



Light Green Advisors

**The Green Growth Catalyst:  
Maximizing Real Property Energy Efficiency Investing with  
Private Capital**

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**Commissioned by the Apollo Alliance**

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### **About Light Green Advisors**

Light Green Advisors (LGA) is an asset manager specializing in profitable environmental sustainability investing. LGA pioneered equity investment strategies that leverage the competitive advantage of superior corporate environmental management and energy efficiency. Light Green Advisors has been managing inclusive “best-of-class” public equity portfolios for institutional investors in the European Union and North America for over a decade. LGA also served as an advisor to Sun Edison and other privately held clean tech companies. LGA is currently exploring specialized private equity vehicles to serve the energy efficiency interests of institutional investors, public agencies, nongovernmental organizations, and real property owners.

### **About the Apollo Alliance**

The Apollo Alliance is a coalition of labor, business, environmental, and community leaders whose goal is to advance a bold vision for the next American economy, centered on clean energy and jobs. Apollo has produced numerous reports on job opportunities in the clean energy economy, including *Community Jobs in the Green Economy* and *Greener Pathways: Jobs and Workforce Development in the Clean Energy Economy*.

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## PREFACE

Energy Efficiency represents an investment vector that can generate a source of uncorrelated returns distinct from public equity and clean tech private equity. The 2008 downturn's impact on venture capital, stocks, and bonds illustrated the strength of the correlation between mature asset classes once thought to provide diversification and the importance of savvy investors seeking new sources of return and risk mitigation beyond what Humphrey Bogart famously termed the "usual suspects."

What constitutes smart investing changes over time. Many markets were first described by academics and other innovators from outside traditional investing – interest rate markets, environmental attribute (e.g. renewable energy credit and carbon) markets, and even securitized mortgages. Special credit is certainly due to civic-minded visionaries such as Amory Lovins, who first defined the theoretical potential of energy efficiency that public policy analysts and entrepreneurs alike are pursuing today. Over the next five years, there is every reason to believe that energy efficiency can be recognized as an asset class just as transport infrastructure is recognized as an investment alternative.

While there is certainly no shortage of work required to source and structure investments in any emerging market, clearly private investors, public agencies, labor organizations, and energy experts are now beginning to mobilize the resources required to identify the issues, generate new alternatives, and increase the scale of energy efficiency in the United States. This mobilization is overdue since energy efficiency offers tremendous economic security, employment and environmental benefits.

The dramatic increase in rooftop solar deployment in the United States (US) between 2004-2009 illustrates how change can be catalyzed with a combination of new business models, strong government incentives, and private sector capital. LGA was proud to work with one of the firms involved in the transformation of rooftop solar finance five years ago, and today the opportunity in real property energy efficiency is even more compelling.

This enthusiasm is tempered with the recognition that the global credit crisis has led to a reduction in credit availability for most American homeowners and businesses. Black Swan author Nassim Nicholas Taleb and others have suggested that our economy is laden with too much debt and that more equity is required. This insight has implications for energy efficiency - new structural alternatives are needed to augment the debt-based approaches that have dominated energy efficiency finance for the past 30 years.

This report presents several important public policy ideas for driving investment into energy efficiency. Please take the time to review the report and share your thoughts with us on the next steps from ideas to action.

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## The Green-Growth Catalyst:

### Maximizing Real Property Energy Efficiency Investing with Private Capital

#### I. Introduction/ Executive Summary

Over the past several decades, **Energy Efficiency (EE)** has been a broadly successful but inconsistently pursued public policy in the United States.<sup>1</sup> As a result of the inconsistency of this pursuit, the US is now considerably less energy efficient than its most analogous economic rival, the European Union.<sup>2</sup> In addition, the US has failed to fully capitalize on the wide-ranging job creation and technology development opportunities that a commitment to energy efficiency would naturally provide. Environmental challenges, such as climate change and fossil fuel usage, have also been under-addressed in the United States as a related consequence of this uneven allegiance to energy efficiency.

Considering the current US economic outlook and the need to advance the nation's employment and environmental agendas, EE appears to be a stellar candidate for significant new public sector investment. In fact, key provisions of the recently enacted American Recovery and Reinvestment Act (ARRA) reflect that perspective.<sup>3</sup> However, ARRA funds constitute only a small fraction of the investment that is needed to meet America's EE challenge. By one leading estimate, the US could use more than \$7 trillion in energy efficiency investment over the next twenty years to achieve a 25% reduction in energy usage.<sup>4</sup> The US is well behind the energy efficiency curve and seemingly losing ground.

Low levels of energy efficiency investment in the United States can be regarded as a policy failure that desperately needs to be addressed by a full mobilization of public resources and incentives. But it can also be viewed as a market failure that should be corrected with appropriate levels of private investment.

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<sup>1</sup> See e.g., National Action Plan for Energy Efficiency Leadership Group, *National Action Plan for Energy Efficiency* [epa.gov/cleanenergy/documents/nape] 2006 for a general overview of federal and state policies.

<sup>2</sup> See e.g., Research and Markets, *Energy Efficiency: Understanding a Growing Industry*, [researchandmarkets.com/reports] 2007 for a comparison of US and EU sectoral energy efficiency.

<sup>3</sup> Among its many provisions, The American Recovery and Reinvestment Act of 2009 [Recovery.gov] appropriates \$5B for Residential Weatherization programs; \$4.5B to modernize Federal and other Public infrastructure for energy savings; \$4B for Green Job training; and \$4.5B for Electricity Grid upgrades; \$3.1B for State Energy Programs; \$3.2B for Local Government Energy Efficiency Block Grants, \$250M for HUD-sponsored Energy Efficiency Housing Retrofits, \$2.5B for Energy Efficiency and Renewable Research funding, and \$400M for Advanced Energy Research Projects.

<sup>4</sup> Ehrhardt-Martinez, Karen and Laitner, John, *The Size of the US Energy Efficiency Market*, American Council for an Energy Efficient Economy, May 2008.



Ultimately, however, a *combination of public policies and market forces* will be needed to overcome the nation's EE investment deficiency, and those policies and markets will need to work in tandem. EE, of course, covers a broad range of sectors – from vehicle fuel standards to home appliance codes – some of which are more responsive to policy and markets than others.

### **The Opportunity: Real Property Energy Efficiency (RPEE) Investing**

Opportunities to invest in EE are abundant, but perhaps no sector offers greater potential for beneficial policy and market synergies than the **Real Property (RP)** sector, which includes new and existing residential, commercial, governmental, medical, and comparable structures. RPEE considerations can be factored into new building design and construction, but can also serve as the basis for small-scale building rehabs and comprehensive large-scale building retrofits that substantially reduce energy loads.

Investments in RPEE typically yield *solid, low-risk returns derived from cost savings that occur with more efficient energy usage* by stable, rate-paying hosts; as a result, RPEE investing generally involves up-front financing in exchange for a share of energy cost savings over a fixed period. In addition to predictable returns, RPEE investment has traditionally brought about a number of corollary benefits such as job creation, natural resource conservation, diminished ambient emissions, and accelerated technology development.

<b>Selected Benefits of Investing in Real Property Energy Efficiency</b>	
<b>RISK/RETURN PROFILE:</b>	RELIABLE LOW-RISK RETURNS OVER FIXED TIME FRAMES
<b>JOB CREATION:</b>	HIGH-SKILL TRADES AND TECHNOLOGY EMPLOYMENT OPPORTUNITIES
<b>RESOURCE CONSERVATION:</b>	REDUCED ELECTRICITY AND FUEL USAGE
<b>POLLUTION PREVENTION:</b>	DECLINES IN GREENHOUSE GAS AND OTHER AMBIENT EMISSIONS
<b>INFRASTRUCTURE PRESERVATION:</b>	DECREASED ELECTRICITY GRID USAGE AND MAINTENANCE
<b>EE TECHNOLOGY:</b>	GREATER DEVELOPMENT AND LOWER COSTS DUE TO ECONOMIES OF SCALE

However, RPEE has not managed to attract high levels of private investment, despite its positive risk/return profile and corollary benefits.<sup>5</sup> Technical and contractual challenges have hindered investment to a degree, but the *primary impediments to private RPEE investing have been financial and economic*.

<sup>5</sup> See e.g., Lawrence, Thomas et al., *Overcoming Barriers to Efficiency*, ASHRAE Journal, Sep. 2005 vol. 47, iss.9 for an overview and analysis of RPEE investment barriers.



The combined impacts of these financial and economic constraints generally work to limit the scale of RPEE investing. *These financial barriers can be broadly categorized:*

- 1) RPEE's long-term savings-based returns fail to overcome short-term investor mindsets and/or up-front expenditures;
- 2) Debt needed to finance up-front expenditures is prohibitively expensive, even when private investors partner with public entities;
- 3) Public incentives such as tax rebates and depreciation allowances are typically insufficient to entice private investors; and
- 4) The value of saving energy is not adequately priced in the US.

<b>Selected Barriers of Investing in Real Property Energy Efficiency</b>	
<b>PRIVATE SECTOR CAPITAL FORMATION:</b>	BORROWING COSTS; INADEQUATE INVESTMENT
<b>VEHICLES RETURN EXPECTATIONS:</b>	ENERGY COST SAVINGS/INTERNAL RETURN RATE LIMITATIONS
<b>REVENUE STREAMS:</b>	SOLITARY COST SAVINGS STREAM/DIVERSIFICATION
<b>CONSTRAINT PRICE SIGNALS:</b>	ENERGY PRICE DOES NOT INCORPORATE EXTERNALITIES/ PRICE VOLATILITY
<b>PUBLIC INCENTIVES:</b>	INADEQUATE TAX/REBATE PROGRAMS; LACK OF ENABLING STATUTES
<b>PUBLIC/PRIVATE MISMATCHED HORIZONS:</b>	SHORT-TERM 'PROJECT DISCOUNTING' MINDSET
<b>CONTRACTUAL CONSTRAINT:</b>	BUILDING OWNERSHIP NOT RESPONSIBLE FOR ENERGY COSTS
<b>TECHNOLOGY CHALLENGES:</b>	HIGH COSTS AND LIIMITED TECHNICAL KNOWLEDGE

As a result, residential and commercial building energy efficiency retrofits, as a percentage of total building space, has been woefully meager in the US.



Indeed, with the exception of the federal government's effort to upgrade its buildings and corporate energy efficiency programs, very little has been accomplished relative to the challenge.

<b>The Real Property Energy Efficiency Challenge</b>
<p><b>Residential/Small Building Market Challenge:</b></p> <p style="text-align: center;">2006 residential energy expenditures exceeded \$220B, while most 2006 public-backed financing programs reached less than 1% of target homes.<sup>6</sup></p>
<p><b>Commercial/Large Building Market Challenge:</b></p> <p style="text-align: center;">2006 commercial/government/hospital/education energy expenditures exceeded \$160B, with roughly 5% of capacity retrofitted in 2006.<sup>7</sup></p>

### **The Imperative: Scaling-up RPEE Investment**

In a nutshell, RPEE is a vastly underserved market due to several key financial and economic barriers that serve to restrict the participation of private investors, especially large-scale investors. At the core of the problem is a lack of adequate public mechanisms and incentives to overcome those barriers and attract private investment.

At this point in time, RPEE investing, with its limited public support, has proven to be a sound investment for specific categories of investors interested in specific outcomes. However, the considerable public benefits that RPEE investment generates suggests that governments have an obligation to help expand investment to a degree that those public benefits are fully, or at least substantially, realized. In other words, ***governments have an obligation to incent private investors to create the scale of RPEE funding that public resources cannot attain.***

While current RPEE financing models generally rely on some public incentives and mandates (for example, tax rebates, equipment depreciation, enhanced loan terms, property tax deductions, demand-side subsidies) to attract private sector involvement, ***those incentives and mandates are not geared toward attracting large-scale investment in RPEE.***

<sup>6</sup> For information on energy expenditures: Energy Information Administration, *Annual Energy Outlook 2007*, US Department of Energy, 2007; and for information on residential program participation rates: Fuller, Merriam, *Enabling Investments in Energy Efficiency: Programs that Eliminate First Cost Barriers for the Residential Market*, Efficiency Vermont August 2008.

<sup>7</sup> For information on energy expenditures: Energy Information Administration, *Annual Energy Outlook 2007*, US Department of Energy, 2007; and for information on residential program participation rates: Hopper, Goldman et al., *A Survey of the U.S. ESCO Industry: Market Growth and Development from 2000 to 2006*, Ernest Orlando Lawrence Berkeley National Laboratory, May 2007.



## Real Property Energy Efficiency Investment Scenarios

### Business-as-Usual/Current RPEE Investment Rate:

\$10B invested in 2008 – including roughly \$3.5B through Energy Services Company (ESCO) and \$2.5B through Demand Side Management (DSM) programs, and more than \$1B in corporate efficiency projects – for an estimated energy cost savings of over \$2.5B on annual basis.<sup>8</sup>

### Immediate Intensive RPEE Investment with Estimated Payback:

\$632B invested by 2010 with the goal of reducing energy usage by 30% in all existing residential and commercial buildings by 2030 – and with all new buildings zero emissions – would yield in excess of \$500B in annual savings in 2030, with an average project cost payback period of 11 years.<sup>9</sup>

### Focused High-level 10 Year Outlay with Estimated Payback:

\$500B invested between 2010 and 2020 with the goal of reducing energy usage by 30% in all existing residential and commercial buildings by 2020 would yield in excess of \$130B in annual savings in 2020, with a total payback of more than \$1.2B.<sup>10</sup>

### Sustained Moderate 20 Year Commitment with Estimated Payback:

\$440B invested in existing US buildings between 2010-30 with a goal of 30% reduction in energy usage would produce an annual energy cost savings of \$170B beginning in 2030 with an average project cost payback period of 2.5 years, for a total savings of more than \$1.5T.<sup>11</sup>

Current models for municipal RPEE financing are also generally restricted by the jurisdiction of a municipal residential subsidy program or the dimensions of a commercial building being

<sup>8</sup> Ibid., Energy Information Administration, *Annual Energy Outlook 2007* and *A Survey of the U.S. ESCO Industry: Market Growth and Development from 2000 to 2006*.

<sup>9</sup> Jameson, Charlotte and Sargent, Rob, *Building a Better Future: Moving Toward Zero Pollution With Highly Efficient Homes and Businesses*, Environment America Research and Policy Center, April 2009.

<sup>10</sup> Choi-Granade, Hannah et al., *Unlocking Energy Efficiency in the US Economy*, McKinsey and Company, July 2009.

<sup>11</sup> Brown, Rich et al., *US Building-Sector Energy Efficiency Potential*, Ernest Orlando Lawrence Berkeley National Laboratory, September 2008.



retrofitted. Moreover, the primary small project or residential market scale-up investment challenge – aggregating small financings into pools large enough to attract investment capital – differs significantly from the principal large project, or commercial market, scale-up investment challenge, which is to align investment opportunities with large investor requirements.

<b>Selected Current RPEE Financing Models<sup>12</sup></b>	
<b>DIRECT PUBLIC FINANCE:</b>	STATE AND LOCAL LENDING PROGRAMS
<b>UTILITY FINANCE:</b>	POWER COMPANIES EE INCENTIVE PROGRAMS
<b>DEMAND SIDE MANAGEMENT COMPANY:</b>	ENERGY PURCHASE PARTNERSHIP PROGRAMS
<b>ENERGY SERVICES COMPANY:</b>	NON-RESIDENTIAL COMPREHENSIVE RETROFITS

Moving beyond community-by-community and project-by-project scale will require innovative investing approaches, including those that allow the pooling of residential rehabs beyond the confines of municipal jurisdictions, or the funding of commercial retrofits beyond individual contractual financings.

Public incentives and programs that build on *existing Public-Private Partnership (PPP) approaches offer perhaps that best possibilities* for hatching innovative new RPEE investment models; in particular, approaches that build on current Public Benefit Corporation and private equity fund models.

<b>Potential PPP-Based Approaches to RPEE Investing<sup>13</sup></b>
<b>COMMUNITY AGGREGATOR PARTNERSHIP:</b>
COMMUNITY-BASED TO MEET SMALL PROJECT/RESIDENTIAL CHALLENGE BUILDS ON PUBLIC BENEFIT CORPORATION PPP MODEL
<b>SPECIALITY EFFICIENCY FUND:</b>
INVESTOR-BACKED ASSET MANAGER TO MEET LARGE PROJECT CHALLENGE BUILDS ON DEDICATED INFRASTRUCTURE FUND PUBLIC-PRIVATE MODEL

Furthermore, well-regulated complementary markets for attributes generated from RPEE projects – such as greenhouse gas emissions (GHG) offset credits and energy efficiency

<sup>12</sup> Section III of this paper provides more detail on these and other current RPEE financing models.

