



Financing Deep Energy Retrofits

Workshop Report



May, 17th 2011

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Executive Summary

Both Rocky Mountain Institute (RMI) and the Northwest Energy Efficiency Alliance (NEEA) actively engage industry to reduce energy consumption in new and existing buildings. Yet even as many developers and real estate holders have forged ahead, the small and mid-sized commercial market has been slow to implement energy efficiency retrofits. To address this issue, RMI and NEEA jointly hosted a workshop about Energy Efficiency and Capital Markets on April 7th and 8th, 2011 in Boulder, Colorado. The workshop explored ways to increase the availability of financing for deep energy retrofits (greater than 30 percent energy savings) for small to mid-sized office or retail buildings (less than 50,000 sq. ft.). Specifically, the workshop focused on actions RMI and NEEA could undertake to expand the market.

Attendees brought a diversity of perspectives to the workshop ranging from building owners to lenders to utilities. As such, the conversation was fairly divergent and explored multiple areas before settling on a few key themes.

Some of the main challenges to deep energy retrofits in the small commercial building industry included:

- Building owners, lenders, and utilities must consider the risk of the retrofit not delivering the estimated energy and cost savings, and are currently unable to understand the risk well enough to properly price and mitigate it
- The small-buildings industry is fragmented, highlighted by language differences, inflexible lending practices, regulatory regimes, verification standards and needs, and industry momentum
- High costs for design, analysis, underwriting and others often make the retrofit rate of return unattractive
- While the split incentive issue has been mitigated to some extent on larger buildings, it is still a major blockage in small non-owner occupied buildings
- A building owner's lack of good credit quality can make financing impossible or cost prohibitive
- There needs to be a significant 'spark' to increase interest in the market

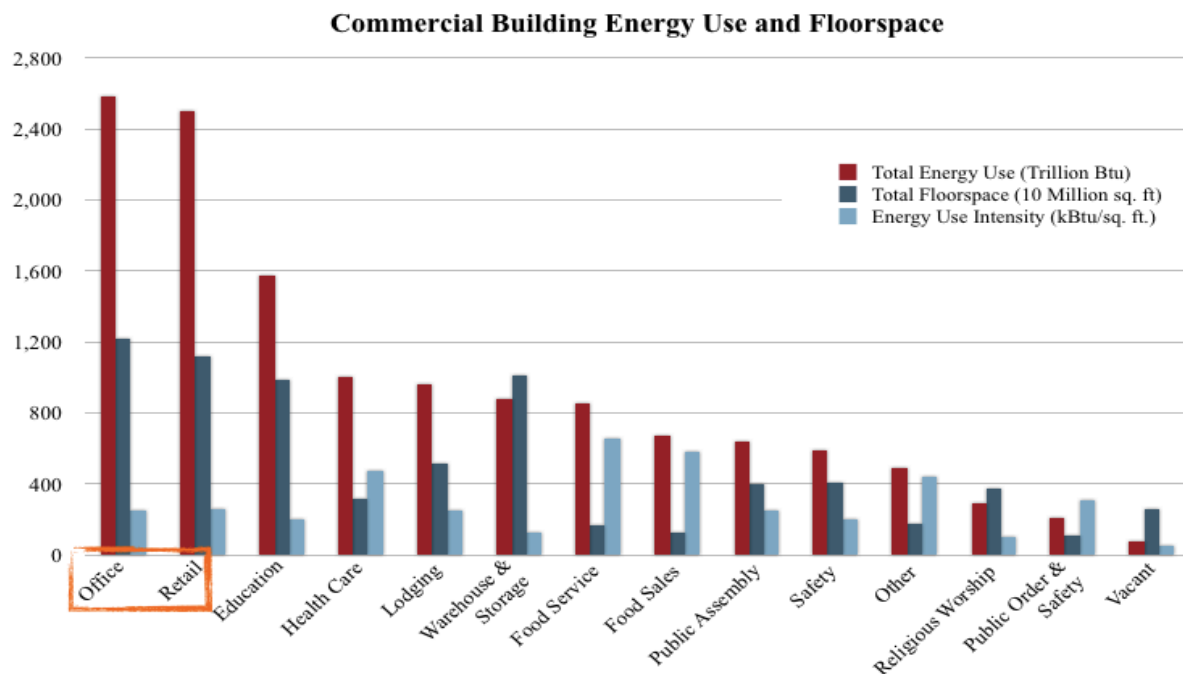
The main actionable strategies for RMI and NEEA to consider included:

