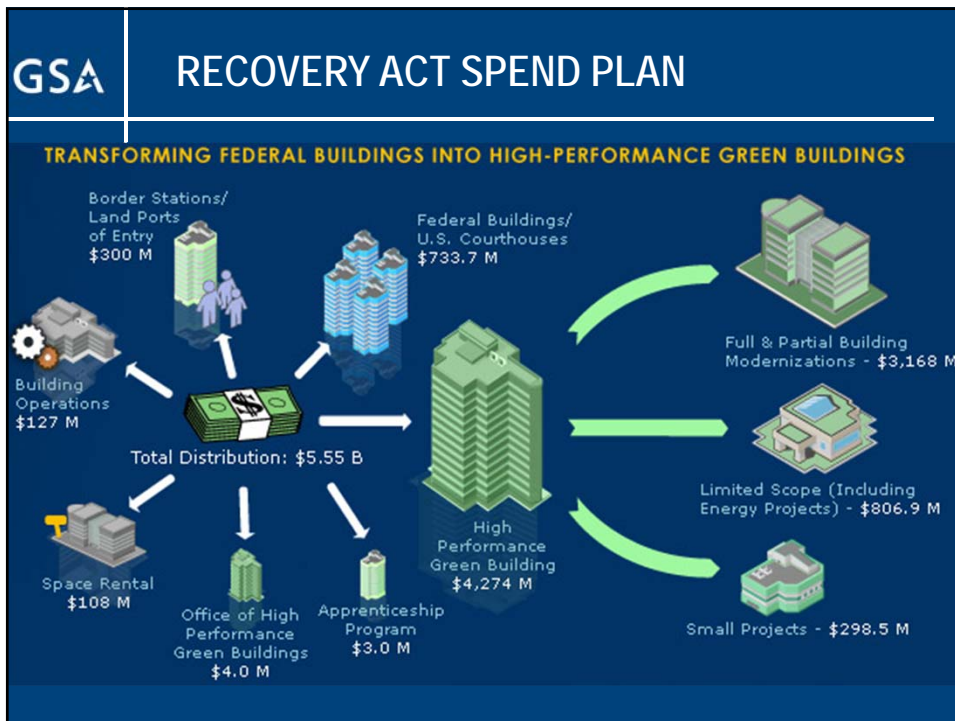
GSA will continue to implement energy conservation projects in its inventory of owned Federal buildings, based on life-cycle cost-effectiveness.

- a) GSA typically invests approximately \$20 million per year in the Energy and Water Retrofit and Conservation program,
- b) GSA selects energy conservation projects based on their ability to demonstrate both a financial return and quantifiable improvements in environmental performance.

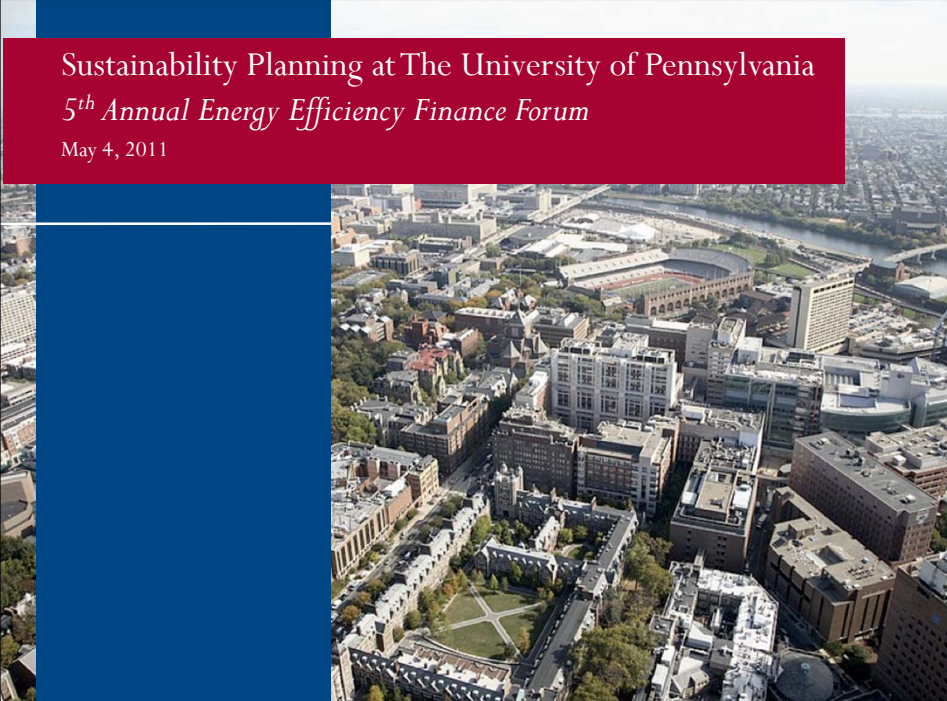
Portland, OR

GSA AMERICAN RECOVERY & REINVESTMENT ACT

- \$5.5 Billion
- \$4.5 Billion for Existing Buildings
- 261 Projects; 50 States, 2 Territories & DC
- Jobs
- High-Performance Green Buildings



GSA	CONTACT & SOURCES
<ul style="list-style-type: none">• Kinga Porst Office of Federal High-Performance Green Buildings, US GSA kinga.porst@gsa.gov• www.gsa.gov• www.fstool.gov• www.wbdg.org• www.gsa.gov/leversforchange• For doing business with the government: IndustryRelations@gsa.gov	





Sustainability Planning at The University of Pennsylvania
5th Annual Energy Efficiency Finance Forum
May 4, 2011

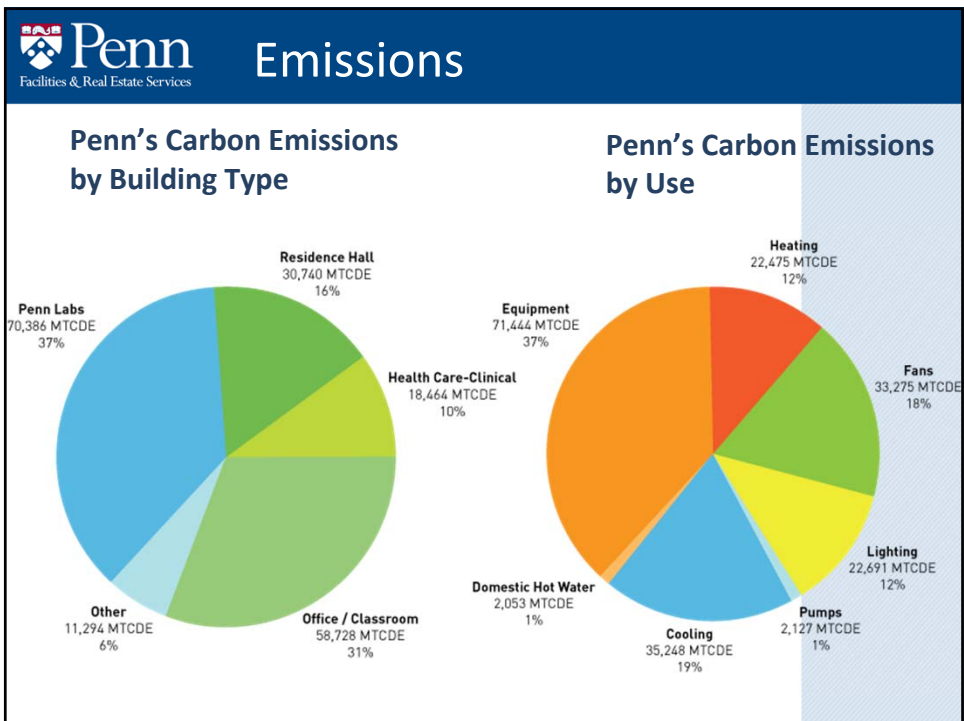
Penn
Facts and Figures


Facilities & Real Estate Services

- 20,000 students, 34,000 staff & faculty
- 12 undergraduate and graduate schools, three hospitals
- 290 acres on one contiguous urban campus
- Operating budget: \$5.6 billion
- 14 million square feet of built environment in 180+ buildings
- Annual energy consumption (kBTU 2009):
 - Total Energy: 2,502,133,019
 - Steam Energy: 1,389,275,386
 - Electrical Energy: 1,112,857,633
- GHG Emissions (2009): 290,000 mtcde

17





 **Penn**
Facilities & Real Estate Services

Energy Reduction Goals


Utilities represent over 85% of the campus' carbon emissions. Goals include:

- **Reduce energy consumption** by 17% by 2014
- **Adopt higher standards** for new buildings (LEED Silver minimum)
- **Renovation of existing buildings** (Energy Reduction Fund)
- **Develop energy conservation programs** among occupants and ensure efficient management by staff




 **Penn**
Facilities & Real Estate Services

Energy Reduction Strategies



- **Transition from allocated costs to meter-based billing**
- **\$2M+ annual funding for energy-reducing capital projects**
- **Creation of continuous commissioning team**
- **Visualization of energy use widely available to local managers**

20




Penn Results

Facilities & Real Estate Services

2010 Data (2007 baseline)

- Overall emissions reduction: 0.43% reduction (-1,259 MTCDE), incorporating campus expansion of approximately 250,000 square feet
- Steam use up, but compensated by reductions in electricity use
- Four new LEED-certified buildings (including one Platinum)
- 30% improvement in recycling rate, from 20% to 30%+
- Significant expansion of outreach and engagement on campus



Commercial Real Estate Drivers

- Emerging perception that “Class A” includes sustainable features and a “label”
- Emerging regulatory concerns (Muni, State, and Federal)
- Useful life limitations on infrastructure



Commercial Real Estate Barriers

- The “Split Incentive”
 - Who funds the cost of improvements?
 - Who gets the financial benefit of efficiency gains?
- The “Leverage Barrier”
 - Lender restrictions on equipment finance
 - Lack of flexibility to “carve out” improvements from the real property



Higher Ed Drivers

- Perception that sustainability is a given in best in class institutions
- Pressure to join voluntary program commitments like ACUPCC
- Aging infrastructure affecting quality and continuity of campus services



Main Barriers to Efficiency in Private Higher Ed

- Balance Sheet Limitations
 - Competition for “core academic investment” for limited resources
 - Bond rating concerns
- Endowment Restrictions
 - Structural barriers in consuming resources for facilities



The Private Sector Nexus

- Cost transparency
- Proper allocation of risk
- Balance sheet treatment is critical
- Mix/Match of internal and external resources to develop projects
- Product/Solution/Contractor/Consultant Neutrality



5th Annual Energy Efficiency Finance Forum
Randy Haines, CEM
Energy Manager
Thomas Jefferson University



THOMAS JEFFERSON UNIVERSITY

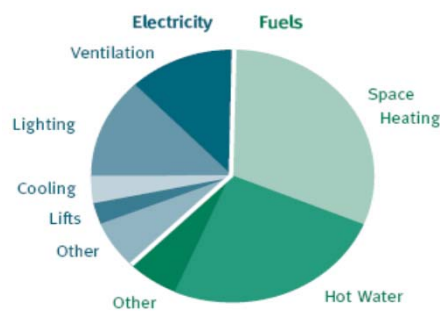


Who is Jefferson?

- A group of Hospitals and a teaching University in Center City Philadelphia.
- Consists of more than 4 million square feet of property (16 major buildings) with more than 13,000 employees.
- Buildings contain clinical (trauma center, operating rooms, patient beds & rehab), wet lab research, teaching, administration and parking activities as well as retail uses (TD Bank, Dunkin Donuts, Jimmie Johns, Au Bon Pain) on the ground floors.
- We also built a Central Chilled Water plant, 7000 tons to serve (4) Hospital buildings and (2) University buildings



Improving Hospital Energy Performance

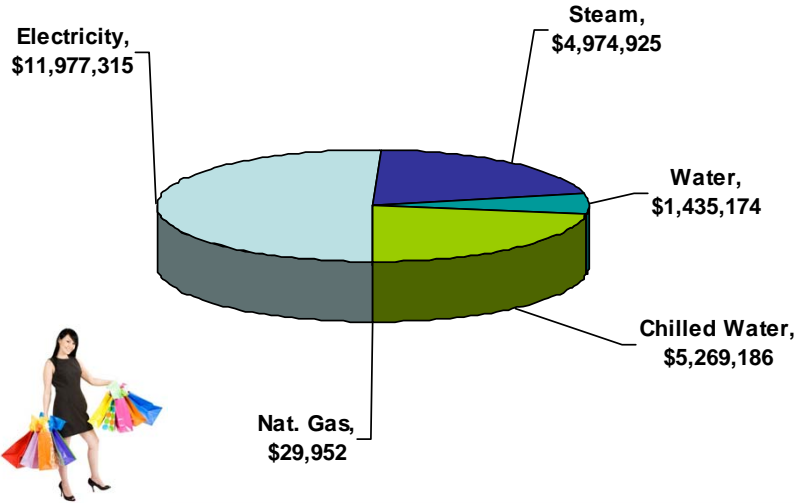


Hospital Energy Consumption by Major Applications

Source: Wissenschaftszentrum U, ed. *Greener Hospitals*. Environment Science Center: Augsburg, Germany, 2004

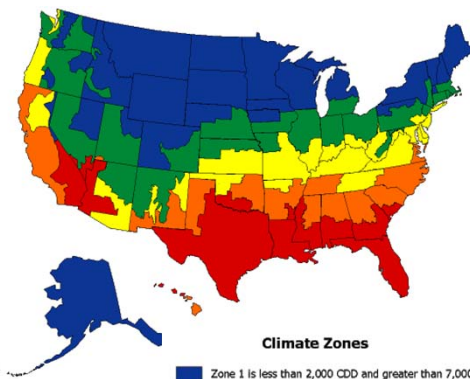


Where we spend our utility dollars



Sightlines

Benchmarking

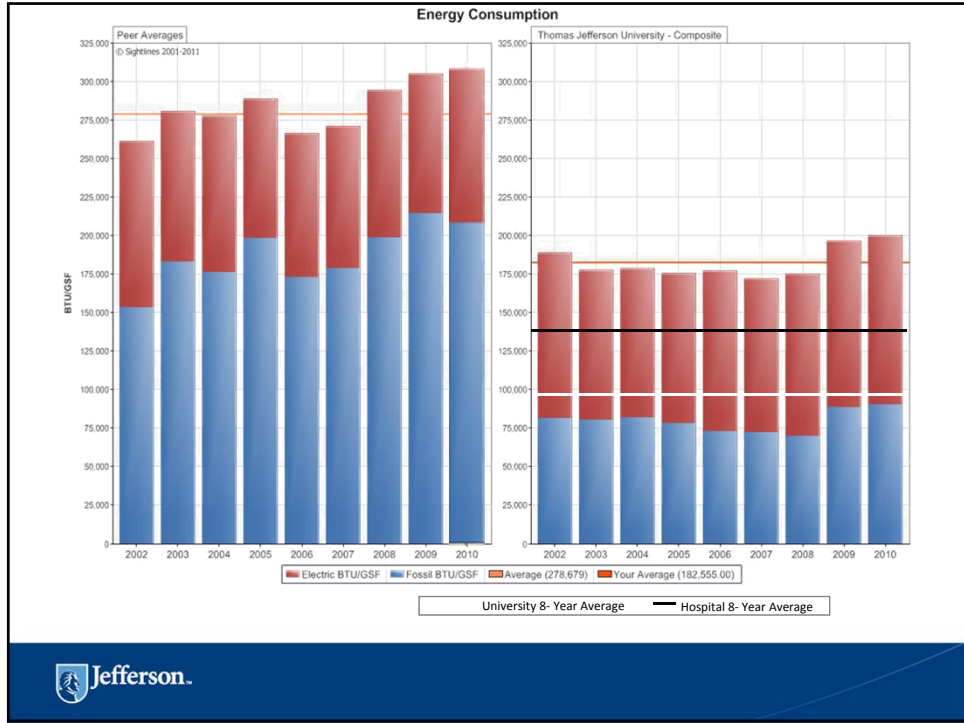


Climate Zones

- Zone 1 is less than 2,000 CDD and greater than 7,000 HDD.
- Zone 2 is less than 2,000 CDD and 5,500-7,000 HDD.
- Zone 3 is less than 2,000 CDD and 4,000-5,499 HDD.
- Zone 4 is less than 2,000 CDD and less than 4,000 HDD.
- Zone 5 is 2,000 CDD or more and less than 4,000 HDD.

Energy Peer Institutions
Carnegie Mellon University
Dartmouth College – Medical School
Drexel University
Georgetown University – Medical Campus
Indiana University Purdue University – Indianapolis
Temple University
Tufts University - Boston
University of Pennsylvania
University of Rochester - Medical Campus





MGMT REPORT/TJUH/TJUH/1210 - Compound

This Year Previous Year Comparison

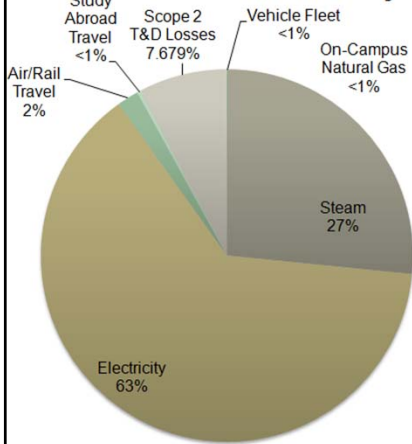
CDD this year-439 (warmer)
CDD last year-1214

HDD this year-4390 (warmer)
HDD last year-4551

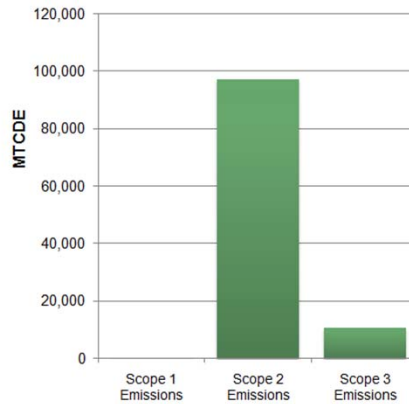
Building	Elec Use This 12 mo kWh	Elec Use Prev 12 mo kWh	Steam Use This 12 mo MLBS	Steam Use Prev 12 mo MLBS	BTU This Year	BTU Last Year	% Change From Prev Year	BTU/ SOFT
Pavilion Building	5,470,435	5,483,171	27,216	28,113	51,052,164,220	52,163,168,452	-2.1%	218,237
Thompson Building	4,190,417	4,301,602	12,540	13,060	29,220,064,804	30,218,704,024	-3.3%	170,659
Main Building	3,316,131	3,425,675	19,302	19,378	34,283,542,972	34,748,461,100	-1.4%	201,897
Gibson Building	25,557,654	24,427,278	66,889	65,456	166,801,101,448	161,238,750,536	3.4%	214,190
925 Chestnut Street	6,060,573	5,399,154	9,787	9,717	32,325,324,076	29,985,619,448	7.8%	123,234
Chiller Plant	13,606,785	12,148,895	-	-	46,428,350,420	41,452,029,740	12.0%	-
TJUH Total	58,201,995	55,185,775	135,734	135,725	360,108,547,940	349,806,733,300	2.9%	
Scott Building	5,706,562	5,572,562	5,269	5,277	25,750,657,544	25,293,449,544	1.8%	229,978
College Building	3,415,908	4,558,241	32,808	32,656	50,696,955,096	54,413,477,292	-6.8%	264,337
Curtis Building	2,150,129	2,373,124	-	-	7,336,240,148	8,097,099,088	-9.4%	53,719
Martin Building	916,826	844,670	2,185	1,766	5,728,717,312	4,983,911,040	14.9%	70,269
Jefferson Alumni Hall E	23,424,375	21,989,588	54,046	55,267	144,238,945,500	140,796,442,256	2.4%	316,514
Edison Building	3,462,405	3,342,379	9,089	11,142	22,629,159,860	24,662,939,148	-8.2%	92,701
Hamilton Building	3,188,684	2,970,497	7,684	7,328	20,023,392,808	10,135,335,764	6.2%	118,532
JHU-900 Walnut Street	8,582,505	8,253,859	24,161	20,292	58,035,097,060	52,309,559,508	10.9%	254,945
Medical Office Building	2,291,797	2,263,511	554	351	8,490,890,364	8,140,551,532	4.3%	102,334
Bluemle Life Sciences	16,457,202	15,974,996	39,683	38,077	103,374,743,224	99,818,435,352	3.6%	359,832
Clinical Office Building	1,896,776	1,831,898	375	0	6,918,287,712	6,250,435,976	10.7%	153,097
TJU Total	71,493,169	69,975,125	175,865	172,157	453,223,086,628	443,622,194,500	2.2%	
Campus Total	129,695,164	125,160,900	311,599	307,882	813,331,634,568	793,428,927,800	2.5%	

Total Carbon Emissions 107,840 MTCDE FY2010

Carbon Emissions by Type

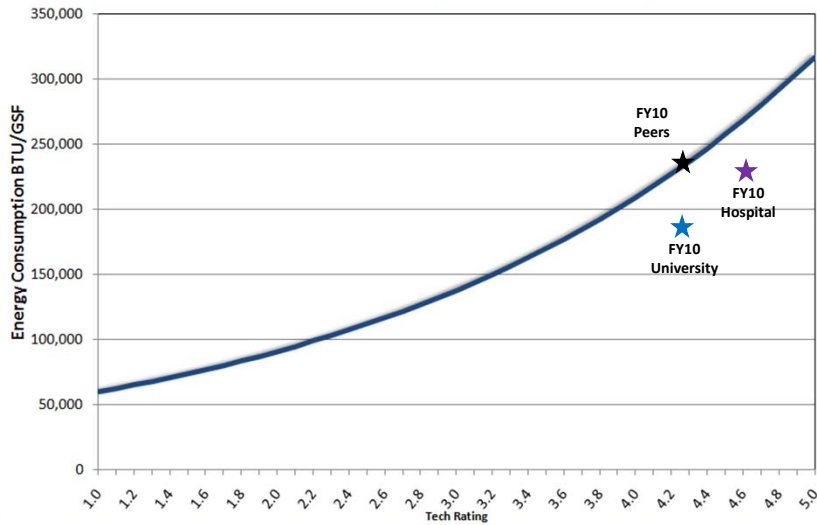


Carbon Emissions by Scope



Technical complexity drives energy consumption. Goal is to continue to drive our energy consumption and costs below our peers

Correlation: Energy Consumption & Tech. Rating



Successes

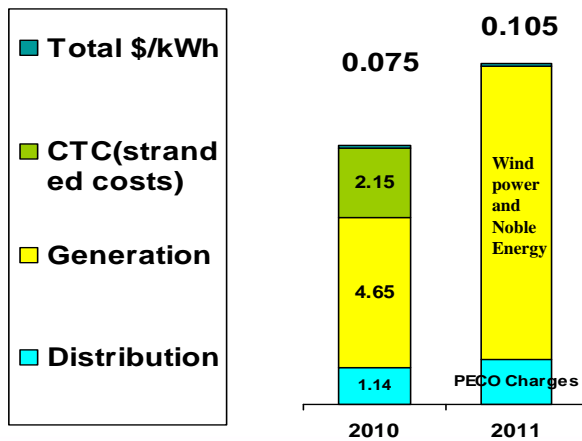
- Starting on Jan. 1, 2011, 35% of the Jefferson Health System electricity is coming from a wind farm in PA (zero pollution!)

