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POWER FACTOR:

Institutional Investors' Policy Priorities Can Bring Energy Efficiency to Scale

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Authored by
Brandon Smithwood
Ceres

Ryan Hodum
David Gardiner & Associates

Ceres is a nonprofit organization mobilizing business leadership on sustainability challenges such as climate change and water scarcity. It directs the Investor Network on Climate Risk (INCR), a network of more than 100 investors with collective assets totaling more than $11 trillion.

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FOR MORE INFORMATION, CONTACT:

Brandon Smithwood
Manager, Policy Program
Ceres
99 Chauncy Street
Boston, MA 02111
smithwood@ceres.org

www.ceres.org

Table of Contents

Figures:

Executive Summary

Recent research shows climate change could impose a multi-trillion dollar burden on the global economy and contribute ten percent of overall risk within institutional investment portfolios.[1] Institutional investors, who manage tens of trillions of dollars globally, are actively looking for ways to mitigate these climate-related risks. Energy efficiency offers one such opportunity for institutional investors such as pension funds, insurance companies, and mutual funds to manage the risks of climate change while earning a competitive rate of return on their investment.[2]

Industry analysts have estimated the potential energy efficiency investment opportunity in the hundreds of billions of dollars.[3] However, under current market conditions, institutional investors are largely unable to finance energy efficiency projects at the scale necessary to address climate change or to meet their own internal investment criteria. At sufficient size, a market for energy efficiency loans could present an attractive investment opportunity for institutions.

Three key areas of policy—utility regulatory policies, demand-producing policies and finance-enabling policies—can together catalyze the development of secondary markets for energy efficiency retrofit loans

Policy will play an essential role in overcoming the present barriers that limit large-scale investment in energy efficiency. Based on a dialogue with institutional investors and efficiency experts, this paper finds three key areas of policy—**utility regulatory policies, demand-producing policies** and **finance-enabling policies**—can together catalyze the development of **secondary markets** for energy efficiency retrofit loans and thus attract investment from institutional investors.

The first section of this paper describes institutional investors' current interest in energy efficiency as an investment vehicle, as well as their current methods of mitigating climate risk in their portfolios. The second section proposes that a financing structure in which energy efficiency loans are securitized and sold on a secondary market may represent an attractive option for institutional investors to expand their investments in energy efficiency while also lowering the cost of financing projects for building and industrial facility owners. The third section outlines investors' policy priorities for stimulating the creation of secondary market financing for energy efficiency.

1 Mercer, "Climate Change Scenarios: Implications for Strategic Asset Allocation", 2011, http://www.mercer.com/articles/1406410

2 Investments in energy productivity could achieve an average internal rate of return of 17% and would generate energy savings up to $900 billion annually by 2020, according to the McKinsey Global Institute (see http://www.mckinsey.com/insights/energy_resources_materials/the_case_for_investing_in_energy_productivity).

3 For a review of estimates see the section "State of Play"

ENERGY EFFICIENCY: A COMPELLING OPPORTUNITY FOR RISK MITIGATION AND INVESTMENT

Energy efficiency can present steady returns and attractive yields for investors. At the same time, efficiency is an essential strategy in the effort to mitigate the economy-wide risks of climate change. Indeed, in scenarios presented by the International Energy Agency, one-third of the emissions reductions needed to avoid the worst impacts of climate change are expected to come from energy efficiency in buildings and industrial facilities.[4] Investors can play a role in ensuring that those emissions reduction targets are met.

Institutional investors have already achieved a number of notable energy efficiency successes. As active shareholders of corporations, they have encouraged companies to improve energy efficiency and thus boost profitability and achieve corporate sustainability commitments. They are also stock- and bondholders of companies that develop energy-efficient technologies or provide energy efficiency services. In addition, institutional investors have begun to embed efficiency metrics into real estate investments and other alternative investment vehicles.

Energy efficiency can make institutional investors' existing investments more profitable, improve the corporate bottom line, present new profitable investment opportunities, and offer the fastest, easiest and cheapest way to significantly reduce greenhouse gas emissions and advance corporate sustainability goals.

However, perhaps the most appealing energy efficiency investment opportunity—the ability to finance energy efficiency retrofit loans through a secondary market—is not yet available. Secondary markets are routinely used to as a way to bring cheaper funding from the capital markets to various forms of debt. Loans, such as car loans, mortgages, and credit card debt can be aggregated (pooled) and repackaged as securities (bonds) that can be purchased by investors. Such secondary market financing provides low-cost financing for borrowers and creates investment vehicles for institutional investors.

Though energy efficiency projects often pay for themselves over time through energy savings, many projects go unrealized for lack of capital to cover the initial project cost. While some owners of homes, buildings and industrial facilities have cash on hand or a mortgage they can use to secure debt for retrofits, many are not in such a position. Innovative financing mechanisms have been created with loans that are repaid using cost savings.[5] The cost of this financing could be reduced—and the scale of its deployment expanded—through the creation of a secondary market for these loans.

Secondary markets for energy efficiency finance should be a shared priority for those who are seeking to make their facilities more efficient and investors who are looking for investment opportunities with attractive rates of return. Policy can help catalyze the development of these secondary markets by helping to overcome market failures and other barriers to energy efficiency and energy efficiency finance.

4 IEA (International Energy Agency), *Energy Technology Perspective 2008*. Paris: Organization for Economic Cooperation and Development.

5 For a recent and comprehensive overview of financing mechanisms see *Scaling Private Energy Efficiency Financing: Models and Strategies*, Capital E 2011, http://www.cap-e.com/Capital-E/Energy_Efficiency_Financing.html

SECONDARY MARKETS FOR ENERGY EFFICIENCY LOANS: OPPORTUNITIES AND CHALLENGES

By definition, secondary markets are markets where financial instruments are bought and sold. Even stock exchanges are secondary markets: After an initial public offering (IPO) of shares by a company to investors, investors can resell these shares on secondary markets (i.e., stock exchanges). Institutions that originate loans also use secondary markets as a way of generating capital for more loans at lower cost. For example, mortgage lenders might package and sell shares of their loans to investors on a secondary market in order to raise cash for future mortgage lending.

For nearly two decades, experts have discussed the value of secondary markets for energy efficiency loans.[6] Since individual energy efficiency loans are typically too small for institutional investors to consider for investment, many loans could be bundled together (as is done with credit card debt, home mortgages and car loans) and then securitized and sold to institutional investors. So far, there have been limited sales of energy efficiency securities, such as a single instance of securitization of energy savings performance contracts.[7] To bring the market to scale, two interrelated sets of barriers must be addressed.

The first set relates to the challenge of building sufficiently sized pools of energy efficiency loans. The creation of such pools is currently inhibited by the **lack of uniform standards** for energy efficiency loans, **limited data** on loan and project performance and an **insufficient pipeline** of projects to build rated, investment-grade pools of loans that exceed $100 million, a level many institutional investors observe as an investment threshold.[8]

The second set of barriers relates primarily to the challenge of building a sufficient pipeline of projects (i.e., scale). These barriers are well documented and often cited. They include **split incentives** between landlords and tenants to invest in efficiency, **utility disincentives** to pursue energy efficiency, **limited information for consumers** and other challenges.

Policy can help address both of these barriers by overcoming the energy efficiency financing "chicken-or-egg" problem, in which the secondary market that could help to catalyze energy efficiency retrofits is not materializing due to a limited level of energy efficiency retrofit activity.[9] If greater scale was achieved through public policy, and secondary markets were established as a result, there could be a virtuous feedback cycle. That is, as secondary market financing opportunities become established, financing costs for energy retrofits should fall and thus drive more demand for such retrofits.[10]

Smart policy can help to close the gap between energy efficiency investment potential and the largest investors in the world. In the United States those policies are numerous and are adopted at several levels of government: local, state and federal. However, the patchwork of policies has not yet had a sufficient impact on removing barriers and bringing the market to scale. In this policy landscape, which energy efficiency policies are most important to institutional investors?

6 Gregory Kats et al, "Energy Efficiency as a Commodity: The Emergence of an Efficiency Secondary Market for Savings in Commercial Buildings" May 1996 http://cgec.ucdavis.edu/ACEEE/1994-96/1996/VOL05/111.PDF

7 Financial firm Bostonia Group securitized an energy performance savings contract done for a large army base retrofit project. Bostonia has a case study available on their website: http://www.bostonia.com/services/energy-savings-performance-contracts

8 Kerry O'Neill Presentation to ACEEE Energy Efficiency Finance Forum, May 2012 "Defining an Asset: Exploring a Secondary Market for Energy Efficiency Finance" http://www.aceee.org/files/pdf/conferences/eeff/O%27Neill-EEFF.pdf

9 Comments by Sadie McKeown at the Berkley Center for Law, Business and the Economy symposium, "Where is the Money? Unlocking Capital for Real Estate Efficiency Improvements", October 5, 2012 http://thenetwork.berkeleylawblogs.org/2012/10/09/bclbe-symposium-recap-unlocking-capital-for-efficiency-improvements/

10 U.S. Department of Energy, "Clean Energy Finance Guide for Residential & Commercial Building Improvements," last updated January 2012, http://www4.eere.energy.gov/wip/solutioncenter/finance_guide/content/build_secondary_market

IDENTIFYING INVESTORS' PRIORITIES FOR ENERGY EFFICIENCY POLICIES

For the purposes of this report, 29 investors and energy efficiency experts gathered together in New York City in March 2013 to identify energy efficiency policy priorities from the perspective of institutional investors. Project participants were selected to represent a diverse cross sampling of energy efficiency financiers, institutional investors and policy experts.