1. Developing the service integrator model
2. Industry education and outreach
3. Refining and distilling the deep retrofit business case for small buildings
4. Developing a roadmap that details when building investments should be made
5. Simplifying the technical parts of a deep retrofit (audits, analysis, measurement and verification)

Industry Background

The small to mid-sized commercial real estate market has been slow to undergo significant numbers of deep energy retrofits. Recent research has shown that only 25 percent of survey respondents at organizations with a smaller real estate property (50,000 square feet or less) are expecting energy efficiency improvements over the next 12 months.¹ These improvements are often low-cost operational modifications or piecemeal upgrades that save no more than 20 percent of the energy use.

Significant market acceleration of retrofits and, in particular, deep retrofits (>30% energy savings) are required in order for the U.S. to become radically energy efficient. Fifty-one percent of the total commercial floor space is located in buildings less than 50,000 square feet and, as shown in the chart below, office and retail buildings use by far the most energy among the commercial building types.



¹ "Johnson Controls 2010 Energy Efficiency Indicator," Johnson Controls. April 19, 2010.
[http://www.institutebe.com/InstituteBE/media/Library/Resources/What's New/EEI-2010-Global-Executive-Summary-ENG.pdf](http://www.institutebe.com/InstituteBE/media/Library/Resources/What's%20New/EEI-2010-Global-Executive-Summary-ENG.pdf)

Introduction

As with a large part of retrofit efforts industry-wide, workshop attendees were primarily focused on large commercial real estate solutions. However, many of these solutions can still be applied to smaller buildings. The solutions proposed were generally market-based but often depended on existing incentives. New business models and education programs were proposed, and existing ones reconsidered. Throughout the brainstorming, attendees considered how RMI and NEEA could play a role.

To frame the initial discussion, RMI and NEEA laid out barriers to deep retrofits and a set of opportunities. Workshop participants had to prioritize a few of the opportunities based on how well they could drive deep retrofits, and then in smaller groups, participants had to develop concrete strategies within the top three. At the start of the workshop, the participants reframed the opportunities to better reflect the interrelationships between possible strategies.

The seven reframed, prioritized opportunities are (1 being the highest priority):

1. Service integration business model / fee developer service model
2. Education, resources/tools and true stories
3. Measurement & verification
4. Increased asset value
5. Utility incentive model
6. 'Spark' (to generate demand for deep retrofits)
7. Accurate and reliable investment grade audits

Prioritized Opportunities

The top three opportunities as chosen by the participants were the 'service integrator' business model, education and true stories, and increased asset value. Each group discussed one opportunity and a number of associated strategies. Ultimately, each group defined one strategy in detail focusing on the logic behind the strategy, the engagement channel, critical partners, and next steps. The following sections describe each strategy.

1. 'Service Integrator' Business Model

As a preface to the 'Service Integrator' discussion, the breakout group identified those who would be highly motivated to conduct deep energy retrofits, including entrepreneurs, investors and utilities. A potential strategy could be to help these parties by helping them develop a 'service integrator' business model that reduces the 'hassle' for building owners, which was noted as a key barrier to widespread retrofits.

Service Integrator Business Model

Logic:

Building owners typically do not have the time or expertise to organize the retrofit. Therefore, an organization providing the full spectrum of support to help navigate and plan a deep retrofit is a necessary role in the market. This 'service integrator' must be independent and trusted and able to work with a range of other service providers.