100_1215.mov



PECO Electric Rate HT, ¢/kWh

Rate caps expired on January 1, 2011





What's new?

Completed another phase of energy savings projects in the Hospital Buildings, including the following:

- Water conservation (using condensate for R.O. makeup)
- Lighting retrofits (LED lights in all stair towers)
- New vacuum pumps in Gibbon
- Variable frequency drives on (2) air handlers
- New domestic water pumps in Gibbon
- Rebate money is available from PECO for electricity saving projects for the next 3 years from PA Act 129

Performed a 2nd retro-commission program in Pavilion building-good results

The new building at 901 Walnut Street will be built to LEED Silver specifications-a first LEED building for Jefferson! (LEED is Leadership in Energy and Environmental Design (*rating system; US Green Building Council*))

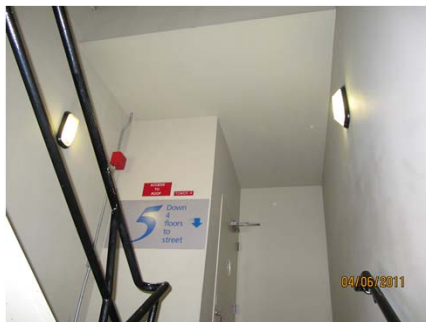


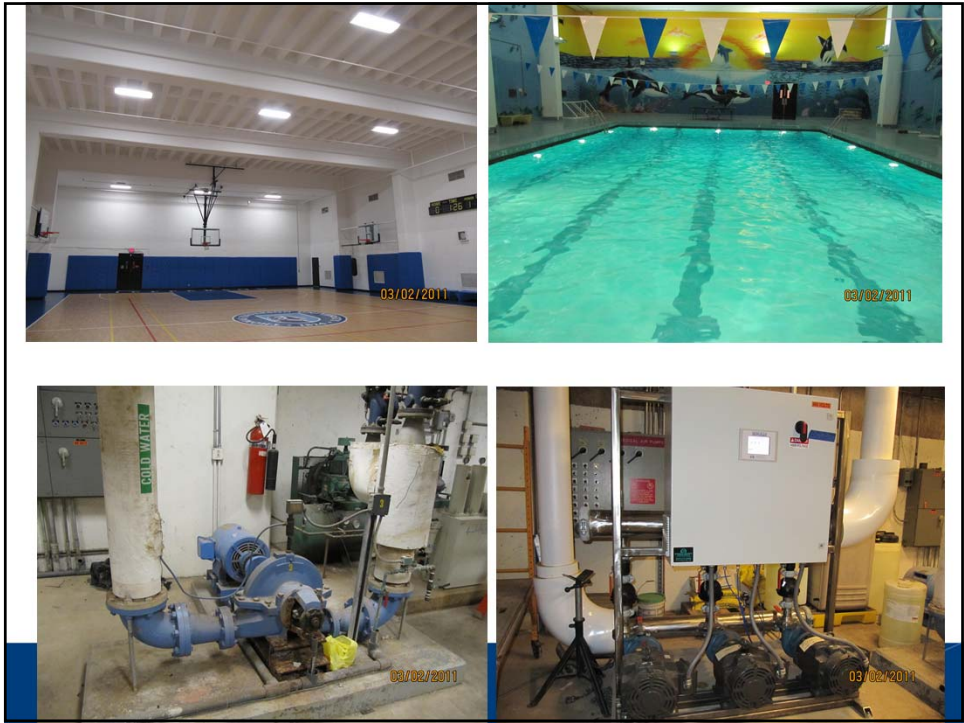
Successes

- June 2010-Completed the installation of energy saving equipment in the University Buildings
- As of April 2011-Completed 80% of the projects for the Hospital Buildings.

Old lighting-56 watts, lasts 2 years

New Lighting-20 watts, lasts 5 years





Old lights last 2 years and use 185 watts-new LED lighting last 7 years and use 36 watts of electricity!!



Energy Projects Completed since 2000

Jefferson Energy Conservation Projects						
	Vendor	Contract amount	Completion	kWh saved	Steam saved	Water saved
TJU	PNC-Information Leasing Corp.	\$4,302,048	11/1/2001	6,723,480		
TJU Phase 2	TRF-The Reinvestment Fund	\$666,447	1/29/2003	988,242		
TJU Phase 3	boilers-cancelled					
TJU Phase 4	Chilled water pump drives	\$1,280,000	12/31/2007	213,900		
TJU Phase 5	TRF-The Reinvestment Fund	\$2,618,675	9/1/2010	1,648,525		
TJUH	Wells Fargo Norwest NA	\$3,324,480	12/26/2002	6,186,700		
TJUH Phase 2	TRF- The Reinvestment Fund	\$1,027,200	1/22/2004	726,348		
TJUH Phase 3	Boilers-cancelled					
TJUH Phase 4	TJUH Self financing-Chilled water	\$3,302,109	12/31/2007	1,010,637		
TJUH Phase 4a	TJUH Self financing-VFD's	\$310,820	5/30/2009	643,217		
TJUH Phase 5	TJUH Self financing-LED, water	\$1,584,400	5/31/2011			
	Totals	\$18,416,179		18,141,049		
Future work:						
TJU Phase 6	lighting, steam station, heat rec., etc	\$5,300,000				
TJUH Phase 6	lighting, steam station, heat rec., etc	\$3,100,000				



Jefferson U. to store power in big batteries

By Andrew Maykuth
INQUIRY STAFF WRITER
 Viridity Energy Inc., the Conshohocken energy management firm, is expanding its smart-grid technology to Thomas Jefferson University and its Center City hospital. Viridity announced Tuesday that it had signed a letter of intent with Thomas Jefferson to develop a one-megawatt battery system that will allow the institution to cut electrical costs by storing cheap power produced at night for use during the day. Thomas Jefferson will use the system to optimize power purchases for its 18 Center City buildings, which occupy 4.5 million square feet and consume up to 22 megawatts, said Ron Bowlan, Jefferson's chief facilities officer. The system will also allow Jefferson to take advantage of an agreement to purchase one-third of the output from a Schuylkill County wind farm, the Locust Ridge II project. Wind turbines produce power intermittently, and tend to produce more at night than during the day.

Audrey Zibelman, Viridity's president, said the battery storage unit would allow Jefferson to sell stored power into the lucrative capacity markets during peak hours, when the regional grid operator pays premium prices for power or reductions in consumption. The battery system, which is about the size of a 40-foot truck trailer, also serves as a backup supply. "It's one asset that provides multiple purposes," she said. The project is the latest for Viridity, which is also working with Drexel University, SEPTA, and several other large institutions on energy-efficiency systems that pay for themselves by shifting power consumption. The Jefferson project is not yet designed. But Viridity's SEPTA pilot project, which involves the installation of a one-megawatt battery system to capture power from braking subway cars, will cost about \$1.5 million.

Contact staff writer Andrew Maykuth at 215-854-2947 or amaykuth@phillynews.com.

4/12/11



Questions?

- Randolph.Haines@jefferson.edu
- phone 215-503-6099



- Thank You



Evaluating Financial Options & Exploring New Financial Mechanisms

Greg Kats, Senior Director
Good Energies

*Dan Reicher, Professor of the Practice of Law, Executive Director of the Steyer-Taylor Center for
Energy Policy & Finance*
Stanford Law School

Gregory Kats



Gregory Kats is Venture Partner at Good Energies a multi billion-dollar global clean energy investor, where he leads investments in the energy efficiency and green building areas, and is President of Capital E, a national clean energy advisory practice. He recently introduced and helped negotiate \$100 million strategic investment by St. Gobain in Sage. Greg developed a partnership with TIAA-CREF establishing \$50 million VC investment vehicle within TIAA's real estate group to invest behind Good Energies' energy efficiency and green building investments. Greg also guides Good Energy's portfolio firms on leveraging legislation and programs at DOE, DOD and EPA, including recently guiding a portfolio firm in securing a \$90 million DOE loan guarantee. He serves on a half dozen boards and is Sustainability Advisor to CalPERS.

Greg served for 5 years as the Director of Financing for Energy Efficiency and Renewable Energy at the U.S. Department of Energy where he led national programs to develop and deploy renewable energy, energy efficiency and advanced building technologies. He initiated and led DOE's successful effort to persuade the SEC to lift key restrictions on domestic and international expansion of US energy service companies. He was the Founding Chair of the International Performance Measurement & Verification Protocol (IPMVP), which has served as the technical basis for \$10 billion in building upgrades and been translated into 10 languages. Earlier in his career, Greg held senior management and marketing positions in London, Paris and Geneva.

Greg is a founder of the American Council on Renewable Energy (ACORE), and the New Resource Bank. He is the Founding Chair of the Energy and Atmosphere Technical Advisory Group for LEED, and is the Founding Chair of the National Chapter of the US Green Building Council. He was the Principal Advisor in developing Green Communities, now the national green affordable housing design standard, used as the green design basis for over 20,000 units of green affordable housing.

Greg earned a MBA from Stanford University and, concurrently, an MPA from Princeton University (where he studied with Ben Bernanke) and a BA from UNC with highest honors as a Morehead Scholar. He is a Certified Energy Manager and a LEED AP. Greg was a principal author of *Green Office Buildings: A Practical Guide to Development* (JLI, 2005), and is the author of the *Greening Our Built World: Costs, Benefits and Strategies* (Island Press, 2010). He is a frequent keynote speaker at national clean-energy technology, venture capital, and real estate conferences.

Costs, Benefits and Financing Issues

Greg Kats, *Capital –E and Good Energies*, May 2011

ARCHITECTURE | FINANCE

Can green building and development transition from an environmentally motivated niche to the cost-conscious mainstream? Can we afford to shift to a clean-energy, low-carbon economy? Based on extensive original research, *Greening Our Built World* documents the costs and benefits—financial, health, spiritual, and environmental—of green design technologies and strategies. It is an invaluable resource for professionals seeking to cost-effectively green their buildings and communities, build competitive advantage, and achieve deep carbon dioxide reductions.

Advance Praise for *Greening Our Built World: Costs, Benefits, and Strategies*

"Everyone who is serious about climate change should get this book. Greg Kats brings a deep knowledge of energy and construction to show that the benefits of green construction outweigh the costs and could jump-start a national revolution toward the use of renewable energy sources."

—DON KENNEDY, President Emeritus of Stanford University and Brig Professor of Environmental Science and Policy

"By every measure, green building is an idea whose time is now. *Greening Work* in this area is part of the reason, and this book will be an invaluable resource to builders, cities and companies on why and how to cost-effectively green their own built worlds."

—BOB FEDRIZZI, President and CEO, U.S. Green Building Council

"Building green offers the potential for important health and economic benefits. As our nation faces the twin mandates to improve health and control costs, analyses such as this one—including full benefit accounting—are indispensable."

—HOWARD FRUMKIN, Director, National Center for Environmental Health/ATSDR, Centers for Disease Control and Prevention

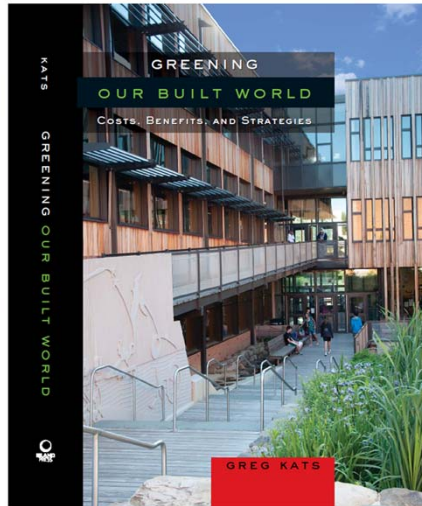
GREG KATS is Senior Director and Director of Climate Change Policy at Good Energies, a multi-billion dollar global clean energy investor. He served as the Director of Financing for Energy Efficiency and Renewable Energy at the U.S. Department of Energy, and is a Founder of New Resource Bank and the American Council on Renewable Energy.

Cover photo: School Friends School, Washington DC, LEED Platinum certified
Cover photo by Trevor Angel



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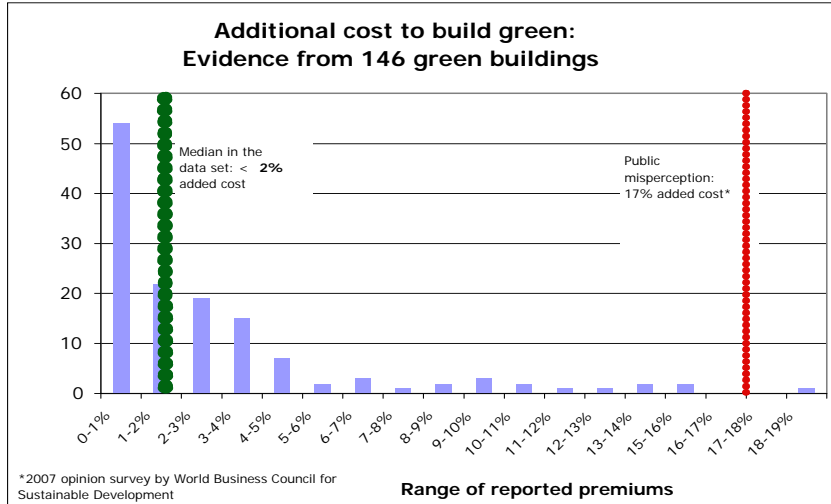
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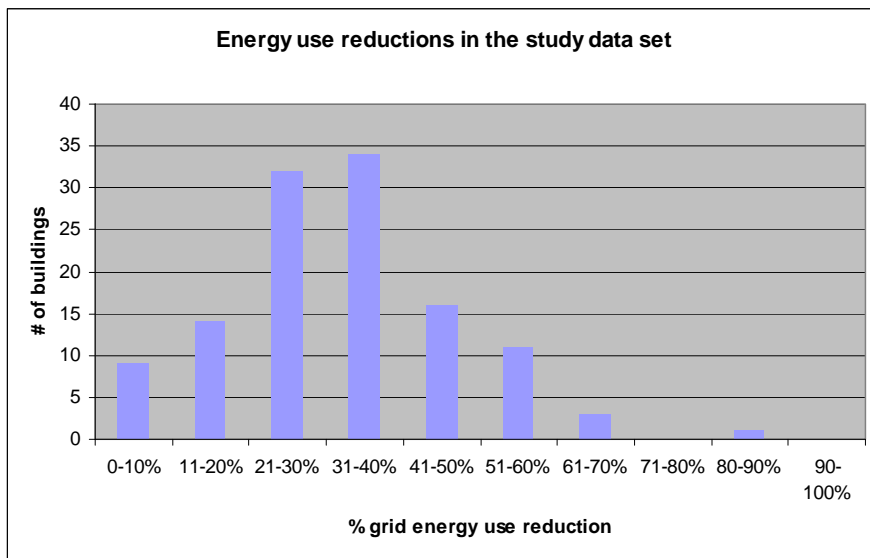
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- ❑ National Association of State Energy Officials
- ❑ National Association of Realtors
- ❑ Real Estate Roundtable
- ❑ US Green Building Council
- ❑ World Green Building Council

Cost of Building Green

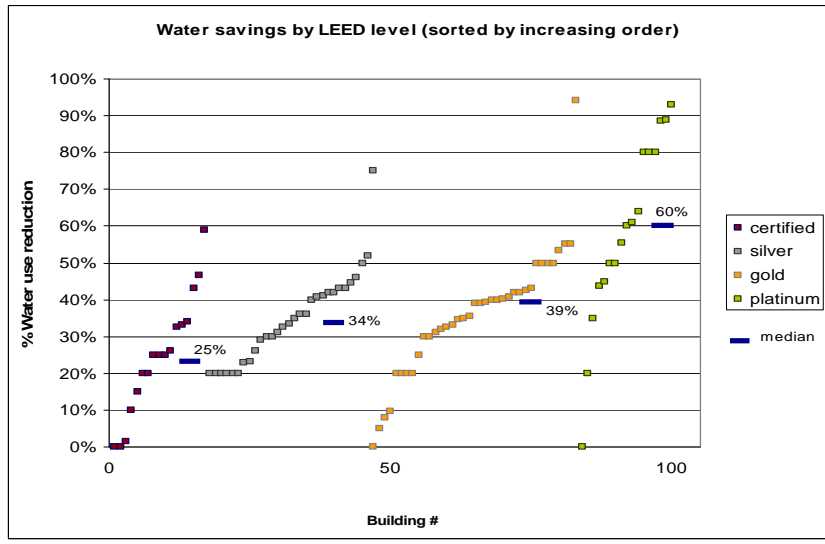


Energy savings green vs. conventional buildings

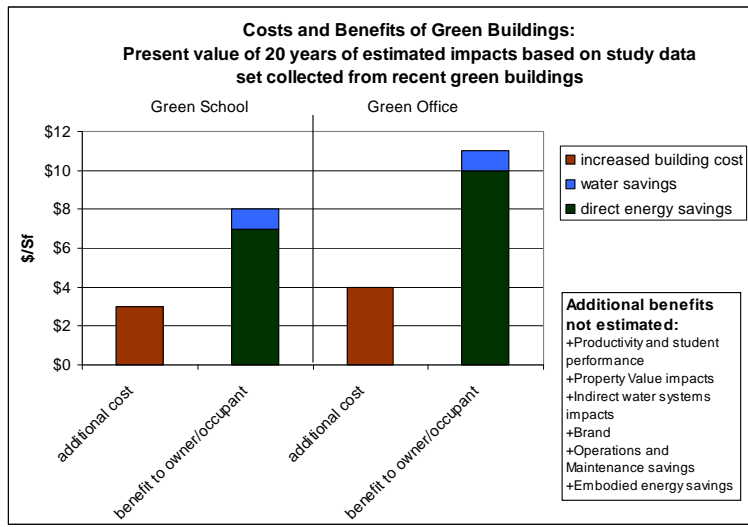


Source: Greg Kats/Good Energies

Water Use



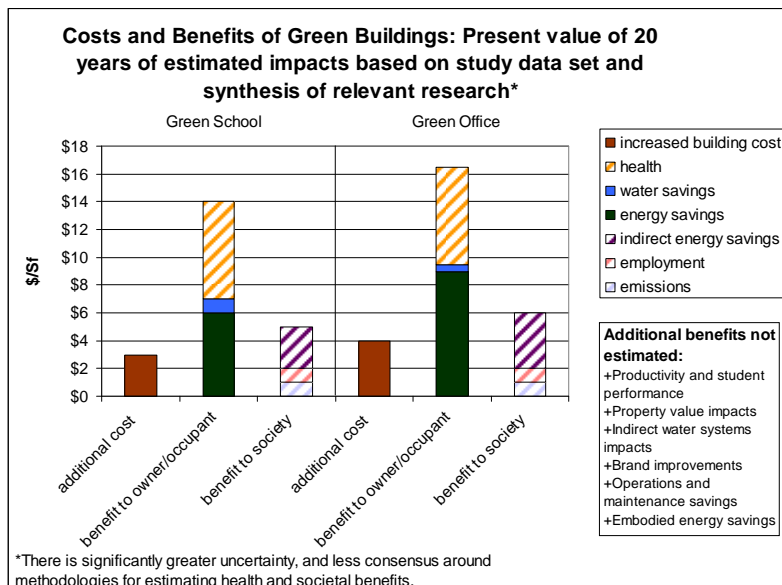
Costs and Benefits



Health Improvements



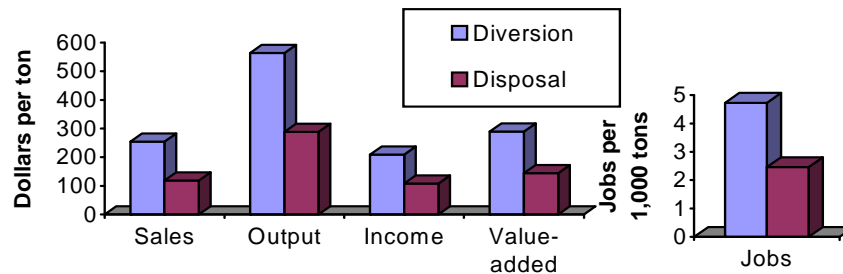
Slides Courtesy of Tom Phillips, Seattle Housing Authority
Results - Breath Easy Homes Study



Waste Diversion and Recycling

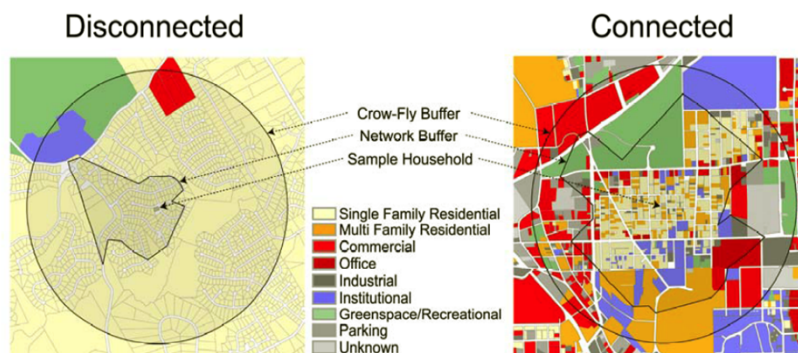
Green buildings increase diversion of construction and demolition waste, and encourage recycling throughout the life of the building, requiring space for onsite sorting and storage of recyclables.