Participants cited three key areas of policy—**utility regulatory policies, demand-producing policies and finance policies**—as those most needed to drive the energy efficiency investment opportunity.

First, investors noted the importance of **leveling the playing field with utility regulations** that would encourage utilities to pursue aggressive energy efficiency goals. To this end, legislators and Public Utility Commissions (PUCs) should eliminate disincentives that discourage utilities from investing in energy efficiency and move toward performance-based ratemaking. In addition, PUCs should support energy efficiency financing through equal treatment of efficiency loans with electricity sales and information sharing between financers and utilities. Such policies could include a backstop for energy efficiency loan programs (a "true-up" mechanism), which could help unlock institutional investment in energy efficiency by lowering the risk of investment.

Policymakers will likely be happy to know that, as one participant in this project noted, "few of the policies discussed here require any public expenditures."

Next, institutional investors expressed their support for a broad range of policies that **drive demand** for energy efficiency retrofits, including appliance and equipment efficiency standards, building codes and standards, and building energy disclosure requirements. These policies stimulate interest in energy efficiency projects and programs while also increasing the amount of information available to investors.

Finally, the participants stressed the importance of policies that enable **innovative financing** tools such as Property Assessed Clean Energy (PACE) and on-bill repayment (OBR). Policies that authorize municipalities and utilities to run these programs help overcome the initial cost barrier that many individuals and institutions face as they consider an energy efficiency retrofit. The policies also address the challenges of limited tenancy and ownership. Such programs are also of interest because they create secured loans that could be part of a securitized loan pool.

This paper finds that these three key areas of policy—utility regulatory policies, demand policies and finance policies—can together catalyze the development of secondary markets for energy efficiency retrofit loans and thus attract investment from institutional investors. As policymakers look to scale up energy efficiency it is the hope of this paper to provide an investment perspective. Policymakers will likely be happy to know that, as one participant in this project noted, "few of the policies discussed here require any public expenditures."

Research Methodology & Scope

The Institutional Investor Energy Efficiency Policy Priorities Project (hereafter "the Project") is an initiative of the **Investor Network on Climate Risk** (INCR). INCR, a project of Ceres, is a network of over 100 institutional investors with collective assets totaling more than $11 trillion who partner to advance the investment opportunities and reduce the material risks posed by sustainability challenges such as global climate change and water scarcity.

For the purposes of the Project, INCR convened an energy efficiency policy roundtable for institutional investors and energy efficiency experts in New York City, hosted by Citigroup on March 11, 2013. To encourage an open dialogue, these discussions were held under Chatham House Rule in which participants may report the information discussed but not attribute that information to any one individual or organization. This discussion and further follow-up interviews served as the basis for the findings of this paper.

The priorities identified in this paper do not reflect individual or institutional endorsements of particular policies, but rather are a distillation of the views of the group based on their collective expertise. Any places where specific individuals or institutions are cited in this paper have either been taken from publicly available documents or have been done with the explicit consent of the person or institution cited.

The 29 participants who attended the roundtable consisted of institutional investors and industry thought leaders in energy efficiency. A complete participant list and agenda are available in Appendices A and B, respectively. Participants were selected to represent a diverse cross sampling of institutional investors and energy efficiency finance and policy experts, such as:

- Insurance companies
- Mutual funds
- Pension funds
- Project developers
- State Comptrollers
- Energy efficiency NGOs

INCR moderated the meeting, posing several key questions for participants, including:

- What is the institutional investor interest in energy efficiency?
- What exposure to energy efficiency does/do your fund(s) currently have?
- What challenges does energy efficiency present to institutional investors as an investment vehicle?
- Which policies are best aligned with the goal of creating institutional investment opportunities? What characteristics do these policies have? How are these policies related and/or interdependent?

The geographic scope of the discussion was limited to the United States and considered major energy efficiency market segments (residential, commercial, and industrial). The so-called "MUSH" market (municipal and state governments, universities, schools and hospitals) was intentionally omitted from consideration. The MUSH market is the most developed market for energy efficiency, with Energy Service Companies effectively deploying Energy Savings Performance Contracts in this sector. The policies reviewed are those commonly proposed or adopted at the local, state, and federal level in the United States.

State of Play: How Institutional Investors Currently Invest In Energy Efficiency

Investing in energy efficiency presents multiple opportunities for institutional investors. Energy efficiency helps investors to mitigate climate-related risks within their portfolios and to earn a competitive rate of return while doing so.

Climate change poses material risks to institutional investors' portfolios, risks which investors themselves recognize.

Climate change poses material risks to institutional investors' portfolios, risks which investors themselves recognize. The *Global Investor Statement on Climate Change*, a letter from 285 investment institutions collectively managing in excess of $20 trillion, has recognized this risk. This letter to the governments of the world's largest economies states that "Further delay in implementing adequately ambitious climate and clean energy policy will increase investment risk for institutional investors and jeopardize the investments and retirement savings of millions of citizens."[11]

Energy efficiency is the cheapest and most readily available resource to mitigate climate risk.[12] Indeed, energy efficiency investments offer asset owners "the cheapest way of postponing lock-in to a high carbon pathway," according to HSBC.[13] International Energy Agency (IEA) analysis suggests nearly one-third of global emissions reduction will have to come from energy efficiency in buildings and industrial facilities to meet the internationally adopted goal of limiting temperature increases to two degrees Celsius above pre-industrial levels.[14]

The IEA estimates that the buildings sector alone must achieve annual carbon dioxide emissions reductions of 8.2 billion tons by 2050 through energy efficiency improvements.

The IEA estimates that the buildings sector alone must achieve annual carbon dioxide emissions reductions of 8.2 billion tons by 2050 through energy efficiency improvements.[15] This would require $1 trillion per year in investment globally, of which $209 billion per year would take place in the United States alone.[16]

Greater investment in energy efficiency is required in order to meet IEA's projections, and indeed, there are ample investment opportunities. Recent studies outline the multi-hundred-billion-dollar investment opportunity:

- Scaling building energy efficiency retrofits in the United States offers a $279 billion investment opportunity, according to Deutsche Bank Climate Change Advisors. This includes $182 billion in residential, $72 billion in commercial and $25 billion in institutional retrofits a year. Over ten years, this investment could yield more than $1 trillion in energy savings.[17]

11 Institutional Investors Group on Climate Change (Europe), Investor Network on Climate Risk (North America), Investor Group on Climate Change (Australia & New Zealand), Asia Investor Group on Climate Change and the United Nations Environment Programme Finance Initiative, "Letter from Global Investor Networks to the Governments of the World's Largest Economies", 2012, http://www.unepfi.org/fileadmin/documents/2012_Global_Policy_Letter.pdf.

12 Ecofys, *The Benefits of Energy Efficiency—Why Wait?*, December 2012, http://www.ecofys.com/files/files/ecofys_2012_the-benefits-of-energy-efficiency-why-wait.pdf

13 HSBC Global Research, "Shifting Capital Markets by 2 Degrees Celsius: Five Themes for the Next Decade", March 2013, https://www.research.hsbc.com/R/20/0bKTsCGMW0Xn.

14 IEA, *Energy Technology Perspective 2008*. Paris: Organization for Economic Cooperation and Development.

15 Ibid.

16 Ibid.

17 Deutsche Bank Climate Change Advisors, *United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models*, March, 2012, http://www.dbcca.com/dbcca/EN/_media/Building_Retrofit_Paper.pdf.

- Investment in energy efficiency in U.S. buildings has the potential to increase to $28-30 billion per year by 2020, with financing through private debt more than doubling to $11 billion by 2020, according to Bloomberg New Energy Finance.[18]
- By 2020, the U.S. has the potential to consume 23 percent less energy per year, which would require $520 billion in upfront cost and would yield present-value savings of $1.2 trillion, according to McKinsey & Company. In 2008, for example, the U.S. spent $10-12 billion on energy efficiency investments; capturing the full efficiency potential would require an additional investment of over $50 billion per year.[19]
- Doubling capacity for combined heat and power (CHP) in the United States by 2020 could attract $40-80 billion in private investment, according to the U.S. Department of Energy.[20]

As investors in all sectors of the economy and across asset classes, institutional investors have numerous means for realizing some of this investment opportunity. Currently, institutional investors are encouraging companies in their corporate holdings to be more energy-efficient; they are investing in companies providing energy efficiency products and solutions; and they are improving the efficiency of real estate they own and invest in.

CORPORATE ENERGY EFFICIENCY & SHAREHOLDER VALUE

Institutional investors allocate a significant portion of their assets to corporate equities and bonds. As owners of stock, these investors have an opportunity to influence the efficiency of the companies they own through shareholder advocacy. Several leading institutional investors have filed shareholder resolutions urging companies to improve energy efficiency in order to increase shareholder value and mitigate the risks posed by climate change.

Recent examples of shareholder action include:

- In 2012, the California State Teachers' Retirement System (CalSTRS) sent letters to 100 companies asking for increased disclosure of energy management practices. Later that year, CalSTRS filed several shareholder resolutions with companies that did not respond to its letter with sufficient information about future plans to manage energy use. These companies included firms in the IT sector, such as Citrix Systems, Dun & Bradstreet, Electronic Arts and Fiserv. The resolutions pressed for increased energy efficiency planning and reporting.[21]
- The New York City Comptroller's Office filed shareholder proposals with AT&T, Cablevision, Comcast, Dish Network, Time Warner Cable and Verizon Communications, encouraging these companies to increase the energy efficiency of their set-top boxes.[22]
- Calvert Investments has filed resolutions with Casey's General Stores to "assess energy use in stores, buildings, and transportation systems and set targets to reduce energy". Calvert has also filed with Public Storage to set goals for reducing energy use.[23]

18 Bloomberg New Energy Finance, "Energy Efficiency, Data and the Capital Markets", June 19, 2012, http://www.cleanenergyfinancecenter.org/wp-content/uploads/Energy-efficiency-data-and-the-capital-markets-2012_06.pdf.