<sup>13</sup> Section IV of this paper provides more detail on these alternative RPEE investment models.



portfolio standard (EEPS) credits – and the tapping of equity and debt market opportunities are examples of market forces that would add to RPEE investment liquidity. These *multiple and valuable project attributes should be monetized to the fullest extent possible in order to increase investor return streams* and enhance overall RPEE financing liquidity.

Fundamentally, RPEE will not attract the large-scale private investment that it requires until new investment vehicles are created that adequately serve the residential and commercial markets, fully incorporate valuable RPEE project attributes and mechanisms, and most importantly provide institutional investors appropriate investment structures.

<b>Potential Market Forces and Market Mechanisms that Benefit RPEE Investing<sup>14</sup></b>
<b><u>MARKET FORCES THAT INCREASE THE RELATIVE COST-EFFECTIVENESS OF RPEE:</u></b>
<b>ENACTEMENT OF CAP &amp; TRADE SYSTEMS THAT ALLOW FOR EE GHG OFFSET CREDITS</b> <b>ADOPTION OF EEPS PORTFOLIO STANDARDS THAT CREATE EE CREDIT MARKETS</b>
<b><u>MARKET MECHANISMS THAT ATTRACT INSTITUTIONAL INVESTOR CAPITAL:</u></b>
<b>PROGRESSIVE LIQUIDITY/TRANSPARENCY MEASURES TO ACCESS EQUITY MARKET CAPITAL SECURITIZATION</b>

New policy approaches are therefore needed – on both the federal and state levels.

*Policy approaches should, at a minimum, accomplish the following broad objectives:*

- 1) Generate opportunities for large-scale private investors to commit substantial funds to RPEE;
- 2) Create the conditions for vibrant, self-sustaining markets for RPEE attributes such as greenhouse gas emissions reductions;
- 3) Reward building owner/project host participation in RPEE programs through public incentives and standards; and
- 4) Enhance the corollary benefits of RPEE, such as employment growth and environmental conservation.

The relationship between policy and markets has perhaps never been as complex in the US as the current situation. Ironically, the traditional low-risk/solid-return profile of RPEE projects has become relatively more attractive in today's risk-adverse, reasonable-return investing climate

<sup>14</sup> Section V of this paper provides more detail on these market forces and mechanisms.



than it has been in the past, and private capital has become more essential for achieving public objectives as government deficits balloon. *Large-scale RPEE investing has the potential to provide risk and return diversification for both private equity and institutional investors and emerge as a distinct asset class -- one that is not correlated with other asset classes.*

## Selected Public Policy Recommendations

### **POLICIES TO ENCOURAGE THE FORMATION OF LARGE-SCALE RPEE INVESTMENT VEHICLES:**

- Adapt the Public Benefit Corporation Structure to Achieve Small Project Aggregation
- Adopt Energy Efficiency Concessions to Incent Large Project Private Equity Funds

### **POLICIES TO PROVIDE FOR THE EMERGENCE OF MARKETS TO COMPLEMENT RPEE INVESTING:**

- Establish National GHG and EEPs Systems that Allow Extensive RPEE Offset Credits
- Incent Mechanisms that Spur RPEE Investor Participation in Equity and Debt Markets

### **POLICIES TO MOTIVATE BUILDING OWNERS/PROJECT HOSTS TO IMPLEMENT RPEE PROJECTS:**

- Pull Building Owners into RPEE Financing Programs with Reward Incentives
- Push Building Owners into RPEE Financing Programs with Building Codes

### **POLICIES TO ASSIST THE DEVELOPMENT OF A SKILLED RPEE WORKFORCE:**

- Commit Direct and Indirect Public Funds to RPEE Workforce Development
- Require Public-Private RPEE Investment Funds to Respect Labor Agreements



## II. Why Now?: The Case for RPEE Investing

A strong economic, employment and environmental case exists for increasing investment in Real Property Energy Efficiency to a scale at least comparable to institutional and private equity investment in transportation infrastructure and clean technology venture capital.

Economically, the US has entered a downturn that is widely considered to be the worst since the Great Depression, and the prospect of a quick recovery to a more traditional Gross Domestic Product (GDP) growth rate is generally bleak. Environmentally, the US has become ever-more threatened by wasteful energy and resource usage practices, just as the challenge to reduce greenhouse gas emissions throughout the economy has become increasingly daunting as a result of years of inaction.

The nation's unemployment rate has steadily increased as economic conditions have worsened – pushing toward a double digit rate even as Federal stimulus funds begin to reach the project stage – and much of the unemployment increase has come in the construction trades sectors. Meanwhile, capital investors – a prime driver of the US economy – have retreated to the sidelines after being battered by losses in the high-risk housing finance sector in particular.

2009 was also the year that energy-related greenhouse gas emissions from China exceeded those of the United States – a stark reminder of a global economic transformation that is still unfolding. Because of these vast and ongoing economic, environmental, employment, and investment transformations, energy efficiency investing is currently positioned to offer higher returns than it traditionally has. RPEE investing offers both a means to realize low-risk, relatively strong investment returns while working to stimulate national economic growth, and advancing critically important environmental and employment policy objectives.

In short, the benefits of RPEE investing include much more than the estimated \$170B or so in energy cost savings across the US that are attainable in the short-term.<sup>15</sup>

This section explores some of the factors that make RPEE an important and urgent consideration for both policy makers and private investors.

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<sup>15</sup> Laitner, John, *Laying the Foundation for Implementing a Federal Energy Efficiency Resource Standard*, American Council for an Energy-Efficient Economy, March 2009 estimating the benefits of a federal energy efficiency resource standard (EERS) requiring utilities to increase electricity output efficiency by 15 percent and natural gas output efficiency by 10 percent by 2020.



### a. The Economy

Unique among options available to improve the overall efficiency of the US economy, RPEE projects can be implemented relatively quickly and in a manner that would impact every geographic region of the country. Furthermore, RPEE projects are largely uniform – requiring similar equipment and job skills, for example – therefore economic efficiencies beyond energy cost saving can be derived from financial contract standardization, technology pool purchasing approaches, and standardized job skill training programs.

More importantly, the economic benefits of RPEE compound and produce ancillary economic benefits as investment levels increase. For example, homeowners who realize energy cost savings are likely to direct those savings to other sectors of the economy, as are businesses that realize energy savings.

*Timing:* Energy efficiency building retrofits can be completed relatively faster than construction-intensive physical infrastructure projects, and RPEE projects funded by private investors generally begin returning revenues quicker than projects that are entirely publicly funded. A federal government survey found that privately funded RPEE projects average 27 months from contract award to operational state, while comparable appropriations-funded projects average 63 months, with higher life-cycle costs as well.<sup>16</sup>

Real property energy efficiency projects can in fact be structured to begin accruing cost savings almost immediately with the installation of various types of energy control devices, if not within weeks with the installation of load shedding and process selection equipment.<sup>17</sup> Typically, the pre-operational schedule for private investor projects is weighted heavily toward energy-use auditing, conducting feasibility studies, and obtaining optimal financing terms – all of which could be standardized to further hasten project start-ups.

*Geography:* RPEE projects can be implemented essentially wherever there are buildings, and as a result, they are not dependent on the presence of physical assets in the same way as geothermal, hydro, solar, and wind projects. In addition, the companies that design and engineer large building retrofits, such as Energy Service Companies (ESCOs), are located throughout the US and their expertise is broadly applicable to any building project, while RPEE equipment is generally adaptable to a wide variety of retrofit projects. Unlike financiers of traditional renewables whose investment schedules are constrained by significant siting constraints, RPEE project financiers are positioned to initiate projects as they become feasible regardless of location and individual site review issues.

Moreover, technology, contractual, and project expertise are transferable across geographic

<sup>16</sup> Oak Ridge National Laboratory, *Evaluation of Federal Energy Savings Performance Contracting – Methodology for Comparing Processes and Costs*, US Department of Energy Oak Ridge National Laboratory, March 2003.

<sup>17</sup> Brodtkorb, Michael et al., *Energy Management: Consider Supply and Demand*, Chemical Engineering, June 2007, vol. 114, iss. 6.



boundaries, so large-scale RPEE investment funds would have a consistent stream of investment-grade projects available across the country, ensuring that capital is continuously deployed and earning returns.

*Equipment Purchasing:* To broaden real property energy efficiency beyond home or project scale, several organizations such as the Clinton Climate Initiative energy efficiency technology Purchasing Alliance<sup>18</sup> have tried to provide large-volume discounted purchases of energy efficiency equipment to lowering up-front project cost hurdles. Utilities, governments, and nonprofit groups have also offered similar programs in the past.

*Contract Standardization:* Programs to finance energy efficiency upgrades of federal facilities have relied almost entirely on standardized contracts to both delineate project scope and establish project financing terms. These standardized contracts have lowered project legal and administrative costs, and furthermore they are instruments that have been pooled together to form secondary market securities that are sold to provide financiers with additional project capital – as investment scales-up, recapitalization using standardized contracts would increase as well.

## **b. The Environment**

According to the US Green Building Council, residential and commercial buildings account for more than two-thirds of the nation's electricity consumption and more than one-third of the country's greenhouse gas (GHG) emissions, along with substantial levels of water and gas consumption.<sup>19</sup> Boosting real property energy efficiency generates not only energy cost savings, but also reductions in the amounts of fuel burned to generate electricity, which in turn lowers GHG emissions rates and conserves water and gas resources.

Under a recent federal government business-as-usual forecast, residential electricity and gas usage is expected to increase on average 1.4% and 0.8% respectively per year from 2006 to 2030 with the current national rate of energy efficiency improvement factored in, as commercial electricity and gas usage increases on average 2.8% and 1.6% over the same period.<sup>20</sup> In other words, the adverse environmental impacts of buildings will only continue to worsen under present policy and market dynamics.

That said, the combination of cost savings and pollution reduction clearly places RPEE beyond the traditional economics versus the environment debate, even though the true economic benefit of RPEE is still undervalued in the US because energy prices do not yet incorporate the negative externality of GHG emissions.

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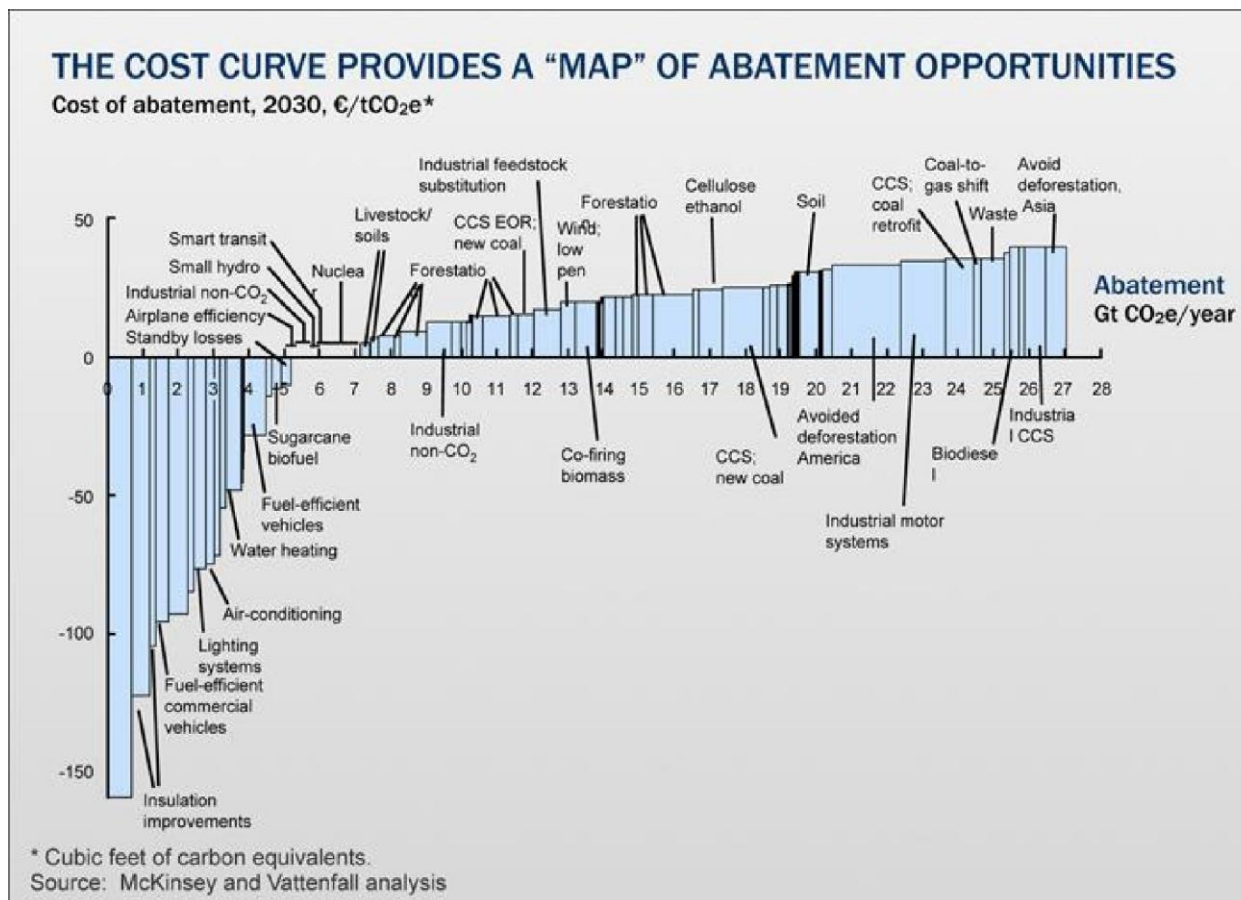
<sup>18</sup> Clinton Climate Initiative Purchasing Alliance states that it furnishes more than 1,000 municipalities around the world with discounted lighting, heating, cooling, and roofing equipment for building retrofits [clintonfoundation.org].

<sup>19</sup> US Green Building Council, *Green Building Facts – Green Buildings by the Numbers*, US Green Building Council, March 2009 [exact figures: 72% of electricity consumption and 38% of carbon emissions.]

<sup>20</sup> Energy Information Administration, *Annual Energy Outlook 2007, With Projections to 2030*, US Department of Energy, 2007.



In fact, a McKinsey Global Institute study of a wide range of GHG emissions reduction approaches concluded that building energy efficiency retrofits are uniquely profitable at current investment prices.<sup>21</sup> This finding implies that, comparatively, the most cost effective strategy for reducing GHG emissions is investment in RPEE improvements.



Source: McKinsey Global Institute 2007/ Vattenfall 2007

Furthermore, a Princeton University framework for analyzing GHG stabilization initiatives under current, or status quo, conditions projects EE investments as a leading means to substantially reduce greenhouse gas emissions growth in the US.<sup>22</sup> Moreover, accelerating that investment would exponentially increase environmental benefits.

GHG emissions reductions one of many environmental benefits of RPEE investing. Additional benefits include reductions in toxic, smog-forming, and criteria pollutant emissions from the burning of fossil fuels – especially coal – to produce electricity, and the reduction in emissions from the on-site burning of fuels (typically gas or heating oil) to heat buildings.

<sup>21</sup> McKinsey Global Institute, *The Carbon Productivity Challenge, Curbing Climate Change and Sustaining Economic Growth*, McKinsey and Company, 2008.

<sup>22</sup> Pacala, Stephen and Socolow, Robert, *Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies*, Science, December 2004, vol. 305, iss. 5686.



### c. Employment

Real property energy efficiency investing contributes greatly to the national effort to develop a green sector workforce, one that maintains an adequate number of trained and certified workers in skill areas that are essential to the task of improving environmental management and securing energy independence. Energy efficiency building retrofits typically also produces long-term retained – rather than simply project-based – jobs, such as system operators and maintenance workers.<sup>23</sup>

An estimated 100,000 on-site jobs are created with every \$10B invested in real property energy efficiency, with thousands of additional ancillary jobs created as well.<sup>24</sup> Moreover, RPEE-created jobs represent a range of skill areas including technical disciplines such as engineering and design, construction trades such as carpentry and masonry, as well as financial services, maintenance and other services, and often involve the acquisition of skills that can be carried forward from an initial project and applied to a series of projects.

Moreover, as RPEE investing is scaled-up, job creation continues to rise: a recent meta-study of a range of employment studies suggests that a concentrated national effort to improve real property energy efficiency by 20-30% by 2030 would result in 500,000 to 1,500,000 new jobs, depending on the types of projects undertaken.<sup>25</sup> The most aggressive, cost-effective efforts analyzed in the study yield the most new jobs – which implies that effective large-scale RPEE investing would create a significant number of jobs.