Economic impacts per ton of disposal and diversion.



Source: CA Integrated Waste Management Board

Transportation savings



Annual transportation savings per household: \$600-\$700/ HH or \$4000 with one less car

Annual health savings: \$100-\$200/person

Total health and transportation related savings: \$5-\$30/sf

Source: Greg Kato/Good Energies

Green Building Benefits: Increased Rent, Sales & Occupancy

<i>1st Quarter 2008</i>	<i>Non-LEED</i>	<i>LEED Certified Offices</i>	<i>Difference</i>	<i>% Change</i>
<i>Occupancy rates</i>	88%	92%	4%	5%
<i>Rent (\$/SF)</i>	\$31	\$42	\$11	35%
<i>Property value (\$/SF)</i>	\$267	\$438	\$171	64%

<i>1st Quarter 2008</i>	<i>Non-Energy star</i>	<i>Energy Star Offices</i>	<i>Difference</i>	<i>% Change</i>
<i>Occupancy Rates</i>	88%	92%	4%	5%
<i>Rent (\$/SF)</i>	\$28	\$31	\$3	11%
<i>Sale Price (\$/SF)</i>	\$227	\$288	\$61	27%

Source: CoStar analysis, 2008

Brand Impact of Greening

Greening impacts: three Sources of Brand Equity

- Increased brand awareness (e.g., free media exposure)
- Greater preference due to specific attributes (e.g., better IEQ)
- General non-attribute preference (e.g., association with quality, lower risk)

All Building Types are Greening

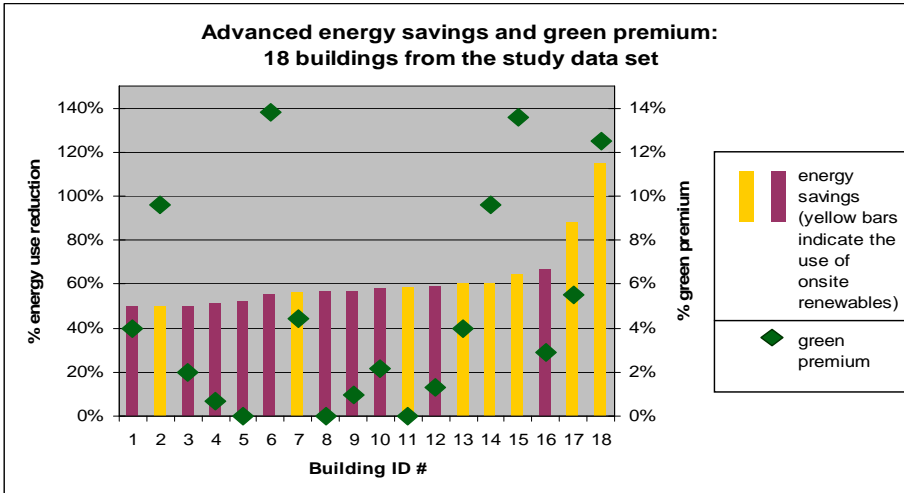
Comcast Building



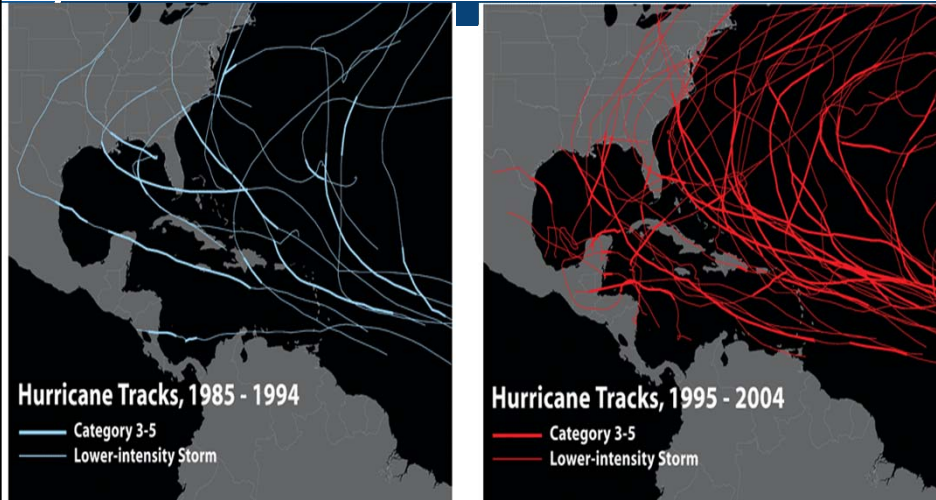
Wentworth Commons - IL



Advanced energy savings and green premium:
18 buildings from the study data set

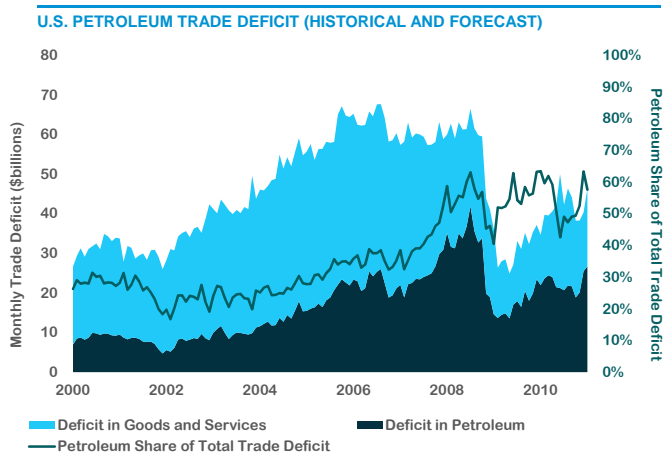


Climate Change is Happening



U.S. Oil Dependence: Economic Costs

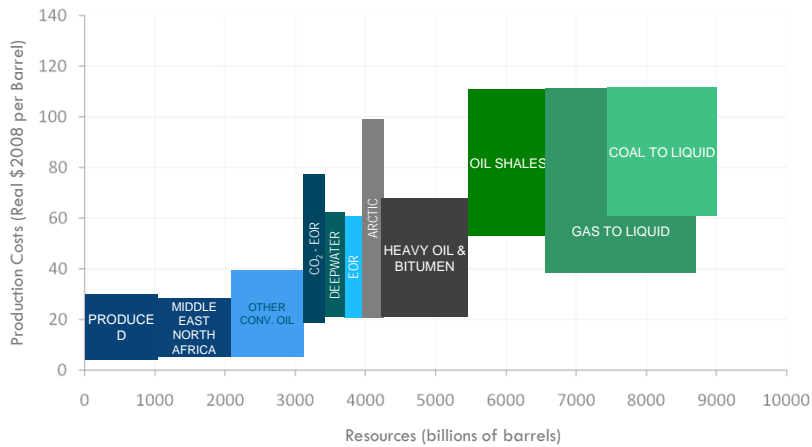
On a month-to-month basis, petroleum imports have typically accounted for about half of the total U.S. trade deficit since the end of 2007.



Future Oil Supplies—Heavier and More Costly

Resources in the Middle East and North Africa will be the least expensive to produce. However, they may also be the least accessible to IOCs.

LONG TERM OIL SUPPLY COST CURVE

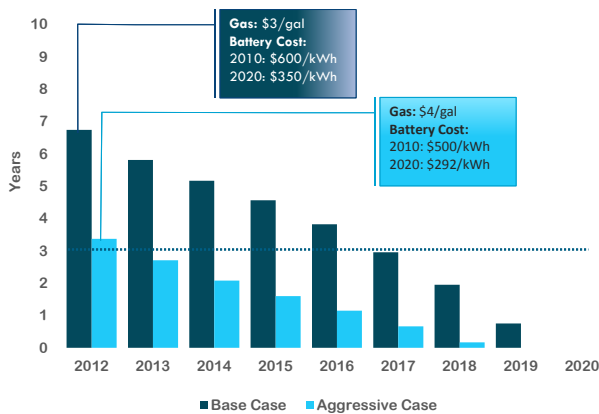


Source: International Energy Agency, World Energy Outlook 2008

Cost Reduction Scenarios

Capital costs are largest obstacle to electric vehicle adoption. However, battery and component costs are falling as gasoline prices rise.

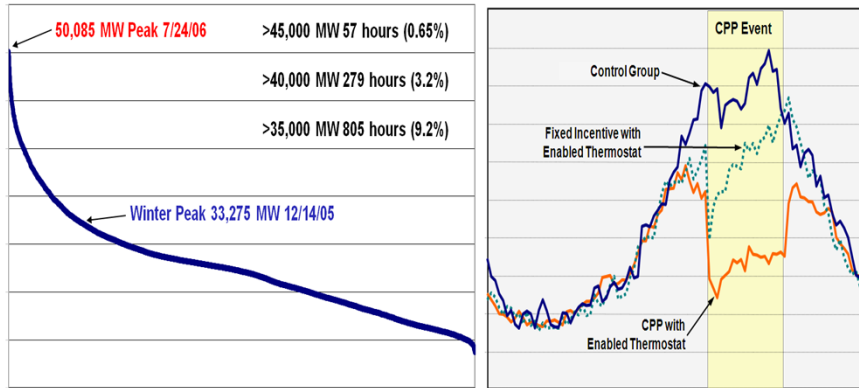
PAYBACK PERIOD FOR A PHEV-40 (INCLUDING ARRA INCENTIVES)



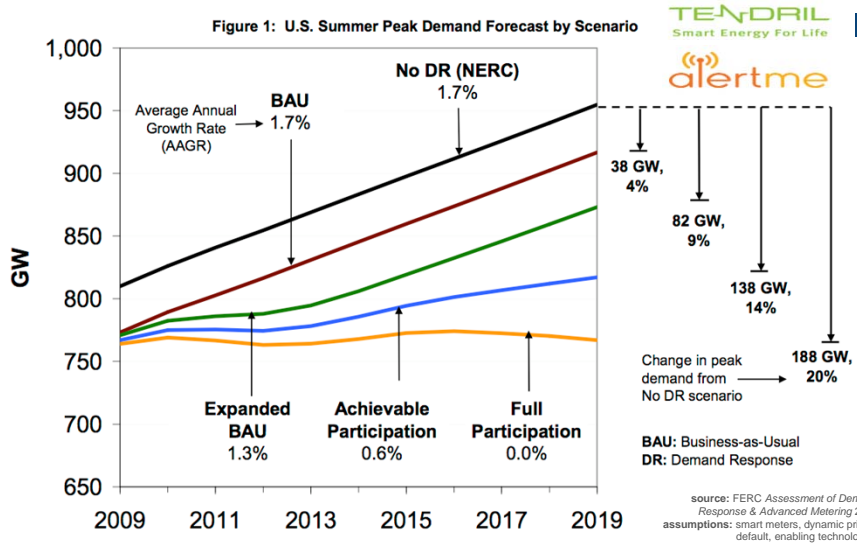
As battery costs come down, the value proposition will get stronger. By mid-decade, PHEVs and EVs could present drivers with an economically compelling option.

Eliminating Peaking Power and T&D should drive huge investments

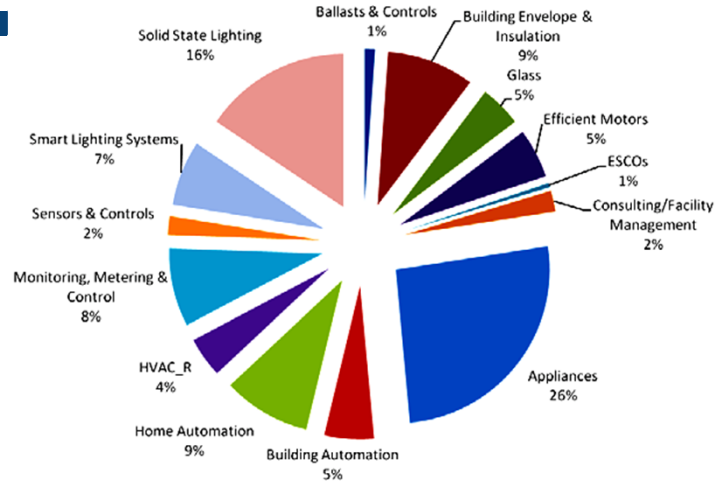
Berkeley Wireless Research Center



Smart grid investments: huge potential



VC Investment by Energy Efficiency Subsector 2009-2010



\$20 billion > \$200 billion EE Financing/Year
Requires new financing models (See www.cap-e.com)

Models

- Energy Service Performance Contracting (ESPC)
- Specialized Third Party Financing Facility
- Special Purpose Entities Using Power Purchase Agreements
- State/Local Contracted and Administered Funded Programs
- Energy Efficiency Utility
- Carbon Market Funding
- Mortgage-Backed Financing
- Utility On-bill Financing
- Property Assessed Clean Energy (PACE) - Commercial
- Property Assessed Clean Energy (PACE) – Residential

Strategies

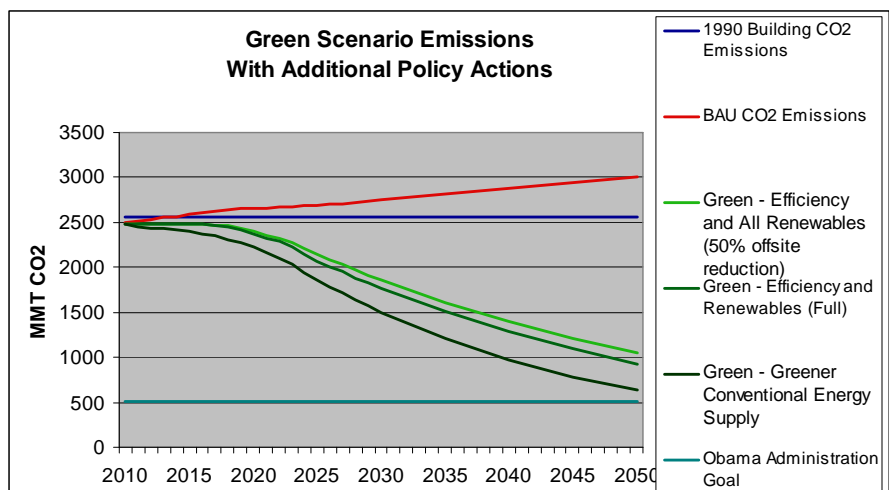
- Intermediary Aggregated Scale Purchasing
- Revolving Loan Fund
- Preferential Loans
- Risk Reallocation
- E-Loan
- Point of Purchase Interest Rate Buy-down

CO2 Value to investors in EE and Renewables

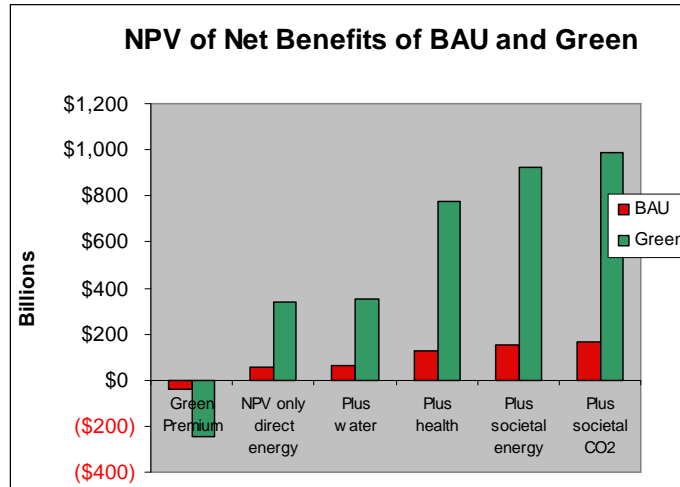
- Real estate investment in efficiency (and renewables) creates 2 value streams

- Phase 1
 - PUC
 - New Competitive Mechanism
 - Intermediaries (Enernoc, Tendril, O Power)
 - Real Estate owners, Cities

CO2 Impact



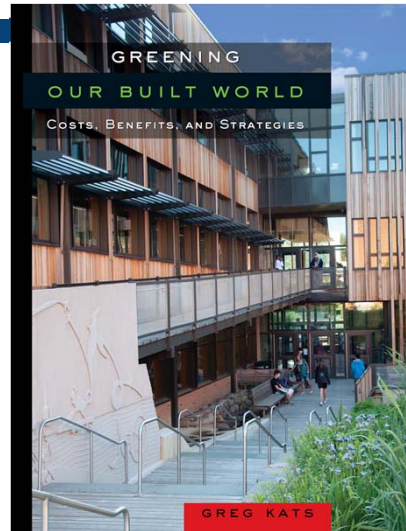
Greening = Wealth and Jobs Creation



For more Information

- www.cap-e.com
- [Greening Our Built World](#) is on Amazon
- www.goodenergies.com
- [Global cool cities alliance](#)

Thank you



Case Study from Multiple Utilities:
**Utility On-Bill Financing: Exploiting a Tool with Great Potential –
Lessons Learned from the Pros**

Moderator:

Charles Gray, Executive Director
NARUC

Utility Case Study #1:

Nancy Brockway, Principal
NBrockway & Associates
Former Commissioner

New Hampshire Public Utilities Commission

Utility Case Study #2:

Frank Spasaro, Energy Efficiency Partnership Manager
Southern California Gas Company

Panelist #3:

Steve Cowell, Chairman & Chief Executive Officer
Conservation Services Group

**BIOGRAPHICAL INFORMATION
CHARLES D. GRAY
EXECUTIVE DIRECTOR
NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS**

Named Executive Director of NARUC in June, 1999, Charles Gray is responsible for the overall management of the Association's Washington Office. Prior to this appointment, he was appointed NARUC's General Counsel in August 1996 where he supervised the legal and policy work of NARUC in legislative and regulatory matters involving energy and communications issues. Prior to his appointment as General Counsel, he represented the Association concerning energy and transportation matters in administrative proceedings, Federal court litigation, and congressional legislation since January 1979. Gray is a 1977 graduate of the Cornell University School of Law and a 1973 graduate of Williams College. He is a member of the District of Columbia Bar, as well as a member of the bars of numerous U.S. Courts of Appeals.

Biodata for Nancy Brockway - Energy Efficiency

Nancy Brockway has worked in the fields of utility regulation and energy efficiency for over 35 years. As a staff member of the Maine PUC (under Peter Bradford, David Moskowitz and Cheryl Harrington), she helped develop one of the first utility demand-side management initiatives in the country, and participated in the development of DSM regulatory theory. She continued her regulatory work on DSM as counsel and ultimately General Counsel of the Massachusetts Department of Public Utilities, where among other things she presided over a major proceeding challenging least cost utility plans for lack of sufficient energy efficiency. Upon leaving the DPU, she spent 9 years as a consultant and advocate for low-income consumers, and testified numerous times on low-income DSM. She also published in this area. She was appointed by the MA DoE as the Conservation and Load Management Expert for a major electric utility collaborative. In 1998, Ms. Brockway was appointed by the Governor of New Hampshire as a member of the New Hampshire Public Utilities Commission, where she served for 5 years. As a Commissioner, Ms. Brockway participated in the reintroduction of gas DSM, the development of periodic DSM plans by utilities, and the initiation of the Pay As You Save™ method for making efficiency available to hard-to-reach customers. She was a member of the NARUC Energy and Environment Committee. Upon leaving the NH Commission, she was the Chair of PAYS America, Inc., a non-profit dedicated to disseminating information about PAYS™. She has consulted for a wide variety of clients, including consumer advocates and environmental groups, and has provided testimony on DSM issues.





Frank Spasaro
Manager, Energy Efficiency Partnerships
SDG&E/SoCalGas

BIO:

Frank is currently responsible for managing the local government and institutional energy efficiency partnerships for both San Diego Gas & Electric and Southern California Gas Company. He is also responsible for developing and implementing their new “on-bill” financing programs for energy efficiency. Since joining Southern California Gas Company in 1983, he has spent the majority of his career working on energy efficiency, including several policy and oversight positions. He has been responsible for the development of many marketing programs to promote energy efficiency and he has managed the Gas Company’s Energy Resource Center.

Frank attended the University of Southern California and graduated with a Bachelor of Science degree in Civil Engineering.

Contact: fspasaro@semprautilities.com



**On Bill Financing:
SDG&E / SoCalGas Case
Study**

Frank Spasaro

May 3-4, 2011
ACEEE Energy Efficiency Finance
Forum

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What is *On-Bill Financing*?



On-Bill Financing (OBF) provides easily accessible, zero percent interest, *on-the-utility bill* financing for purchasing and installing qualified energy efficient equipment. It is targeted to overcome the barriers of capital constraints, administrative and/or time burdens.

SDG&E/SCG Program Design: 2010-2012 Program Overview



- Businesses only (commercial, industrial, taxpayer-funded, and non-owner occupied MF).
- Customers receive both an OBF loan and a rebate/incentive from an energy efficiency program.
- Energy savings covers the loan installment
- **Zero-percent interest, unsecured, non-transferable**
- Minimum loan \$5,000
Maximum \$100,000 / \$250,000 / \$1,000,000
- Monthly loan payment is included on the utility bill
- Loan Default = Meter shut-off



SDG&E/SCG PROGRAM DESIGN: Current Eligibility/Rules



Project:

- ✓ Must qualify for a utility rebate/incentive program (business programs)
- ✓ Loan term is tied to the payback period: cap of 10 years for *taxpayer-funded*, 5 years for all other businesses (*or useful measure life*).