19 McKinsey & Company, *Unlocking Energy Efficiency in the US Economy*, 2009, http://www.mckinsey.com/client_service/electric_power_and_natural_gas/latest_thinking/unlocking_energy_efficiency_in_the_us_economy.

20 U.S. Department of Energy, "Combined Heat and Power: A Clean Energy Solution", August 2012, http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_clean_energy_solution.pdf.

21 Ceres, "Investors Push 13 Corporations to Adopt Clean Energy Strategies in Shareholder Filings", February 19, 2013, http://www.ceres.org/press/press-releases/investors-push-13-corporations-to-adopt-clean-energy-strategies-in-shareholder-filings

22 New York City Comptroller, "2012 Shareowner Initiatives: Postseason Report", Fall 2012, http://www.comptroller.nyc.gov/bureaus/bam/corp_gover_pdf/2012-Shareholder-Report.pdf

23 Ceres, "Investors Push 13 Corporations to Adopt Clean Energy Strategies in Shareholder Filings", February, 19, 2013, http://www.ceres.org/press/press-releases/investors-push-13-corporations-to-adopt-clean-energy-strategies-in-shareholder-filings.

- In 2013, Carbon Action, an investor-led initiative of the Carbon Disclosure Project consisting of 190 investors with over $18 trillion in assets under management, asked 260 of the world's highest emitting companies to make emissions reductions with publicly disclosed targets and ROI-positive investments in projects.[24] Energy efficiency projects resulting from this effort have achieved some of the highest ROIs and carbon emissions benefits and have been a focus of the initiative.

INVESTMENT IN ENERGY EFFICIENCY PRODUCT & SERVICE PROVIDERS

Institutional investors have the opportunity to invest in companies that provide the products and services that increase energy efficiency. Project participants noted investments in energy efficiency companies ranging from manufacturers like CREE, which makes high-efficiency LED lighting, to service providers like Ameresco, which retrofits buildings under an ESCO business model where savings are guaranteed to exceed retrofit costs. Investors also noted that such investments are growing portions of "clean tech" portfolios. One participant's fund is illustrative: his firm has moved investments on a global basis from renewable energy investments to energy efficiency related investments, which now constitute 42% of a $3 billion portfolio.

ENERGY EFFICIENCY IN REAL ESTATE & THE INDUSTRIAL SECTOR

In the United States, existing buildings account for nearly 40 percent of total energy use.[25] Many institutional investors hold portfolios of commercial real estate investments and thus have the opportunity to improve the efficiency of that real estate. Commercial real estate investment represents one of the most effective avenues for implementing energy efficiency upgrades.[26]

Many institutional investors are taking steps to make their real estate portfolios more energy efficient. For investors with extensive real estate holdings, energy efficient buildings can provide a buffer against financial losses in a sluggish economy and create competitive advantage.[27] Among INCR's membership there are numerous examples of investors taking action to make their real estate portfolios more energy efficient:

- The California Public Employees' Retirement System (CalPERS), with a real estate portfolio of over $21.3 billion, worked with core real estate investment managers to pursue a 20 percent energy reduction. The goal was not only met, it was exceeded.[28]
- The California State Teacher Retirement System (CalSTRS) has, since 2003, directed managers for its separate accounts to assess sustainability annually. The result has been a dramatic improvement of the energy performance ratings of buildings in the portfolio. In 2007 less than half of the buildings in the portfolio had an Energy Star score above 75; by the summer of 2011, 93% of buildings achieved that rating.[29]

24 Climate Disclosure Project, "Carbon Action Project", https://www.cdproject.net/en-US/Programmes/Pages/initiatives-cdp-carbon-action.aspx

25 U.S. Department of Energy, Buildings Energy Data Book, 2011, Table 1.1.3, http://buildingsdatabook.eren.doe.gov/

26 International Energy Agency, "Frequently Asked Questions about Energy Efficiency", available as of May 2013, http://www.iea.org/aboutus/faqs/energyefficiency/

27 Ceres, "Energy Efficiency and Real Estate: Opportunities for Investors", 2009, http://www.ceres.org/resources/reports/energy-efficiency-and-real-estate-opportunities-2009

28 Phone conversation with Carrie Douglas Fong of CalPERS, March 28th, 2012

29 California State Teachers Retirement System, "Green Initiative Task Force 2012 Annual Report" July 2012, http://calstrs.ca.gov/Investments/green_initiatives_task_force.pdf

- Connecticut Retirement Plans and Trust Funds is taking steps to make its real estate portfolio more efficient (which consists mainly of public equities and participation in commingled funds), including specifying LEED certification for newly acquired property and hiring a national consultant to assess the portfolio.[30]
- Florida's State Board of Administration engaged with one of its major real estate managers, Prudential Real Estate Investments, to demand more attention to energy efficiency. As a result, a national consultant was hired to assess performance across portfolios and establish benchmarking practices.[31]

The demand from the largest institutional investors such as CalPERS, CalSTRS, and others has an impact. As one real estate investment manager participating in the project said, "we run a commingled fund, so a client's money can't be directed to a specific set of buildings. However, our clients want to know that their money is going to green building, as a result we build all new buildings to a minimum of LEED Silver."

"Our clients want to know that their money is going to green building, and as a result we build all new buildings to a minimum of LEED Silver."

Beyond buying green buildings or retrofitting inefficient facilities, some funds are seeking investment strategies that involve the acquisition and retrofit of buildings with ongoing management of the facilities' efficiency. Jonathan Rose Companies, for example, is a green real estate policy, planning and investment firm, which focuses its real estate private equity funds on energy efficiency retrofits so that owners benefit directly from energy efficiency gains both from the retrofits and energy conservation programs.[32]

Beyond deriving more value from real estate investments, energy-efficient real estate has also been a way for some funds to meet asset allocation goals related to sustainable investment. Real estate investment trusts (REITs) make up 9 percent of the S&P 1,000 and between 15-23 percent of commercial real estate is owned by REITs.[33] They thus represent a significant asset class from the perspective of institutional investors. Exposure to energy-efficient REITs may decrease benchmark risk and offer stable returns as a substitute for fossil fuel based energy investments. Indeed, a recent study showed that "green" REITs outperformed other REITs with lower stock price volatility and higher returns on assets and equity.[34]

While many of the participants in the Project were involved in commercial real estate investment, there was recognition that industrial energy efficiency is another compelling sector for investment. One participant noted that energy efficiency is the largest sector represented in his firm's fund, and industrial energy efficiency is a dominant strategy within those investments. Another asset manager echoed this sentiment noting that her fund had invested in a range of industrial energy efficiency opportunities, including companies manufacturing efficient industrial motors. Yet another mused "there is a lot of conversation about energy efficiency in commercial buildings. In the industrial sector there is less talk, but more deals are getting done."

Industrial energy efficiency is an opportunity not only to reduce energy use at single facilities, but also to provide efficient and clean energy supply to the grid. In the case of combined heat and power (CHP), for example, industrial facilities can generate both electricity and useful thermal energy in a single, integrated system. This process captures heat that is usually wasted in traditional electricity generation, increasing efficiency from approximately 45 percent to levels as high as 80 percent. One participant in the Project noted that secondary markets for such deals could be hugely helpful in deploying this resource more widely. While these

30 Ceres, "Investor Progress on Climate Risks and Opportunities: Results Achieved Since the 2008 Investor Summit on Climate Risk at the United Nations" January 2010 http://www.ceres.org/resources/reports/investor-progress-report-results-achieved-since-the-2008-institutional-summit-on-climate-risk

31 Ibid.

32 To learn more about the Johnathan Rose Company's approach visit http://www.rosecompanies.com/investments/green-strategy

33 National Association of Real Estate Investment Trusts "REITWatch", March 2013, http://returns.reit.com/reitwatch/rw1303.pdf

34 Eichholtz, Kok, and Yonder, "Portfolio greenness and the financial performance of REITs" *Journal of International Money and Finance*, 2012 http://www.corporate-engagement.com/files/publication/EKY_JIMF.pdf.

facilities are efficient electricity generators, capital costs can be in excess of 17%; if projects costs can be brought down and projects bundled, a pool of project loans could be offered to pension funds and others with a 6-9% return.

INCREASING TRANSPARENCY ON ENERGY PERFORMANCE

Investors have made progress in promoting energy efficiency across their portfolios. However, many project participants noted that limited data on energy performance have limited their ability to fully evaluate energy risks in their investments. Transparency about the energy performance of real estate and other investments could advance energy efficiency in existing investments while also providing a better understanding of energy-related risks in those investments.

Participants identified two particular areas that would potentially see value from increased energy transparency: insurance and mortgage underwriting. As one investor noted, her firm has engaged with an insurance company to encourage them to incentivize their policyholders to pursue energy efficiency upgrades. The rationale is that by evaluating the efficiency of insured buildings and incorporating the process into the underwriting of policies for those buildings, insurers can better assess the risk of having to pay out on the policy for that building. Indeed, at least one insurance company has recognized this value and has begun offering an insurance policy that incentivizes green building.[35]

"Mortgages on energy-efficient homes are 32 percent less likely to default than those on inefficient homes."