The primary barrier to this strategy is implementation cost (measurement and verification (M&V), audits, analysis, underwriting, and others) that makes projects economically infeasible. Additionally, in order to create demand most or all parties involved in a retrofit (see 'Education and True Stories' below) must understand the service integrator business model and the opportunity it presents. It will be challenging to identify and effectively educate all the correct parties.

Engagement Channel:

One option is to work with community programs, the Small Business Administration (SBA) 504 Green Loan and 7a programs, community development banks, and utilities.

Critical Partners:

The service integrator would need to cooperate with lenders and others in this market sector to drive demand.

Next steps:

1. In order to better understand what the business model looks like, map the retrofit requirements (accuracy of savings predictions, M&V, etc.) in different situations (owner-occupied buildings, portfolios, etc.)
2. Identify/refine technical/process solutions to bring down costs (for M&V, audits/analysis, transaction costs, and financing costs)

2. Education and True Stories

The group discussing education and true stories (or case studies) explored the interrelationships between parties involved in a retrofit including:

- developers
- tenant/owners
- brokers
- asset and property managers
- investor representatives
- vendors/contractors
- accountants
- attorneys
- bankers/appraisers
- utilities

Each party has an important role to play and any of them can initiate or terminate a project, especially a project without significant momentum or a compelling business case. Brokers, appraisers and utilities were identified as key players who could enable deep retrofits. Any education must start by raising awareness within the real estate industry using tangible demonstrations of the value of deep retrofits. These awareness programs must be tailored by group and by market, although there are some general messages that could be broadly applied.

Education: Sparking Demand & Facilitating the Process

(Considered from both tenant and owner driven perspectives)

Logic:

There are several situations in which a deep retrofit would make good economic sense. The parties named above must understand these opportunities. For example, lenders could alert owners to the opportunity for a deep retrofit as part of a refinancing deal, insurance companies could alert owners to the opportunity with having to replace a roof that leaked, brokers could alert owners to the retrofit opportunity during tenant turnover, etc.

Engagement Channel:

Guides (such as investment roadmaps or green lease guides) and tools (such as life cycle cost calculators) accessible on websites or offered through utilities would disseminate the information, and make it easy to use. In addition, continuing education programs, trade publications, and conference workshops could also prove highly effective engagement channels.

Critical Partners:

The critical partners are chambers of commerce, local rotary clubs, business associations and utilities. In addition, the following organizations:

- The Institute of Real Estate Management (IREM)
- Certified Commercial Investment Manager Institute (CCIM)
- Society of Industrial and Office Realtors (SIOR)
- Building Owners and Managers Association International (BOMA)
- International Facility Management Association (IFMA)

3. Enhanced Value

The third breakout group investigated how to document/verify the improved asset value for deep retrofits. One of the challenges is that financing is typically provided based on three key elements in this order: the people, their credit, and the real estate. That is, who owns the building is more important than what will be done to enhance the real estate value (the building owner is more of a factor than, e.g., the planned 30 percent energy savings or the new HVAC equipment). Also, owners or occupants consider asset value only in close proximity to capital events, such as loan refinancing or point of sale.

Enhanced Value

Logic:

Positioning deep retrofits as a risk reducing measure could be a main driver in demonstrating enhanced value. Value can be a driver particularly during a capital event or intervention. Another persuasive case is the 'future-proofing' of buildings against obsolescence (i.e., leveraging the 'fear' of obsolescence).

Engagement Channel:

Targeting business bankers (as well the SBA, International Council of Shopping Centers (ICSC), and Community Reinvestment Act (CRA) equivalent), creating pilot examples in the community, and engaging with the media are the key channels. The community program could possibly be supported with a tax increment financing (TIF) or local improvement district (LID) fund. Franchises could also be more likely to initiate projects, and could lead the way for other small businesses.