Credit:

- ✓ Applicant must be a customer of the utility (active account) for at least 24 months in the same business, with at least 12 months of energy usage data at the current location.
- ✓ Applicant's account must be in good standing

Other Requirements:

- ✓ Audit; pre-/post-inspection



Legal and Regulatory Issues

- Lending Laws: State and Federal
 - Federal Truth in Lending Act
 - Equal Credit Opportunity Act
 - Fair Credit Reporting Act
 - and the full panoply of federal and state laws which deal with privacy and the safeguarding of information about consumers.*
 - DOC Licensing
 - Disclosures
- Regulatory – Rules, Tariffs and Billing...Reporting!
- Credit checks



Program Status (thru March 2011):

	<u># of Loans</u>	<u>Amount(\$)</u>	<u>Avg. Loan (\$)</u>
SDG&E: 22,045	663	14,615,693	
SoCalGas:	23	851,173	37,008
<i>Defaults:</i>	5	76,988	



An OBF Example



- Customer: A business customer of The Gas Company who manufactures aluminum castings.
- Size: Approx. 30,000 therms a year
- Project: Replacing existing inefficient 900-lb crucible with a new high efficiency one equipped with precise temperature control, small pilot (as opposed to the log gas flame pilot in existing equipment) with convection flow to transfer heat, and insulation.
- Cost: \$43,264.55




An OBF Example (Continued)



- Estimated annual energy savings: 7,169 therms or \$8,256.54
- Business Energy Efficiency Program (BEEP)
Incentive amount: \$7,169
- Loan amount: \$36,095.55 (project cost minus BEEP incentive)
- Simple Payback period: 4.37 years
- Loan Term = 53 months (4.37 years in months plus one month)
- Monthly payment: \$681.05



On Bill Financing Beyond OBF




Energy Efficiency Finance Study:

- ✓ CPUC Energy Division tasked to engage key actors and secure industry perspectives thru meetings, workshops, or other means to explore additional financing possibilities and oversee preparation of a report recommending the most-promising energy efficiency financing approaches that should be considered in California for underserved segments of energy users.
- ✓ Consumer “gap”
- ✓ Utilities are directed to coordinate any potential market research on financing instrument feasibility or development with the Energy Division effort.



On Bill Financing Beyond OBF (Continued)



Utility Coordination with Community Financing Programs:

Utilities are to assist in the development of community financing programs by

- ✓ offering routine information about typical energy improvements, their costs, expected lives, and saving, etc.
- ✓ providing existing consumer-specific documentation from ratepayer-supported energy programs (e.g., information on rebate applications, verification of completed installations, etc).
- ✓ pointing customers to community (or other) nonutility financing programs when these are available



Lessons Learned

- Understanding applicable laws/regulations is key.
- Expect the unexpected! Be nimble with IT and program design.
- Working with contractors is a challenge.
- Manage expectations—OBF is not a panacea!



Getting Started is Easy!

- SoCalGas: www.socalgas.com/business
- Call 1-800-427-6584 (select option 6) or email scgobf@semprautilities.com to contact The Gas Company's On-Bill Financing Program Staff
- SDG&E: www.sdge.com/obf
- Call SDG&E Energy Information Center at 1-800-644-6133 or email sdgeobf@semprautilities.com to inquire about SDG&E's On-Bill Financing program.



STEPHEN L. COWELL

Chairman and CEO – Conservation Services Group

Stephen L. Cowell founded Conservation Services Group (CSG) in 1984 and is the organization's chairman and chief executive officer. Mr. Cowell has been the founder and director of numerous energy efficiency and renewable energy organizations during his career.

For the past 30 years, Steve has been involved in energy efficiency programs around the country and has successfully advocated for energy efficiency as a least-cost power supply option. He has helped create and build the industry through sound public policy, legislation, and establishment of trade ally networks as well as the delivery of cost-effective residential energy efficiency programs. Under Steve's leadership, CSG has designed and implemented conservation and renewable energy programs for utilities, state agencies, and other groups throughout the U.S., providing services to nearly two million businesses and households.

Federal & State Efficiency Programs & Policies: What Does the Future Hold?

Steven Nadel, Executive Director
American Council for an Energy-Efficient Economy

*Stockton Williams, Senior Advisor for Energy Efficiency Markets, Office of Sustainable Homes
and Communities*
U.S. Department of Housing and Urban Development

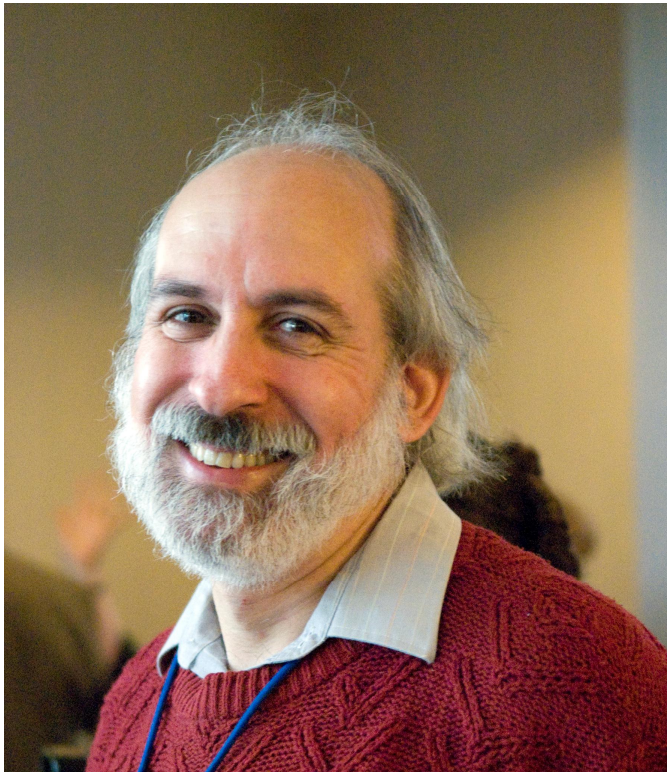
Jeff Genzer, Counsel
National Association of State Energy Officials

Gilbert P. Sperling, Senior Advisor for Policy and Programs
Office of Energy Efficiency and Renewable Energy

Dian Grueneich, Former Commissioner
California Public Utilities Commission

Steven Nadel

Steven Nadel is the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a non-profit research organization that works on programs and policies to advance energy-efficient technologies and services. Steve has been at ACEEE for 20 years serving as Deputy Director of the organization and Director of ACEEE's Utilities and Buildings programs prior to his promotion to Executive Director in 2001. Prior to ACEEE he planned and evaluated energy efficiency programs for New England Electric, a major electric utility; directed energy programs for the Massachusetts Audubon Society, Massachusetts's largest environmental organization; and ran energy programs for a community organization working on housing rehabilitation in the poorest neighborhoods of New Haven, CT. Steve has worked in the energy efficiency field for 30 years and has over 100 publications on energy-efficiency subjects. He has testified many times before Congress on energy efficiency subjects and also testified before multiple state legislatures. He was a major contributor to national energy legislation passed by Congress in 1987, 1992, 2005, 2007, and to energy legislation now pending before Congress. His current research interests include utility-sector energy efficiency programs and policies, state and federal energy and climate change policy, and appliance and equipment efficiency standards. He has a M.S. in Energy Management from the New York Institute of Technology, and a M.A. in Environmental Studies and B.A. in Government from Wesleyan University in Connecticut.



Energy Efficiency Policy Opportunities

Steven Nadel
ACEEE
Energy Efficiency Finance Forum
May 2011



112th Congress

- Bipartisan items
- “Bite size”, “in chunks”
- Consensus equipment standards
- Clean Energy Standard
- Tax incentives
- SAVE
- Financing
- Revitalizing manufacturing
- Appropriations



Consensus Federal Standards

- Almost passed Congress in 2010
- Includes:
 - 6 residential appliances
 - Residential AC and furnaces
 - Hot food holding cabinets, hot tubs and drinking water dispensers
- Some clarifications and reforms to standards program

ACEEE30
30 Years of Energizing Efficiency



Clean Energy Standard (CES)

- Includes renewables, efficiency, nuclear, carbon capture and storage
- Examples – Lugar and Graham bills, Obama included in SOTU
- Issues:
 - Include efficiency, no cap
 - Numbers – 80% by 2035?
 - Include natural gas for partial credit?
 - Carbon storage vs. “sequestration ready”

ACEEE30
30 Years of Energizing Efficiency



Tax Incentives

- Residential – add performance based credits (25E) & extend/modify prescriptive credits(25C)
- Commercial – improve new construction deduction, add performance-based incentive for retrofits (20%+ savings)
- Extend new home and appliance credits
- Reinstate credits for heavy-duty hybrids
- Some possible new items (Bingaman/Snowe)
 - Chillers
 - Advanced motors
 - Expand CHP credit
- Perhaps shorter depreciation for some EE investments as part of business tax reform

ACEEE 30
30 Years of Energizing Efficiency



Revitalizing Manufacturing



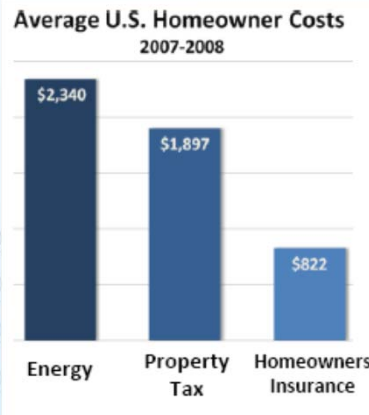
- Senators Brown, Stabenow and others introduced IMPACT
 - Revolving loan fund to improve manufacturing processes and to expand production of clean energy products
- Other options:
 - Requirements to let EE bids compete with new capacity
 - EE investments deductible but repay within 10 years

ACEEE 30
30 Years of Energizing Efficiency



SAVE Act (Sensible Accounting to Value Energy)

Require federal loan agencies to assess the expected energy costs for mortgage applicants



Financing



- Direct appropriations will be difficult, so looking more into financing
- Opportunities:
 - Clean Energy Development Administration (CEDA)
 - Improving and expanding DOE loan guarantee program
 - Federal bonds used to provide low-cost capital that banks or agencies then lend
 - Better including efficiency in review of existing home and commercial loans

Appropriations



- FY 2011
 - Agreed to cut \$38 billion, includes \$½ billion from EERE
 - House R's wanted to cut \$61 billion
 - Energy Star and many DOE programs targeted
- FY 2012
 - Administration proposing to increase budgets for some programs
 - Congress will likely cut substantially



Other Possibilities from 2010 ACELA Legislation



- Improved building codes
- Industrial/building job training & TA – IAC, BTAC
- Programs for industry
- Reauthorizing WAP and SEP
- Demand response (2009 House bill)



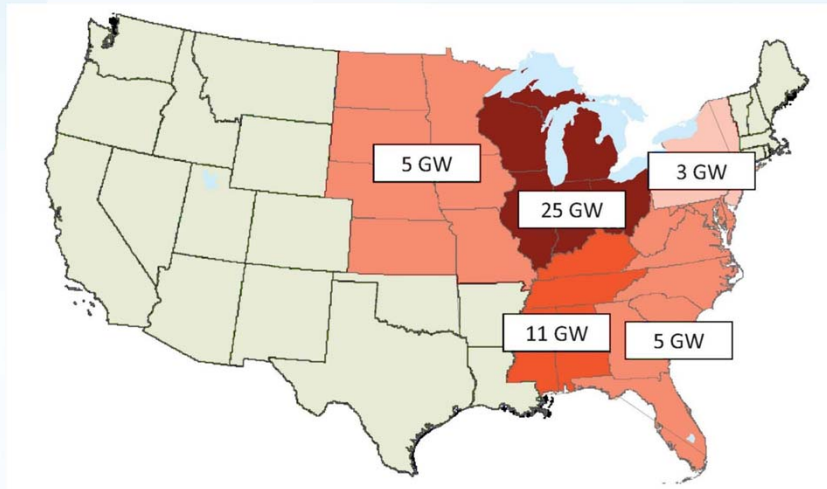
Administrative Items



- Appliance standards
- Implementation of existing tax incentives and financing
- FERC – demand response, maybe EE
- EPA rulemakings and role of EE

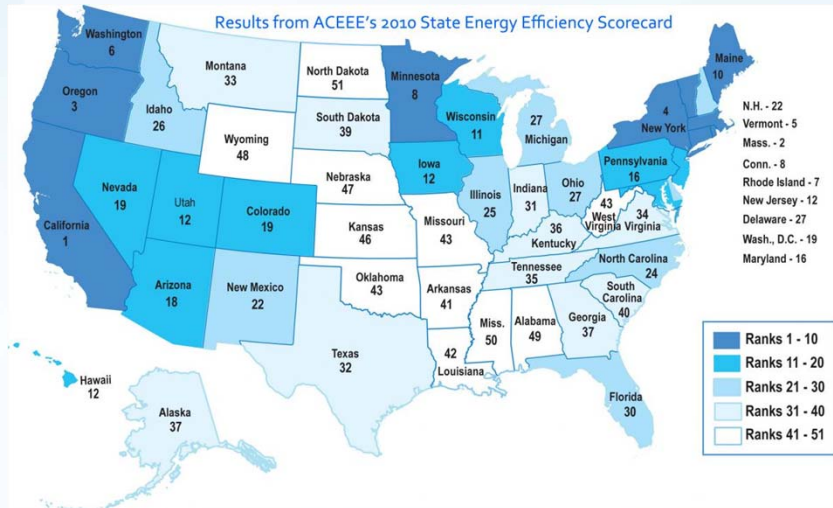


“At Risk” Coal Generation by Region: Greets Potential Problems in Midwest & South Central

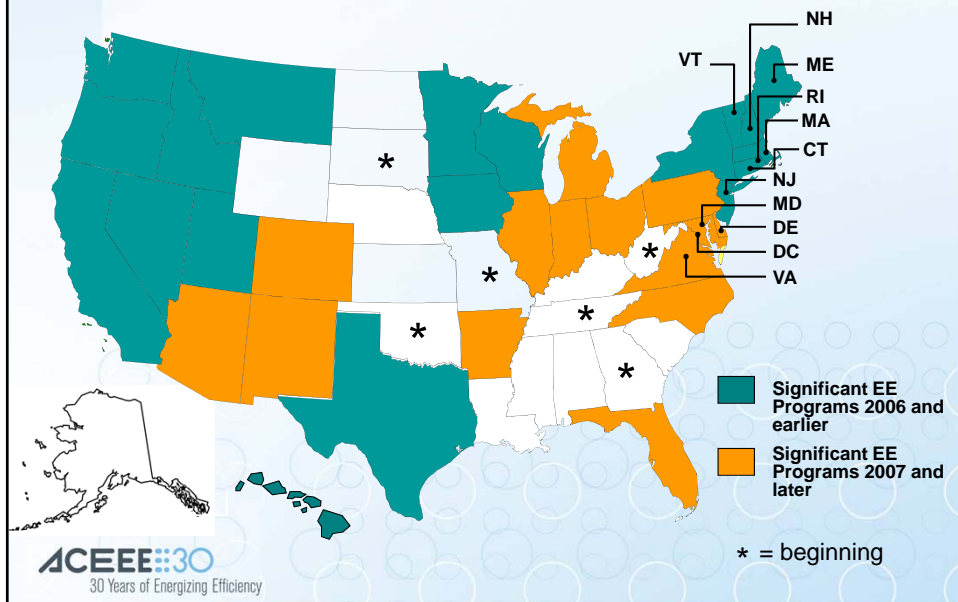


Source: ICF International for INGAA (May 2010)

2010 State Energy Efficiency Scorecard



Utility EE Policies & Programs



2020 Cumulative Electricity Savings Targets by State

Vermont	30%	Indiana	14%
New York	26%	Rhode Island	14%
Massachusetts	26%	Hawaii	14%
Maryland	25%	California	13%
Delaware	25%	Ohio	12%
Illinois	18%	Colorado	12%
Connecticut	18%	Utah	11%
Minnesota	17%	Michigan	11%
Iowa	16%	Pennsylvania	10%
Arizona	15%	Washington	~10%



Includes extensions to 2020 at savings rates that have been established

Growing Efforts

Arizona
 Arkansas
 Idaho
 Illinois
 Indiana
 Iowa
 Maine
 Maryland
 Massachusetts
 Michigan

Minnesota
 North Carolina
 Ohio
 Oregon
 Pennsylvania
 Texas
 Washington
 Wisconsin

Initial Efforts

Georgia
 Louisiana
 Missouri
 Oklahoma
 South Carolina
 South Dakota
 Tennessee
 West Virginia



State and Local Programs



- ARRA funds must generally be spent April 2012
- States and municipalities want to continue some efforts
- Revolving loan funds
- Links with utility programs
- PACE and its cousins



Contact Information

Steven Nadel
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202-507-4000
www.aceee.org



Stockton has recently joined the U.S. Department of Energy as Senior Advisor for Urban Policy. He will be responsible for strengthening the partnerships between the department and urban/metropolitan areas to expand clean energy solutions and identifying new opportunities for collaboration on policy development, program delivery and evaluation between DOE and local communities.

Stockton has served in the Obama Administration since 2009 as Senior Advisor in the Office of Sustainable Housing and Communities at the U.S. Department of Housing and Urban Development. At HUD he was primarily responsible for developing new initiatives that expand the benefits of energy efficiency and renewable energy in affordable homes and helped develop new energy financing programs, including FHA PowerSaver, the Green Refinance Plus program and the HUD Energy Innovation Fund, among other initiatives.

Prior to joining HUD, Stockton was Senior Advisor and Director of Green Economy Initiatives for Living Cities, a consortium of global foundations and financial institutions that makes catalytic investments to improve prospects for low-income people and communities, where he managed philanthropic investments in sustainable development activities in 17 cities. Stockton was previously Senior Vice President and Chief Strategy Officer for Enterprise Community Partners, where he led government affairs, fundraising and communications for the national nonprofit and had executive responsibility for the Green Communities® initiative, the largest nongovernmental effort in the U.S. to bring the benefits of green development to residents, builders and investors in affordable housing.

Stockton's recent affiliations include being a member the Urban Land Institute's Advisory Group on Climate Change, Land Use and Energy; the Trust for Public Land Real Estate Council; and the Board of Directors of CNT-Energy. Stockton has a Master of Science Degree in Real Estate Development from Columbia University and a Bachelor of Arts Degree in Religion from Princeton University.


BIOGRAPHY

Jeff Genzer

Jeff Genzer is Vice President at the firm of Duncan, Weinberg, Genzer and Pembroke, P.C., where he has practiced since 1985. Mr. Genzer practices energy, utility and environmental law. He also serves as counsel to a number of national associations, including the National Association of State Energy Officials (“NASEO”), the National Association of Energy Service Companies (“NAESCO”), the National Energy Assistance Directors’ Association, the Energy Programs Consortium, the Solar Energy Industries Association, the Solar Alliance and the Geothermal Energy Association. Mr. Genzer has been counsel to NASEO since it was formed in 1986, and has advised them on energy policy matters, drafts legislation and testimony and has been very involved in program implementation. Jeff has also represented NAESCO for approximately two decades. Prior to entering private law practice in 1985, Mr. Genzer was the staff counsel and energy lobbyist for the National Governors’ Association.

His practice involves work before federal and state legislative bodies and administrative agencies, including state public service commissions and the Federal Energy Regulatory Commission, as well as the Department of Energy and the U.S. Environmental Protection Agency. He worked extensively on the Federal American Recovery and Reinvestment Act (“ARRA”) as well as a variety of implementation issues since enactment in early 2009, including financing issues. He has worked on energy project development, energy efficiency projects, electric and natural gas ratemaking, bulk power supply, transmission system issues (including ISOs and RTOs), contract negotiation, franchise issues, renewable energy projects and energy efficiency programs. Recent energy projects have included advising clients on energy efficiency, biomass, solar, geothermal, ethanol, wind and landfill gas, as well as power plant development and T&D infrastructure. In the environment area he has been involved especially in the Clean Air Act and Toxic Substances Control act issues, and all phases of environmental reviews for energy projects. He has spoken on numerous occasions, especially on federal legislative activities, energy, environment and utility issues.

He is a graduate of Haverford College and the Washington College of Law of the American University. He resides in Silver Spring, Maryland, with his wife. He has four children.



STATE AND LOCAL ENERGY EFFICIENCY FINANCING PROGRAMS – WHAT IS HAPPENING NOW AND WHERE IS IT GOING

May 2011

Jeff Genzer
Counsel

National Association of State Energy Officials
(NASEO)

Duncan, Weinberg, Genzer & Pembroke, P.C.
1615 M Street, N.W., Suite 800
Washington, D.C. 20036
(202) 467-6370
jcg@dwgp.com



Who/What is NASEO

- The National Association of State Energy Officials (NASEO) has been in existence since 1986 and represents the 56 state and territorial energy offices in Washington, D.C.
- NASEO members operate energy efficiency and renewable energy programs across the country; they serve as Governors' energy policy advisors; and they are committed to energy and economic development programs.
- NASEO helps the individual state energy offices by sharing "best practices" and helping with program and policy implementation, including work through a network of seven regional coordinators.

Why are Financing Programs Important?


- State energy offices have been operating energy financing programs for decades, ranging from revolving loans to more sophisticated energy financing programs.
- The American Recovery and Reinvestment Act of 2009 (ARRA) provided \$3.1 billion for the State Energy Program (SEP), \$3.2 billion for the Energy Efficiency and Conservation Block Grant (EECBG), \$5 billion for the Weatherization Assistance Program (WAP) and \$300 million for the State Energy Efficiency Appliance Rebate Program.
- Between \$1-\$1.5 billion from SEP and EECBG funds have been allocated for a variety of energy financing programs.