Another area where improved energy performance transparency could be valuable is in the residential home mortgage market. Mortgages on energy-efficient homes are 32 percent less likely to default than those on inefficient homes, according to a recent survey of over 70,000 home loans from 38 states.[36] Government-backed entities such as Fannie Mae and Freddie Mac could require an assessment of energy performance as part of their mortgage underwriting and thus incorporate a substantial household cost. Indeed, energy costs for a home are often higher than interest payments or property taxes, both of which are considered as part of the assessment of risk to the repayment of the mortgage.[37] Therefore, proponents argue that incorporating energy costs into the mortgage assessment process could yield less risky home loans and incentivize energy efficiency.

These changes could deepen the efforts investors have already made to improve the efficiency of their facilities and the efficiency of facilities owned by their portfolio companies. However, there remains an unrealized opportunity for investors to finance energy efficiency projects in buildings owned by homeowners and business owners across the country. To realize the energy efficiency opportunity and meet the climate change challenge, many homes and businesses will have to be retrofitted for energy efficiency. As individuals and institutions seek financing for these retrofits, secondary markets could provide institutional investors with an investment opportunity and borrowers with lower financing costs.

35 The Fireman's Fund provides a green home insurance policy. For more information visit: http://www.firemansfund.com/personal-insurance/Pages/do-you-need-green-insurance.aspxhttp://www.firemansfund.com/personal-insurance/Pages/do-you-need-green-insurance.aspx

36 University of North Carolina at Chapel Hill Center for Community Capital and the Institute for Market Transformation, "Home Energy Efficiency and Mortgage Risks", March 2013, http://www.imt.org/resources/detail/home-energy-efficiency-and-mortgage-risks.

37 Institute for Market Transformation, "SAVE Act Fact Sheet", http://www.imt.org/uploads/resources/files/SAVE_Act_Factsheet.pdf

The Next Frontier: Secondary Market Finance for Energy Efficiency Retrofits

If energy efficiency investment is to reach the scale outlined in the aforementioned studies on investment potential, the scale of investment will be too large for bank balance sheets alone and will therefore require broader capital markets participation, as it has for other forms of consumer and commercial debt.[38] Securitization and trading of energy efficiency loan pools through a secondary market would provide liquidity and access to the capital markets that would lower the cost of financing for energy efficiency projects.[39]

Thus far, however, opportunities for investment in such pooled vehicles are nearly non-existent for large institutional investors. While estimates and definitions of the assets under management by institutional investors vary globally, there is a vast pool of capital—tens of billions of dollars-owned and managed by these institutions. How can some of this vast resource be directed into the financing of retrofits?

CURRENT STATE OF ENERGY EFFICIENCY FINANCING: DIRECT FINANCING

Without pooled investment opportunities of the scale and quality needed for their consideration, capital market investors are effectively absent from energy efficiency retrofit financing. This remains the reality, despite the fact that energy efficiency financing programs have grown dramatically in recent years, both in scope and sophistication.[40]

Currently, direct financing for energy efficiency projects comes from multiple sources:

- **Commercial banks** finance energy service contracts undertaken by large firms such as Honeywell, Johnson Controls, and Siemens;
- **Credit unions** are active partners in utility-sponsored retrofit programs;
- **Community development financial institutions (CDFIs)** defray transaction costs typical of energy efficiency loan programs;
- **Private finance companies**, such as AFC First Financial, originate energy efficiency loans and sell them to a secondary source, such as the Pennsylvania State Treasurer;
- **Utilities** including investor-owned utilities, municipal-owned utilities and electric cooperatives offer rebate programs and energy efficiency financing programs across all market segments;
- **Federal, state and local governments** through the American Recovery and Reinvestment Act, State Energy Program funds, Revolving Loan Funds and Property Assessed Clean Energy programs reduce risk and create scale in energy efficiency markets; and
- **Foundations** provide direct funding and credit enhancements for energy efficiency financing projects.

38 Gloria Gonzalez, "Capital Markets Needed for Energy Efficiency Retrofits", May 30, 2012, http://www.environmental-finance.com/news/view/2529

39 Milken Institute "Financing the Residential Retrofit Revolution", April 2010, http://www.milkeninstitute.org/pdf/FILab_Res_Retrofit_April_20.pdf

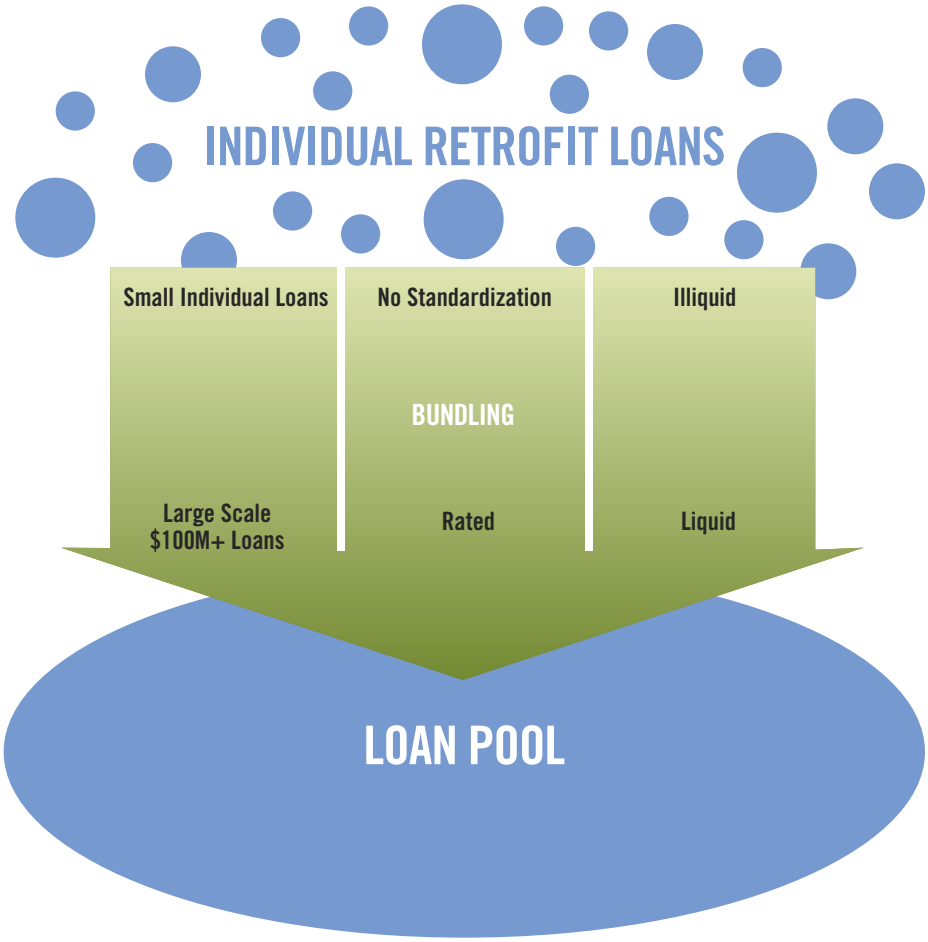
40 Shaw Environmental, "Energy Efficiency Finance 101: Understanding the Marketplace", August 2011, http://aceee.org/files/pdf/white-paper/Energy%20Efficiency%20Finance%20Overview.pdf

While each of these funders provide a much-needed source of capital, none can match the scale and efficiency of lending that would result from the creation of a secondary market for energy efficiency loans.

THE FUTURE OF ENERGY EFFICIENCY FINANCING: SECONDARY MARKETS FOR ENERGY EFFICIENCY LOANS

The market has yet to develop an institutional-scale investment product capable of financing energy retrofit loans. [41] Several barriers have inhibited the development of pooled investment opportunities of energy efficiency loans. Primarily, project participants cited the lack of energy efficiency loan standardization, limited data on loan and project performance, and an insufficient pipeline of projects.[42] There must be quality and scale in the energy efficiency finance market to aggregate loans into a loan pool that can be rated and achieve a high rating (e.g., AA). Loans must meet uniform standards and have ample data on their performance as a class. The need for "scale" simply refers to the existence of enough projects seeking finance. These barriers must be overcome before a secondary market structure for energy efficiency financing can become established.

FIGURE 1: POOLING ENERGY EFFICIENCY LOANS



41 excluding those secured by a first mortgage that would meet the investment criteria of institutional investors

42 Environmental Defense Fund, "Investor Confidence Project Fact Sheet", available as of May 2013, http://www.edf.org/sites/default/files/EDF-ICP_fact-sheet.pdf

Meeting Investor Expectations for Secondary Market Finance for Energy Efficiency Retrofits

For the past six years, the Institute for Building Efficiency's Energy Efficiency Indicator survey of corporate executives has found that "lack of funding" is the key barrier to the deployment of corporate energy efficiency projects.[43] In the residential sector, 30 percent of residential renovations were financed, with nearly half (12 percent) of these projects paid for with unsecured loans.[44] If presented with appropriate investment vehicles, institutional investors could play a role in overcoming the financial hurdles limiting the development of many energy efficiency projects. But first, these investment products must meet three key criteria: scale, liquidity and quality. As one asset manager in the Project noted, "We need scale and liquidity to get the big investors to focus on energy efficiency. Returns need to be higher in illiquid classes, so to make this affordable we need to take something bond-like and make it bond-class."

Bundling numerous loans is essential to achieve sufficient scale. Indeed, most institutional investors require an investment opportunity be at least $100 to $150 million.