Another recent analysis suggests that an immediate investment of \$6.5B in RPEE residential and commercial projects in the 25 largest US metropolitan areas would create more than 440,000 new jobs.<sup>26</sup> An additional study suggests that \$1B invested in real property energy efficiency would create 26 times more new jobs than the same amount invested in nuclear power, and more than 30 times as many new jobs as an equivalent investment in the building of a state-of-the-art coal-fueled power plant.<sup>27</sup> In short, RPEE investments produce quality, sustainable jobs, and as investment accelerates job creation is likely to increase. Furthermore, RPEE investment creates environmental-technical jobs imperative to a vibrant 21<sup>st</sup> Century economy.

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<sup>23</sup> Worldwatch Institute, *Green Jobs: Toward Decent Work in a Sustainable Low-Carbon World*, Worldwatch Institute/UN Environment Program, 2008 [citing a study of German RPEE projects].

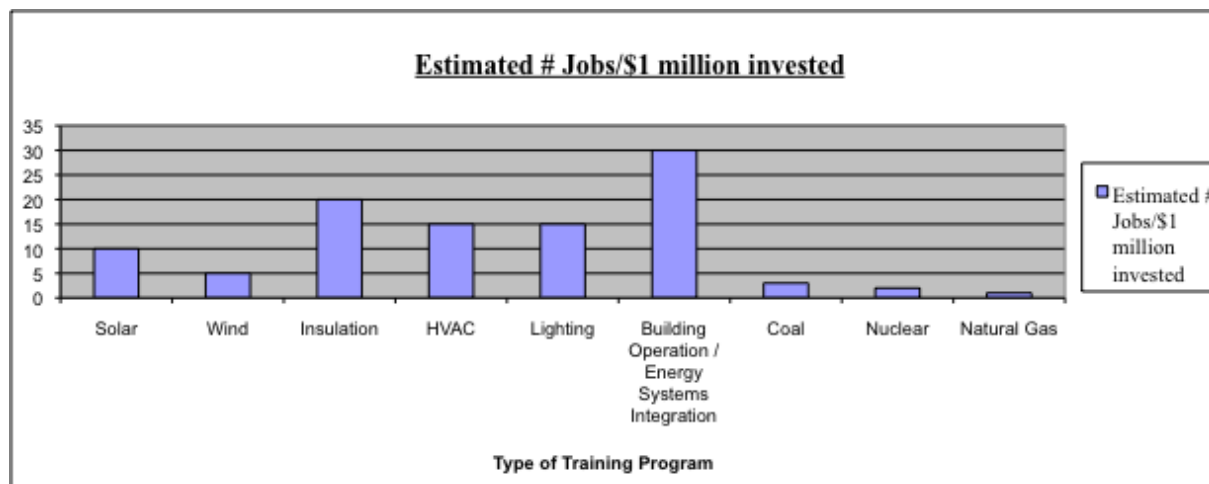
<sup>24</sup> Petta, Seth, *Data Points: Investments in Clean Energy Soar* [apolloalliance.org/news/investment/data] , The Apollo Alliance, October 3, 2008.

<sup>25</sup> Furrey, Laura A. et al., *Laying the Foundation for Implementing a Federal Energy Efficiency Standard*, American Council for an Energy Efficient Economy, March 2009.

<sup>26</sup> Hecht, Ben, *Creating Jobs Today Through Large-Scale Building Retrofitting*, Living Cities, discussion memorandum, December 2008.

<sup>27</sup> Brown, Lester, *Creating Jobs, Cutting Carbon Emissions, and Reducing Oil Imports by Investing in Renewable Energy and Energy Efficiency*, Earth Policy Institute, December 2008.





Source: Light Green Advisors

#### d. Investing

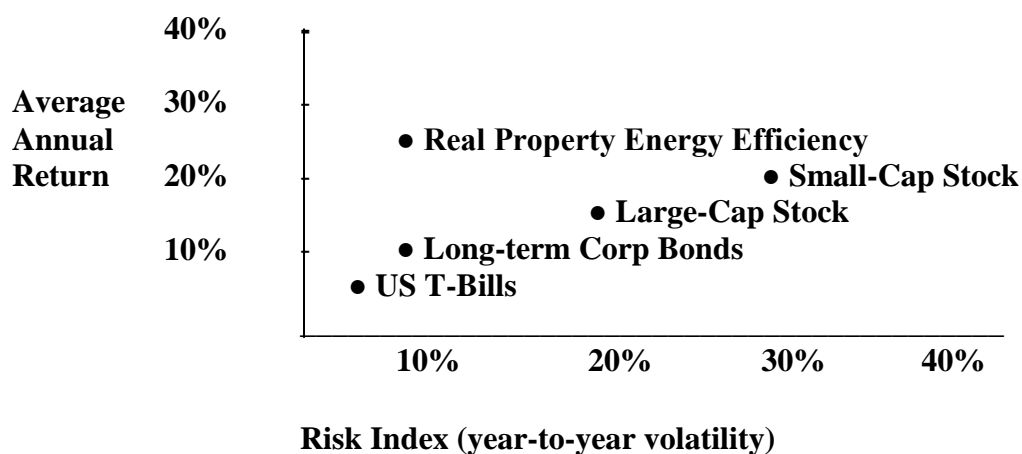
The bulk of RPEE investment in the US has involved Energy Service Companies (ESCOs) contracting with federal agencies to upgrade federal facilities through mechanisms such as Energy Savings Performance Contracts and Shared Energy Savings Contracts, as well as similar state level programs. This history of restricted investing has generally been attributed to the relatively low RPEE projects returns, and the necessity of partnering with entities, like governments, in order to access to prime borrowing rates.

The traditional RPEE Energy Savings Performance Contracts/Shared Energy Savings Contracts model has been remarkably consistent – according to a 2004 Congressional report, no private sector federal agency energy efficiency contract among the more than 300 that had been initiated since 1992 had failed to produce energy use reductions and cost savings.<sup>28</sup> That said, the conventional rap against RPEE investing has been that project returns have been less than those of other private equity investment options, including highly leveraged infrastructure and clean technology venture capital investments.

<sup>28</sup> Andrews, Anthony, *CRS Report for Congress: Energy Savings Performance Contracts*, Congressional Research Service, September 2004 [citing Department of Energy cost savings information].



### Energy Efficiency Investing Risk/Return Profile<sup>29</sup>



Of course, under current economic conditions the traditional Federal RPEE contract-derived 10% RPEE project rate-of-return is relatively more attractive than investment options such as stocks and bonds. But more importantly, innovative RPEE investment models and complementary markets for RPEE project attributes offer the potential for enhanced returns.

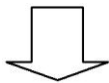
The emergence of infrastructure investment funds over the past decade – due largely to institutional investor demand for long-duration stable returns that match their long-term obligations – is perhaps the most compelling example of the opportunity available in RPEE. These funds have successfully attracted substantial levels of large institutional investor funds, and RPEE investing has characteristics to similarly fulfill institutional scale, duration, and return requirements.

<sup>29</sup> Prindle, William et al., *The American Energy Efficiency Market*, American Council for an Energy Efficient Economy, White Paper Prepared for the Energy Efficiency Finance Forum April 2007.



## RPEE Investment Vehicles: Current and Potential Impacts

Current: Lack of Large-Scale  
Investment Vehicles



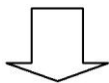
Low Investment  
Levels

Limited Returns  
Possibilities

Low Technology  
Development

Low Job  
Creation

Potential: Emergence of Large-Scale  
Investment Vehicles



Large-Scale  
Investment

Enhanced Returns  
Scenario

Accelerated  
Tech Development

Elevated Job  
Creation



### III. Existing Models for Financing Real Property Energy Efficiency

As energy efficiency efforts have been active for decades, public sector programs geared to achieving energy savings have also existed for decades. These Real Property Energy Efficiency (RPEE) financing programs can be broadly characterized as having low participation rates and little meaningful private sector involvement – mutually reinforcing constraints – and they have also generally been restricted by the jurisdictional limits of a public subsidy program, or the dimensions of the specific project financed.

This section provides brief descriptions of several innovative RPEE financing programs, geared to either the residential/small project market<sup>30</sup> or the commercial/ large project market.<sup>31</sup> In addition, this section describes financing approaches that could potentially be modified to accommodate large-scale RPEE investors.

#### a. Direct Public Finance/Public Subsidization Programs

Under a direct public finance model, Real Property Energy Efficiency projects are funded by public outlays including Federal transfer payments to states, as well as by taxes and bond issuances. Some states, including Connecticut, Maryland, Massachusetts, North Carolina New Jersey, and Pennsylvania offer loan programs directly to homeowners for small, mainly residential, RPEE projects, while other states offer loans or provide backing for banks to make loans to companies or homeowners to undertake RPEE investments.

Municipal programs, again primarily focusing on residential projects, also exist and most are made available only within the municipality jurisdiction:

*Municipal Energy Conservation Districts:* Under this approach, the municipality lends directly to qualified commercial and residential property owners – typically with funds raised through a special municipal bond issue or seed funds received through a Federal or state program – and loans are repaid through an annual property tax assessment on participants, which commonly has a 10-20 year duration. If the property is sold prior to full repayment, the subsequent owner assumes the remaining special assessment payments.

*Municipal Special Purpose Districts:* Here, the municipality issues bonds that are similar to Industrial Revenue Bonds for the purpose of providing low interest rate loans to businesses and commercial property owners that meet certain criteria, including businesses located in depressed areas. Loan recipients must be sound with sufficient revenues to repay the authority; however, the municipality generally receives a claim to the assets of the companies or in the

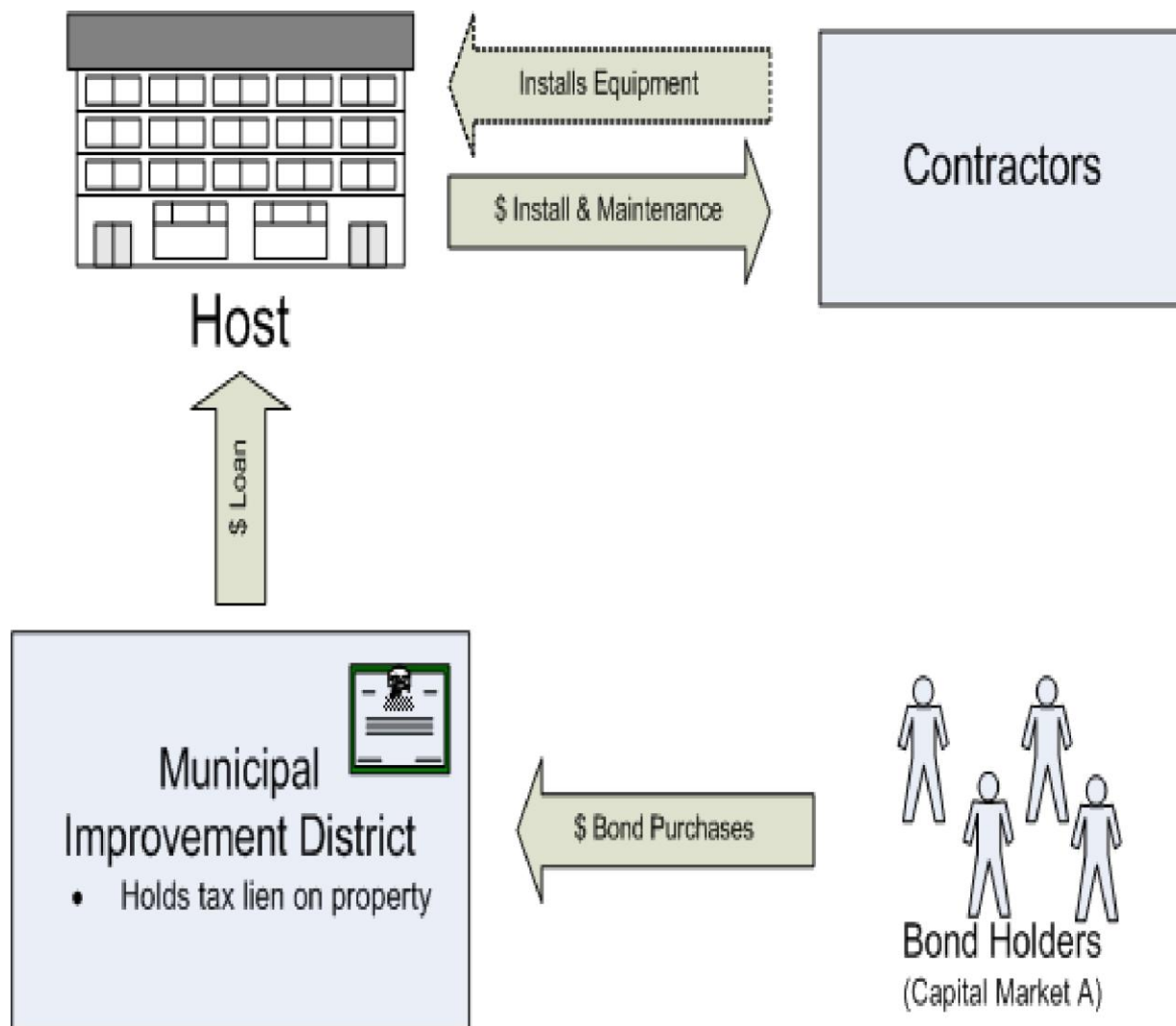
<sup>30</sup> See e.g., Energy & Resources Group, UC Berkeley/Fuller, Miriam, *Enabling Investments in Energy Efficiency*, CA Institute for Energy and Environment, May 2009 for an overview of existing residential‘ market RPEE programs.

<sup>31</sup> See e.g., Hopper, Nicole et al., *A Survey of the US ESCO Industry: Market Growth 2000-2006*, Ernest Orlando Lawrence Berkeley National Laboratory, 2007 for an overview of existing commercial‘ market RPEE programs.



case of a commercial property owner, a lien on the property.

**MUNICIPAL IMPROVEMENT DISTRICT BONDS**



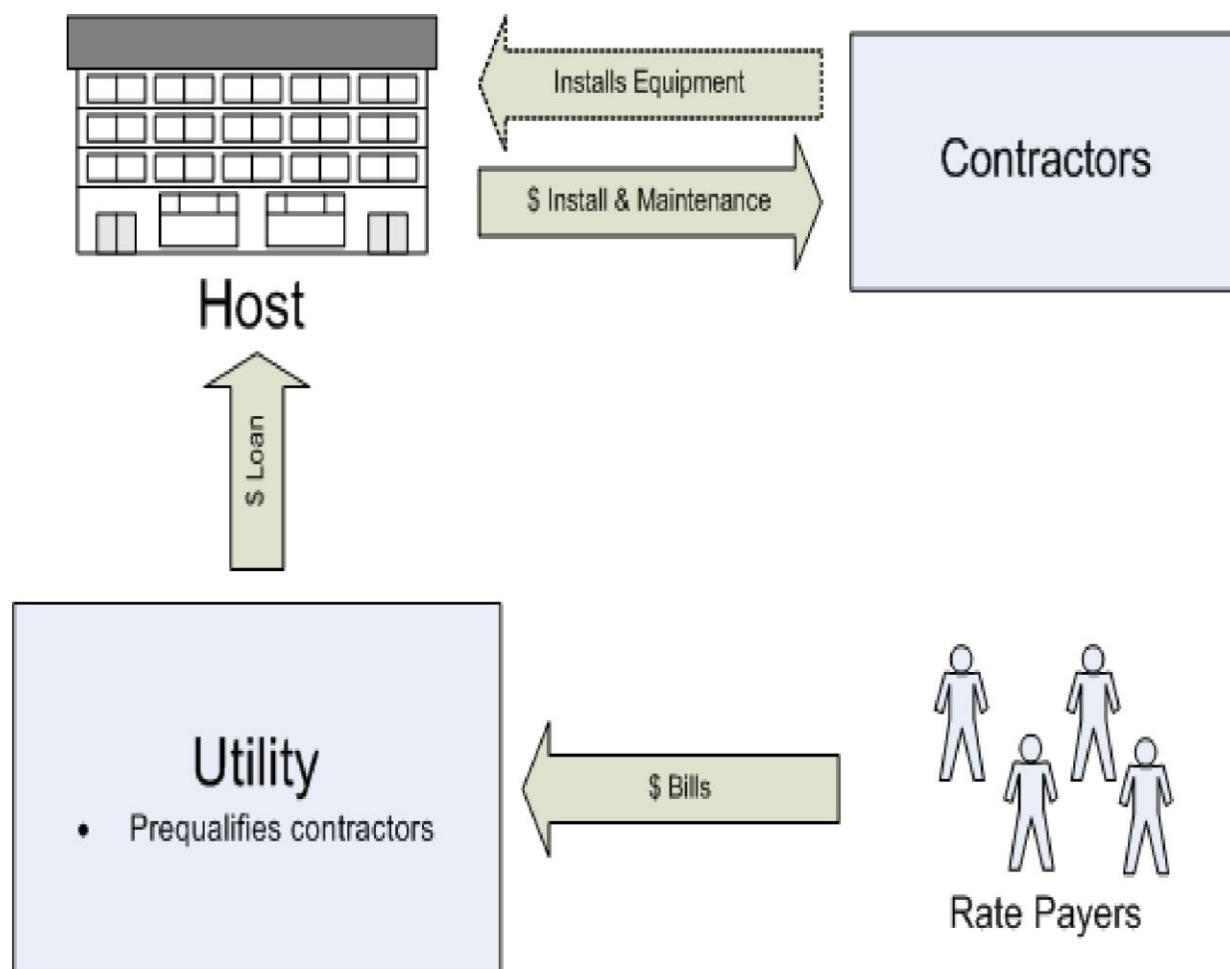
Source: Light Green Advisors

## b. Utility Finance/On-Bill Financing Approaches

Under the utility finance model, a power company lends directly to its customers who then use the funds to pay pre-qualified contractors to install energy efficient equipment on their property. Typically, the utility makes the low-interest loans out of funds sourced from ratepayers, rather than funds borrowed from banks and customers hold title to the equipment financed.