3

Why are Financing Programs Important?

- When the ARRA funds otherwise run out, the financing programs can and will continue beyond the spring of 2012.
- If the ARRA funds are allocated to loan programs directly by state and local governments, or other direct financing mechanisms, once the funds are loaned out the first time (no later than the spring of 2012) and they are returned, they can be loaned again or other financing mechanisms can be implemented.
- If the ARRA funds are placed at a third-party financial institution (bank, etc.), then these funds must be explicitly allocated by the state and local government at such institution (direct loans, loan loss reserves or other credit support mechanism) prior to the spring of 2012.

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Okay, We Know we can Operate Financing Programs, but can you give me Categories of Programs and Policies?

- Revolving Loans.
- Loan Loss Reserves.
- Other Credit Support Programs.
- Qualified Energy Conservation Bonds (QECCBs).
- On-Bill Financing.
- Commercial Property Assessed Clean Energy (PACE) programs.
- Modified Residential PACE programs (secondary lien), e.g. Maine.

5



How About Some Specific Examples

- **AlabamaSAVES** - \$60 million loan fund supports loans ranging from \$250,000 - \$4 million for businesses in a range of sizes.
 - 10 year maximum loan.
 - 2% fixed interest rate.
 - Security is determined on a case-by-case basis.
 - Work with private lenders.
 - Closing costs – 2-3% loan origination fee.
- **Kentucky Green Bank** - A revolving loan fund of \$14 million was originally limited to state government buildings and has now expanded.

6

How About Some Specific Examples

- **Massachusetts/The Mass Save Residential HEAT Loan** - Low-interest loans working with Commonwealth, investor-owned utilities and local lenders, producing \$27.6 million in personal unsecured energy efficiency loans in 2010.
 - Since 2006, \$62.5 million in loans, serving 8,000 households.
 - Average loan size has increased from \$6,860 to \$8,080.
 - 23 local banks and credit unions.
 - Loan size - \$5-\$15k.
 - 7 year term.
 - Cost of Capital - prime + 1%, with floor of 5% and utility buys-down the rate to 0%.
 - 2011 changes will be a range of \$500 - \$25k, with landlord-owned and commercial properties participating as well.

7

How About Some Specific Examples

- **Michigan Saves - Home Energy Loan Program** – These are unsecured loans from \$1,000 - \$12,500 for energy efficiency improvements in primary residences, utilizing authorized energy efficiency contractors. A loan loss reserve fund of \$3.4 million backs up the private lenders.
 - Fixed APR, not to exceed 7%.
 - 12 month term for loans under \$1,000 up to 5 years for \$5,000; up to 10 years for loans over \$5,000.
 - Minimum underwriting standards, include FICO score of 680 or higher and debt-to income ratio of 50% or less (possibly could go FICO scores of 640-679).

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How About Some Specific Examples

- **Nebraska** - \$200+ million in energy efficiency loans over the 20 year life of the program (25,618 in loans), plus \$35 million in ARRA funds.
 - Work with local banks and defaults have been less than \$68,000 over the 20 years.
 - 5% interest rate for 5-10 year loans.
 - 300 financial institutions (with 900 locations) participate in the state.
 - State invests in the fund, along with prior oil overcharge refunds, funds from SEP, Nebraska Public Power District and the State Department of Environmental Quality.

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How About Some Specific Examples

- **Green Jobs – Green New York Program** – \$112 million through Home Performance with Energy Star Program and includes multi-family as well as single family homes. Better Buildings grant from EECBG of \$40 million is testing on-bill financing, among other options.
 - Pays 10% of the costs of the eligible improvement up to 3,000. Lower-income households could receive up to 50% as a grant up to \$5,000 (\$10,000 for a 2-4 unit building).
 - Loans are capped at \$13,000 for residential properties, with repayment periods up to 15 years.
 - Financing subject to qualification criteria, including FICO score.

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How About Some Specific Examples

- **South Carolina ConserFund** – Low-cost revolving loan program for energy efficiency improvements for state agencies, public colleges, universities, school districts, local governments and private non-profits.
 - Fixed interest rate below prime (3% in 2009).
 - 10 year term.
 - \$25,000 - \$500,000 range of loans.
 - Free preliminary energy audits and project planning assistance through state.
- **Texas LoanSTAR** (Saving Taxes and Resources) – This program is for public buildings and operated for many years before ARRA, and includes funding of \$260 million. The pre-ARRA program has operated for 20 years and implemented 202 loans with no defaults.

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Some Other Examples (not comprehensive)

- **Arkansas** – K-12 schools revolving energy efficiency loans (\$3 million), sustainable building revolving loans (\$12 million); and industrial energy efficiency revolving loans (\$9.9 million).
- **California** - \$25 million in loans for state buildings, \$30.6 million for low interest loans for energy efficiency/renewable manufacturing facilities, \$25 million for local jurisdiction energy efficiency loans. \$2.5 billion in residential utility energy efficiency programs.
- **Colorado** - \$9.9 million capital investment revolving loan fund; \$6 million for the Green Colorado credit program and \$13 million for energy efficiency and renewable energy revolving loans. Additional allocations for Qualified Energy Conservation Bonds.
- **Delaware** - \$11 million for energy efficiency and renewable energy financing and a separate program for Green New Construction Home Loans (\$3,000).
- **Georgia** - \$2 million for Green Community Fund and \$5 million for residential energy efficiency loans.

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Some Other Examples (not comprehensive)

- **Kansas** - \$34 million in energy efficiency retrofit loans for homes and small businesses. Pre-ARRA, state Energy Service Performance Contracting program implemented energy efficiency improvements at over 76% of state buildings.
- **Maine** - \$20 million for residential PACE loans (secondary, not primary lien).
- **Massachusetts** – Commonwealth allocated \$237 million in general obligation bond funds to augment private sector financing. 65 performance contracting projects, totaling \$458 million have been completed.
- **Missouri** - \$2.5 million in revolving loans and an additional \$5 million in agricultural and residential energy efficiency loans.
- **Montana** – \$1.2 million in the alternative energy revolving loan funds.
- **Nevada** - \$9.3 million for renewable energy and energy efficiency loans.

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Some Other Examples (not comprehensive)

- **North Carolina** - \$18 million renewable energy revolving loans for commercial and residential customers, with a 20 year term and a 8% interest rate cap.
- **Ohio** - \$7 million in revolving loans for energy efficiency.
- **Pennsylvania** - \$ 5 million geothermal loan fund, \$3.5 million Keystone Home Energy Loan and \$12 million Green Development Loan Program.
- **South Dakota** - \$2.2 million for SD government building energy efficiency loans.

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Some Other Examples (not comprehensive)

- **Utah** - \$2.5 million for renewable energy loans for school districts.
- **Washington** - \$5 million energy efficiency credit enhancement with financial institutions plus \$38.5 million for public and private energy efficiency and renewable energy programs.
- **Wisconsin** - \$55 million in clean energy revolving loans for businesses at a 2% interest rate; 5-10 year term for equipment and 5-7 year term for working capital.

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LESSONS LEARNED – WHERE ARE WE GOING FROM HERE?

- Sharing “Best Practices” between states is being implemented through the NASEO Energy Financing Task Force.
- NASEO’s regional coordinators are working with states to avoid “reinventing the wheel” and implementing programs.
- State-local coordination is a key.

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LESSONS LEARNED – WHERE ARE WE GOING FROM HERE?

- NASEO members are continuing to work closely with the Energy Service Performance contractors to implement billions in dollars each year in the “MUSH” market.
- Commercial buildings market is still very tough due to split incentives and desire for quick pay back. The White House-led effort on commercial buildings could be critical, including, “Race to the Green,” shift of 179d to a credit from a deduction, loan guarantees and the commercial challenge.
- Combination of energy financing funds through ARRA, cooperation with financial institutions, public benefits funds and economic development funds will be crucial to make the energy efficiency financing system more robust.

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CONCLUSION

Any questions?

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 Also contact: David Terry, NASEO Executive Director
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 Energy Financing Task Force – dlin@naseo.org

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GIL SPERLING
SENIOR ADVISOR FOR POLICY AND PROGRAMS
U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY



Gil Sperling currently serves as the Senior Advisor for Policy and Programs in the Office of Energy Efficiency and Renewable Energy at the U. S. Department of Energy. He advises the Assistant Secretary for Energy Efficiency and Renewable Energy and senior EERE management regarding policy and programs to further the Department's clean energy goals and objectives. His responsibility cuts across the ten energy efficiency and renewable energy programs managed by EERE. Gil also works closely with EERE stakeholders at the state and local level and in the private sector to communicate EERE's mission and to develop state, local and regional initiatives and collaborations to further DOE's national clean energy goals.

Prior to being promoted to the EERE front office, Gil served as Program Manager for the Office of Weatherization and Intergovernmental Program (OWIP) with a budget in excess of \$11.6 Billion. Under Gil's leadership, the OWIP team worked aggressively to implement and execute the first disbursement of American Reinvestment and Recovery Act (ARRA) stimulus funds at DOE that include: \$5 Billion for Weatherization Programs, \$3.1 B for State Energy Programs, and \$3.2B for Energy Efficiency and Conservation Block Grant Programs.

Prior to joining DOE he served as Executive Vice President and General Counsel of Verdant Power, Inc., a company that generates electricity from the free flow of water in oceans, tidal areas, rivers and man made waterways.

Gil also served as Vice President and General Counsel of Pipeline Research Council International, Inc., the not for profit technology and research development arm of the oil and natural gas pipeline industry.

Mr. Sperling served in private practice for more than twenty years before joining DOE, providing regulatory, corporate, and finance related services for companies developing power and related energy projects in the U.S. and overseas. In the mid 1980s, Gil served as Senior Counsel to the House Subcommittee on Energy Conservation and Power, chaired by Congressman Edward J. Markey,.

Gil received his Bachelors of Arts from Dickinson College in Carlisle, Pennsylvania and Jurist Doctorate from New York University School of Law where he was a Root-Tilden Scholar.

Attorney Bio.

Dian Grueneich



PARTNER

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Dian M. Grueneich is a nationally recognized expert in energy and environmental issues, with more than 33 years' experience. Her focus is on energy efficiency, climate change, renewable energy resources, transmission planning and permitting, demand response, and advanced meter infrastructure (smart grid).

Prior to joining Morrison & Foerster, Ms. Grueneich served as a Commissioner on the California Public Utilities Commission (CPUC) from 2005 – 2010. While at the CPUC, Ms. Grueneich was the lead commissioner on energy efficiency and demand response. She provided leadership for the groundbreaking development of the 2008 California Long-Term Energy Efficiency Strategic Plan, overseeing a 40% expansion of energy efficiency funding in 2009, which resulted in the current three-year, \$3.8 billion energy efficiency program of California investor-owned utilities, the largest program in the United States. She also focused on the adoption of California's "net zero energy" building goals, as well as the launch of Engage 360, the state's clean energy marketing/outreach effort, and Energy Upgrade California, the state's home retrofit program.

Prior to her appointment to the CPUC, Ms. Grueneich served as a board member of the American Council for an Energy-Efficient Economy and is a past-president of the California League of Conservation Voters. Ms. Grueneich is a member of the Executive Group of the State Energy Efficiency Action Network (SEE Action) and co-chairs its Residential Retrofit Working Group.

Ms. Grueneich currently serves on the U.S. Department of Energy Electricity Advisory Committee, its Smart Grid Advisory Sub-Committee, the Leadership Council of the China-US Energy Efficiency Alliance, and the Advisory Council of Stanford University's Precourt Energy Institute.

She is a graduate of Stanford University and holds a J.D. from Georgetown University.

Professional Recognition

- Recipient, American Council for an Energy-Efficient Economy's 30th Anniversary Award for outstanding contribution in the field of energy efficiency (2010)
- Recipient, National Association of Regulatory Utility Commissioners Kilmarx Clean Energy Award (2010)
- Recipient, EE Global Forum's first Visionary Award for her leadership role in developing California's Long-Term Energy Efficiency Strategic Plan (2009)

This is MoFo.

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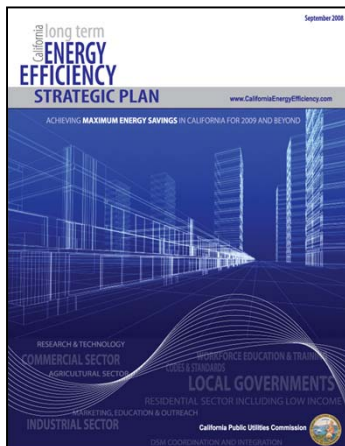
- Recipient, American Council for an Energy-Efficient Economy's National Champion of Energy Efficiency Award for her outstanding, career-long leadership in the energy efficiency field and innovation in utility regulation (2008)

California Energy Efficiency Programs & Financing Policies



Dian M. Grueneich
Former Commissioner, CPUC
Partner, Morrison & Foerster
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May 4, 2011

CA Strategic Plan: Finance Task Force



Identify new and existing financing tools that:

- Help owners leverage the saving on monthly operating costs
- Create increased access to capital markets
- Address homeowner turnover concerns
- Permit whole-house retrofit measures
- Address the “principal-agent” issues that deter investment in leased commercial buildings
- Leverage the value of carbon reductions
- Include appraisal, insurance, and operations pass-through mechanisms to reflect lower operating costs and higher property values

On-Bill Financing

- CPUC Decision 09-09-047 approved proposed on-bill utility financing programs with modifications to align loan terms across the utilities
- Removes the first-cost barrier
- Allows customers to finance energy efficiency measures on their energy bills at low interest or no interest
- Matches the payment schedule for energy improvements by allowing the cash savings on utility bills to repay the cost of the improvement
- Used for small-to-medium size businesses and institutional (taxpayer funded or non-profit) facilities
- Generally not used for residential customers because of the complexity and overhead costs of adhering to federal and state consumer lending laws

California Comprehensive Residential Building Retrofit Program

- AB 758 (Skinner, 2009)
 - Required the Energy Commission to establish a regulatory proceeding to develop a comprehensive program to achieve greater energy savings in the state's existing residential and non-residential building stock. (Cal. Pub. Res. Code §25943)
- California Comprehensive Residential Building Retrofit Program
 - California received \$226 million in federal American Recovery and Reinvestment (ARRA) funds for the State Energy Program (SEP).
 - \$110 million was allocated for energy programs focused on existing residential and commercial building energy efficiency (and water efficiency) retrofits.
 - Just over \$50 million of the residential retrofit money has been allocated.



California SB 77 & CAEATFA

- **SB 77** (Pavley, 2010) requires the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) to develop and administer the PACE-Bond Reserve Program. (Cal. Pub. Res. Code §§ 26100-26141).
- **The PACE Bond Reserve Program** will be used to reduce the overall costs of PACE bonds issued by a local jurisdiction.
- SB 77 creates a **\$50 million fund**, and authorizes CAEATFA to use this fund to finance reserves for qualifying PACE bonds.
- The timeline indicates that **bonds will be issued beginning in 2012**.

SEE Action Financing Working Group Overview

- Goal: To identify ways to use financing tools (e.g., loans, leases, service agreements) to remove barriers to domestic EE.
- After examining various market segments for financing EE, determined the best initial target is the residential sector:
 - One of the least efficient capital markets; 30% of US energy consumption
 - Relies proven EE upgrade measures; Leverages conventional credit evaluation criteria (e.g., FICO score, debt-to-income ratio)
- As the WG advances the residential segment, it will address other market segments (e.g., small business) that have other unique challenges
- Working Group Year 1 Products:
 - From dialogue with financial community (originators, investors, etc), issue a report summarizing the results, including value chain analysis for policy makers and the energy and financial communities
 - Toolkit for financial institutions that provides analysis to utilities, government entities and financial institutions to fill knowledge gaps and information needs enabling them to create appropriate finance products.
- For more information, contact Bret Kadison, bret.kadison@ee.doe.gov

**PACE Updates & Setbacks:
What's the Latest & What's Next for Commercial Projects?**

Francisco DeVries, President
Renewable Funding

Mark Zimring, Senior Research Associate
Lawrence Berkeley National Laboratory

John McNeill, CEO
Renovate America

Cisco DeVries
President
Renewable Funding LLC

Cisco DeVries is President of Renewable Funding, which works for governments, utilities and others to design, administer and finance clean energy initiatives such as the Property Assessed Clean Energy (PACE) program. Renewable Funding has been contracted to provide services to over 250 local and state governments throughout the country.

DeVries also serves as a resource to governments and organizations working on PACE and other clean energy financing programs, including providing technical assistance for the U.S. Department of Energy. He has presented at over 100 conferences, trainings, and workshops – including those sponsored by the U.S. Department of Energy, the U.S. Department of Housing and Urban Development, Harvard’s Kennedy School of Government, Pacific Gas & Electric, Sierra Club, and others.

As Chief of Staff to the Mayor of Berkeley, he envisioned and led the initial development of the PACE model, which allows property owners to pay for solar installations and energy efficiency projects as a line item on their property tax bill. The model has been replicated around the country and has spurred state enabling legislation in 25 states. PACE has received national and international attention, including being named one of the 20 “world-changing” ideas by *Scientific American* magazine.

Previously, while with the San Francisco firm Staton & Hughes, DeVries provided policy, media, and political guidance for a wide variety of clients from Members of Congress to Fortune 500 companies.

From 1996 to 1998, DeVries was an appointee in the administration of President Bill Clinton, serving as an aide to the U.S. Secretary of Transportation and the U.S. Secretary of Energy.

DeVries holds a bachelor’s degree in Political Science from the University of California, San Diego and a Master’s degree from the Goldman School of Public Policy at the University of California, Berkeley. He lives in Piedmont, California with his wife and two children. He also sits on the Board of the Oakland Museum of Children’s Art.

Mark Zimring is a Senior Research Associate at Lawrence Berkeley National Laboratory (LBNL). His work focuses on the financing and deployment of energy efficiency and renewable energy. He is a member of the Department of Energy's Financial Technical Assistance Team, providing assistance to state and local governments using Recovery Act funds to support energy efficiency programs in the residential, commercial and public sectors. Prior to joining LBNL, Mark spent 8 years working in finance at Deutsche Bank.

John Paul McNeill, Chief Executive Officer, Renovate America

Mr. McNeill co-founded Renovate America in 2009 to facilitate the mass adoption of energy efficiency and renewable energy products. In 2010, Mr. McNeill and the Renovate America team began providing PACE administrative and marketing services to the City of Yucaipa's Energy Independence Program. Since then, Renovate America has been working to develop, administer and finance PACE programs in California and in other states. In Summer of 2011, Western Riverside Council of Governments ("WRCOG"), with support from Renovate America and other partners, expects to launch the HERO (Home Energy Renovation Opportunity) Program which will provide PACE financing to residential and commercial businesses.

Mr. McNeill, CEO, has unique experience working with public agencies, nonprofits, consumers and the private sector. Mr. McNeill has held a number of senior level positions at three start ups, two of which went public on NASDAQ stock market and a third which was acquired for \$150 million. One of the start-ups, Kintera, Inc., in the first five years processed more than \$1 billion in online donations and grew registered online users to more than 55 million people.

Prior to Renovate America, Mr. McNeill worked at SunEdison, North America's largest solar energy service provider, in business development. At SunEdison, Mr. McNeill worked with utilities, cities, public agencies and commercial entities to develop solar photovoltaic projects and programs.

Mr. McNeill started his career as a Certified Public Accountant with Ernst & Young in 1992 and worked in both the San Diego, CA and Glasgow, Scotland offices. Mr. McNeill graduated with high honors from the University of Notre Dame with a degree in Business Administration.

PACE and Beyond

ACEEE

Cisco DeVries | May 4, 2011

RENEWABLE  FUNDING



“

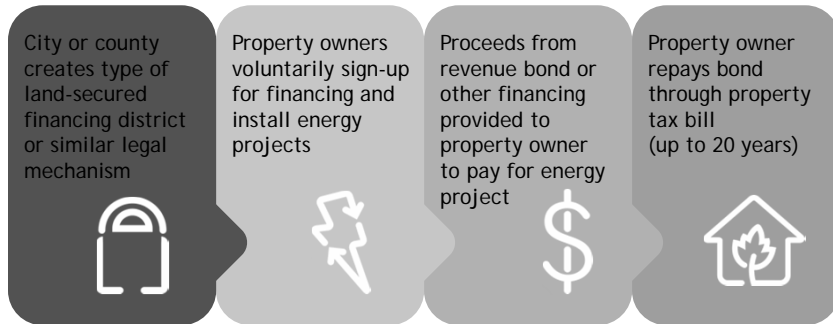
We are going to make it a lot easier to borrow money. We are doing this by encouraging communities to give you the option to pay the expense of retrofitting your home by paying it back on your property taxes.

”




Vice President Biden
October 2009

How PACE Works



National PACE Policy





FEDERAL HOUSING FINANCE AGENCY
Office of the Director

June 18, 2009

Neil Milner
President and CEO
Conference of State Bank Supervisors
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David A. Saunders
Executive Director
American Association of Residential
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William Pound
Executive Director
National Conference of State Legislatures
444 North Capitol Street, N.W. Suite 515
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Mary Martha Forney
President and CEO
National Association of Credit Union Supervisors
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Arlington, Virginia 22209

Raymond C. Scheppach, Ph.D.
Executive Director
National Governors Association
Hall of the States
444 N. Capitol St. Suite 267
Washington, D.C. 20001-1512

Dear Mr. Milner, Ms. Forney, Mr. Saunders, Mr. Scheppach and Mr. Pound:

The Federal Housing Finance Agency (FHFA) regulates and oversees financial institutions that are vital to supporting our country's mortgage markets, housing policy and economic recovery—Fannie Mae, Freddie Mac, and the Federal Home Loan Banks (FHLBanks).