Given that even the largest energy efficiency projects are too small for institutional investors to evaluate and invest in, bundling numerous loans is essential to achieve sufficient scale. Indeed, most institutional investors require an investment opportunity be at least $100 to $150 million. Bundling energy efficiency loans into pools and selling a security backed by these loans could offer a sufficiently sized investment opportunity for institutional investors.

Having more energy efficiency projects in development meets the scale challenge. Barriers to developing more projects and thus reaching scale include:

- **Lack of information:** Both consumers and building owners are unaware of their energy consumption and do not recognize the full value of energy efficiency.
- **Split incentives:** The building owner pays for the energy efficiency upgrade while the tenant benefits from the reduction in operating expense.
- **Capital and First Cost:** Upfront borrowing costs and capital expenditure often pose a hurdle to investment.
- **Limited tenancy or ownership structures:** Short-term planning horizons encourage short-term decision-making. Many consumers prefer investments with near-term results, especially if they plan to sell the building or facility before energy efficiency projects have repaid themselves.
- **Utility disincentives to deploy energy efficiency:** The utility business model has typically been linked to the amount of energy sold, not the amount of energy saved.

At sufficient scale, a secondary market investment structure presents investors with an attractive level of liquidity for their energy efficiency investments. Currently, energy efficiency project financiers must wait for particular loans to mature over the course of several years. Under a secondary market structure, investors would be able to buy and sell their holdings as needed, similar to their investments in stocks and bonds.

Beyond scale and liquidity, there is the question of quality. An energy efficiency investment product must achieve at least the same return as comparable investment alternatives. Investors demand higher returns from lower quality (i.e., higher risk) investments. If energy efficiency loans in a pooled investment can be shown to be less risky, investors will require lower returns and thus lower the cost of financing for those building and facility owners implementing efficiency projects.

Policy can help to address each of these three criteria—scale, liquidity and quality—all of which are required to create a secondary market for energy efficiency loans that meets the requirements of institutional investors.

43 Institute for Building Efficiency, "Energy Efficiency Indicator," 2012, http://www.institutebe.com/Energy-Efficiency-Indicator.aspxhttp://www.institutebe.com/Energy-Efficiency-Indicator.aspx

44 Guerrero, A. M.. 2003. Home Improvement Finance: Evidence from the 2001 Consumer Practices Survey. Joint Center on Housing Studies, Harvard University, 2003, http://www.jchs.harvard.edu/research/publications/home-improvement-finance-evidence-2001-consumer-practices-survey

Secondary Market Solutions in Development

While secondary market financing of energy efficiency remains effectively non-existent, there are a number of efforts underway to develop such markets. For example, Bostonia Group has successfully securitized Energy Savings Performance Contracts[45], which are typically provided by an Energy Service Company (ESCO) as a method of financing energy efficiency projects. ESCOs monitor energy savings and maintain upgrades after the project is complete. However, such securitizations have not occurred at scale, however, in part because these contracts can be complex and are not standardized across the industry.

Other efforts are underway to build larger scale energy efficiency loan pools. This year, the Warehouse for Energy Efficiency Loans (WHEEL) program will launch in Pennsylvania. The program is designed to provide low cost, large-scale capital to homeowners who participate in state and local government and utility-sponsored energy efficiency loan programs.[46] WHEEL will allow state and local programs to achieve economies of scale and drive down the cost of capital over time. The first sale of loans from WHEEL will occur in the second quarter of 2013.

In addition to the WHEEL effort, the Clean Energy Group and Bond Finance Initiative will explore how to raise capital at scale for clean energy through bond financing. The goal for this partnership is to increase bond financing for clean energy from $5 billion to $20 billion in private capital.[47]

The "quality" challenge of generating performance data and standardization among projects and loans is being tackled by a number of organizations, including the Investor Confidence Project, managed by the Environmental Defense Fund. Currently, there is no standardized method for recording both the engineering and documentation of an energy efficiency retrofit. The result is reduced investor confidence in individual projects, misunderstanding of performance risk and higher than necessary transaction costs. The goal of the Investor Confidence Project to create project-level protocols that assemble standards and process for the full lifecycle of a project, from scoping projects through execution and evaluation of the projects. These protocols will provide a replicable framework that yields standardized projects and reduces the variation in performance between similar projects. Creating standardization will greatly diminish the evaluation work needed to finance individual projects and to pool the subsequent loans.

Better data standardization will help increase investor confidence in energy efficiency investments; however, until the number of projects reaches a critical scale, the quality of the data standardization platform alone will not be sufficient to drive the creation of a secondary market.[48] Investors need to be confident that there will be a strong pipeline of consistent, standardized projects for a secondary market to materialize.

45 Financial firm Bostonia Group securitized an energy performance savings contract done for a large army base retrofit project. Bostonia has a case study available on their website: http://www.bostonia.com/services/energy-savings-performance-contracts

46 National Association of State Energy Officials, "Warehouse for Energy Efficiency Loans Primer", http://www.naseo.org/Data/Sites/1/documents/committees/financing/documents/WHEEL_Primer.pdf

47 Clean Energy Group and Council of Development Finance Agencies, "Clean Energy and Bond Finance Initiative", available as of May 2013, http://cleanenergybondfinance.org/.

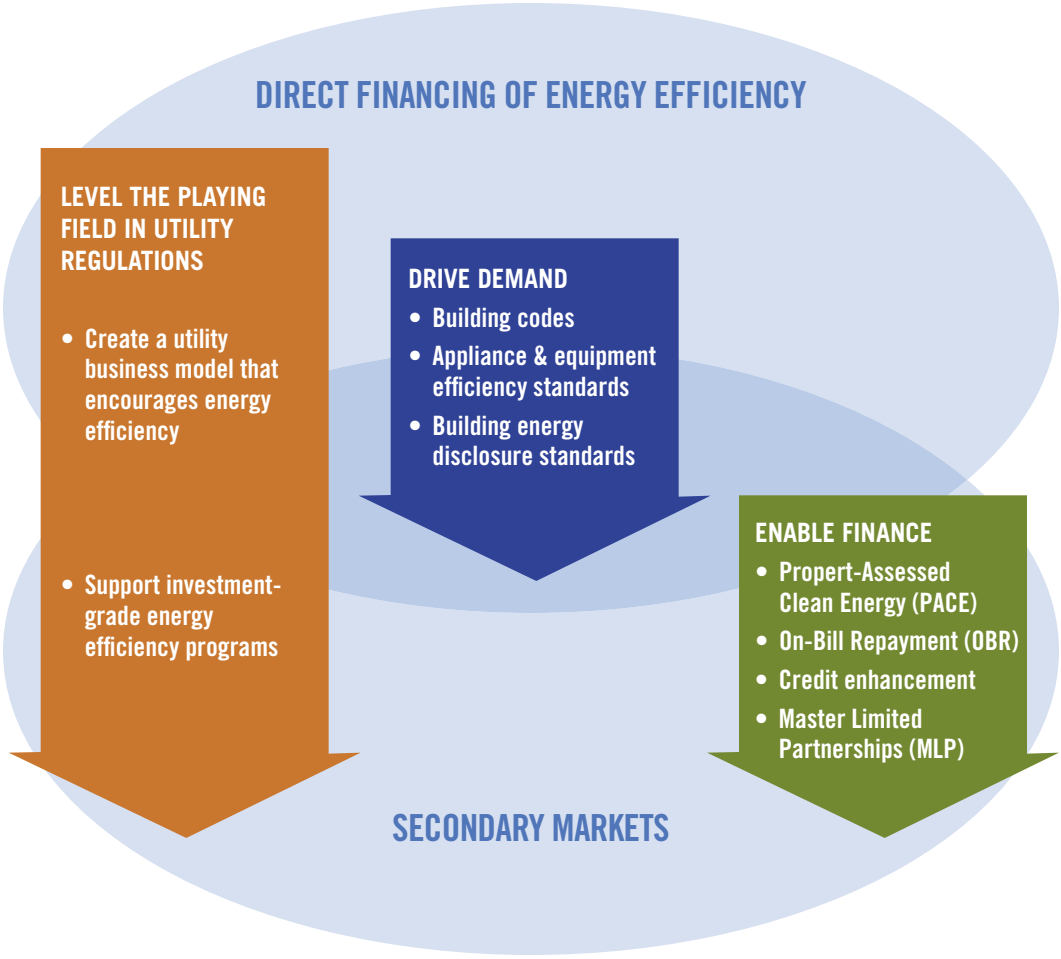
48 Bloomberg New Energy Finance, "Energy Efficiency, Data and the Capital Markets", June 19, 2012, http://www.cleanenergyfinancecenter.org/wp-content/uploads/Energy-efficiency-data-and-the-capital-markets-2012_06.pdf.

Catalyzing Secondary Market Finance for Energy Efficiency: Key Policies

The scale, liquidity and quality of investments that could be achieved in a secondary market for energy efficiency retrofit finance make this investment opportunity particularly appealing to institutional investors. Policies must play a role in driving the creation of this market by overcoming barriers to energy efficiency development and finance. Project participants identified three types of policies as the most essential: those that level the playing field in utility regulation, those that drive demand and those that enable innovative financing.

Figure 2 illustrates how these three sets of policies intersect, as well as how they each work together to overcome the previously described barriers to bringing energy efficiency investment to scale.