Loan repayment is accomplished through an assessment included on the participants' monthly utility bills. In general, however, utilities have been slow to adopt this model because RPEE project return rates are usually inferior to return rates associated with investments in their traditional businesses, and many innovative programs have been discontinued.

### UTILITY LOAN PROGRAMS (including on bill-financing)



Source: Light Green Advisors

The Sacramento Municipal Utility District (SMUD), for example, implemented an on-bill financing model for residential customers, but encountered problems in establishing the priority of creditors between the utility, contractors, and technology suppliers, in case of inadequate or late payment. SMUD cited the expense of upgrading its billing program as a factor in its decision to end its program, and for the most part efforts to implement utility on-bill financing programs have not been widely successful.

The City of Milwaukee and the Center on Wisconsin Strategy (COWS) have begun to work with labor, community, and business leaders to initiate a citywide RPEE residential financing program – the Milwaukee Energy Efficiency (Me2) initiative – that aims to generate immediate savings to both homeowners and renters, with no upfront costs. Me2 proposes that the utility or the city offer energy efficiency loans that can be repaid over 20 years so that monthly repayments are less than the monthly savings available from the installation of RPEE equipment.

Babylon, NY has a RPEE program that provides financing for cost effective energy efficiency improvements to homeowners for a standard set of cost effective energy efficiency measures. The program aims to improve energy efficiency and reduce heat loss from older – generally 40-50 years old – single family homes, focusing on cost-effective retrofits with simple paybacks of seven years or less, and recovering the cost of the retrofit and a low 3% interest rate. The program was capitalized in 2008 with \$2 million in solid waste funds and it has completed more than 100 retrofits as of December 2009.

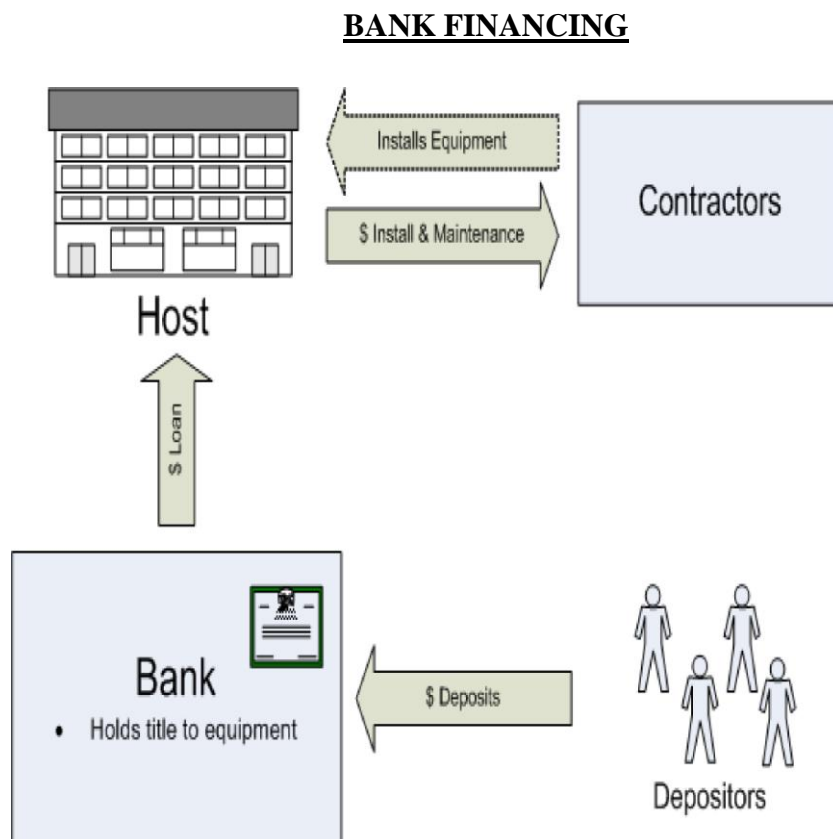
Another variation of the utility finance model is the demand side management company (DSM) approach. Under this model, energy efficiency investments are financed through payments by utilities to specialized companies that implement RPEE upgrades, typically at the sites of third party commercial customers of the utility. The DSM company approach moves away from the traditional utility on-bill financing model to a new model that employs a greater level of private management and private profits from success in increasing energy efficiency of energy-using assets. Demand side management programs have reduced the need for utilities to undertake new and expensive capacity additions. DSM company programs, however, have focused primarily on the commercial or large project market and not the residential market.



### c. Bank Financing/ Energy Services Companies

Under the traditional banking model, banks lend funds to hosts – residential and commercial – who then use the funds to pay contractors to install energy efficient equipment. Typically the bank retains title to the equipment, or a lien on the property, until the loan is paid off by the host, and so the utility customer or host assumes the risk that the correct equipment is purchased, installed and maintained properly, and that the benefits it generates exceed the cost of the capital and the installation.

If the host goes out of business, goes bankrupt, or fails to pay on time, then the cost of recovering the property or securing the property based upon the lien accompanying the loan are borne by the lender. This cost and time for project management activities and the cost of capital, including the risk of property as a result of a bank lien, are widely perceived to exceed the incremental value of energy savings, and as a consequence most homeowners and small businesses do not avail themselves of this financing method. The attractiveness of bank financing (as well as other debt models) for small businesses and homeowners has been reduced by the nationwide contraction in credit available to small businesses and homeowners.



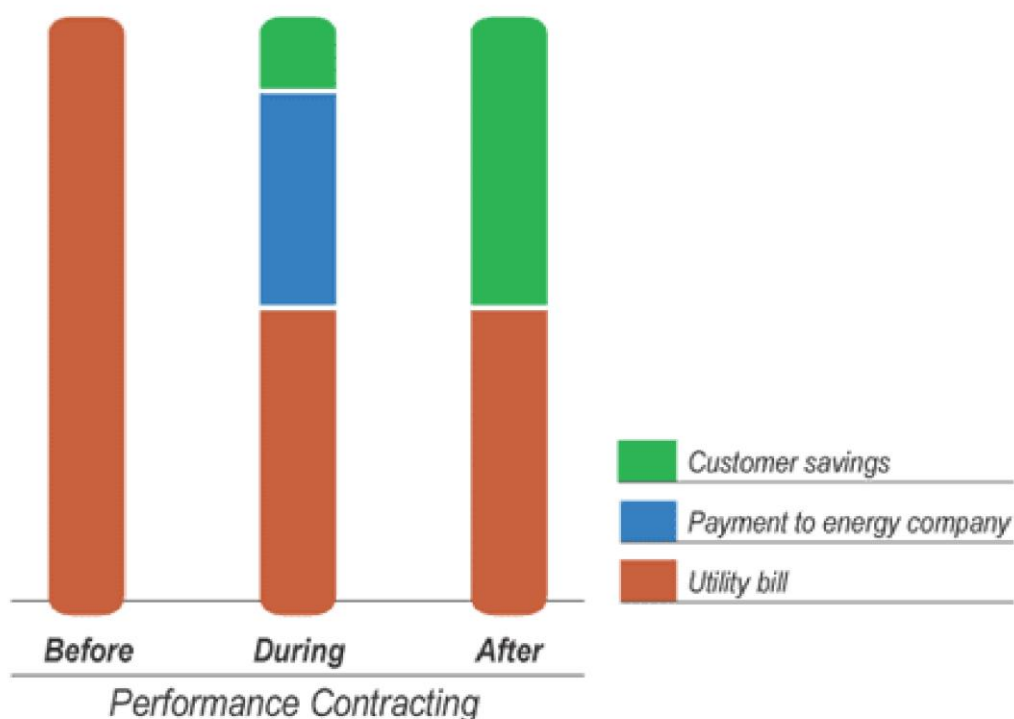
Source: Light Green Advisors



Energy service companies (ESCOs) are specialist energy companies that provide investment capital and energy management services for generally large-scale energy consumers in return for a share of the energy cost savings that result from building retrofits. Using a standard Energy Savings Performance Contract (ESPC), an ESCO commits to identifying, installing, operating, and maintaining new or upgraded energy-efficient equipment at a large energy user's property. The property owner does not invest its own capital, but rather agrees to pay a share of cost savings – calculated using historical energy costs as the baseline – that result from the retrofit to the ESCO, which commonly recoups its initial investment over a 5-10 year period. At the end of the contract, the customer typically gains title to the installed equipment and receives energy efficiency cash flow benefits for the life of that equipment.

The ESCO model differs from traditional bank financing in several important ways: first, the ESCO specialist, not the real estate host, assumes the risk of selecting, installing, and maintaining the equipment; second, the ESCO contractor, rather than the host, is responsible for financing the project and managing debt risks; third, the ESCO often uses independent financial services companies rather than traditional banks to finance projects; and finally, ESCO profitability depends on energy saved, in contrast to traditional loans, whose profitability is fixed as an interest rate.

### **HOW ENERGY SAVING PERFORMANCE CONTRACTING WORKS**



Source: Ameresco

The vast majority – over 80% – of ESCO ESPC contracts are with agencies of the federal government. The ESCO Federal market focus is a function of the large-scale size of federal projects, the availability of a standardized performance contract, and the federal government's AAA credit quality.



It remains to be seen whether the ESCO model can be extended to the commercial sector and the residential sector, where hosts have higher credit risks. Notwithstanding these questions, the success of performance contracting by ESCOs has demonstrated that RPEE savings are verifiable, stable and can be profitable.

#### **d. Private Sector Financing/Power Purchase Agreement**

Private investors seeking to enter the RPEE, or energy reduction, market face entry barriers similar to investors seeking to enter the energy production market. That is, the power production market is characterized by high up-front costs and limited return possibilities without public sector participation.

To lower these entry barriers and incent private investment, contractual forms have been established that create long-term, risk-mitigated relationships between private investors and public entities. These contracts generally guarantee a market for power produced through private investment, typically setting a price and delivery quantity for energy produced.

The take-or-pay contract or Power Purchase Agreement (PPA) model has brought significant amounts of private capital to renewable energy in the US, especially the solar energy production market. PPA's have served to remove the upfront capital cost barrier for solar and to provide the necessary expertise to manage equipment installation and system management.

Under the typical solar PPA structure, a public agency, or a viable company, agrees to purchase the electricity produced by a solar installation. The solar energy developer usually finances the capital and operating costs of the project, and then recoups its investment by charging for the electricity it produces.

Solar PPA installations are thus analogous to a small utility that produces power for decentralized users. Furthermore, the PPA model relies on private capital and a private sector specialist owner-operators with technical skills and the capacity to harvest several incentives for which utilities and public agencies are not generally eligible: rebates in some states, renewable energy credits or RECs in other states, federal investment tax credits, depreciation, and whatever other incentives are relevant.

Rapid solar PPA growth shows how private capital can be brought to bear on a challenge-increasing renewable energy - with public sector incentives and catalysis. While it has not been done yet, the RPEE PPA model could be successfully based on the solar PPA vehicles, especially considering that the cost effective RPEE market in the US is many times the size of the solar opportunity.

Several notable challenges do exist: generating electricity with photovoltaic panels is easily verified, for example, while RPEE energy savings are relatively more difficult to track.

Ultimately, however, an energy efficiency Power Reduction Agreement approach would require that public sector policymakers equate the concept of energy reduction with the more traditional



notion of energy production. It would help to establish energy efficiency standards, similar to renewable portfolio standards as well as standards for calculating how much energy is saved. As discussed later, public sector policymakers could also facilitate investment by setting standards for secondary markets for energy efficiency certificates and greenhouse gas emission reductions resulting from RPEE investments, and those markets would facilitate private sector investment just as renewable energy credit (REC) markets have facilitated private sector investment in wind and solar. Favorable public sector mindsets on this issue would likely set the stage for the emergence of innovative large-scale RPEE investment vehicles.



#### IV. Alternative Models for Real Property Energy Efficiency Investing

A common thread of many current Real Property Energy Efficiency (RPEE) financing models is the complementary nature of the public and private sectors – governments receive a range of societal benefits, such as environmental and employment gains, and investors realize energy cost savings. Not surprisingly, ***the current public sector RPEE challenge mirrors that of the private sector***: the public sector requires large-scale RPEE investment to meet its goals, while private investors require scale investment vehicles in order to commit substantial funds.

Public-Private Partnerships (PPP's) have increasingly been used by governments at all levels to involve the private sector in fulfilling public mandates. Furthermore, ***PPP's have perhaps never been more necessary to the public sector or attractive to the private sector***: public budgets are stretched and private investors have lowered risk in search of stable returns.

In general, ***PPP's involve the granting of a monopoly, or near monopoly, to a private actor in order to accomplish a public objective***; and PPP's are typically based on the transfer of programmatic operations and operational risk by a public entity to a private actor in exchange for the right to earn operational revenue generated by the program.<sup>32</sup> To make the arrangement more attractive to private partners, government partners often offer additional incentives such as seed capital or credit lines.

For the most part, the ***PPP model has not been used for financing RPEE, in particular not with the objective of attracting large-scale private investment to finance projects***. And yet, PPP's would seem to be the ideal mechanism for combining public sector energy efficiency objectives with private sector interests.

Infrastructure development-based PPP's that produce consistent, predictable revenue streams – such as toll-roads and bridges – are perhaps the most suitable PPP model for RPEE in that RPEE investments can be structured to have similar life-cycle characteristics. That said, the features of the residential, or small project, RPEE market are sufficiently different than the commercial, or large project, market to necessitate distinct PPP approaches for each; in particular, the residential market requires an aggregating entity that can work across multiple jurisdictions.

This section provides two potential public-private models, based largely on existing PPP models that could serve as new vehicles to direct large-scale private investment into RPEE.

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<sup>32</sup> See e.g., Pagdadis, S. et al., *A Roadmap to Success for Public-Private Partnerships of Public Infrastructure Initiatives*, The Journal of Private Equity, Spring 2008 for an overview of PPP financing.



### **a. Residential/Small Project Financing: The “Community Aggregator Partnership”**

Residential-scale Real Property Energy Efficiency (RPEE) financing programs, such as those described in Section III of this paper, are typically limited in scope to the confines of a municipal jurisdiction, or to the customer base of a regional utility. As a result, residential-scale – including small businesses and similar structures – financing programs have consisted of a hodge-podge of programs that, for example, might provide incentives to residents of one town and not to those of a neighboring town, or customers of one utility and not to another.

Furthermore, significant structural and financing problems have hindered residential programs – in particular, the structural challenge of residential ownership transfers that occur during the course of project payback periods, and the financing challenge of securing relatively large amounts of upfront capital to fund initiate projects.

In practice, therefore, publicly funded residential RPEE financing programs have had poor participation rates: most programs reached less than 1% of their target homes in 2006.<sup>33</sup>

Moreover, these jurisdictional, customer-base, structural, and financing constraints have greatly limited the pooling, or aggregating, of residential-scale projects for the purpose of gaining better financing terms or leveraging equipment purchasing power. And these constraints have largely stemmed the participation of large private investors in small project financing.

Instituting the capacity to aggregate projects across broad jurisdictional lines and customer bases would create larger revenue streams from energy efficiency cost savings, as well as opportunities to leverage equipment purchasing power. It would also open the possibility for large-scale private investment in residential projects.

Far-reaching aggregation authority combined with innovative structural approaches that ensure the transfer RPEE projects with changes in residential ownership would decrease project risk and present the opportunity for long-term investment stability. Aggregated project returns and limited project risk, in fact, create a solid foundation for large-scale investment.