This letter brings to your attention an emerging trend in state and local financing for residential energy efficiency home improvements. FHFA believes residential energy efficiency will help improve our use of resources and, in the long term, keep down the costs of home ownership. However, any such program must be carefully crafted to avoid unintended consequences for homeowners and lenders.


A significant feature of recently-enacted energy loan tax assessment programs ("ELTAP") is that the loan amount is repaid as part of the homeowner's real property tax assessment and the loans have superior lien status to existing first mortgages. The effect is to impair the value of first mortgages to

The Feds Take an Interest:

- ✦ June 2009
 - Federal Housing Finance Agency Issues Letter raising PACE concerns
- ✦ Summer 2009
 - White House Interagency Task Force Meets to Resolve Concerns, Develop PACE Guidelines

PACE Gets Green Light:

- ✦ Sept. 2009
 - Fannie Mae issues lender guidance allowing PACE to be treated as an "assessment"
- ✦ October 2009
 - Vice President Biden Announces PACE support
 - White House Framework Issued
 - \$150 Million in Federal Funds for PACE



LENDER LETTER

Lender Letter 07-2009 September 18, 2009

To: All Fannie Mae Single-Family Sellers and Servicers

Energy Loan Tax Assessment Programs

Introduction

Fannie Mae has recently received questions from lenders regarding certain state and county-sponsored programs that make loans available to residential homeowners for energy efficiency improvements tied to tax assessments. Approximately ten states have enacted laws allowing localities to establish programs to finance energy efficient home improvements, and other states may be considering similar legislation. Under these laws, localities or private lenders loan funds to participating homeowners. These loans are generally treated as special assessments and are levied and collected in the same manner as real property tax assessments. The resulting energy loan has priority over all existing liens, other than liens related to real property taxes.

These energy efficiency loan programs are sometimes referred to as Property Assessed Clean Energy (PACE) programs, or Energy Loan Tax Assessment Programs (ELTAPs). Depending on the jurisdiction, ELTAPs may be used to fund energy efficiency improvements such as new windows, insulation, and solar panels. The specific implementation (e.g., maximum loan amount, permitted purpose, etc.) differs from county to county. Typically, homeowners repay ELTAP loans via their property tax bill, and in the event of non-payment, the ELTAPs have priority over Fannie Mae's mortgage lien.

ELTAPs bear similarity to special assessments, which may be imposed by local governments or homeowner's associations, generally to make improvements to a community's infrastructure such as roads, water, or sewer. However, ELTAPs differ in that they are a loan made by a government or private entity to fund improvements to the borrower's private residence, and the total obligation is generally considerably higher.

Note: ELTAPs are not eligible for sale to Fannie Mae. Rather, this Lender Letter is intended to alert lenders to issues concerning ELTAPs in the underwriting and servicing of Fannie Mae mortgages.

Underwriting and Servicing Mortgage Loans with an ELTAP

As ELTAPs have the potential to become a first lien if unpaid, and increase the borrowers total debt obligations, Fannie Mae is reviewing its underwriting guidelines to determine appropriate requirements in jurisdictions that have enacted legislation establishing ELTAPs. Until such

Lender Letter 07-2009 Page 1

The Hammer Falls...

- ❖ May 2010: Fannie Mae lender letter
 - PACE programs are “loans,” not assessments
- ❖ July 2010: FHFA guidance letter
 - PACE creates “Safety and soundness concerns”
 - Punish PACE properties and communities offering PACE
- ❖ August 2010: Fannie Mae lender letter
 - PACE “loans” prior to July 6th must be paid off at time of refinance



Path Forward



Negotiation

Litigation

Legislation

Lessons from PACE

- ❖ PACE works
 - Created demand, attracted private capital
 - Excellent repayment performance
- ❖ Benefits of PACE went beyond financing
 - Consumer demand boosted by other elements of program
- ❖ Regulators, finance industry cannot “see” energy costs
 - Energy costs are not part of mortgage underwriting standards
 - Increased home values are still a matter of debate
- ❖ Standardization, data are essential
 - Market lacks common systems for underwriting and energy projects

Challenge Becomes Innovation



- ❖ Coordinated \$292 million clean energy program
 - Information, On-line Property Analysis Tool
 - Single Application for Rebates, Incentives, Financing
 - Qualified Contractor Lists and Quality Assurance Requirements
 - Financing Marketplace and Subsidies
 - Local Program Integration

Upcoming National Loan Programs

- * **FHA Powersaver.** Partially government insured home improvement loan for energy upgrades.
 - Based on Title 1 Home Improvement Loans
 - FHA provides 90% guarantee on loans, up to 10% of portfolio
 - Up to \$7500 unsecured, above \$7500 requires second mortgage
 - Pilot programs schedule to launch mid-2011

- * **Secondary Market for “Unsecured” Financing.** Create system for home energy loans that looks like auto loans, credit card receivables, etc.
 - Standardized underwriting, reporting, and project requirements
 - Promising approach: “WHEEL” program based on PA Keystone HELP scheduled to launch mid-2011
 - Energy Upgrade CA designed to support this effort





Update on Commercial PACE Programs

Mark Zimring
Lawrence Berkeley National Laboratory
5th Annual ACEEE Financing Forum—May 4, 2011



Commercial PACE Progress



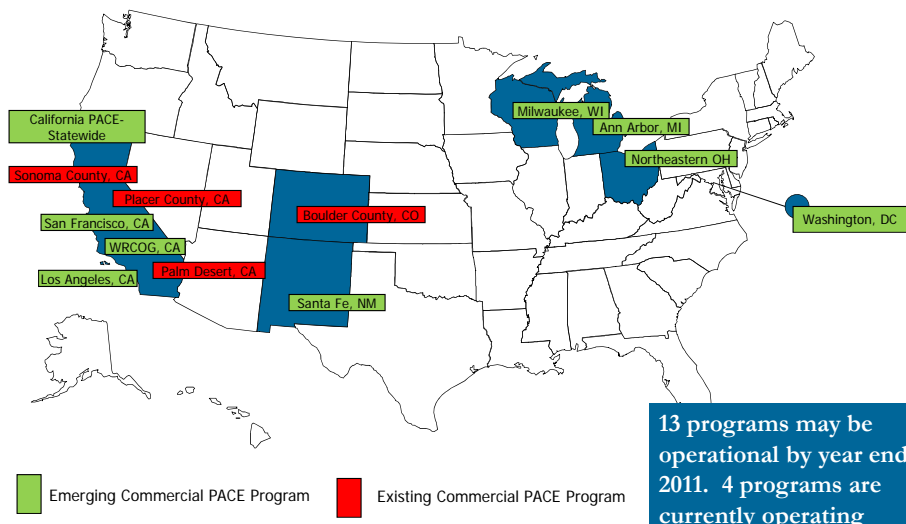
- 24 states and the District of Columbia have authorized PACE under State law. State and local governments initially allocated \$150 million in ARRA funds to launch programs.
- All existing Commercial PACE programs utilize government capital or credit to provide financing. Emerging programs will rely primarily on private capital complemented by ARRA funds for credit enhancement purposes.

PACE Financing Structures



1. **Warehouse model.** Government program sponsor uses a credit line (or internal capital) to fund projects, followed by ‘takeout financing’ (Sonoma County, CA).
2. **Pooled Bond model.** Government program sponsor aggregates project applications and then issues a bond to fund all projects at the same time (Boulder County, CO).
3. **Owner-arranged model.** Each owner negotiates financing terms directly with an investor. Government program sponsor issues bond to investor and passes through assessment payments to investor (Los Angeles, CA).

Existing & Emerging Commercial PACE Programs



Existing PACE Programs



Summary of Approved Projects				
# Programs	Approved Projects	Total Approved Funding	Ave Project Size	Project Size Range
4	71	\$9.7mm	\$138k	\$2k - \$2.3mm

- National, regional and local mortgage lenders have provided approval on PACE projects.



Existing PACE Programs



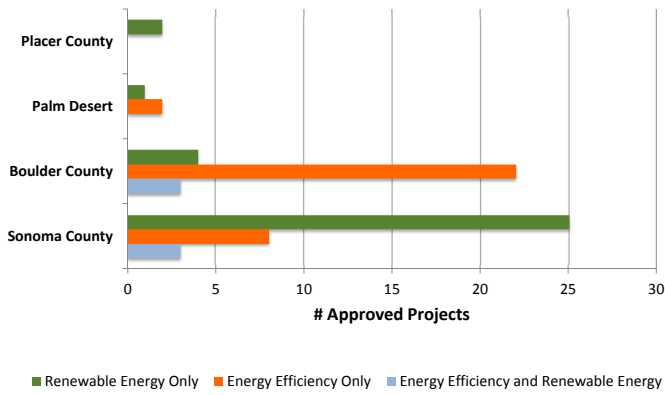
Details of the 71 Approved Projects as of January 2011

Program	Approved Projects	Total Approved Funding	Ave Project Size	Interest Rate	Term (yrs)	Funding Source
Sonoma County, CA	37	\$7.3mm	\$196k	7%	Up to 20	County Treasury
Boulder County, CO	29	\$1.5mm	\$51k	1.04% or 2.29%	5 or 10	Moral Obligation Bond Issuance
Placer County, CA	2	\$319k	\$160k	7.25%	Up to 20	County Treasury
Palm Desert, CA	3	\$575k	\$192k	7%	Up to 20	City Backed Funds

Existing PACE Projects



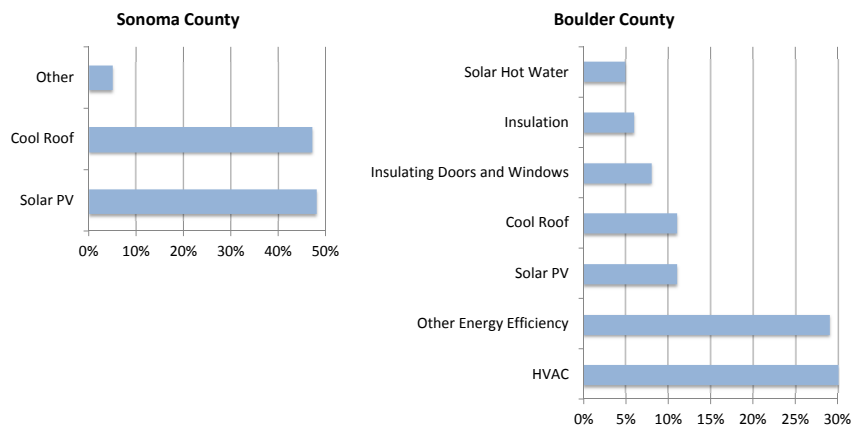
Number of Approved Projects by Program & Type



Existing PACE Projects



% of Approved Project Funding by Project Type



Commercial PACE Challenges



- **High Legal and Administrative Setup Costs.**
- **Need Significant Deal Flow.** May not be appropriate for small towns and cities as scale is required to reduce costs (regional/statewide models can help).
- **Mortgage Holder Consent/Acknowledgement Required.** Buildings with mortgages in CMBS will likely not get consent.
- **Regulatory Uncertainty.** The OCC has expressed concern about commercial PACE.

Questions?



Download the Commercial PACE Update Policy Brief Here:

<http://eetd.lbl.gov/ea/ems/reports/pace-pb-032311.pdf>

This Policy Brief Was Co-Written By:

RENEWABLE  FUNDING



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CLIMATE
INITIATIVE



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Confidential and Proprietary



renovateamerica™

**PACE Updates & Setbacks:
What's the Latest & What's Next for Commercial Projects?**

Top 10 Breakthrough Ideas for 2010



**Harvard
Business
Review**

1. **Leadership**..... What Motivates Workers
2. **Medicine**..... Technology that can Revolutionize Healthcare
3. **Finance**..... What the Financial Sector Should Borrow
4. **Pharmaceuticals**..... Getting the Drugs We Need
5. **Energy Alternatives**..... A Market Solution for Achieving "Green"
6. **Innovation**..... A Faster Path from Lab to Market
7. **People Management**..... Hacking Work
8. **Risk Management**..... Spotting Bubbles on the Rise
9. **Global Economy**..... Creating More Hong Kongs
10. **Negotiation**..... Independent Diplomacy

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State of Our Nation



Our Challenges

- **Energy**
 - \$1.0 trillion spent on energy each year, majority of it imported
- **Environment**
- **Economy**
 - Big deficit, high taxes, tight credit, small return on savings
- **Jobs**
 - High unemployment
- **War**
 - Energy dependencies drive geopolitical instability



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A Market Solution for Achieving Green



The Problem: "It's easy to get excited about the promise of clean technology."

5. ENERGY ALTERNATIVES
A Market Solution for Achieving "Green"
 by Jack D. Hidary

Financing that encourages building retrofits.

The Problem. It's easy to get excited about the promise of clean technology—especially new high-efficiency and solar devices that can significantly reduce the energy use of existing homes and commercial buildings. But the retrofitting challenge we face is immense, and if we hope to see major progress, we must help home and building owners overcome the barrier of up-front costs.

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A Market Solution for Achieving Green



Harvard
Business
Review

“...unless we can... tap into private capital markets, the improved economics of clean technology won't make enough difference.

Already we are at the point—thanks to falling prices from large-scale production in China and other manufacturing hubs, and thanks to government rebates—where some clean-tech retrofits achieve cash payback in less than three years. But unless we can provide the necessary assurance to investors and tap into private capital markets, the improved economics of clean technology won't make enough difference.

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A Market Solution for Achieving Green



Harvard
Business
Review

“The Breakthrough Idea: PACE (Property Assessed Clean Energy) bonds, which are just being introduced in 15 states...”

The Breakthrough Idea. Enter PACE (Property Assessed Clean Energy) bonds, which are just being introduced in 15 states across the country. PACE bonds are debt instruments issued by a municipality and backed by property-tax liens on buildings whose owners take PACE loans from the bond pool. Here's an example: Suppose a commercial building in Annapolis, Maryland, has utility costs of \$20,000 a month, which include electricity and natural gas. The building owner, Annapolis Management, has done an energy audit and concluded that a \$300,000 investment in energy efficiency (retrofitting windows, lighting, and HVAC) would bring monthly utilities down to \$13,000.

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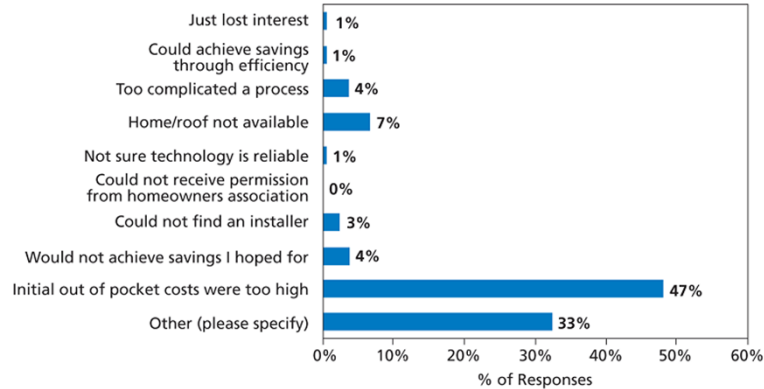
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The Case for Financing



- 70-90% improvements are financed in one way or another
- 47% sited initial out of pocket expenses too high

#1 Reason for Not Installing?



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Very Popular



“In my view for the United States, it is **the greatest economic opportunity we’ve had since we mobilized for World War Two**. If we do it right, it will produce job gains and income gains substantially greater than the 1990s.”

“**PACE is a real market based solution.**”

Bill Clinton

“With PACE financing...**we are providing homeowners and business owners with powerful tools to take control of their energy use and creating jobs at the same time.**”

Arnold Schwarzenger

“**We are going to make it a lot easier to borrow money.** We are going to do this by encouraging communities to **give you the option to pay the expense of retrofitting your house by paying it back on your property taxes.**”

Vice President, Joe Biden

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Very Popular



States and Municipalities


Association of Bay Area Governments (ABAG), CA - Henry Gardner, Executive Director
 City of Annapolis, MD - Mayor Ellen Moyer
 City of Berkeley, CA - Mayor Tom Bates
 City of San Diego, CA - Mayor Jerry Sanders
 City of San Francisco, CA - Mayor Gavin Newsom
 City of San Jose, CA - Mayor Chuck Reed
 County of Boulder, CO - Board of County Commissioners
 County of Montgomery, MD - Councilmember Roger Berliner
 County of Sonoma, CA - Supervisor Valerie Brown
 State of California - Governor Arnold Schwarzenegger
 State of Colorado - U.S. Senator Michael Bennet
 State of Florida – Steve Precourt (R), Chairman, Energy & Utilities Committee
 State of Florida – Adam Hasner (R), House Majority Leader
 State of Louisiana - U.S. Senator Mary Landrieu
 State of Maryland - Delegates David Rudolph, Sue Hecht and Sonny Minnick
 State of Michigan - U.S. Senator Debbie Stabenow
 State of New Mexico - U.S. Senator Jeff Bingaman, Chairman, Committee on Energy and Natural Resources
 State of Ohio - U.S. Senator Sherrod Brown
 State of Oregon - U.S. Senator Ron Wyden
 State of Wisconsin - U.S. Senator Russell Feingold

Very Popular




Alliance to Save Energy	Living Cities
American Institute of Architects (AIA)	Masco Home Services
Americans for Clean Energy	Milken Institute
Apollo Alliance	National Association of Real Estate Investment Trusts (NAREIT)
Barclays Capital	Natural Resources Defense Council (NRDC)
Bipartisan Policy Center	Polyiso Insulation Manufacturers Association (PIMA)
California Energy Commission	ProLogis
Carbon War Room	Real Estate Roundtable
Center for American Progress	Renewable and Appropriate Energy Laboratory, University of California, Berkeley
Center for Sustainable Energy	Renewable Funding LLC
Citicorp	Renovate America
Climate Communities	Royal Bank of Canada
Clinton Global Initiative	Serrafix Corp
Environmental Defense Fund	Siemens Corp
Goldman Sachs	Sierra Club
Hannon Armstrong	Simon Properties Group
International Association of Heat and Frost Insulators and Allied Workers	Solar Energy Industries Association (SEIA)
International Brotherhood of Teamsters	Stewards for Affordable Housing for the Future (SAHF)
International Union of Painters and Allied Trades (IUPAT)	Sustainable Buildings Industry Council
Jack D. Hiday Foundation	Tishman Speyer
Johnson Controls Inc.	Trane
Jonathan Rose Companies	Vermont Energy Investment Corp.
Jones Lang LaSalle Inc.	The Vote Solar Initiative
Laborers International Union of North America (LIUNA)	Wells Fargo
Lime-Energy	

How PACE Works




Step One:



City or County

Establishes land secured financing district


Step Two:



Capital Markets

Proceeds are provided to property owner to pay for product

Step Three:




Property Owners

Voluntarily sign-up for financing
Repays bond through property tax bill (up to 20 years)




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PACE Update



- Through 2010, PACE has financed \$60+ million in EERE (Available in 0.3% of U.S. Market)
- Participation rate of less than 0.5% of building stock in each market
- New PACE Programs anticipated to launch in 50+ cities in 2011 (Available in 1.8% of U.S. Market)
- Mostly Commercial and Industrial, some Residential
- Energy efficiency, renewable energy and water efficiency improvements

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New Program – WRCOG PACE Program



Economic Snapshot of Riverside County, CA

- Unemployment 15%
- Property values have dropped 50% ¹
- 50% of mortgages are underwater ²

(1) According to Dataquik
 (2) According to First American CoreLogic

WRCOG PACE Objectives



- Offer WRCOG PACE Program that is:
 - Legally viable
 - Cost effective
 - Attractive to property owners
- The WRCOG HERO PACE Program's objectives include:
 - Create new jobs
 - Improve property values rather than continue spending on energy bills
 - Enhance energy independence
 - Meet statewide AB 32 requirements
 - Save money

WRCOG PACE Terms



- Commercial, industrial and residential
- Energy efficiency, renewable energy and water efficiency
- Add 100% of cost of eligible improvements to property taxes
- Borrow up to 10% of property value
- Amortized over 5-20 years
- Prepayment option

Eligibility Requirements - Commercial



- Applicant property owner(s) **must be the property owner(s) of record**;
- Mortgage debt **lender(s) have given consent** to Program financing;
- Property owner(s) **must be current on property debt**;
- Property owner(s) or their affiliated companies **have not been involved in a bankruptcy** proceeding during the past seven (7) years and must not be an asset in a bankruptcy;
- Property has a **debt service coverage ratio of 140% or higher**;
- Mortgage-related debt on the property plus PACE Financing does **not exceed 80%** of the market value of the property;
- The **total annual property taxes** (general property taxes, special taxes and assessments) on the property will **not exceed 5% of the property's market value**, as determined at the time of approval of the contractual assessment.



We will let you know how it goes!

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JP McNeill, CEO
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**Searching for Scalable & Proven Results:
Performance Measurement Verification & Emerging Trends**

Joshua Wolfe, Principal
PES Group

Ben Bixby, CEO
Earth Aid

Chris Kaiser, Senior Account Executive
Noresco

Joshua Wolfe has spent the better part of a decade creating communications campaigns and editorial content, from concept to design. He is a founding partner of the PES Group, a strategic communications company focused on issues related to energy, environment and climate. With Mark Wolfe he co-founded the *State & Local Energy Report* and served as editor for its first two years. He coauthored *Climate Change: Picturing the Science* (W.W. Norton, 2009) with NASA Scientist Gavin Schmidt. *Popular Mechanics* called it “the first book anyone seeking a layman's understanding of the science of global warming should read,” and NPR said, “It's an important subject, and Wolfe and Schmidt make a compelling case that we should care.” Josh is the youngest recipient of the Ansel Adams Award from the Sierra Club.