Critical Partners:

This effort requires partnering with utilities, the banking community, and possibly local USGBC chapters.

A path forward

The results of the recommendations from the workshop groups can be synthesized into a general action plan for enabling deep retrofits.

Defining deep energy retrofits for small buildings

The definition of a deep energy retrofit must be refined and clarified, and specifically targeted at small buildings. As part of this definition, the value proposition must be identified and clearly articulated for all parties, including owners, tenants, investors and utilities (it may require numerous case studies with different data points). The process must also be simplified and streamlined, including the planning, auditing, analysis, execution, and follow-up phases.

Linking improvement roadmaps with financing

A critical element of the deep retrofit definition that is worth highlighting on its own is that retrofit measures need not be implemented all at once, but over time and often coordinated with other major events. Some key events include equipment/envelope end of life, market repositioning, code-required upgrades or tenant turnover. It will be critical for several entities to be able to create and/or understand the logic of such roadmaps, including lenders who can work with the building owner to ensure that the roadmap is linked to an adequate financing plan.

Simplifying the process

A critical challenge will be in identifying low-cost audits (design, analysis, and presentation) and M&V that can require a significant amount of time and cost. The costs for these deep retrofit elements are proportionally larger than the energy savings for smaller

buildings, often making the deep retrofit uneconomical. Simplifying the process and creating ‘Service integrator’ business models and technical solutions are needed to help reduce these costs.

Educational outreach and marketing

Educational products or resources should be used to educate key stakeholders about the deep retrofit process and other non-energy benefits. These materials will illustrate what exactly deep retrofits look like in a small building, explain how to follow investment roadmaps, and describe how good planning and process improves return on investment.

The following materials could be useful for the industry:

- a pre-analyzed list of measures (options analysis) per building type to indicate the correct retrofit steps in the correct order
- a guide for service providers on the value and how to sell and market bundles of synergistic efficiency measures
- simplified guides for owners and investors on measurement and verification
- life cycle cost analysis model for owners and contractors
- sample green PCAs (property condition assessments)
- sample RFPs (request for proposals) for efficiency improvements
- a retrofit investment guide
- case studies with motivating factors and financial details

Illustrative and detailed studies help financial decision makers understand the impact of energy efficiency and predict their returns. Case studies should include real examples illustrating the deep retrofit product and clarifying the integrative nature of energy efficiency improvements. For the financial decision maker, the case studies should include detailed pro formas and stories of problems faced to guide risk mitigation efforts.

The delivery mechanism is crucial for effectively disseminating these educational resources, and could include continuing education, pamphlets, or online tools. Another key engagement channel could be a joint marketing program in conjunction with banks and utilities.

Next Steps

RMI and NEEA felt the workshop identified many good potential areas to have impact. Currently, we are considering pursuing a variety of educational outreach efforts. As our strategies and next steps evolve, RMI and NEEA may engage workshop participants as appropriate.

Appendix A: Contact List

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Appendix B: Pre-read

<This document was sent out to participants and a few select others to review in preparation for the workshop>

RMI and NEEA have compiled the following list of barriers and opportunities central to unlocking investments in deep energy retrofit projects. We would like to vet these with workshop participants. After receiving feedback from each of you, we plan to identify those areas that are most aligned with our organizational strengths and—if successfully addressed—would most likely meet our common objectives. These in turn will be used to shape the workshop agenda.

We ask workshop participants consider the following questions while reading this document:

- Are the listed **barriers** realistic? How would you modify them?
- Could the stated **opportunities** lead to effective strategies? How would you change or add to the opportunities?
- Do the action items capitalize on the opportunities? Please add to or edit the listed **possible action items**.
- Do the action items **avoid duplication** of other efforts? Or if it supports other efforts, by whom?
- Are the barriers, opportunities and action items relevant to the building types we are discussing at the workshop, that is, **office and retail buildings that are less than 50,000 square feet**?