Because market forces alone have clearly been inadequate to incent large-scale small project investment, statutorily created entities offer a practical alternative. That is, public-private entities with the capacity to aggregate projects derived from multiple programs over a wide region would provide a model to overcome the current small project market failure.

In particular, Public Benefit Corporations (PBC’s) are public-private partnerships that have successfully linked critical public policy goals with private resources. And, in fact, there are Public Benefit Corporations that are currently active in bridging residential energy efficiency projects, as well as clean technology development, with private sector resources.

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<sup>33</sup> Fuller, Merriam, *Enabling Investments in Energy Efficiency: Programs that Eliminate First Cost Barriers for the Residential Market*, Efficiency Vermont August 2008.



<b>Key Public Sector Strategies to Enhance Private Sector Willingness to Invest in Public-Private Partnerships<sup>34</sup></b>	
<b>INVESTOR-FOCUSED MEASURES:</b>	CREATE PROSPECTS FOR PREDICTABLE, LOW-RISK RETURN
<b>ELECTORATE-FOCUSED MEASURES:</b>	MANAGE PUBLIC PERCEPTION OF PRIVATE PARTY RISK

PBC's are public-private nonprofit corporations established under Internal Revenue Service Rule 63-20 to fulfill a beneficial public purpose.<sup>35</sup> Among other advantages, PBC's are authorized to issue tax-exempt debt on behalf of private actors that is not subject to statutory caps placed on government-issued private activity bonds and other forms of public capital formation. If the bond-financed activity is revenue-producing, the PBC generally issues debt based on expected future revenues. The government entity – commonly a state – that establishes a PBC must retain an interest in the corporation while the tax-exempt debt remains outstanding, and may also be obligated to retain legal title to financed projects until the debt is repaid.

In a nutshell, the uncapped tax-exempt debt raising capability of PBC's could well provide the crucial seed capital to attract large-scale private investment to the residential/small project RPEE market. Under this scenario, debt raised by a PBC would be low cost and low risk, yet sufficiently large in scale to form a capital base attractive to private equity partners – that is, private investors would be offered the opportunity to pool their investment with PBC capital by taking equity shares in the PBC for a fixed duration and set rate of return.

Limits are generally placed on the amount of private equity capital that is permitted to fund a PBC, as well as the rate of return private investors are permitted to realize. That said, the shared savings agreements used in federal government Energy Services Company (ESCO) contracting typically provide a preset 10% net rate of return to the ESCO, and a similarly mandated rate for a RPEE PBC would likely be adequate to attract those categories of large institutional investors that seek stable returns over fixed durations of perhaps ten years or more.

Under this scenario, a statutory nonprofit RPEE PBC would derive revenue from energy savings – typically estimated to on-average exceed 20% for residential projects – which would both finance operational and programmatic expenses, and satisfy obligations to bondholders and shareholders, the private investment partners.

Perhaps the most appropriate current PBC model to build from is the New York State Energy Research and Development Authority (NYSERDA), which has a number of successful

<sup>34</sup> Koppenjan, Joop and Enserink, Bert, *Public-Private Partnerships in Urban Infrastructure – Reconciling Private Sector Participation and Sustainability*, Public Administration Review, Mar/Apr 2009.

<sup>35</sup> See e.g., Transportation Research Board, *Major Legal Issues for Highway Public-Private Partnerships*, The National Academies, January 2009 for an overview of current PBC requirements.



residential energy efficiency programs, as well as RPEE contractor certification programs and green collar workforce training programs.<sup>36</sup> Since 2000, NYSERDA has channeled more than \$100M into residential RPEE upgrades, mainly by coordinating with utilities to provide on-bill financing or subsidize loans from banks to homeowners.

NYSERDA, however, is funded by a Systems Benefit Charge on statewide energy rate payers, a charge that would need to be increased dramatically to effectively fund extensive RPEE financing programs. Indeed, NYSERDA programs have been accessed by fewer than 20,000 NY residential owners, very few of which have received direct upfront capital for their EE upgrade.

In other words, NYSERDA was not established to be a project financing entity. A NYSERDA-type PBC with a large pool of seed capital, however, would be in a position to directly initiate a significant number of projects, and do so over decades. This next generation PBC would be in the business of directly providing – or indirectly facilitating through loans and guarantees – upfront capital to project hosts in exchange for energy savings revenues. Existing techniques to overcome change in ownership structural hurdles, and current RPEE contractor certification and green job training programs could also be incorporated.

The key to this approach is the PBC's capacity to provide a variety of small project RPEE upgrade programs using multiple financing techniques to a range of customer types over a wide geographic region. All projects initiated by the PBC would then be aggregated to provide large investors stable, well-diversified returns at an appropriate scale.

Unfortunately, one current constraint on adopting the RPEE PBC concept is the dearth of state-level PBC statutes – in fact, most states have yet to enact basic Public-Private Partnership statutes.<sup>37</sup> Model enabling legislation using a NYSERDA-plus approach as a basis, however, could facilitate the broad enactment of state-level statutes. A similar constraint is the wording of IRS Rule 63-20 itself, which at present does not specifically provide for the creation of PBC's for RPEE financing purposes and therefore is arguably imperfectly suited for energy efficiency financing. An amending of Rule 63-20 to specifically establish RPEE financing as a public benefit worthy of PBC activity would be an important evolution.

One further constraint, common to all efforts to increase RPEE financing, is the issue of project host incentive: that is, even if advantageous financing terms are offered, residential hosts are not sure to request or accept them. Mandating building codes that fine homeowners who sell residences that have not been made energy efficient might be a stick that complements a RPEE PBC.

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<sup>36</sup> See [nyserda.org](http://nyserda.org) for a description of current residential and small project programs; and see *“NYSERDA CEO Contributes to ACEEE Finance Forum,”* US Federal News Service, Apr. 11, 2008 for an overview of results.

<sup>37</sup> See e.g., Urahn, Susan/The Pew Center on the States, *Driven by Dollars*, The Pew Charitable Trusts, March 2009 for an overview on state-level public private partnership statutes.



### **Selected Benefits of the Community Aggregator Partnership Model**

#### **PUBLIC BENEFIT CORPORATION DEBT CAPITAL RAISING CAPACITY:**

- TAX-EXEMPT BOND ISSUANCE RESULTS IN LOW COST SEED CAPITAL
- BOND ISSUANCE NOT SUBJECT TO 'PRIVATE ACTIVITY' DEBT CAP

#### **LARGE-SCALE PRIVATE INVESTOR OPPORTUNITY:**

- SCALE INVESTMENT OPPORTUNITY FOR LARGE PRIVATE INVESTORS
- RETURN STRUCTURE BASED ON ENERGY COSTS 'SHARED SAVINGS' APPROACH MULTIPLE FINANCING PROGRAMS AVAILABLE FOR OF RESIDENTIAL/SMALL PROJECTS
- GREEN COLLAR JOB TRAINING/LOCAL RPEE CONTRACTOR CERTIFICATION INCLUDED IN MANDATE

These several constraints notwithstanding, a RPEE PBC would put governments in a position to realize the benefits of large-scale RPEE investment without having to outlay public funds or assume project operations and other forms of risk, while simultaneously gaining important community benefits like green job training and contractor certification.

A project-aggregating RPEE PBC or Community Aggregator Partnership (CAP) could provide large investors a vehicle to invest in tangible energy efficiency projects at a scale and for durations that meet their investing requirements and fulfill their program missions. [See **Appendix A** for an overview the CAP model.]

### **The Basics: Community Aggregator Partnership Model**

<u>Inputs</u>			<u>Results</u>
<i>PBC FUNDS:</i>	<i>PRIVATE</i>	<i>GREEN</i>	<i>RPEE/</i>
<i>TAX-EXEMPT +</i>	<i>CAPITAL: +</i>	<i>COLLAR =</i>	<i>SMALL</i>
<i>BOND</i>	<i>EQUITY</i>	<i>JOB</i>	<i>PROJECT</i>
<i>ISSUANCE</i>	<i>SHARES</i>	<i>TRAINING</i>	<i>FINANCING</i>
		<i>=</i>	<i>FIXED-RATE</i>
			<i>EQUITY RETURN</i>



## **b. Commercial/ Large Project Financing: The “Specialty Efficiency Fund”**

While a residential/small project Community Aggregator Partnership model could offer a range of financing programs across a statewide jurisdiction, a commercial/large project market investment vehicle would be designed to offer generally standardized retrofits over across the country. If the goal of the CAP is to finance and aggregate as many projects as possible in order to provide stable returns, the goal of a large project investment vehicle would be to maximize investor returns.

In other words, the public-private partnership model would be adjusted from one that aims to meet investment return expectations, to one that aims to exceed expectations. While a PBC CAP would be limited by statutory rate-of-return and leverage constraints, a large project financing entity might most effectively be constituted as a private equity fund which, like many infrastructure funds, would have some public sector investors.

As with the small project market, creating the potential for large-scale private investment in commercial/large project RPEE requires instituting the capacity for big institutional investors to maximize returns through a conventional investment vehicle. For example, public-private infrastructure development funds offer large investors a suitable investment model.

Public-private infrastructure funds are typically based on the grant of a concession to a private party, which may come in the form of a management contract for the delivery of energy, such as a Power Purchase Agreement which stipulates an amount of energy to be produced and delivered by a private partner to a public entity, and a guarantee from the public or private entity that the energy will be paid for whether the government ultimately finds consumers for the power or not.<sup>38</sup> Energy efficiency, or energy reduction, should be considered a resource that is conceptually the equivalent of energy production, and therefore a candidate for public sector energy reduction concessions that guarantee the private partner revenue even if RPEE consumers are not found.

Under such a scenario, the RPEE fund would be compensated directly through project host energy cost savings for the projects it implements in the jurisdiction of the concession grant; however, if the fund is unable to contract with an adequate number of project hosts to achieve a preset energy reduction goal, a payment guarantee would kick-in and the concessionaire would be obligated to compensate the fund for the difference. Thus, the government partner would have a strong incentive to enact energy efficiency building codes and similar property laws.

The key to the concession-based fund approach is its capacity to offer below market priced retrofits due to its government guarantee: RPEE funds would be able to raise equity and debt capital on favorable terms,. And exceeding the concession-mandated energy reduction target would lead to even greater profits.

A public-private RPEE investment fund would provide upfront financing for projects through a combination of its paid-in equity and debt; and as long as the price of debt is appreciably lower

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<sup>38</sup> See e.g., Kerf, Michael, *Concessions for Infrastructure, World Bank Technical Paper 399*, The World Bank Group, 2000 update for an overview of the PPA concession approaches.



than project rates-of-return, and expected project revenues are low risk, the fund could follow an aggressive debt-to-equity ratio – 50:50, or more – to finance its projects. This positive leverage approach in essence works to provide investors enhanced returns without substantially greater risk – a solid incentive for large investors.

Furthermore, ESCOs and other entities currently active in serving the large project market would be natural partners for RPEE funds. Current equipment depreciation incentives and energy efficiency tax rebates would factor into the equation as well, by providing fund managers additional assets that boost fund performance.

### **Public Sector Hurdles to the Establishment of Public-Private Partnership Concession-Based Funds<sup>39</sup>**

- **GAINING POLITICAL SUPPORT**
- **OVERCOMING FEAR OF PRIVATE SECTOR CONTROL**
- **SETTING PREDICATABLE REVENUE  
EXPECTATION/MAXIMUM RETURN CAPS CREATING  
SOUND AND FAIR BIDDING REFERENCE POINTS AND  
PROCEDURES**
- **MATCHING FINANCING TERMS/DEBT BORROWING  
WITH REVENUE STREAMS**

Governments granting RPEE concessions would safeguard the public's interest by setting the parameters of the fund's activities and would further public goals by mandating labor standards and green collar job training. They would also be responsible for implementing the concession bid process, selecting fund managers, and developing fund governance rules.

The emergence of public-private funds based on a RPEE concession, however, would require a huge shift in the way energy efficiency is viewed by governments – a shift from the view that energy efficiency is a convenient benefit to a view that it is an absolute necessity. This shift would also entail an expansion of the traditional concept of concession which is grounded in interests in tangible, rather than intangible, public assets or property; and, RPEE concessions would need to be granted over broad geographic areas to provide adequately sized markets.

That said, the establishment of public-private RPEE funds along with the enactment of stringent building codes that mandate efficiency upgrades for commercial buildings would provide both a carrot and a stick to building owners. Further incentives for owners include the right to long term energy cost savings upon completion of project payback periods.

<sup>39</sup> Millerman, Elena and Reynolds, David, *US Projects Look to Private Finance*, International Financial Law Review, May 2006.



### **Selected Benefits of the Specialty Efficiency Fund Model**

#### **PUBLIC-PRIVATE PARTNERSHIP WITH ESSENTIAL PUBLIC-SECTOR OVERSIGHT ROLE:**

- **GOVERNMENT RETAINS CONTROL OF EE CONCESSION**
- **GOVERNMENT SETS CONTRACT AND LABOR STANDARDS**

#### **LARGE-SCALE PRIVATE INVESTOR OPPORTUNITY:**

- **SCALE INVESTMENT OPPORTUNITY FOR LARGE PRIVATE INVESTORS/ GUARANTEED SAVINGS LARGE-SCALE INVESTORS ARE ABLE TO LOCK-IN FOR LONG DURATIONS AT LOW FEES**
- **CAPACITY TO LEVERAGE INVESTOR CAPITAL WITHOUT SUBSTANTIAL INCREASED RISK PROJECT TYPE, HOST CATEGORY, AND GEOGRAPHIC DIVERSIFICATION OPPORTUNITIES**

And for investors, RPEE concession-backed funds could provide large investors – in particular institutional investors – a means to commit large investments to energy efficiency, much as large infrastructure funds have attracted institutional investors; and furthermore, open-ended duration strategies common to infrastructure funds could also be offered to attract investors to RPEE, as could variable participation strategies, including the opportunity to co-invest in particular projects rather than commit to full equity shares.<sup>40</sup> Well-capitalized RPEE funds would, in turn, spur the demand for large project contractors, as well as overall growth in the energy efficiency economy<sup>41</sup> [see **Appendix B** for an overview of the Specialist Efficiency Fund (SEF) model.]

<sup>40</sup> See e.g., Chambers, Judy, *Infrastructure Research Report*, Pension Consulting Alliance, June 2007 for an overview of fund strategies.

<sup>41</sup> See e.g. *ibid.*, Choi-Granade, Hannah et al. for an analysis of energy efficiency investment multipliers.



## The Basics: Specialty Efficiency Fund Model

<u>Inputs</u>		<u>Results</u>
<p><i>RPEE CONCESSION/ + GUARANTEED PURCHASE OF ENERGY REDUCTION</i></p>	<p><i>PRIVATE CAPITAL + FUND SHARES/ LOW COST LEVERAGE</i></p>	<p><i>LABOR STANDARDS =</i></p> <p style="text-align: center; margin: 10px 0;">=</p> <p><i>RPEE LARGE PROJECT FINANCING</i></p> <p style="text-align: center; margin: 10px 0;">=</p> <p><i>MAXIMIZED RETURNS</i></p>

## V. Complementary Markets: Monetizing the Attributes of RPEE

Creating residential and commercial Real Property Energy Efficiency investment vehicles that can accommodate the scale and duration requirements of large investors is only one step toward establishing the conditions that will lead to a significant RPEE investment upswing, the other step is the full monetization of RPEE project attributes.

RPEE project attributes with evident market value fall into two general categories: environmental market credits that can be generated through project implementation; and commercial market opportunities that are created through the formalization and standardization of RPEE financing instruments.

Environmental market credits include both tradable greenhouse gas (GHG) emissions reduction offset credits and energy efficiency portfolio standard (EEPS) credits that RPEE projects have the capacity to generate. Commercial market opportunities include both equity and debt market opportunities.

Monetized attributes, of course, provide RPEE projects with revenue streams beyond the core energy efficiency cost savings that projects have historically produced. The availability of these additional – and largely untapped at present – revenue streams offers investors both risk mitigation and return diversification while significantly increasing the worth of RPEE projects beyond traditional valuations – all of which would serve to further distinguish RPEE investments from similar asset categories.

In addition, the adoption of national GHG and EEPS mandates would ultimately increase the price of energy, in particular electricity, and in turn the value of energy efficiency, while simultaneously both equity and debt market opportunities would increase capital available for RPEE investing. In other words, attribute-driven market forces and market mechanisms tend to have a positive effect on the value of energy efficiency and the availability of capital, equally beneficial scenarios for RPEE investors.