Ben Bixby is CEO of Earth Aid, a venture-backed cleantech startup that has developed disruptive energy tracking technology and that is leveraging that technology to power the world's first universal rewards program for saving energy. Earth Aid furnishes a free "Mint.com for energy" at EarthAid.net that the New York Times has called a great way to "squeeze more information out of your utility bill," and Earth Aid technology now powers innovative performance monitoring programs for the U.S. Green Building Council, Virginia's Energy Sense campaign, and many more.

Ben personally coded the original Earth Aid prototype and is now charged with steering Earth Aid's growth as the company prepares to launch its next-generation platform. Ben is a graduate of Georgetown University, where he co-founded STAND: an international advocacy network of students for the plight of the people in Darfur - a role that has been chronicled in Don Cheadle's recent bestseller *Not On Our Watch*. Ben's work with STAND and Earth Aid has been recognized with many awards, including JCPA's Tikkun Olam Award, the Sustainable Brands New Venture Award, and the Web 2.0 Expo Launch Pad Award.

Christopher Kaiser

Chris Kaiser has extensive experience working with energy performance contracting and performance-based efficiency programs throughout the United States. He has helped various municipal governments develop and implement energy and water efficiency programs that reduce energy costs, decrease greenhouses gas emissions, and increase revenues for municipal utility operations. As an energy and water efficiency expert, Chris' background includes proficiency in developing large-scale energy and water efficiency projects that produce maximum environmental and financial impact for customers.

Several of Chris' projects have gained national attention and were highlighted in publications such as Electrical Contractor Magazine and American City and County Magazine. His work has also been recognized with a nomination for an American City and County's Crown Communities Award, which recognizes local governments for energy and water efficiency programs that have a sustainable impact on the environment.

Chris is a cum laude graduate of Robert Morris University where he received his Bachelors of Science in 2000 and, in 2004 he obtained his Masters of Business Administration from Point Park University.



Rethinking Residential Retrofit Marketing

Joshua Wolfe

May 4th, 2011

www.pescommunications.com

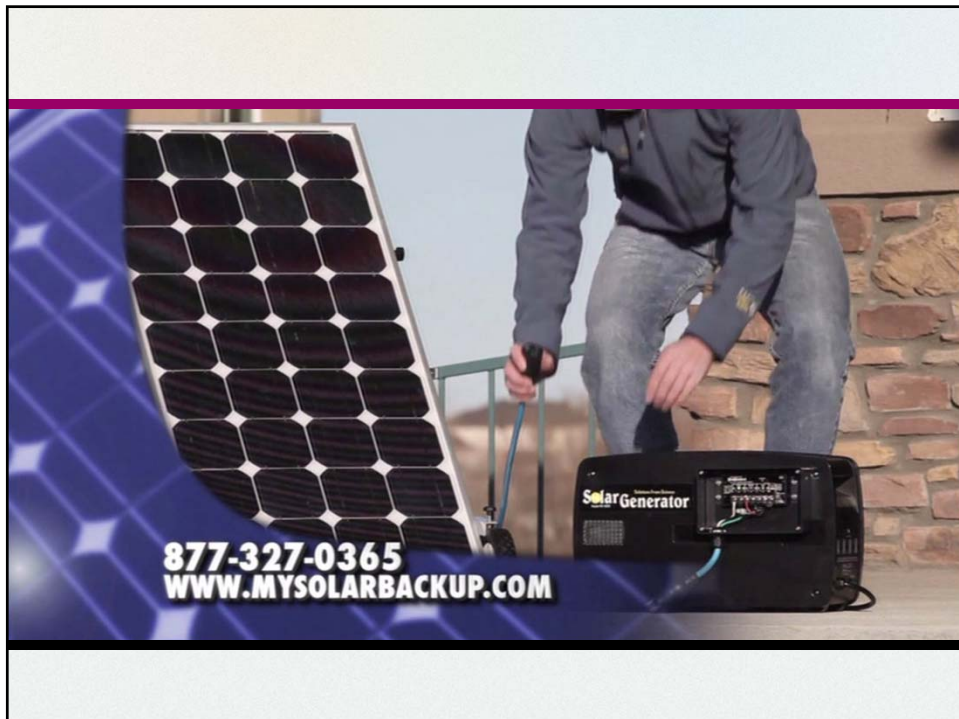


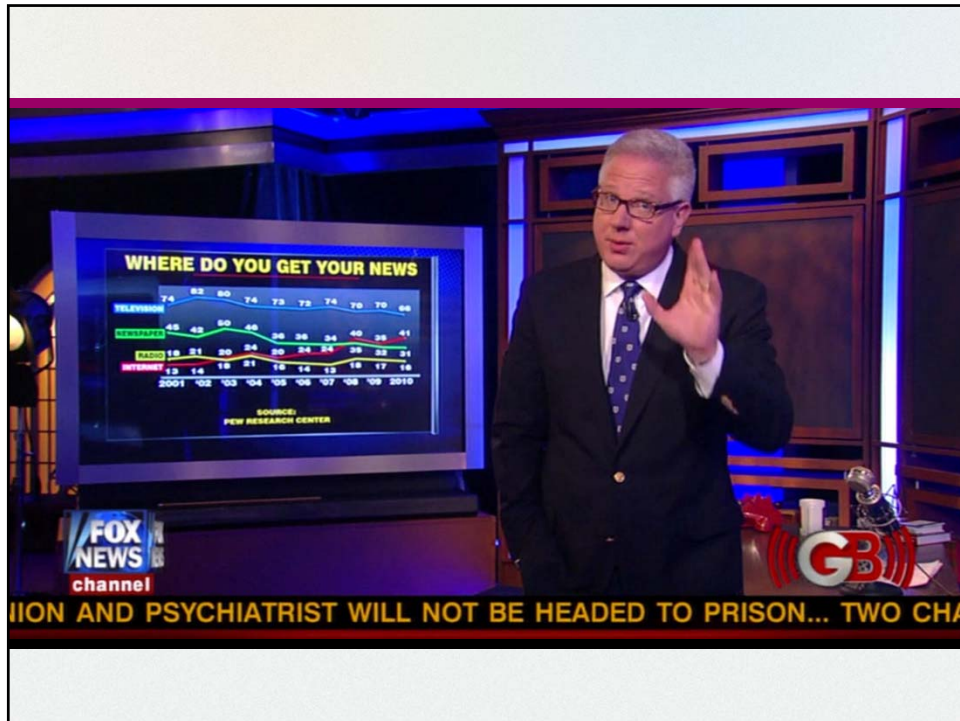
All Market Research is Wrong



All Market Research is Wrong

Some of it is Useful





Lessons of Market Research on Residential Retrofits

- Consumers don't have a basic understanding of a retrofit and its benefits.
- Consumers don't understand the costs associated with energy improvements.
- Environmentalists are not significantly more likely to undertake energy upgrades than those on the opposite side of the political spectrum.
- Programs targeted at basic improvements have been more successful than ones promoting whole house retrofits.

Decision Points Strategy

- Change in Life: Pregnancy, Aging, Illness
- Investing
- New Home Purchase
- Mortgage Refinance
- Major Appliances/HVAC Replacement



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Measurement & Verification: Searching for Scalable & Proven Results

Chris Kaiser
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- Why Measurement & Verification?
- International Performance Measurement & Verification Protocol (IPMVP)
- IPMVP Options Overview
- Benefits of Using IPMVP
- Cost vs. Benefits of IPMVP Strategies

Discussion Topics

- Energy consumption and costs are often invisible to decision makers within the organization
- Various types of facilities, industrial processes and energy conservation measures (ECM) need standardized measurement of performance
- Energy efficiency return on investment usually occurs over a number of years with various complex systems
- Defined method of substantiation of payments (ROI) for specific performance of each individual energy conservation measure
- Common terms and principles to increase validity of investment

Why Measurement & Verification?

- IPMVP documents common terms and methods to evaluate performance of efficiency projects for buyers, sellers, and financiers*
- IPMVP provides methods, with different levels of cost and accuracy, for determining overall facility savings or individual ECM's
- IPMVP specifies the contents of a M&V plan that will provide a verifiable savings reports
- IPMVP applies to a wide variety of facilities including existing and new buildings
- IPMVP methodology not required for all energy efficiency projects

International Performance Measurement & Verification Protocol (IPMVP)

* Information provided from the IPMVP Volume 1, 2010

- The IPMVP protocol includes four main measurement and verification options:
 - Option A – Partially Measured Retrofit Isolation – Savings determined by field measurement of key performance parameters
 - Option B – Retrofit Isolation – Savings determined by field measurement of the energy use by ECM-affected system
 - Option C – Whole Facility - Savings determined by energy use at the whole facility or sub-facility level
 - Option D – Calibrated Simulation – Savings determined by simulation of whole or sub-facility

IPMVP Options

- Substantiation of payments for performance
- Lower transaction costs in an energy performance contract
- International credibility for energy savings documentation
- Enhanced building rating under programs to encourage or label sustainable designed and operated facilities
- Assist national and industry organizations to promote and achieve resource efficiency

Benefits of Using IPMVP

* Information provided from the IPMVP Volume 1, 2010

- Set appropriate expectations for M&V activities
- M&V activities can be costly for facility owners who want every ECM verified (estimate 10% of savings for M&V)
- Ensure that data received from M&V plan is actively reviewed
- Utilize M&V data to improve performance of ECM's and overall operational strategies
- Determine timeline and goals for M&V program

Cost vs. Benefits of IPMVP Strategies

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Smart Grids for Energy Efficiency

Audrey Zibelman, President and CEO
Viridity Energy, Inc

Ivo Steklac, Executive Vice President, Sales & Strategy
Tendril Inc.

Jim Sinopoli, PE, LEED AP, RCDD, Managing Principal
Smart Buildings



Audrey Zibelman – President, Chief Executive Officer, and Founder

As President, CEO and Founder of Viridity Energy, Inc., Audrey has led the company's strategic vision since its founding in 2008. Under Audrey's leadership, Viridity Energy has grown its operations, offerings and customer footprint across the United States. Viridity Energy has seen its strategic energy solutions and VPower™ software platform spread to exciting projects in the Municipal, Higher Education, Public Transportation, Healthcare and Commercial/Industrial markets, enabling customers to dynamically shift and balance energy load. Under Audrey's leadership, the company has been recognized with multiple industry awards and has qualified for millions of dollars in local, state, and federal grants for energy innovation projects. Today, Viridity Energy is making the next generation of the smart grid a reality by providing large energy consumers with powerful tools to increase energy efficiency and decrease energy costs.

Audrey formed Viridity Energy after more than 25 years of electric utility industry leadership in both the public and private sectors and is a recognized international expert in energy policy, markets and smart grid innovation. Prior to forming Viridity Energy, Audrey was the Executive Vice President and Chief Operating Officer of PJM Interconnection LLC, a Regional Transmission Organization that operates the world's largest wholesale power market and serves 14 states throughout the eastern United States. Audrey was previously an executive at Xcel Energy, Inc., where she oversaw transmission operations and planning, energy market trading, risk management, fuel procurement and renewable energy development. She is a former General Counsel of the New Hampshire Public Utilities Commission, and has participated as both counsel and expert in numerous electric utility proceedings before state and federal regulatory and legislative bodies.

She has testified before Congress and federal and state agencies on the benefits of power markets and smart grids to consumers. Audrey has also served on the Boards of numerous entities responsible for assuring the security and reliability of the nation's power system, including, Reliability First and the GridWise Alliance.

Audrey earned her Juris Doctor degree from Hamline University Law School. She received her Bachelor of Arts degree from the Pennsylvania State University.



Ivo Steklac, Executive Vice President of Sales and Strategy

Ivo has more than 20 years of energy and utility experience, having held various leadership positions in research and development, marketing, and general management. As Executive Vice President of Sales and Strategy, Ivo is responsible for strategic positioning and value-proposition deployment of Tendril products on a global scale. Most recently Ivo was CEO of Greenbox Technology, a company that provides interactive energy management for the smart home, which was acquired by Silver Spring Networks in late 2009. Previously he worked as vice president of marketing for energy and utilities at Schlumberger, and founded Enspira Solutions Inc., a consultancy and systems integrator with a strong focus in energy management and operational efficiency within Advanced Metering Infrastructure (AMI), Demand Response, and Smart Grid. Ivo holds degrees in Electrical Engineering and Computer Science from Queen's University at Kingston Ontario, Canada.




James M. Sinopoli, PE, LEED AP, RCDD Managing Principal



For over 25 years, Mr. Sinopoli has worked extensively on projects involving the design, construction and operation of buildings and building systems. This has involved the configuration and optimization of building technology systems, facility management and operations. Mr. Sinopoli is the Managing Principal of Smart Buildings, which provides engineering and consulting services for the design and operation of integrated building technology systems. His background is in construction practices, design, procurement, project management, account management, and building systems and operation, with a particular focus on monitoring and managing a building's performance.

Mr. Sinopoli has experience in the healthcare, corporate, education, manufacturing, finance, construction and government industry sectors. His clients have included Fortune 100 corporations, major school districts, university systems, airports and ports, national government agencies, large private and public hospitals, technology companies, and major developers. His international experience includes projects in Asia, Europe, the Middle East, South America and Africa. United States federal clients have included the Internal Revenue Service, the General Services Administration and the US Postal Service.

Mr. Sinopoli's educational credits include a B.S. in Engineering from Purdue University and a M.A. in Applied Science and Environmental Management from Governor's State University. He is a licensed Professional Engineer, an Accredited LEED Professional and a Registered Communications Distribution Designer. Mr. Sinopoli is Chairman of the Continental Automation Buildings Association's Task Force on Industry Training and Education. Mr. Sinopoli has spoken on numerous occasions at conferences and seminars focusing on building management and technology systems including AIA, BOMA, Builconn, Realcomm, BICSI and CEFPI conferences. He is a contributing editor for the web site AutomatedBuildings.com, and has written for many industry publications worldwide. Mr. Sinopoli has received the international "Harry J. Pfister" award from the Building Industry Consulting Service International (BICSI). His most recent publication is a book titled "Smart Buildings Systems for Architects, Owners and Builders".




Energy Efficiency Finance Forum

Energy Efficiency and the Smart Grid

Audrey Zibelman,
President and CEO

484-534-2222
www.viridityenergy.com



Viridity Energy: Key Facts

Industry, market, technology and business experience to transform the power/energy industry:

- Regional Company
- Founders from PJM and the energy and technology industries
- Focus on large energy users, e.g - universities, hospitals, commercial buildings, transit agencies, water utilities, industrial sites and military/government

Corporate Objective:
Assist clients to minimize electric power expenses by maximizing the opportunities to use their energy assets to reduce supply costs, *while simultaneously* gaining revenues in the competitive wholesale power markets

viridityenergy

Existing Grid vs Smart Grid

Supply

Demand

----- data flow

The grid must continuously balance production and consumption

5/2/2011 Highly Confidential 3

viridityenergy

Customer load and energy resources provide maximum benefit when integrated and aligned with real time power grid operations

The Grid is a Single Machine

Global proliferation of distributed energy resources:


- Distributed generation
- Distributed storage
- Controllable load

The Smart Power Grid is a real time a network of distributed systems and microgrids capable of:

- Self-healing
- Self-coordination
- Self-scheduling

Viridity Energy enables the seamless integration of distributed resources and microgrids as Virtual Power into real time power grid operations

4/26/2011 © 2011 Viridity Energy Inc. Source: iTeros 4



Corporate Consumers vs. Pro-sumers


Energy accounts for 40% of the building operation costs

Most buildings have 20 - 40% unrealized energy savings

Energy is the largest operating expenses outside raw materials in process industries

Energy reduction strategies often require up front investments with unattractive paybacks based on savings.

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Efficiency vs Demand Response vs Dynamic Demand Optimization

Efficiency - Reduction of KW consumption per square foot over all hours

Demand Response - The ability to reduce consumption in response to a utility request

Dynamic Demand Optimization - The automated and continuous active management of consumption per square foot from the power grid in reaction to real time prices while ensuring that tenant comfort, sustainability and productivity concerns are addressed.

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Smart Grids Enable Pro - Sumers



Definition of a Prosumer:

- "An institution that takes an enlightened, proactive approach to its energy use, by:
 - a) Utilizing real-time pricing information to manage energy consumption;
 - b) Integrating distributed generation and storage onsite when deemed economical;
 - c) Interfacing with the wholesale power markets on a continuous basis to provide virtual power;
 - d) Making its own energy choices rather than acting as a passive bill-payer."

1/20/2010

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Corporate Consumers vs. Pro-sumers

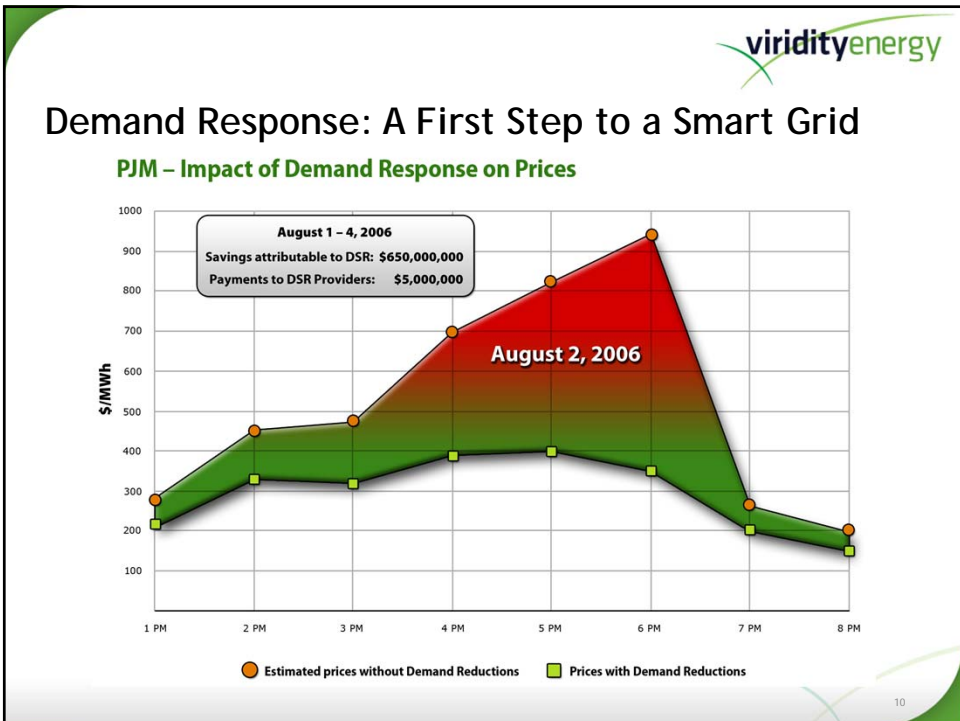
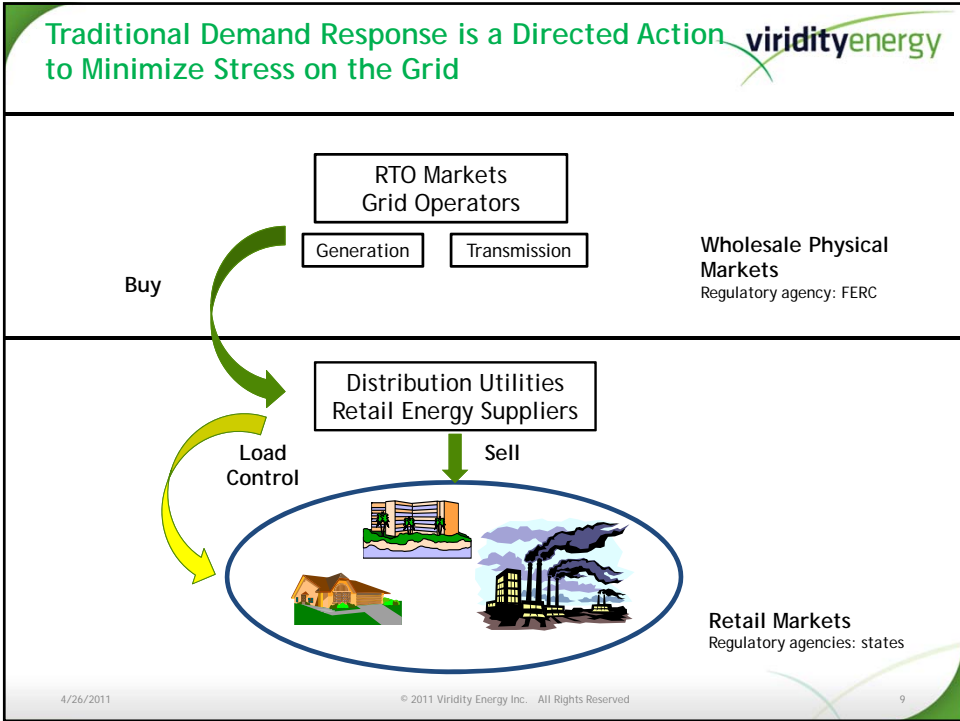


Consumer	Prosumer
Savings Only	Savings and Market Revenue
Long Paybacks	Short Paybacks
Energy Efficiency	Energy Efficiency + Energy Effectiveness
Passive Ratepayer	Proactive supplier and user
Capital Costs	Capital Investments
Growth = more costs	Growth = more revenue