FIGURE 2: POLICIES FOR CATALYZING ENERGY EFFICIENCY FINANCE



LEVEL THE PLAYING FIELD IN UTILITY REGULATIONS

Participants in the Project noted that while financing policies could provide routes to the capital markets and demand policies provide a project pipeline to grow loan pools, ultimately these efforts would be hamstrung if electric power utilities have no incentive to promote energy efficiency and financiers find it difficult to evaluate energy efficiency loan programs administered by utilities. As traditional utility business models reward utilities for selling more electricity, Public Utility Commissions (PUCs) and the regulating state legislative committees must align utility incentives so that they stimulate greater energy efficiency deployment and spur investors' interest in financing these projects.

Creating a Utility Business Model That Encourages Energy Efficiency

At the turn of the 20th century, Samuel Insull popularized the use of the electric meter and subsequently transformed the utility business model from one in which a central plant served only a small district of homes and businesses to one that allowed for the reach of electricity service to cover the entire United States. The effect, however, was utilities that were "natural monopolies", since providing an area with electricity service required building electricity infrastructure that was best done by one company. Indeed, it made no sense to have multiple companies building extensive, redundant infrastructure. The monopoly model remains today, as does the model for regulating utilities. In exchange for being granted a monopoly status, utility commissions determine the rate of return utilities can earn on their investments to ensure fair treatment of their customers. While some states have made efforts to move electricity generation into competitive markets, the business model for utilities remains largely one which is based on the amount of electricity sold, rather than the quality of the electrical services provided to the end customer.

"The fundamental question is how does the utility make money and how do we reward them? Is it on how much they invest in electricity generation? Or on their performance?"

In the words of one participant, "The fundamental question is how does the utility make money and how do we reward them? Is it on how much they invest in electricity generation? Or on their performance?" There is a series of policy steps that can help make the transition from a utility business model that is antithetical to energy savings that drive down the amount of electricity sold, to one that maximizes the value of energy efficiency. States are at various points in the process of passing laws and regulations that transition utilities from the original business model to a performance-based model.

An initial, basic step in removing the utility disincentive to energy efficiency is for PUCs to allow utilities to receive reasonable cost recovery for energy efficiency expenses. This can be achieved in several ways. In some states where utilities are vertically-integrated, utilities recover most of the costs associated with administering, implementing and evaluating energy efficiency programs through the rate cases they present to the state's utility regulators. In deregulated states, a per-kilowatt charge (often called a "systems benefit charge") is collected from ratepayers to fund energy efficiency programs. Since energy efficiency program costs reduce utility revenue directly, utilities want to be able to recoup these costs.

Being repaid for the cost of running energy efficiency programs does not change the utilities' fundamental drive to grow revenues through the sale of more electricity. This "throughput incentive" that encourages utilities to produce more energy, rather than less, can be addressed through mechanisms that either allow utilities to recover lost revenues due to energy efficiency programs (i.e., lost-revenue recovery policies) or separate utility revenues from sales

(i.e., decoupling policies). According to the most recent Institute for Electric Efficiency survey of state regulations, nearly all states allow for energy efficiency program cost recovery and 27 states have lost-revenue recovery or decoupling policies.[49]

Beyond removing disincentives to energy efficiency, Energy Efficiency Resource Standards (EERS) or requirements that utilities procure all cost-effective energy efficiency can incentivize the deployment of energy efficiency. The strongest EERS requirements exist in Massachusetts and Vermont, which require almost 2.5 percent annual savings. As of October 2012, 24 states had energy efficiency resource standards.[50]

Utility procurement of energy efficiency resources can also be facilitated through long-term power purchase agreements (PPAs) for combined heat and power (CHP) projects, which operate much more efficiently than traditional power generation and can serve as a resource to the grid.

Ultimately performance-based ratemaking, which rewards utilities for meeting certain benchmarks on factors like service, safety or efficiency, rather than total sales, could transform the utility business model. These incentives are typically delivered in the form of a higher return on investment for energy efficiency programs, as opposed to generation and transmission projects, so long as the programs demonstrate measured or verified success. In this case, superior performance yields greater profits, rather than capital-intensive projects that are charged to ratepayers over time.

Support Investment-Grade Energy Efficiency Programs

In addition to their role in transforming the utility business model to maximize procurement of cost-effective energy efficiency, state legislatures and utility regulators can also support energy efficiency by improving utilities' retrofit financing programs.

Project participants identified three valuable changes that could help to accelerate the implementation of energy efficiency:

- Creating a "true-up" mechanism that allows utilities to recover some revenue lost to unpaid energy efficiency loans;
- Compelling utilities to be good data partners with energy efficiency financiers; and
- Developing programs with strong contractor standards and evaluation measurement and verification (EM&V) standards to improve loan quality

"Utilities should sell energy efficiency just as they sell electrons."

One important change for PUCs to consider would be allowing utilities to use electricity rates to "true-up" any revenue lost through energy efficiency loans that are not ultimately repaid by the borrowers. This mechanism could be used as a backstop for bonds that are issued to finance energy efficiency loan programs, and it could provide a form of credit enhancement that reduces the cost of this financing. Creating this "true-up" mechanism would not be a departure from PUCs' current work. Regulations currently allow utilities to recover revenues from unpaid commodity sales (kilowatt-hours of electricity) through their electricity rates. One participant captured the value of this idea for helping level the playing field for energy efficiency saying, "utilities should sell energy efficiency just as they sell electrons, and when it isn't paid they should be able to recoup this loss back through rates, just as they do with electricity sales."

Such a policy is not going to put an undue burden on faithful utility customers. Loan default can be predicted with relative accuracy, and thus the use of the "true-up" mechanism could be limited to extraordinary circumstances. Even so, the use of this mechanism would provide

49 Edison Foundation Institute for Electric Efficiency, "State Electric Efficiency Regulatory Frameworks," July 2012 http://www.edisonfoundation.net/iee/Documents/IEE_StateRegulatoryFrame_0712.pdf

50 American Council for an Energy-Efficient Economy (ACEEE) "Energy Efficiency Resource Standards", last updated October 2012, http://aceee.org/topics/eers

payment certainty to investors and allow them to achieve AAA rating[51] for energy efficiency loans, resulting in the lowest cost of capital, which can then be passed on to lower the interest rate for customers' financing. In turn, these lower financing costs can then drive additional demand for consumer clean energy investments.

By facilitating secure data transfer, PUCs can help to ameliorate the data and quality challenges that currently limit energy efficiency loan pools. Commissions could encourage utilities to share with investors the data needed to create energy efficiency investment products. One way PUCs can help facilitate new financing could be achieved by directing utilities to:

- Cooperate with the underwriters of energy efficiency based investment products as these underwriters do their due diligence;
- Provide portfolio level performance data on payment of electricity bills to the rating agencies and investors; and
- Verify that data they are providing is accurate.

In addition, public utility commissions can help ensure loan quality and standardization by developing:

- Statewide programs that allow lenders to determine the underwriting criteria and maximize customer and contractor flexibility to determine the best way to deliver energy efficiency services; and
- Contractor standards and EM&V protocols for verifying energy savings, which are two vital components to creating investment-grade energy efficiency loan pools.

Utility regulation thus plays two critical roles in enabling development of secondary markets for energy efficiency financing. First and foremost these regulations can change the utility business model from one that rewards increasing sales of electricity to one that maximizes energy efficiency. At the same time, regulators can ensure that utilities are running efficiency programs that will meet the needs of investors and are sharing the data investors need to make energy efficiency investment products. However, aligning utility incentives is not enough. The barriers to homeowners and facility owners and managers deciding to undertake projects are still significant. Demand policies can be used to overcome information barriers, split incentives, and other barriers that stymie the development of otherwise cost effective energy efficiency projects.

DRIVE DEMAND FOR ENERGY EFFICIENCY

> ***"We are creative in how we finance, but we are not nearly creative enough in how we compel or incent demand for the financing we create. We need to move from a trickle of $500K deals to $20M pooled deals out of a single fund to bring in cheaper capital and get to scale."***
>
> **– Jessica Bailey, Director, Commercial and Industrial Property Assessed Clean Energy, Clean Energy Finance and Investment Authority**

Discussions about engaging the capital markets in energy efficiency retrofit financing often conclude with a "chicken-or-egg" problem. In order to lower the cost of financing (and thus allow for scaling of retrofit activity) energy efficiency retrofits could benefit from financing through the capital markets. However, in order to engage the capital markets, there must be

51 Fitch Ratings "Rating Criteria for U.S. Utility Tariff Bonds" October 27, 2009

greater demand for energy efficiency projects to generate sufficient scale for investment. Not only will greater scale drive interest in investment, but also it will generate additional data and standardization that are attractive to investors interested in managing risk throughout their portfolios. Right now, however, the market for energy efficiency retrofits remains underdeveloped. As one large fund said "on the demand side, consumer demand is soft, there is confusion among real estate owners and operators as to what they should be doing and what their return will be and how to finance it."

There is a broad range of policies that can help to drive further demand for energy efficiency retrofits. Building a strong pipeline of energy efficiency projects can enable retrofit loans to be aggregated into pools and give investors the certainty and track record they need to evaluate opportunities and make investments.

Project participants identified a number of what they called "foundational" or "demand-driving" policies as priorities. First, broadening and strengthening robust **building codes and standards**, as well as **appliance and equipment efficiency standards**, can help grow demand for energy efficient technologies and set a baseline of energy efficiency activity as buildings are renovated periodically. In addition, **building energy disclosure standards** can provide data that will incentivize demand for projects, as well as further transparency that investors can use in their analysis.

Strong Building Codes

Project participants agreed that energy codes and standards are critically important to investors. Once they are embedded in the market and utilized robustly, they create the demand required to scale efficiency investments.