These various RPEE project attributes and equity and debt market opportunities would, if fully realized, lead to the emergence of a range of new energy efficiency market participants – from third-party GHG and EE offset credit auditors and certifiers, to specialty financial services companies such as RPEE asset managers that find markets for monetized project attributes and access equity and debt market opportunities. This section explores the impacts of GHG and EE markets on RPEE investing, as well the potential role of equity and debt markets.



### a. GHG Offset Credits

GHG emissions trading systems, or cap and trade systems, have catalyzed significant amounts of private sector investment in energy efficiency projects around the world, and those market forces are now poised to fully impact the United States in the near future. A vital feature of these systems is their use of offset credits to provide regulated entities the option of tapping the market to meet their emissions reduction obligations. This market option works to increase investment flows to GHG projects by inducing offset credit developers to dedicate capital needed to finance credit generating projects. Thus, the inclusion of an offset credit mechanism in cap and trade systems typically broadens liquidity while increasing environmental benefits.

State and regional GHG regulatory systems are now or are set to come into operation in the US, and a national regulatory system is anticipated within the next few years. Each system caps regulated point sources, each is expected to provide those emitters the flexibility to purchase GHG emissions reduction credits to offset their mandated emissions reduction obligations, and each will have specific criteria for the credit certification, although federal criteria will very likely supplant state and regional criteria.

A recent Congressional Budget Office (CBO) analysis projects the US carbon market to exceed \$60B during its first year of operation – 2012 – if climate change legislation recently adopted by the House Energy & Commerce Committee becomes law.<sup>42</sup> Considering that the mostly-European global carbon market exceeded \$120B in 2008, with offset credit transactions exceeding \$30B, the US carbon market might yield in excess of \$12B in offset credit volume with the enactment of a federal cap and trade system.<sup>43</sup>

Credits generated by energy efficiency would be expected to capture a significant percentage of the US offset market. EE projects make up a significant portion of global private investment fund carbon portfolios that hold United Nations-criteria offset credits: roughly 15% of total projects, and more than 10% of total dollar value, according to a recent survey.<sup>44</sup>

Moreover, a separate survey indicates that carbon funds dedicated more than 20% of their investing capacity to energy efficiency in 2008, second only to investments in renewable energy projects.<sup>45</sup> This emphasis on energy efficiency is primarily due to the lost-cost, low-risk aspect of EE projects, and these global trends would very likely repeat themselves in a growing US carbon market. Thus, a US carbon market that is projected to exceed \$60B annually with more than \$12B in offset trading would likely spawn more than \$2B in yearly EE offset credits.

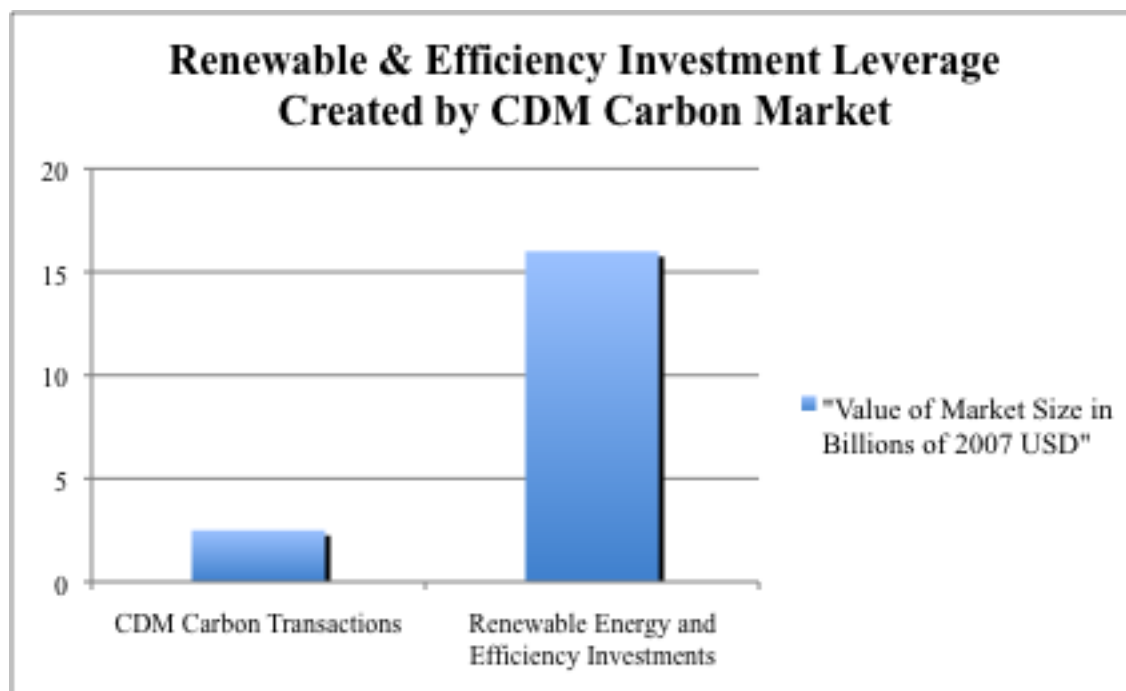
<sup>42</sup> Congressional Budget Office, *Cost Estimate For H.R. 2454, the American Clean Energy and Security Act of 2009*, US Congress Congressional Budget Office, June 2009.

<sup>43</sup> Roine, Kjetle et al. editors, *Carbon Market Monitor 2009: A Review of 2008*, Point Carbon [available at [pointcarbon.com/research](http://pointcarbon.com/research)], 2009.

<sup>44</sup> Cochran, Ian and Leguet, Bernard, *Carbon Investment Funds: The Influx of Private Capital*, Mission Climat Caisse des Depots, 2007.

<sup>45</sup> Kozlecka, Nina and Paulou, Julien, *Carbon Funds Outlook*, ICF International, January 2009 [quoting a survey of 84 global carbon funds].





*Source: World Bank Group 2007 [CDM: United Nations approved GHG credit]*

Maximizing RPEE investment will require that carbon credits for RPEE projects under a nationwide cap and trade system be clearly defined.. The World Bank has historically excluded GHG reduction projects that make economic sense because they would have happened without the carbon credit, based on the notion that to earn credits, projects need to be “in addition” to those that would have occurred without a carbon market. Thus, blindly replicating the World Bank CDM formulation of “*additionality*” would have the result of excluding projects that make sense from a business standpoint and/or those that produce revenue beyond the credit itself – effectively prohibiting carbon credits from most, if not all, profitable RPEE projects. Furthermore, the rules for a national cap and trade system would need to settle the debate over whether project initiators and financiers or electricity generators should be awarded *ownership* of GHG credits produced by RPEE projects, given that offset ownership is paramount to inducing project capital inflows.

Offset developers would also need the right to hold credits produced before US GHG cap and trade systems come online for eventual use when systems do become active, a practice known as *banking*, in order to encourage immediate-term project investment. And *banking* rights should be broad enough to allow the use of banked credits under multiple systems.

If the overarching goal of policymakers is to significantly increase energy efficiency, then efforts should be made to craft a cap and trade system that clarifies these issues and spawns the greatest number of EE projects as quickly as possible. And if incenting private capital and institutional investor involvement in EE is also a priority goal, then efforts should be made to create the largest most liquid carbon market possible. Crafting formulations of *additionality*, *ownership*, and *banking*, along with creating incentives for aggregating offsets to achieve economies of scale, are all important to triggering EE projects and enhancing US carbon market



liquidity. Perhaps the most valuable lesson to be drawn from Europe's GHG emissions trading system is that private capital and institutional investors responded early to its potential for scale and liquidity and funneled investment into offsets at its outset.

## **b. Energy Efficiency Credits**

Renewable energy investing in the US has benefitted greatly from Renewable Energy Credit (REC) markets. At their most basic, Rocs certify that electricity has been generated from a renewable fuel. Standardized certification criteria are employed so that Rocs are uniform nationwide and can be traded for compliance purposes in participating states. Compliance mandates – Renewable Portfolio Standards (RPS) – require power generators to hold a specified percentage of Rocs either by producing them or acquiring them in the open market.<sup>46</sup>

There have been attempts to duplicate the REC approach with energy efficiency, such as Nevada's White Tags program, which involves the certification of EE projects in credit form.<sup>47</sup> Like Rocs, White Tags are denominated in kilowatt hours; however, their limited marketability reflects perhaps both a bias toward renewable energy and an undervaluing of energy efficiency. Combining REC and EE Credit markets might solve both issues. However, integrating the markets would surely create unwanted competition between the credit forms.

Mandating Energy Efficiency Resource Standards (EERS) for power generators would serve to spur a market for EE Credits without creating direct competition with Rocs, and in fact would ultimately complement renewable portfolios in key ways. That is, energy efficiency does not require the long-term public subsidies that renewable fuel development has and will continue to require; and furthermore, EE Credits represent power not sent over the grids, which works to relieve overextended grids, unlike Rocs.

EE Credits would also complement GHG offset credits in that each denotes a distinct, yet equally value-laden, attribute: EE Credits represent kilowatts saved, while GHG offsets represent tons of carbon equivalent reduced. Conceptually, EE Credits could be monetized in smaller value segments and therefore generated from a wider scope of projects that GHG offsets – especially in the small business and residential sectors – but because it is clearly possible to generate both types of credits from the same project, Energy Efficiency and Greenhouse Gas emissions offset credits should be treated as complementary and not exclusionary in order to encourage the most liquid market possible for both.

Moreover, RPS mandates, especially those with rising compliance targets serve to raise the cost of energy – assuming that renewable sources continue to be relatively more expensive than traditional sources – which in turn increases the cost-effectiveness of energy efficiency.<sup>48</sup> Thus,

<sup>46</sup> See e.g. Wiser, Ryan and Barbosa, Galen, *Renewable Portfolio Standards in the US*, Lawrence Berkeley National Laboratory, April 2007 for an overview of RPS approaches across the US.

<sup>47</sup> See e.g., Nadel, Steve, *Energy Efficiency Resource Standards: Experience and Recommendations*, American Council for an Energy Efficient Economy, March 2009 for an overview of EEPS across the US.

<sup>48</sup> Mahone, A., *Renewable Portfolio Standards and Cost-Effective Energy Efficiency Investment*, Energy and Environmental Economics, Inc., 2008.



a mandated EERS in conjunction with a mandatory RPS would work to offset the expense of renewable energy while simultaneously making RPEE investments higher yielding and generally more attractive.

Unfortunately, the climate change legislation recently adopted by the House Energy & Commerce Committee groups renewable energy and energy efficiency into the same national standard.<sup>49</sup> Allocating a separate national mandate to energy efficiency is imperative, given that EE is distinct from renewable energy in both substance and value.

### **c. Equity Markets**

Both private and public equity markets have substantially aided the development of alternative energy resources in the US – the private equity market mainly through specialty fund vehicles; the public markets largely through direct investment in companies or indices. By contrast, concession-based infrastructure development has come mainly through the private equity market rather than through public markets – primarily due to the fact that infrastructure development is project-driven, as opposed to new technology-driven.

Unlike other forms of alternative energy, the technology required to implement effective RPEE has been developed; in addition, RPEE does not entail large blocks of investment in single projects, as is typically the case with infrastructure projects. That is, RPEE is an alternative energy resource that as an investment does not involve the uncertainty of new technology development, and a project-driven proposition that does not require betting large sums on single projects, but has the capacity to rollover projects for stable returns over long periods.

For those reasons, and because RPEE projects have the capacity to generate GHG and EE credit revenues, a concession-based RPEE fund would represent a new and distinct asset category for private equity investors, in particular large investors seeking to diversify their portfolios away from standard alternative energy and infrastructure investments. To that extent, a RPEE fund would combine two prominent asset categories, while potentially providing consistent periodic revenues to investors.

The most common large-scale private equity investment fund – the limited partnership private equity fund – is an investment vehicle typically used to fund concession-based infrastructure projects, which makes it a potentially effective model for a RPEE fund. Limited partnership private equity funds generally require lock-up periods of ten years or more during which investors usually cannot extract funds – at the end of the lock-up period investors recoup their investment and receive a premium.

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<sup>49</sup> H.R. 2454, the American Clean Energy and Security Act of 2009, as approved by the US House Energy & Commerce Committee on May 18, 2009, can be accessed at [energycommerce.house.gov/index](http://energycommerce.house.gov/index) [in addition, the Senate Energy & Natural Resources Committee approved The American Clean Energy Leadership Act on June 17, 2009 with a similar grouping together of Renewable and Energy Efficiency standards].



Large institutional investors typically seek large-scale, long-duration investment vehicles that match their future payout obligations while minimizing transaction costs; as a result, the limited partnership private equity fund has become a popular equity market instrument for large institutions. Alternative energy and infrastructure funds have been especially attractive to large institutional investors, in that those funds commonly meet institutional scale and duration requirements at acceptable risk levels.

RPEE funds, such as the Specialty Efficiency Fund model described in Section IV of this paper, would also have the capacity to meet institutional scale and duration requirements, while potentially providing investment energy cost savings and offset credit revenues rather than end-of investment revenue only. Moreover, the uncertainty of technology and infrastructure development has been shown to have a negative effect on investor portfolio risk by some measures, while funds with regulatory-based revenue, such as offsets credits are less risky.<sup>50</sup>

A private equity RPEE fund would also be a mission compatible investment for many large institutional investors – those that seek investments that provide social benefits along with adequate returns.<sup>51</sup> Furthermore, a concession-base RPEE fund that is established as a result of a public-private partnership, such as the Specialty Efficiency Fund model, would be ideally suited to provide a level of liquidity and transparency governance that most private equity funds do not currently provide.

That is, most private equity funds, even those based on government concessions, prohibit investors from liquidating/selling fund shares, and in many cases do not provide investors with regular, detailed investment strategy information. And yet, both granting the right to sell fund shares in a secondary equity market and allowing a degree of transparency have been known to increase the attractiveness of funds to potential investors, and to motivate fund managers to produce solid returns over the life of the fund, rather than gamble for a big, end of term payoff.<sup>52</sup>

Large institutional investors have increasingly come to view liquidity and transparency governance as part of their private equity investing-associated fiduciary responsibility, especially in the aftermath of the US housing finance market meltdown which left many institutions unable to extricate positions in illiquid and opaque investment funds. A recent survey, in fact, indicates that a slight majority of large institutional investors are willing to temper private equity returns expectations in exchange for enhanced transparency protections.<sup>53</sup>

Private equity RPEE funds supported by government EE concessions should serve as a model for progressive liquidity and transparency measures. Doing so would increase RPEE fund

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<sup>50</sup> Newell, Graeme and Hsu, Wen Peng, *Role of US Infrastructure in Investment Portfolios*, Journal of Real Estate Management, Jan.-Mar. 2008 Vol. 14, Iss. 1.

<sup>51</sup> See e.g., Cumming, Douglas and Johan, Sofia, *Socially Responsible Institutional Investment in Private Equity*, Journal of Business Ethics, 2007 for an overview of institutional investment in socially responsibly private equity.

<sup>52</sup> See e.g., Schack, Justin, *Sweet Liquidity*, Institutional Investor, May 2001 for an overview of private equity fund features that are valued by institutional investors.

<sup>53</sup> Scott, Jeremy/Global Financial Services Leadership Team, *Transparency Versus Returns: The Institutional Investor View of Alternative Assets*, PricewaterhouseCoopers, March 2008.



attractiveness to institutional investors, and would also provide access to RPEE funds to some investors through the secondary private equity market.

#### **d. Debt Market**

An additional characteristic of clean energy and infrastructure private equity funds is their capacity to leverage capital through debt, often as a direct result of a partnership or seed funding relationship with a public sector entity. Traditional Energy Service Company (ESCO) RPEE projects are based on leverage, using government agency partnership status to acquire low interest rates – fund-level leveraging, rather than project-level leveraging, would similarly boost RPEE investment capital.

A leveraged public-private RPEE investment fund would thus finance projects through a combination of its paid-in equity and its acquired debt, and as long as the price of debt is appreciably lower than project internal rates-of-return, and expected project revenues remain low risk, the fund could follow an assertive debt-to-equity ratio – 50:50, or more – to finance its projects. This positive leverage approach in essence works to provide investors enhanced returns without substantially greater risk – a solid incentive for large investors.

Public-private RPEE investment vehicles, whether private equity funds or some other form, would likely have limits on their leverage ranges and ratios that are statutorily-imposed; however, RPEE funds would be well suited to take advantage of an additional debt market mechanism – the securitization of the energy services contracts the fund enters into. In brief, the pooling or securitization and resale of contracts is considered a sale of assets, which permits the to raise further capital while reducing leverage ratios.