5/2/2011

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

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viridityenergy

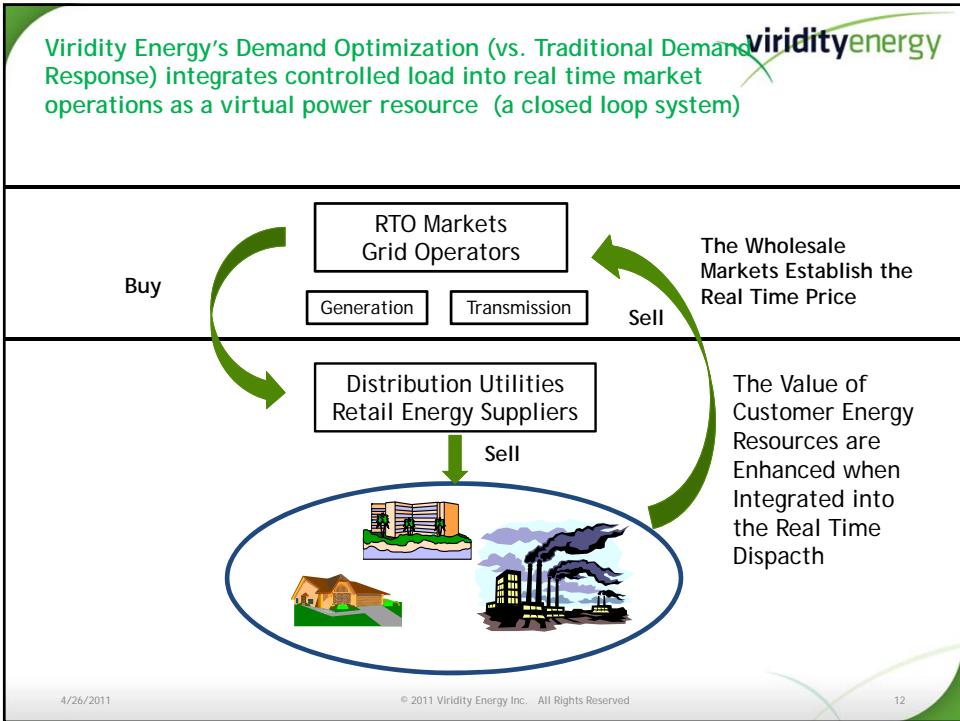
Benefits of DR to PJM Customers

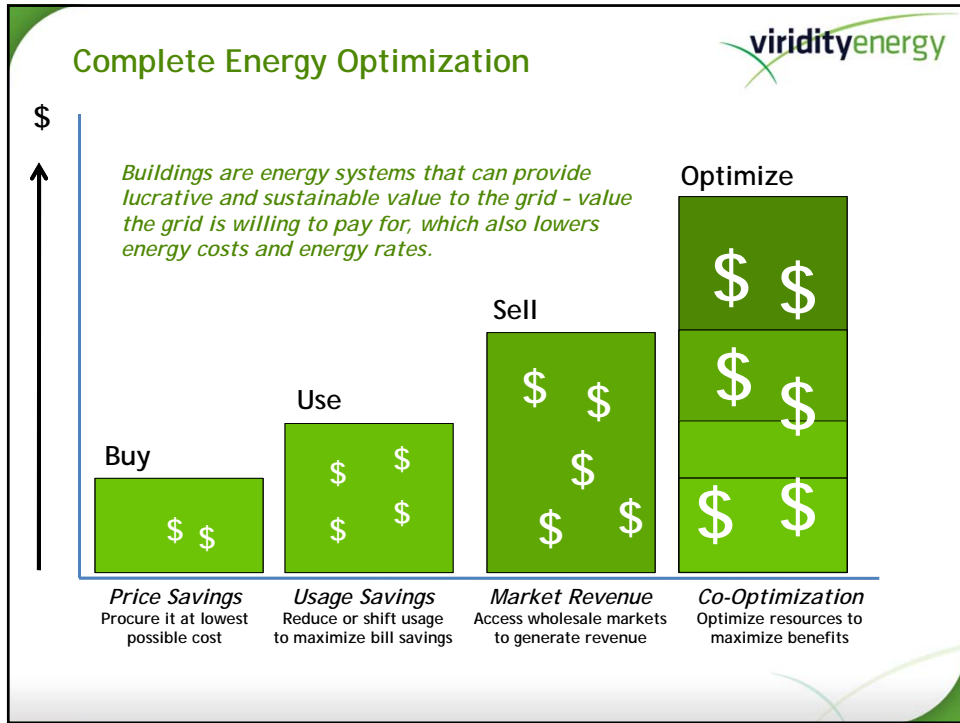
Quantity of fuel displaced by voluntary load reduction during peak usage periods 1 August 2006 through 4 August 2006

- Coal  1,367 Tons
- Heavy Oil  15,855 Barrels
- Natural Gas  227,965 MCF

\$5 million = direct payout to DSR instead of additional generation dispatched at higher price.
 \$650 million = indirect savings per day to system during the week from DSR through lower marginal clearing prices

5/2/2011 Source: PJM






Commercial Real Estate Owner with est. 7,000,000 SQF within PJM Territory

Programs	2012-13 Benefit	'13-'14
Capacity (5 MW)	\$228,308*	\$402,413*
Economic (3.5 MW)	\$143,220	\$265,720†
Sync Reserve (1 MW)	\$32,316	\$32,316
Supply Savings	\$350,000	\$350,000
Total:	\$750,611	\$1,050,448

1/20/2010 Confidential


Large Area Hospital 

Looks to install pollution controls on backup generators for EPA compliance

Total estimated cost \$648,000. With Viridity, simple payback <20 months.

Virtual Power Opportunity	Annual Revenues /Savings	Notes
Capacity (ILR)	\$144,540	4MW Capacity revenues based on '11/'12 clearing price (\$110/MW-day)
Economic	\$15,362	500 kW HVAC load curtailment for approx 1000 hours; G + T = \$50
Sync Reserve	\$81,741	1 MW / 4 MW
Supply Savings	\$40,000	\$100/MWh retail rate
Less Generation Costs	(\$9,600)	
Total:	\$272,043	

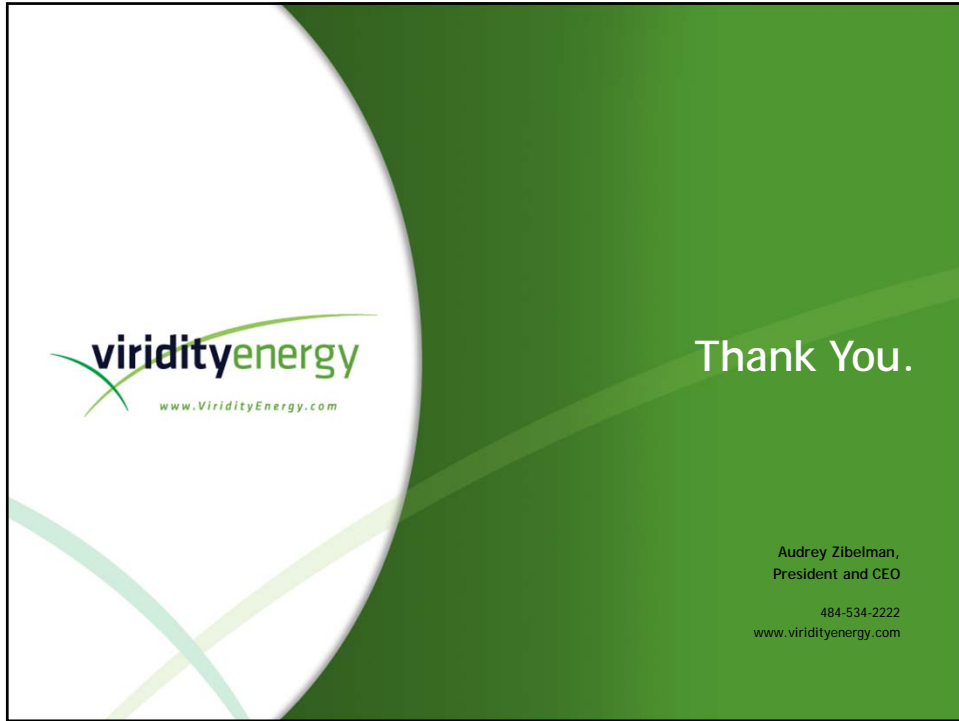
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The Smart Grid Enables Corporate Pro-sumers

- Receive revenues from power market participation.
- Reduce payback period for energy investments that promote efficiency.
- Reduce supply expense through superior load management.
- Minimize carbon footprint
- Better achieve environmental/sustainability goals.

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China's Investments in Energy Efficiency & U.S. Collaborations

Moderator:

Bill Nesmith, Senior Energy Advisor
NASEO

Panelists:

William Chandler, President
Transition Energy
Research Director, Energy Transition Research Institute

Bo Shen, PhD, China Energy Group, Environmental Energies Technology Division
Lawrence Berkeley National Laboratory

Alisa Valderrama, Finance Policy Analyst, Center for Market Innovation
Natural Resources Defense Council

Xiadong Wang, PhD, Senior Energy Specialist
The World Bank

Bio for WILLIAM NESMITH

William Nesmith is currently the Senior Energy Advisor for the National Association of State Energy Officials (NASEO) located in Alexandria, Virginia. In this position William provides expert advice and consultation to NASEO on a variety of energy efficiency, renewable energy, sustainable development, and international programs.

William's background includes a Master of Science degree and over twenty-five years experience in the field of energy efficiency and renewable energy. He has worked as a land use planner for local government, been a program manager with state government, served as a public utilities specialist with the US Department of Energy, Bonneville Power Administration, and served as the Assistant Director for Energy Efficiency at the Oregon Department of Energy.

Career highlights include:

- Received the Energy Advocate of the Year award from the Northwest Energy Efficiency Alliance, in October 2007.
- Serve as special advisor to the City of Shanghai, China, for Sustainable Development and Energy Conservation from 2003 to present. Recipient of City of Shanghai's highest civilian award, the "Silver Magnolia", in 2005.
- Served as Vice Chair of the National Association of State Energy Officials (NASEO), participated on the Executive Committee and served as Chair of Industrial Committee, from 2005 to 2008.
- Serve as Secretary on the Board of Directors, Earth Advantage Program, a non-profit entity promoting sustainable housing, from 2005 to present.
- Served on the Board of Directors, Energy Trust of Oregon, Oregon's largest non-profit entity that distributes Oregon's energy related public benefits charge, from 2003 to 2008.
- Served on the Board of Directors, US Department of Energy, State Energy Advisory Board, from 2002 to 2006.
- Served as Special Assistant to Oregon Governor Goldschmidt's Senior Advisor on Natural Resources in 1999.
- Recipient of Oregon State Management Association's "Manager of the Year" award, 1992.

WILLIAM U. CHANDLER

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William Chandler is president of Transition Energy and research director for the Energy Transition Research Institute (Entri). He is a board member of the Environmental Law Institute and a member of the Committee on the Human Dimensions of Climate Change of the National Academy of Sciences. He is a founder of and advisor to Dalian East Energy Development Co., which finances and builds heat recovery power plants in China.

From 1988 to 2005, Chandler served as Senior Staff Scientist and Laboratory Fellow for the Pacific Northwest National Laboratory (PNNL) of the Battelle Memorial Institute. At PNNL, he led the creation of national energy efficiency centers in Bulgaria, China, the Czech Republic, Poland, Russia, and Ukraine. He taught energy policy for 15 years at Johns Hopkins University School of Advanced International Study, and for a decade served as a lead author for the Intergovernmental Panel on Climate Change. Bill was an external senior fellow at the Carnegie Endowment from 2007 through 2010, and earlier worked at Oak Ridge Associated Universities and the Worldwatch Institute.

Chandler has authored or co-authored several books, including: *Energy: The Conservation Revolution* (New York: Plenum, 1981); *The Myth of TVA: Conservation and Development in the Tennessee Valley, 1933-1983* (Cambridge, MA: Ballinger, 1983); *State of the World* (Vols. 1984-1988) (New York: W.W. Norton); *Energy Efficiency: A New Agenda* (Washington: ACEEE, 1988); *Carbon Emissions Control Strategies* (Washington: Conservation Foundation, 1990); and *Energy and Environment in the Transition Economies* (Boulder: Westview Press, 2000). He has published frequently in scientific and popular journals, including *Climatic Change*, *Energy Policy*, and *Scientific American*. Chandler has testified on energy and environmental issues many times in the U.S. Congress, most recently on Chinese climate policy before the Senate Foreign Relations Committee.

Chandler received the 1992 Champion of Energy-Efficiency Award from the American Council for an Energy Efficient Economy for his work in Eastern Europe. In 1999, he received the first Global Climate Leadership Award from the International Energy Agency for his work in China and Russia.

He holds a B.S. from the University of Tennessee, and an M.P.A. from Harvard University.

Bo Shen



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Areas of Specialization:

Demand-Side Management

Areas of Specialization:

Emerging Areas

Areas of Specialization:

Industrial Energy Efficiency

Areas of Specialization:

Policy Analysis

Bo Shen is a Principal Scientific Engineering Associate in the China Group of Lawrence Berkeley National Laboratory. His current work at LBNL involves extensive collaboration with Chinese partners on improving China's energy use through industrial energy efficiency and demand-side management programs. Dr. Shen has over 17 years of experience working in the energy field. Prior to joining the China Group at LBNL, Dr. Shen led the China Energy Efficiency and DSM Project at the Natural Resources Defense Council (NRDC) where he worked with partners in China in building capacity and providing policy support in facilitating greater energy efficiency improvement at the national level and designing and implementing DSM programs at the provincial level. From 1999-2007, Dr. Shen worked as a Senior Public Utilities Analyst for the state utility advocate agency in Delaware on a broad range of regulatory issues including electricity restructuring, retail competition, wholesale power market development, integrated resource planning, energy efficiency, demand response, renewable energy, and distributed generation. Dr. Shen had also worked as a policy specialist primarily in the area of regional planning and energy management for 4 years at the Chinese Academy of Science before he moved to the U.S. in 1990 to pursue his graduate study. Dr. Shen earned a Ph.D. in energy and environmental policy from University of Delaware, an MBA in finance from Temple University, a M.S. focusing on environmental policy from Rensselaer Polytechnic Institute, and a B.A. in mechanical engineering from Peking University.

Alisa is a Financial Policy Analyst at NRDC's Center for Market Innovation. Alisa is currently working to assist cities to implement innovative financing mechanisms toward energy efficiency retrofits, with a focus on commercial buildings. Prior to joining NRDC, Alisa worked on the finance team at the Clinton Climate Initiative. Previously, Alisa helped launch the World Bank's first program geared toward corporate responsibility in environmental, social, and governance issues. She has consulted on securities law reform for the United Kingdom Treasury, and assisted in fraud investigations conducted by the United Nations Oil-for-Food Independent Inquiry Committee. Alisa is a graduate of the London School of Economics, the University of Southern California Law School, and the University of Pennsylvania.

Xiaodong Wang is a Senior Energy Specialist in the East Asia & Pacific region of the World Bank. Dr. Wang has extensive experience and knowledge in the areas of climate change, energy efficiency, renewable energy, and energy access. She is the task manager of the \$300 million program on China Energy Efficiency Financing, and has worked in more than 20 developing countries, mostly in Asia and Africa, on clean energy policy and financing issues. She is the lead author for the World Bank East Asia's energy flagship report: *Winds of Change: East Asia's Sustainable Energy Future*, and the Energy Chapter of the annual World Bank flagship report: *World Development Report 2010 on Development and Climate Change*. Prior to joining the World Bank, Dr. Wang managed the Climate Change and Sustainable Energy Program at the UN Foundation, and worked at the UNDP-GEF developing clean energy projects in East Asia. She holds a PhD in Energy and Resources from UC Berkeley, and a MS in Environmental Science and Engineering from Tsinghua University



ACEEE 5th Annual Energy Efficiency Finance Forum

Presentation on Oregon Business Energy Tax Credit Program

Philadelphia, PA
May 3-4, 2011

William Nesmith, Senior Energy Advisor
National Association of State Energy Officials

Oregon's Business Energy Tax Credit

Encourages investments in:

- Energy Efficiency
- Renewable energy
- Transportation
- Rental dwelling weatherization
- Sustainable buildings
- Recycling
- Renewable energy manufacturing

Objectives of the Business Energy Tax Credit

To cut energy use and save money

To reduce pollution and the production of
greenhouse gases, especially CO₂

To promote economic growth with a smaller
environmental footprint

NASEO International Program

Business Energy Tax Credit

Tax credit is 35% of approved project costs

Tax credit is taken over a 5-year period

10% the first two years

5% the next three years

Revenue impact spread over 5 years

Certain renewable energy and
manufacturing projects can receive a 50%
credit

NASEO International Program

Business Energy Tax Credit

Project Eligibility criteria

Energy projects must be 10% more efficient than energy code or standard industry practice

Lighting projects must be 25% more efficient

Projects must have a simple payback of 1 to 15 years (Solar projects – 30 year payback)

NASEO International Program

Business Energy Tax Credit

Applicant eligibility

Project owners:

Business

Rental property owner

Non-profit

Public entity

Pass through Partners

Individuals

Businesses

NASEO International Program

Business Energy Tax Credit Facts

Began in 1980

More than 11,000 tax
credits issued*

Total project costs of about \$848.5 million*

Projects saved and generated about 2% of
Oregon's total energy use in 2001

NASEO International Program

Business Energy Tax Credit Facts

An estimated 80% of projects would not
have been completed without the program.

Completed projects lead to decreased
energy use.

Investments in projects stimulate the economy.

NASEO International Program

Business Energy Tax Application Process

- 1) The project owner completes a project-specific application form and pays the review fee **BEFORE** project start-up
- 2) Department of Energy staff reviews the application and issues a preliminary certification if project meets requirements

NASEO International Program

Business Energy Tax Credit Application Process

- 3) The project owner begins the project. When the project is complete, the project owner files for final certification. The owner must include receipts, invoices or a CPA letter to verify final eligible costs of the project.

NASEO International Program

Business Energy Tax Credit Application Process

- 4) Department of Energy staff reviews the final application form and issues a tax credit certificate for 35 percent of the final eligible costs
- 5) Applicant claims a dollar for dollar credit against state taxes owed.

NASEO International Program

Business Energy Tax Credit Quality Control

Department of Energy conducts post-installation verification site visits on a sampling of installed projects.

Site visits are targeted based on final project cost. Cost categories are established and a percentage of projects are randomly selected for verification.

Selected projects are compared to ensure a variety in system type, business classification, and geographic location

NASEO International Program

Business Energy Tax Credit

Special Provisions

Monetization

LEED Buildings

NASEO International Program

Business Energy Tax Credit Monetization

The pass-through option allows a project owner to transfer their tax credit eligibility to a business or individual with a tax liability in exchange for a lump-sum payment

For a 5 year, 35% tax credit the present value lump sum pay is 25% -- effectively converting the tax credit to a grant

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Business Energy Tax Credit for High Performance Buildings

Tax credit based on LEED® certification - existing, recognized national program

LEED easily adapted to tax credit and requires minimal staff time

Building must receive silver, gold or platinum rating and minimum 1 energy point, 1 commissioning point

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Business Energy Tax Credit

Final Thoughts

Investment Credit

Must have limits to optimize effectiveness

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Business Energy Tax Credit

Oregon's tax credit is based on the project owner's investment in an energy project.

The investment or eligible costs are the incremental costs of the system or equipment that exceed code or standard practice.

The project owner must show how much energy will be saved from the system/equipment.

The project is not based on PERFORMANCE due to uncontrolled site specific variables

NASEO International Program

Business Energy Tax Credit

Oregon's tax credit is currently in danger of being allowed to expire because of overly generous credits made available for manufacturing and generating renewable resource projects, primarily wind projects.

This has created a situation where the revenue impacts have been far greater than projected and are having a significant impact on the state's general fund budget.

NASEO International Program

Business Energy Tax Credit

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NASEO International Program

Financing China's Energy Efficiency Campaign

Dr. Xiaodong Wang
Senior Energy Specialist
East Asia and Pacific Region
The World Bank

Energy Efficiency Financing Forum, Philadelphia, May 3-4, 2011

Chinese Government Primarily Relies on Administrative Tools to Achieve the EE Target

- **Decoupling energy from growth achieved:**
 - Past 30 years (1980-2010): 18x GDP, 5x Energy -- Energy intensity dramatically declined by 70%
- **Primarily relied on mandatory approaches – achieving 20% energy intensity reduction 2006-2010**
 - Allocation of **provincial targets**
 - Agreements with **Top 1000 industrial enterprises**
 - Industrial, building, appliances, and vehicle **standards**
 - Strong government **financial support**
 - *\$20 billion* from central government in 2006-2009 with additional funds from provinces
- **Moving forward:** China is committed to reduce carbon intensity by 40-45% 2005-2020, and energy intensity by 16% 2011-2015

World Bank Introduces Market-based Mechanisms: Delivery Models and Financing Schemes

- **Phase I: Piloted 3 ESCOs as a market-based mechanism of delivery model a decade ago**
 - **ESCO industry:** growing from 3 to 450 with \$3 B in EPCs
 - Government issued **financial incentives policies** for ESCOs
- **Phase II: Provided guarantees to ESCOs**
 - \$22M GEF grant **leveraged** \$140M investments by 42 ESCOs
 - Many ESCOs received bank loans **for the first time**
- **Phase III: Mainstreaming EE lending in the banking sector**
 - WB loan (\$300M): **on-lend** to industry enterprises for EE investment
 - GEF grant: **capacity building** to banks and EE **policy support**
 - **Achievements:** \$95M IBRD leveraged \$400M; Energy savings of 1.5 Mton of coal equivalent and emission reductions of 4 Mt
 - **Future efforts:** to expand PFI lending to ESCOs and building EE

Lessons Learned from WB EE Financing Portfolio

- **Effective EE policies: driver for demand**
- **Technical Assistance to PFIs: high pay-off**
- **Careful selection of fund management: key to success**
 - Strong management commitment in EE
 - Interest in ESCO/SMEs
 - Actively engage branches
- **Financing instruments: tailored to market segments**
 - **Credit line:** increasing PFIs' capacity, interests, and confidence in EE investments in **large and medium sized** clients and projects
 - **Guarantee:** increasing banks' confidence in the clients at **border line such as ESCOs** to reduce banks' perceived risks
 - **Dedicated EE Funds:** increasing access to EE financing for **SMEs and public sector projects**, but sustainability and scale-up key challenges