Building codes typically include prescriptive and performance options, which include both specific measures to include in a home or building as well as minimum efficiency levels that must be met regardless of measures employed in a home or building. Because states are not required to adopt the most stringent building code standards there is a significant inconsistency in standards across the country. Nine states, for example, have no statewide building code. Simply setting standards in these states would drive additional demand for efficiency.

Efficiency Standards for Appliances and Equipment

National appliance and equipment efficiency standards specify the minimum efficiency levels of specific products, such as refrigerators, motors, heating and air conditioning equipment and lighting. These standards are set either by Congress or the U.S. Department of Energy and are reviewed and updated periodically.

Investors noted that these standards are important as they, like building codes, set a baseline of energy efficiency performance for the equipment that will go into buildings and industrial facilities. Indeed, the Department of Energy's Building Technologies Program estimates that because of the standards they implement in over 50 categories of appliances and equipment, US consumers saved $40 billion in 2010 alone.[52]

52 U.S. Department of Energy "Appliance and Equipment Standards Result in Large Energy, Economic, and Environmental Benefits" last updated March 2013, https://www1.eere.energy.gov/buildings/appliance_standards/

Building Energy Disclosure Standards

A growing number of large cities in the United States, such as New York City and Philadelphia, require that commercial building energy use be disclosed publicly. These building energy disclosure standards offer several benefits to investors. Recent analysis of building energy disclosure data from New York City will enable investors to apply the information when choosing the highest impact investments to gain greater efficiencies.[53] Such data will be more valuable as more cities implement their disclosure policies and more data becomes available.

In addition, building energy disclosure requirements can help to overcome the common "split incentive" between tenants and building owners. If, for example, a tenant has a comprehensive lease, in which the electric bills are paid as part of a flat monthly lease payment, there is a disincentive to shut off lights, limit climate control and otherwise manage energy use. However, if the tenant pays the energy bills, the owner has no incentive to upgrade equipment within the property, since they will not reap the value of the savings. Building energy disclosure standards can provide a way around this challenge by giving a building owner incentive to improve the performance of the building even if she does not pay the energy bills. However, current disclosure laws alone will not achieve scale. To date, the price signal remains too weak and valuation figures have not been robust enough for engagement by the capital markets. Wider adoption of these policies will help strengthen the effect.

"The current level of transparency is insufficient to allow us to invest capital as we would like in energy efficiency."

Beyond driving demand for retrofits, disclosure standards could provide needed data to investors. As large investors in real estate portfolios, building energy disclosure requirements could help investors evaluate the performance of buildings held in Real Estate Investment Trusts (REITs). There is robust evidence that more efficient buildings obtain higher rents and are occupied more quickly than comparable less-efficient spaces.[54] However, as highlighted by one investor in the Project, "The current level of transparency is insufficient to allow us to invest capital as we would like in energy efficiency. Currently, not all REITs disclose their percentage of LEED certified buildings or the percentage of ENERGY STAR rated buildings." This lack of disclosure makes evaluating the efficiency of REIT investments difficult. Disclosure requirements could provide this necessary information.

ADOPT FINANCE-ENABLING POLICIES

"We have both a knowledge gap and a capital gap. Institutional investors have to find mechanisms that meet their rating criteria and their return criteria. From a policy standpoint, both state/local government and utilities/PUCs are going to need to undertake policies that overcome these barriers."

– Jeff Pitkin, Treasurer, NYSERDA and co-chair,
National Association of State Energy Officials (NASEO) Energy Finance Committee

Large institutional investors are actively seeking opportunities to invest in **Property Assessed Clean Energy (PACE)** bonds and **on-bill repayment (OBR)**, which provide an opportunity for the pooling of energy efficiency loans. **Credit enhancement** can help catalyze financing and **extending Master Limited Partnerships to clean energy** can provide a means outside of securitization for bringing public capital market financing to energy efficiency projects.

53 PlaNYC, "New York City Local Law 84 Benchmarking Report", August 2012, available as of May 2013, http://www.nyc.gov/html/gbee/downloads/pdf/nyc_ll84_benchmarking_report_2012.pdf.

54 Fireman's Fund, "Insurance, Green Risk and Buildings", available at: http://greenriskadvisor.ffido.com/microsite/read.aspx?a=1084

Property Assessed Clean Energy (PACE)

PACE offers an energy efficiency financing structure that reduces household and institution up-front costs for energy efficiency projects while enabling local governments to raise money through the issuance of bonds that are used to finance these projects. This arrangement allows property owners to overcome two major barriers to energy efficiency upgrades: the large up-front capital requirements and the disincentive to invest if you're going to sell the facility before the project is paid off. PACE is also valuable in that it leverages an existing and secure form of financing through municipal bonds, with which institutional investors are very familiar.

PACE bonds may be one of the most effective vehicles for connecting energy efficiency finance to the capital markets since they use a financing mechanism that is familiar and secure. Municipalities have used "special assessment districts" (of which PACE is one) for decades to fund roads and sewers. Used for clean energy projects, the loans are secured against the mortgage of the home and collected through the home or building owner's taxes. Many investors buy municipal bonds and are therefore more readily able to evaluate PACE investment over other energy efficiency opportunities. However, in aggregate, PACE has supported only $121 million in energy efficiency and clean energy projects, which is far too little for large pension funds to participate.[55] In the longer term that may change, as the Kroll Bond Rating Agency believes that PACE bonds are ripe for securitization.[56] Indeed, one program in California believes it will reach the $100 million mark for securitizing its loans this year.[57]

Despite its many benefits, PACE also faces challenges in getting to scale. PACE programs require time-consuming approval by local jurisdictions. Local program management can also limit standardization and scale creating fragmentation, which investors aim to avoid. In addition, a recent ruling by the 9th Circuit Court of Appeals effectively put a halt to residential PACE financing for homeowners across the United States. The Court sided with the Federal Housing Finance Administration, which in 2010 barred Fannie Mae and Freddie Mac from underwriting mortgages with senior liens from PACE programs. While there remain significant opportunities for commercial PACE, this legal development will make it difficult to securitize residential debt through PACE.

On-Bill Repayment

On-Bill Repayment (OBR) enables utility customers to finance energy efficiency and renewable energy projects through loans that are repaid through a charge on the customer's utility bill. OBR also creates a platform for banks to offer energy efficiency solutions that match each customer segment: residential, commercial and industrial. These loans provide homeowners and business owners a way to overcome the first cost barrier by providing long-term financing. At the same time, OBR overcomes the limited tenancy challenge by tying repayment to the utility meter; if the owner of the building moves before the loan is repaid, the next owner picks up the payment as part of his or her utility bill.

The New York State Energy Research and Development Authority (NYSERDA) administers a successful OBR program for homeowners, small businesses and multi-family building owners. NYSERDA has the largest on-bill program to date, having financed nearly 1700 loans totaling in excess of $15 million in the first six months of the program. California and several other states are currently in the process of developing large programs of their own.

55 Andrew Herndon, "Sewer Bonds Now Saving Power as Simon Property Uses PACE", Bloomberg April 8, 2013, http://www.bloomberg.com/news/2013-04-07/sewer-bonds-now-saving-power-as-simon-property-uses-pace.html.

56 Institutional Investor, "Commercial Property Assessed Clean Energy (PACE) Securitization", February 5, 2013, http://www.securitizationintelligence.com/Article/3151457/Default/Commercial-Property-Assessed-Clean-Energy-PACE-Securitization.html#.UYAOSqJwevn.

57 "California PACE Programme Expected to Scale up to $100 Million this Year" Environmental Finance February 7th, 2013 http://www.environmental-finance.com/news/view/3111

The participants in the Project did note that there are challenges to successfully scaling on-bill repayment. One challenge is the question of how secure the loan will be perceived by rating agencies. By attaching the loan to the utility bill there should be a high level of confidence that the loan is repaid, especially as payment of utility bills is high. However, there was doubt among the group that non-payment would lead to the ultimate repercussion of electricity service being shut off to the non-paying party. At the same time, one participant noted that while utility loan payment rates are high, there is a high rate of delinquency in utility payments, providing a layer of risk that is not immediately apparent. At the same time, while collections are performed by rated public utilities (creating a highly scalable, highly efficient system for collections) some utilities have questioned how severe the cost of using their collection systems to this end will be.

Credit Enhancement

Credit enhancement is a means of reducing the risk of financing a project or institution by providing assurances that the loan will be repaid. Since the risks to the financier are lowered, so too are the interest rates that are charged to the borrower. These lower rates can expand the number of potential borrowers. In addition to the lower financing costs for individuals and institutions, credit enhancement is of interest to investors looking to scale efficiency and develop secondary markets.

Credit enhancement can facilitate the scaling of energy efficiency loan programs. This scaling can happen through greater demand for retrofits resulting from lower costs of financing. More importantly, the various assurances provided as part of credit enhancement help make lenders comfortable with new and unfamiliar products like energy efficiency retrofit loans. As highlighted in this paper, the lack of data on how projects and loans perform is a significant challenge to energy efficiency finance; there is hesitancy to finance these projects because they are not well understood. As one participant noted "If structured properly the mere fact that the commitment to guarantee programs or projects is overcoming the barrier [i.e., lack of data]; now you have strength of credit enhancement provider [such as a government] supporting the loan."

Two forms of credit enhancement include loan loss reserves and loan guarantees. Both are provisions that will cover payments in the case of default on a loan(s). While loan guarantees are agreements to cover payments that are based on the credit of the issuer of the guarantee, loan-loss reserves provide a guarantee to pay that only has recourse to the funds available in the reserve.