The securitization of energy savings contracts is in current practice – the *Economist* reported in 2007 that a leading US ESCO, Hannon Armstrong, had cumulatively securitized approximately \$1.5B of its deals. Federal Energy Savings Performance Contracts/Shared Energy Savings Contracts typical to Federal agency/ESCO deals provide the sort of standardization necessary for the pooling of contracts, and ensure the relatively low-risk return flows that offer the necessary return predictability.

Widespread securitization of energy services contracts, rather than the extremely limited securitization that exists today, would require Federal involvement in the standardization of contracts, the promulgating of underwriting terms, the insuring of securities, and the providing of market liquidity.

Leverage and securitization could play a vital role in expanding RPEE financing, as it did for decades in the housing market without negative consequences. Public-private partnership structures that serve to leverage limited public and private funds, and expanded government backing for standardized RPEE contracts are a means to spur securitization. Furthermore, because RPEE projects have the capacity to generate secondary attributes – GHG offsets and EE Credits – with revenue streams to supplement energy cost savings, RPEE securities can be created with layers that could be stripped off and sold to raise additional capital. This would in



turn create substantial new sources of RPEE investment.

### **Market Forces and Market Mechanisms that Incent RPEE Investing**

#### **Policy Driven Market Forces That Increase the Value of RPEE:**

- ENACTMENT OF GHG 'CAP & TRADE' SYSTEMS
- ADOPTION OF NATIONAL EEPS STANDARDS/MANDATES
- EXTENSION OF RPS STANDARDS/MANDATES
- ALLOWING RPEE PROJECTS TO GENERATE BOTH GHG & EE CREDITS

#### **Policy Driven Market Mechanisms That Increase the Value of RPEE:**

- PRIVATE EQUITY FUND LIQUIDITY/TRANSPARENCY MEASURES
- SECURITIZATION OF RPEE FINANCING INSTRUMENTS



## VI. Conclusion/Policy Recommendations

Energy Efficiency (EE) has been called the nation's greatest untapped natural resource.

Unfortunately, energy efficiency is generally not considered to be a natural resource in the US, which is one reason that it has remained largely unexploited. Similarly, ***EE is typically not understood as an investment opportunity, despite its proven capacity to deliver returns.*** As a result, both public and private sector investment in energy efficiency has lagged well behind investment in other energy resources.

Furthermore, ***energy efficiency is usually not considered within the context of the full range of societal benefits it confers*** – its potential impact on the overall efficiency of the nation's economy is greatly undervalued or overlooked for example, as well as its positive environmental, employment, and investment impacts. Public policy measures geared to promote other forms of alternative energy have, in fact, often worked to diminish the importance of energy efficiency and even dissuade investment in energy efficiency.

Low levels of energy efficiency investment in the United States can therefore be regarded as a policy failure that desperately needs to be addressed by a mobilization of public resources and incentives – and it can also be viewed as a market failure that should be corrected with appropriate levels of private investment. Moving forward with ***a combination of public policies and market forces will ultimately be needed to overcome the nation's EE investment deficiency***, and those policies and markets will need to work in tandem.

Perhaps ***no sector within EE offers greater potential for beneficial policy and market synergies than the Real Property (RP) sector*** – which includes new and existing residential, commercial, governmental, medical, and comparable structures. RPEE investments typically yield solid low-risk returns derived from cost savings that occur with more efficient energy usage, and it has traditionally brought about a number of corollary benefits such as job creation, natural resource conservation, diminished ambient emissions, and accelerated technology development.

RPEE is a vastly ***underserved market due to several key financial and economic barriers that serve to restrict the participation of private investors***, especially large-scale investors. At the core of the problem is a lack of adequate public sector mechanisms and policy incentives to overcome those barriers and attract large-scale private investment.

New policy approaches are therefore needed. Approaches that ***generate opportunities for private investors to commit substantial funds to RPEE***, and that spur the development of vibrant markets for RPEE project attributes, reward building owner/project host participation in RPEE programs, and enhance the employment and environmental corollary benefits of RPEE.

Moreover, these ***policy approaches should work to catalyze the emergence of essential new participants in RPEE*** – for example, green asset managers that can direct private funds to RPEE, and also monetize project attributes such as greenhouse gas (GHG) and energy



efficiency (EE) credits, develop leverage strategies, and administer tax and depreciation incentives.

Fundamentally, *large-scale private sector investment is necessary to meet the estimated \$500B investment in RPEE required over the next ten years in the US*, given current public sector budget limitations. Simultaneously, new scalable investment vehicles are required to allow large private investors, especially institutional investors, to participate in RPEE investing.

In other words, existing policy and market dynamics should be transformed to incent large-scale private investment in RPEE.

That transformation should be innovative and multifaceted, and should stimulate entrepreneurship and, employment; therefore, the following policies are recommended:

#### **a. Enact New Public-Private Partnership Structures That Will Facilitate Large-Scale Private Sector Investment in RPEE**

Public-Private Partnerships (PPP's) have increasingly been used by governments at all levels to incent the participation of the private sector in fulfilling public mandates. At present, PPP's have perhaps never been as necessary to the public sector, or as attractive to the private sector: public budgets are ever more stretched, and large mission-based institutional investors in particular have progressively moved out of high-risk ventures in search of predictable returns that synchronize with their long-term obligations.

For the most part, the PPP model has not been used for financing RPEE, especially not with the main objective of attracting large-scale private investment to finance projects. Furthermore, the features of the residential, or small project, RPEE market are sufficiently different than those of the commercial, or large project, market to necessitate distinct PPP approaches for each. In particular, the residential market requires aggregating entities that can work across municipal jurisdictions and electric utility customer bases. The commercial market requires strongly capitalized and strategically leveraged funds that can supply the private capital required to fully utilize the public incentives that have been developed and that are being put in place.

##### ***1) Adapt the Public Benefit Corporation Structure to Achieve Residential/Small Project Aggregation and Scale For Large Private Investors***

Public Benefit Corporations (PBCs) are a type of Public-Private Partnership structure that has successfully matched specific public policy goals with private resources. PBCs, in particular, have been active in linking financing sources to energy efficiency projects as well as directing capital to clean technology entrepreneurs.



PBCs can be authorized to issue tax-exempt debt on behalf of private actors that is not subject to statutory caps placed on government-issued private activity bonds and other forms of public capital raising. Debt raised by PBCs, is therefore generally be low cost and low risk, and yet could be sufficiently large in scale to form a capital base attractive to private equity partners.

Furthermore, PBC's can be constituted to take on private investment partners that supply seed and operational capital in exchange for statutorily-fixed returns. That is, private investors would augment PBC debt capital through the purchase of equity shares in the corporation for fixed durations and set rates of return.

Some existing PBC's do have EE as a stated public benefit purpose and at least one PBC – the New York State Energy Research and Development Authority (NYSERDA) – has successfully initiated residential energy efficiency programs. It is also involved in RPEE green collar workforce training programs and local RPEE contractor certification programs.

Nonetheless, no current PBC was specifically established to attract large-scale private investment to RPEE. Replicating aspects of the existing NYSERDA structure, and adding extensive bond issuance, private partnering, project financing, and project aggregation authority could be an effective approach to meet the requirements of the residential RPEE market.

Under this scenario, a RPEE PBC would have the capacity to provide a variety of upgrade programs using multiple financing techniques to a range of customer types over a wide geographic region. Projects initiated by the PBC could then be aggregated to provide large investors stable, well-diversified returns at an appropriate scale. Marketable project attributes, such as project-generated GHG and EE offset credits could also be aggregated and sold to enhance revenue streams. Furthermore, green job training and local RPEE contractor certification programs would be sponsored by a PBC, thereby incentivizing the emergence of new RPEE market participants.

That said, most states have yet to even enact Public-Private Partnership statutes, let alone statutes that provide for the creation of PBC's. Furthermore, limits are generally placed on the amount of private equity capital that is permitted to fund a PBC, as well as the rate of return private investors are permitted to realize.

Thus, state statutes specifically authorizing energy efficiency public-private partnerships, Public Benefit Corporation partnerships in particular, should be enacted. Moreover, those *statutes should allow for expansive private investor partnering, including setting statutory rate-of-return levels at 10% or greater*, while also ensuring that local labor, contractors, and RPEE market entrepreneurs have access to the resources necessary to create self-sustaining local energy efficiency economies.



## 2) *Adopt Energy Efficiency Concessions to Incent Commercial/Large Project Private Equity Funds For Large Private Investors*

Incenting large-scale private investment in commercial/large project RPEE requires creating the capacity for institutional investors to maximize returns through conventional investment funds. An investment fund that draws on aspects of a standard concession-based private equity infrastructure fund would be an appropriate model.

Public-private infrastructure funds are frequently capitalized based on the grant of a public concession to a private party. Furthermore, that concession could be in the form of a management contract for the distribution of power, which stipulates an amount of energy to be delivered by the private partner to the public entity.

An energy reduction or RPEE concession could be implemented in a manner similar to a typical energy production concession: the energy efficiency provider would be compensated for providing a set level of energy savings, rather than power production, to a public sector partner. Instead of being paid in currency, however, the EE provider would be compensated through project host energy cost savings – this modification of the traditional power pay-go contract would guarantee the provider a rate of return if preset energy reductions are achieved.

Governments granting RPEE concessions would be able to safeguard the public's interest by setting the parameters of the fund's activities, including mandating labor standards, managing the concession bid process, selecting fund managers, developing fund governance rules, and devising risk management procedures and project qualification guidelines. RPEE concession fund managers would manage the investment of private sector partners, monetize project attributes, develop leverage strategies, and administer tax and depreciation incentives.

RPEE concessions, of course, would require a sizable shift in the way energy efficiency is viewed by governments – a shift from the view that energy efficiency is a convenient benefit to a view that it is an absolute necessity. However, energy efficiency should be considered a resource that is the conceptual equivalent of energy production.

This shift would also entail an expansion of the traditional concept of a concession which is grounded on interests in tangible rather than intangible public assets or public property. However, governments have long granted energy production concessions, and so an energy reduction concession is essentially nothing more than a natural progression.

The emergence of RPEE concession-based private equity funds would require a new generation of state-level public concession statutes that both establish energy efficiency as a necessary public asset, similar to power production or public infrastructure, and set the parameters for government oversight and investor participation.

Those new *statutes should provide fund managers the capacity to maximize private partner investment return*, as well broad flexibility to set leverage strategies. In addition, they should work to catalyze the emergence of entrepreneurial participants in the RPEE market, as well as vibrant markets for RPEE project attributes.



## **b. Create Vibrant Complementary Markets For RPEE Project Attributes That Will Generate Supplementary Project Revenue Streams**

RPEE project attributes with evident market value fall into two general categories: environmental market credits that can be generated through project implementation; and commercial market opportunities that are created through the formalization and standardization of RPEE financing instruments.

Environmental market credits include both tradable greenhouse gas (GHG) emissions reduction offset credits and energy efficiency portfolio standard (EEPS) credits that RPEE projects have the capacity to generate. Commercial market opportunities include both equity and debt market opportunities.

Monetized attributes provide RPEE projects with revenue streams beyond the core energy efficiency cost savings that projects have historically produced. The availability of these additional – and largely untapped at present – revenue streams offers investors both risk mitigation and return diversification while significantly increasing the worth of RPEE projects.

Attribute-driven market forces and market mechanisms tend to have a positive effect on the value of energy efficiency and capital availability; for example, national GHG and EEPS mandates would ultimately increase the value of energy efficiency investments. Equity and debt market measures, in turn, would work to increase capital available for RPEE investing.

### ***1) Establish National GHG and EEPS Systems That Allow Extensive RPEE Generated Offset Credits and Avoid Conflicts With Renewable Energy Mandates***

If the overarching goal of policymakers is to significantly increase energy efficiency, then efforts should be made to craft a national GHG cap and trade system that spawns the greatest number of GHG and EE offset credit-generating projects as quickly as possible. And if incenting private investor involvement in RPEE is also a priority goal, then efforts should be made to create the largest most liquid carbon market possible – with favorable project economic *additionally*, and offset credit *banking* formulations so that both residential and commercial scale energy efficiency project financiers are able to enhance project revenue streams by generating marketable greenhouse gas emissions reduction offset credits.

Mandating Energy Efficiency Resource Standards (EERS) for power generators would serve to spur a market for EE Credits without creating direct competition with RECs, and in fact would ultimately complement renewable portfolios in key ways. That is, energy efficiency does not require the long-term public subsidies that renewable fuel development has and will continue to require; and furthermore, EE Credits represent power not sent over the grids, which works to relieve overextended grids, unlike RECs.



EE Credits would also complement GHG offsets in that each denotes a distinct attribute: EE Credits represent kilowatts saved, and GHG offsets represent tons of carbon equivalent reduced. Conceptually, EE Credits could be generated from a wider scope of projects than GHG offsets – especially in the small business and residential sectors – but because it will be possible to generate both types of credits from the same project, credits should be treated as complementary and not exclusionary in order to create the most liquid market possible for both.

Moreover, RPS mandates, especially those with rising compliance targets serve to raise the cost of energy – assuming that renewable sources continue to be relatively more expensive than traditional sources – which in turn increases the cost-effectiveness of energy efficiency. Thus, a mandated EERS in conjunction with a mandatory RPS would work to offset the expense of renewable energy while simultaneously making RPEE investments higher yielding and generally more attractive.

## ***2) Incent Market Mechanisms that Increase Institutional Investor Participation in RPEE Through Private Equity Markets and Debt Securitization Markets***

The most common large-scale private equity investment fund – the limited partnership private equity fund – is an investment vehicle typically used to fund concession-based infrastructure projects, which makes it a potentially effective model for a RPEE fund. Limited partnership private equity funds generally require lock-up periods of ten years or more during which investors usually cannot extract funds – at the end of the lock-up period investors recoup their investment and receive a premium.

Large institutional investors typically seek large-scale, long-duration investment vehicles that match their future payout obligations while minimizing transaction costs; as a result, the limited partnership private equity fund has become a popular equity market instrument for large institutions. Alternative energy and infrastructure funds have been especially attractive to large institutional investors, in that those funds commonly meet institutional scale and duration requirements at acceptable risk levels.

Large institutional investors have increasingly come to view liquidity and transparency governance as part of their private equity investing-associated fiduciary responsibility, especially in the aftermath of the US housing finance market meltdown which left many institutions unable to extricate positions in illiquid and opaque investment funds.

Private equity RPEE funds supported by government EE concessions should serve as a model for progressive liquidity and transparency measures. Doing so would increase RPEE fund attractiveness to institutional investors, and would also provide access to RPEE funds to some investors through the secondary private equity market.

Furthermore, well-leveraged public-private RPEE investment funds could finance projects through a combination of its paid-in equity and its acquired debt, and as long as the price of debt



is appreciably lower than project internal rates-of-return, funds could follow an assertive debt-to-equity ratio – 50:50, or more – to finance projects. This leverage approach works to provide investors enhanced returns without substantially greater risk.

Leverage and securitization could play a vital role in expanding RPEE financing, as it did for decades in the housing market without negative consequences. Public-private partnership structures that serve to lever limited public and private funds, and expanded government backing for standardized RPEE contracts are a means to spur securitization. Furthermore, because RPEE projects have the capacity to generate secondary attributes – GHG offsets and EE Credits – with revenue streams to supplement energy cost savings, RPEE securities can be created with layers that could be stripped off and sold to raise additional capital. This would in turn create substantial new sources of RPEE investment.

Widespread securitization of energy services contracts, rather than the extremely limited securitization that exists today, would require Federal involvement in the standardization of contracts, the promulgating of underwriting terms, the insuring of securities, and the providing of market liquidity.

A Federal Green Bank that would back energy efficiency contract securitization by promulgating standardized contractual terms for qualified projects, and that would ensure securitization market liquidity through the issuance of specialty bonds, has been proposed in Congress. That proposal, or the generally similar Clean Energy Development Agency proposal that has been included in the US House H.R. 2454, the American Clean Energy and Security Act of 2009, should be enacted.

### **c. Provide Public Sector Incentives to Building Owners/ Project Hosts that Reward RPEE Program Participation**

New public-private RPEE investment vehicles and complementary markets for RPEE project attributes would together provide strong incentives to potential investors, and yet those incentives would have limited impact if building owners lack similar motivation. Governments have offered building owners EE equipment purchase rebate programs, tax credits, accelerated equipment depreciation schedules, and other enticements beyond the traditional project financing programs with slight results.

Extending and enhancing these enticements is important – in particular through energy and climate change legislation currently under consideration in Congress.

#### ***1) Push Building Owners/ Project Hosts into RPEE Financing Programs by Upgrading Building Codes and Requiring Resale Performance Certificates***

Considerable attention in Congress has recently focused on the proposed establishment of net-zero emissions standards for new buildings, and similar aggressive new building energy



efficiency codes. On the whole, aggressive building codes have been successful – California’s code has been credited with more than \$30B in energy cost savings over its 30+ year existence.

Building codes have generally targeted new construction, although California’s code does include some types of home remodeling, building rehabilitation and commercial space renovation. In light of the lack of new building activity, an aggressive national standard that focuses on existing structures is recommended

Mandating a national building standard similar to the California standard that includes not only new but covers all existing buildings should be the goal. Furthermore, linking those standards with a mandatory energy usage disclosure at the point of building ownership change or transfer would push owners to make EE upgrades or risk diminishing the market value of their building.

The cities of New York and Seattle are both considering mandatory energy audits and historical energy usage disclosure requirements for commercial and residential buildings at the time of sale, with the intent of encouraging building owners to pursue energy audits and efficiency upgrades when ownership is transferred.

Mandated disclosure of real property utility costs at the time of sale will empower market participants to use real energy cost information as an integral part of valuing properties at the time of sale. Given that some buildings use more energy than others, buyers would be able to make decisions about purchases based on absolute, or current dollar, energy cost information. By requiring historic (e.g. previous 12 months) energy usage disclosure at the time of sale, buyers will be able to ascertain whether similar properties are distinguished by their energy footprint and resulting operating costs.

Furthermore, the greater than \$500 billion worth of property transactions that occur each year in the US will drive the inclusion of energy information in property valuations by real estate assessors, as well as banks and similar market participants. The expense of providing this information will be relatively low since almost all commercial and residential buildings are served by public utilities, which can be compelled to provide such information based upon the public benefits of the energy efficiency upgrades.

Energy Performance Certificates that indicate a structure’s energy efficiency performance have become, or are slated to become, national policy in several European countries. Certificates must be presented to potential buyers when a building is put up for sale, and may favorably or unfavorably affect a building’s market value.

Certificates have been criticized in some circles for their potentially negative impact on real estate market liquidity. However, they generally work in tandem with energy efficiency building codes to establish the valid real property values; therefore, Federal energy efficiency building codes should include building resale provisions.

Work required to upgrade a property to a national energy efficiency standard would be easily ascertained by reviewing building performance certificates at the time of sale. These certificates would indicate a particular building’s level of energy efficiency relative to



similar buildings in a given geographic region.

Combining energy usage and cost disclosure via a national Performance Certificate program with the sort of point of sale energy audit, as the cities of New York and Seattle are currently considering, would serve to alert building owners to the vital importance of energy efficiency. And it would also drive new investment in RPEE when buildings are being sold.

## ***2) Pull Building Owners/Project Hosts into RPEE Financing Programs By Enhancing and Creating Incentive Programs***

The rapid growth of renewable energy resource in US is partly due to the many state level incentives tax credit programs as well as favorable Federal tax treatment of renewable investments. As a matter of national policy, RPEE should be afforded equal treatment with renewable energy resources.

RPEE involves multiple technologies; therefore, expanding RPEE investing will require clarification that project developers can treat as a depreciable asset any asset whose application reduces energy usage. This progressive treatment has been proposed in Congress, notably in the context of current energy legislation, and should be enacted.

An additional incentive approach that has been discussed on the state-level is the rewarding of RPEE program completion with publicly-subsidized energy efficiency electricity rate premiums. These types of rate premiums have typically been proposed in the context of utility administered demand-side management programs.

Rate-payer premiums have been criticized as regressive in nature – impacting poorer customers who do not have access to, or the capacity to participate in, programs that wealthier customers utilize. Yet, poorer customers can be assisted in ways that complement RPEE customers; therefore rate-payer premium programs should be considered.

### **d. Develop a Skilled and Sustainable “Green Collar” Workforce Through Public Funds and Public-Private Agreements**

Real property energy efficiency investing contributes greatly to the national effort to develop a green sector workforce, one that maintains an adequate number of workers in skill areas essential to a vibrant 21<sup>st</sup> Century economy. An estimated 100,000 on-site jobs are created with every \$10B invested in real property energy efficiency, with thousands of additional ancillary jobs created as well, and yet the current trained RPEE workforce only about 10% of what it will need to be for the US to meet a goal of a 20% reduction in energy intensity by 2030.

Thus, workforce development must be integrated into both public and private real property energy efficiency efforts. Funds should be directed toward training both entry level and incumbent workers to conduct energy audits and energy efficiency upgrades, including renewable energy system installation. Preference must be given to contractors that hire apprentices and local green job training program graduates. Large-scale RPEE programs must



also include initiatives that connect disadvantaged populations with jobs through pre-apprenticeship, job readiness and community-based bridge programs.

### ***1) Commit Direct and Indirect Public Funds to RPEE Workforce Development***

Many Federal grant programs, including Energy Efficiency and Conservation Block Grants, the Weatherization Assistance Program, and the State Energy Program allow for a percentage of funds to be applied to relevant training efforts. Furthermore, RPEE public-private partnerships, such as Public Benefit Corporations, established under state law should be required to support job training programs by funding training agencies or programs.

Municipalities implementing RPEE programs should maximize these funding opportunities and combine them with existing Federal and state training resources.

### ***2) Require Public-Private RPEE Investment Funds to Respect Labor Agreements***

Public-private RPEE investment funds should be required to fulfill wage and benefit obligations, including the payment of ‘prevailing wages’ following Department of Labor wage classifications. The American Recovery and Reinvestment Act requirement that laborers and mechanics employed on construction and renovation projects funded under the act be covered by Davis-Bacon Act standards – similar, in fact to many state law requirements – should be extended to public-private concession-based RPEE investment funds.

Project Labor Agreements (PLA’s) – comprehensive pre-hire collective bargaining agreements between unions, governments, project owners, and contractors – should pertain to public-private partnerships, including, to the greatest extent possible, public-private RPEE investment funds. Under a PLA, contractors are required to make exact bids for labor – including wages, benefits, and workers’ compensation rates. The ultimate result of this sort of bid process is the establishment common labor rules across all trades and crafts. Additional PLA requirements, such as prevailing wage standards, local hiring, apprentice hiring, first source hiring, and union hiring should all be respected, as well.

Best Value Contracting (BVC) – a method for project owners and governments to solicit bids for project design, construction, and management – should be followed by public-private RPEE investment funds. Under a BVC approach, winning bids reflect the best value both in terms of project costs and bidder qualifications: BVC proposal requests (RFP’s) include extensive bidder qualifications specifications – ranging from safety records to contractor certification – and those qualifications determine the winning bid.

Many states and cities already use Best Value Contracting approaches, usually through statutory requirements. The BVC approach, along with similar qualification standards for RPEE contractors, should be extended to public-private partnerships, including, to the greatest extent possible, public-private RPEE investment fund statutes.

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## The Recommended Way Forward For Institutional Investors:

### Allocate 1% to Real Property Energy Efficiency Investment

Progressive private and pension fund investors should begin to make discretionary capital allocations to funds targeting the deployment of measures to increase real property energy efficiency. By beginning with even a relatively modest allocation, pension plan sponsors, private equity investor principals, and their consultants can gain experience in the field and generate the internal expertise required to put more money to work in an alternative asset class that has the potential to grow as large as traditional centralized infrastructure investments.

These investments will offer a different risk reward profile than existing institutional allocations to venture capital and real estate. Unlike venture capital, the risk of failure with individual investments will be much lower and a majority of the investments will generate profits. In contrast to existing real estate applications, RPEE investments can earn positive returns even when real estate prices are not going up since the returns can be linked to energy as opposed to property value. These countercyclical features of RPEE investments make them particularly attractive to investors that have significant exposure to the high-risk clean tech and overextended real estate property markets today.

New specialized funds and businesses focused on retrofitting existing buildings are required to complement the green real estate and traditional infrastructure investments already being made by institutional investors. Existing buildings – as distinct from new buildings and developments that are the focus of most green real estate funds offered today—constitute the lion’s share of the opportunity for innovative new funds and businesses that have the capacity to capture the cost savings and other ancillary benefits such as greenhouse gas emission credits that can be generated from RPEE investments.

Institutional investors can expect these funds to offer higher returns than their domestic fixed income investments with somewhat lower expected returns and significantly lower risks than their clean tech venture capital investments. From a return perspective, they may be viewed similarly to other types of infrastructure, with some elements of absolute returns embedded into the investment in a way that equity markets cannot match.

### Benefit Comparison for Alternative Energy Investments

Asset Class	Energy Efficiency	Venture	Infrastructure	Private Equity
Return Range	10-25%	0-100%	5-20%	0-50%
US employment	Yes	Some	Some	Some
Absolute return	Yes	No	Yes	No
Environmental benefits	Yes	Some	some	No

The ancillary benefits of these investments: cash flow, energy security, environment, and employment, are not directly part of the investment profile but can contribute to the overall



economic health of the US by reducing overhead and improving the energy budget of both small businesses and private households. And on a global level, US institutional investments in RPEE will demonstrate concretely that US investors are acting on their climate change ambitions and channeling their investment capital into solutions that cost-effectively reduce the GHG intensity of the US economy while generating returns.

Because most businesses view energy as a non-core function that is a source of costs rather than a source of value, RPEE funds provide a means to improve the economic competitiveness of many businesses by reducing their overhead requirements and thus contributing to their cash flow.

In addition, Taft-Hartley plan managers and social investors should consider making RPEE investment allocations to help spur an industry that has great potential to stimulate green job creation. RPEE investment would meet both mission-based reasons for acting early, and produce positive returns that are competitive with other return opportunities.

Because of these financial, countercyclical risk, and ancillary attribute features of RPEE investing, it is appropriate for so-called perpetual investors as well as private equity funds seeking new opportunities for superior risk adjusted returns to set targets and open their internal review processes to new RPEE funds and opportunities.



## APPENDIX A: THE “COMMUNITY AGGREGATOR PARTNERSHIP” [CAP] MODEL

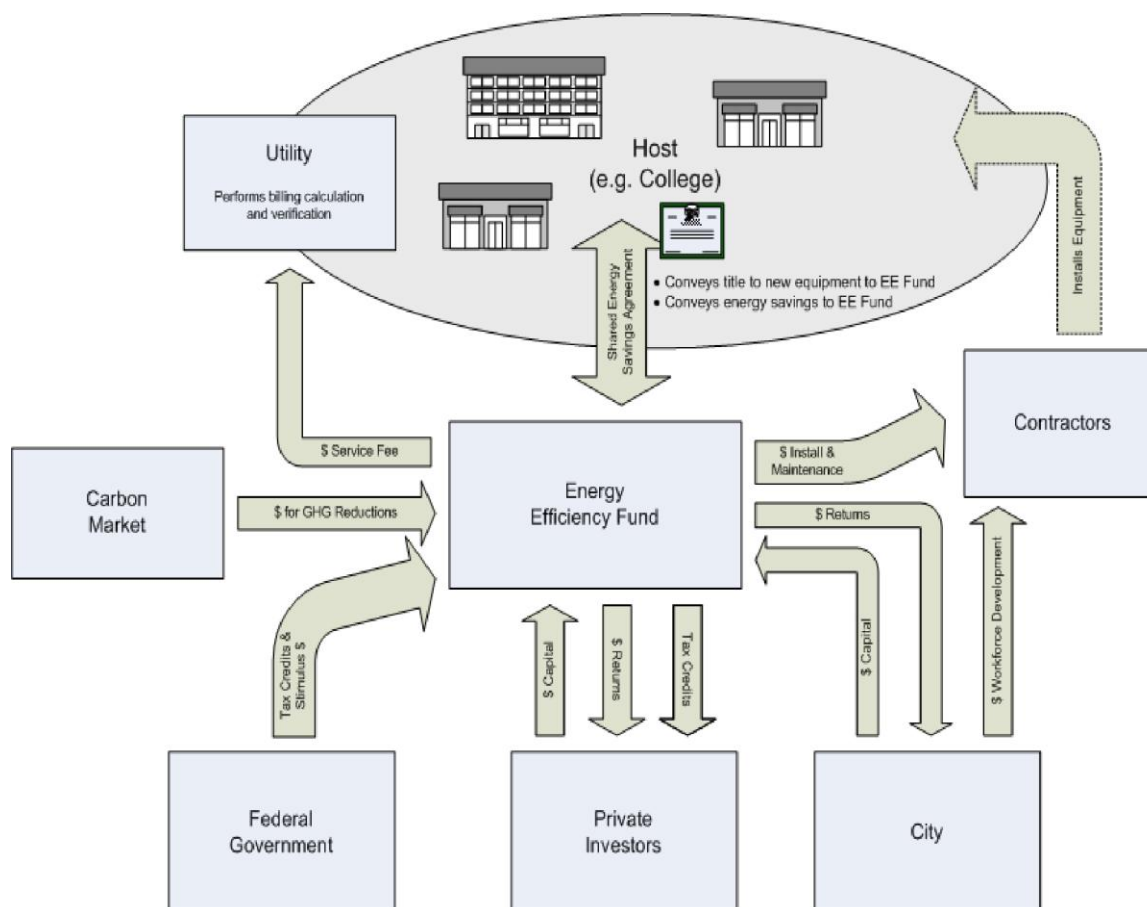
The “Community Aggregator Partnership” is a statutory public-private Public Benefit Corporation that is authorized to both issue ‘private activity’ bonds and take on private investor equity partners. The CAP would have broad authority to finance residential/small project energy efficiency projects in its jurisdiction – generally a state – and aggregate those projects to maximize its revenue streams.

<b>Seed Funding:</b>	<ol style="list-style-type: none"> <li>1) Public purpose ‘private activity’ bonds</li> <li>2) Private partner equity investment</li> </ol>
<b>Core Purpose:</b>	<ol style="list-style-type: none"> <li>1) Facilitate small project upfront costs by direct outlays or subsidies</li> <li>2) Provide ‘green’ job training and local RPEE contractor certification</li> </ol>
<b>Revenue Sources:</b>	<ol style="list-style-type: none"> <li>1) Primary revenue: contractually-acquired energy cost savings – project hosts make monthly energy payments based on historical usage until project payback period completes, differential between project hosts’ payments and reduced energy costs in funneled through utility company to CAP</li> <li>2) Potential additional revenue sources: sale of project generated GHG credits and project generated EE credits</li> </ol>
<b>Business Outlays:</b>	<ol style="list-style-type: none"> <li>1) RPEE project financing</li> <li>2) Repayment to bondholders</li> <li>3) Statutory fixed rate of return payments to equity shareholders</li> <li>4) “Green” job training and local contractor certification</li> </ol>
<b>Cost Mitigation</b>	<ol style="list-style-type: none"> <li>1) Programmatic operations are not-for-profit</li> <li>2) Project aggregation authority provides diversification and risk reduction</li> </ol>
<b>Market Safeguards:</b>	<ol style="list-style-type: none"> <li>1) In the event of residential ownership change, historical usage energy payment contract continues with new owners until payment period completes</li> <li>2) Building codes that, at time of sale of a residence, impose a fine on residential owners who have not pursued energy efficiency upgrades</li> </ol>
<b>Private Investor Benefits:</b>	<ol style="list-style-type: none"> <li>1) Fixed rate of return – 10% – over durations of 10+ years</li> <li>2) Mission compatible investment for responsible institutional investors</li> </ol>
<b>Public Sector Benefits:</b>	<ol style="list-style-type: none"> <li>1) Residential/small project RPEE upgrades without direct public outlays</li> <li>2) More efficient local economies</li> </ol>
<b>Project Host Benefits:</b>	<ol style="list-style-type: none"> <li>1) Reduced energy rates after completion of project payback period</li> <li>2) Enhanced market value of residence</li> </ol>
<b>Community Benefits:</b>	<ol style="list-style-type: none"> <li>1) Trained ‘green’ collar workforce</li> <li>2) Certified local RPEE contractors</li> </ol>



## APPENDIX B: THE “SPECIALTY EFFICIENCY FUND” [SEF] in ACTION

### Light Green Advisors-designed RPEE Large Project Investment and Relationship Management Flow Chart:



Source: Light Green Advisors 2009

### Role of the Energy Efficiency Fund in Large Project Real Property Energy Efficiency (RPEE) Investing:

- 1) **Manages fund assets by:**
  - i) Distributing energy savings returns to investors
  - ii) Monetizing project corollary attributes like GHG and EE credits
  - iii) Processing Federal/state tax rebates and depreciation incentives
  - iv) Administering RPEE Energy Reduction concession (if available)
- 2) **Directs fund relationships by:**
  - i) Securing fund equity investor partners
  - ii) Negotiating fund debt terms and setting fund debt strategy
  - iii) Generating project demand and marketing project services to potential hosts
  - iv) Defining project scope and determining most appropriate project technology
  - v) Contracting with RPEE project implementers
  - vi) Implementing 'green' job training programs



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