A number of states have created loan loss reserves as part of energy efficiency finance programs.[58] In Oregon, Clean Energy Works Portland requires its finance partner, Shorebank Enterprise Cascadia, to maintain a 10% loan loss reserve at all times. In the Michigan Saves program, all participating lenders need to start with a reserve of $10,000 and after making $200,000 worth of loans they must grow the reserve by an amount equal to 5% of each loan.

58 Mark Brown of Franklin Energy, "Financing Energy Improvements: Insights on Best Practices to Engage Stakeholders and Marry Dollars with Demand," prepared for the Minnesota Department of Commerce's Office of Energy Security, January 2011, http://www.franklinenergy.com/sft341/whitepaper_financingenergyimprovements_012011.pdf

Extending Master Limited Partnerships to Combined Heat and Power and Other Efficiency Projects

Master Limited Partnerships (MLPs) are another attractive option for investors in energy efficiency that can be unlocked through policy changes. MLPs are publicly traded partnerships that are commonly used for energy-related projects, including oil and gas pipelines. The MLP structure is attractive to institutional investors in part because it provides exposure to real assets (infrastructure) with the liquidity of investing in a publicly traded security, like a stock or bond.

MLPs could significantly lower the cost of capital for industrial efficiency projects and reduce financing costs by 30 to 50 percent.

Extending the MLP tax structure to efficiency projects could provide another channel to securing financing through the capital markets outside of pooled investments. For example, MLPs could significantly lower the cost of capital for industrial efficiency projects such as combined heat and power (CHP) and waste heat recovery (WHR) and reduce financing costs by 30 to 50 percent.[59] Portfolios of CHP projects could be financed through such partnerships. MLPs may also benefit ESCO projects and infrastructure investment in transmission lines, among other project types.

In order to unlock this source of investment opportunities, legislative changes are needed. Congress is already considering extending the MLP structure to renewable energy and energy efficiency projects; there is thus a near-term opportunity to make MLPs a tool for energy efficiency finance.

59 Call with Dick Munson and Aaron Walters of Recycled Energy Development, March 29, 2013

Conclusion

Policymakers and utility regulators should pursue financing policies that can provide loans for pooling and securitization and ensure that there is a focus on demand-driving policies so that there is a robust pipeline of projects to be financed. Addressing these challenges through policy changes would catalyze the development of energy efficiency investment opportunities in the capital markets. Utility regulations will also play a key role in ensuring that the scaling of such markets is not hamstrung by utility disincentives.

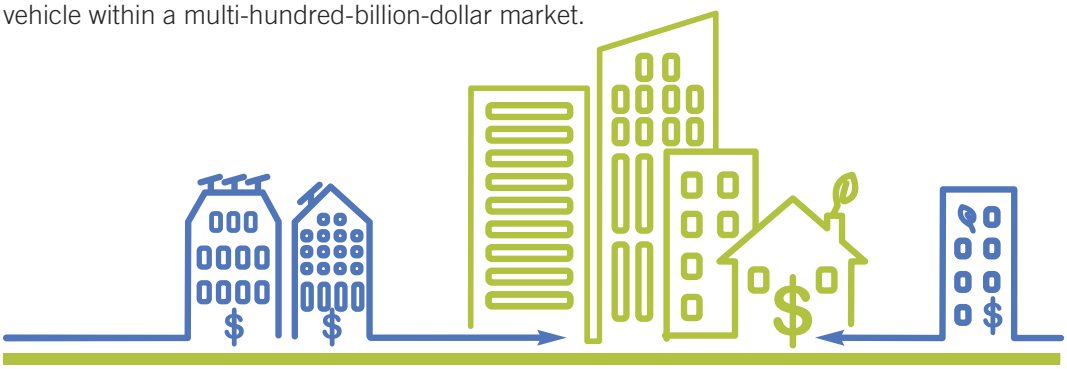
Institutional investors are making headway on energy efficiency investments. These investors are spurring efficiency retrofits in their real estate portfolios, investing in companies that develop energy efficiency products and services, and engaging with companies in their equity holdings to make these corporations more efficient. However, more is needed to reach adequate scale. Unlike car loans, home mortgages, credit cards, and other forms of finance, energy efficiency projects have not yet been bundled into products that will not only meet investors' criteria, but also will be needed to address the challenges of climate change.

To create a secondary market for energy efficiency finance, investors must be able to aggregate many small loans into large, rated pools. In order to achieve this scale of investment, policy must drive demand for efficiency. Participants in the Institutional Investor Energy Efficiency Policy Priorities Project recognize that public policy will be essential to several aspects of energy efficiency finance: leveling the playing field in utility regulations, driving demand for energy efficiency retrofits, and enabling innovative energy efficiency finance mechanisms.

Financing policies, such as PACE and on-bill repayment can provide loans that can be pooled and securitized. However, they alone will not drive the scale of activity needed to meet the emissions reduction goals science says are necessary nor will they be sufficient to develop a secondary market for energy efficiency. More demand for retrofits is needed. Policies that set standards for energy performance and transparency will drive the market towards more efficient energy use. As the market expands, credit enhancement can help to ensure that the resulting projects are capitalized.

As the key regulators of utility electricity resource procurement, Public Utility Commissions, and the legislative committees that have jurisdiction over them, must first ensure that utility incentives are aligned with energy efficiency and distributed generation through CHP. Furthermore, regulators must also support investment-grade energy efficiency loan programs.

Through these three key areas of policy—utility regulatory policies, demand-producing policies and finance-enabling policies—policymakers can catalyze the development of secondary markets for energy efficiency retrofit loans and thus attract investment from institutional investors, which will create attractive returns and a climate-conscious investment vehicle within a multi-hundred-billion-dollar market.



APPENDIX A

Institutional Investor Energy Efficiency Policy Priorities Project Participants

INSTITUTIONAL INVESTOR REPRESENTATIVES

- Geeta Aiyer, Boston Common Asset Management
- Carrie Douglas Fong, California Public Employees Retirement System (CalPERS)
- Alan Gordon, California Controller's Office
- Rob Gronda, Landon Butler & Company
- Natasha Lamb, Trillium Asset Management
- Ken Locklin, Impax Asset Management
- Deborah Nisson, Ullico Investment Company, Inc.
- Brian Rice, California State Teachers' Retirement System (CalSTRS)
- Patricia Karr Seabrook, Miller/Howard Investments
- Patrick Shaunessy, Pennsylvania Treasurer's Office
- John Stouffer, New York State Comptroller's Office
- Nathan Taft, Jonathan Rose Companies
- Leanne Tobias, Malachite LLC
- Les Williams, Landon Butler & Company

BANKING PROFESSIONALS

- Amy Brusiloff, Bank of America
- Marshal Salant, Citigroup
- Bruce Schlein, Citigroup
- Steven Vierengel, Citigroup

ENERGY EFFICIENCY DEVELOPERS & POLICY & FINANCE EXPERTS

- Jessica Bailey, Connecticut Clean Energy Finance and Investment Authority (CT CEFIA)
- Casey Bell, American Council for an Energy Efficient Economy (ACEEE)
- Brad Copithorne, Environmental Defense Fund
- Tom Croft, Steelworkers Heartland Trust
- Marianne DiMascio, Appliance Standards Awareness Project
- Lily Donge, Ernst & Young
- Cliff Majersik, Institute for Market Transformation
- Richard Sedano, Regulatory Assistance Project
- Jeff Pitkin, New York State Energy Research and Development Authority (NYSERDA)
- John Rhodes, Center for Market Innovation, Natural Resources Defense Council
- Aaron Walters, Recycled Energy Development

APPENDIX B

Meeting Agenda

INSTITUTIONAL INVESTOR ENERGY EFFICIENCY POLICY PRIORITIES PROJECT

In-Person Meeting
March 11th, 2013, 9:30-4:30
Citigroup

Objective for the day: Participants will identify a set of priority policies and a rationale for why those policies are priorities from the perspective of institutional investors interested in financing energy efficiency retrofits.

e.g., X, Y, and Z are policies that are vital to scaling energy efficiency and creating capital market financing of energy efficiency, because A, B, and C.

9:30 COFFEE AND BREAKFAST

10:00AM-10:30AM WELCOME & OVERVIEW OF THE OBJECTIVES & BOUNDARIES OF THE CONVERSATION (SCOPE & EXPECTATIONS)

10:30-11:30 PERSPECTIVES FROM (AND OF) THE BUY-SIDE

What is the interest of pension funds, mutual funds, and insurance companies in the room in financing energy efficiency, how do you have exposure to the space, what challenges are you finding? What is the optimum form through which you seek to invest in energy efficiency? Into what asset class/where would EE investment products/strategies fit into your investment portfolio?

11:30-12:30 PERSPECTIVES FROM EE LOAN POOL CREATORS & INDUSTRIAL PROJECT FINANCERS

What are the successes and what are the challenges? What polices have helped- or what policies could help- in achieving your ends?

12:30-1:30 LUNCH

1:30-4:00 PRIORITIZATION OF POLICIES

Objective: Identify policy priorities and rationale for why these policies are priorities from the perspective of institutional investors

Secondary objective: we could identify qualities of the way these policies should be structured or implemented as subsidiary considerations

Key questions: which policies are best aligned with the goal of creating institutional investment opportunities? What characteristics do these policies have? How are these policies related/interdependent?

4:00-4:30 REVIEW OUTCOMES & REMAINING QUESTIONS FROM THE DAY & DISCUSS NEXT STEPS

Ceres
99 Chauncy Street
Boston, MA 02111
T: 617-247-0700
F: 617-267-5400

www.ceres.org