Thus, RMI and NEEA are holding this workshop in order to address the following question:

*What strategies or programs should RMI and NEEA independently pursue to rapidly increase the amount of investment in deep retrofit projects in **small to mid-size commercial office and retail buildings**, and how could the organizations coordinate their work with others?*

The barriers and opportunities

For the purposes of this workshop, we identified primary and secondary barriers that inhibit the financing of deep retrofits of small to mid-size office and retail buildings. We also identified a preliminary list of opportunities to address these barriers. These barriers and opportunities, as well as possible RMI/NEEA action items and the work of other organizations, are described in this section.

Primary Barrier

The major barrier to investing in deep retrofits of small commercial buildings is **transaction risk**. Building owners, contractors, lenders, and utilities must consider the risk of not delivering the estimated energy and cost savings, and are currently unable to understand the risk of a deep retrofit well enough to properly price and mitigate it. As a result, only relatively simple efficiency projects with short paybacks are pursued.

Secondary Barrier

We acknowledge as a secondary barrier a “**disconnect**” between disparate markets, whether through financial markets, real estate markets, energy markets, or contractor and construction markets. These disconnects manifest themselves through the inflexibility of traditional lending

practices, language differences, regulatory regimes, verification standards and needs, and industry momentum.

Opportunities

The following are possible opportunities for addressing the risk and disconnect barriers:

1. “Service integrator” business model

“Service integrators” or providers of “turnkey” solutions can bring together all the required service providers as well as the financing for a deep retrofit project. Low- or no-hassle turnkey solutions, when combined with verified savings of other projects, can improve the investment risk/reward profile. RMI/NEEA could help grow this service as a business model.

Possible Action Items: RMI and/or NEEA can work with

- Up-and-coming energy service providers (including ESCO’s) to develop business strategies and technical capacity to capture deep energy savings
- Help utilities to develop and fine-tune efficiency programs and financial packages that encourage deep energy savings

Other Organizations Working in this Space:

- TBD

2. Education and information resources/tools

Education and information resources/tools need to be put in place to facilitate better communication between lenders, service providers and owners. Since small- to mid-size commercial real estate can be a localized endeavor, the education and resources must be adapted to local market conditions and regulatory structures.

Possible Action Items: RMI and/or NEEA can help create financial, technical, or business model templates, packages or tools that deliver critical “ingredients” necessary for deep energy savings projects, but flexible enough to be adapted to local conditions. These resources will create a “common language” between lenders, service providers and owners.

- 3rd party lending assistance or bank support structure, or lending “rules of thumb”
- Investment roadmaps
- Technical design packages and related analysis and design tools (e.g., life cycle cost analysis, automated building energy modeling, targeting the “right” building at the right time)
- Service model or “franchise” agreements for contractors/designers
- Risk mitigation, audit, and loan application checklists
- Utility financing and/or incentive packages
- Financial and measurement verification protocols that meet multiple markets’ needs

Other Organizations Working in this Space:

- US DOE, PNNL and NREL
- California
- TBD

3. True stories of retrofits

Stories of real projects with verified savings will help create greater comfort levels among market sectors on the risk/rewards related to financing deep retrofits.

Possible Action Items: RMI and/or NEEA can

- Collect and/or write case studies
- Drive widespread verification of energy savings in order to create more case studies
- Help create mechanisms that disclose energy performance in lease, underwriting, and other financial transactions
- Create educational, marketing, and PR strategies to increase awareness of successes

Other Organizations Working in this Space:

- USDOE
- NBI
- TBD

4. Increased asset value

Appraisals that quantify the impact of deep retrofit projects on asset values will dramatically increase interest level among building owners and reduce the risk associated with lending.

Possible Action Items: RMI and/or NEEA can

- Work with industry to standardize ways of factoring energy savings into asset value assessments
- Fund research and pro-forma modeling on the impacts of deep retrofits on asset value
- Develop appraisal “case studies”

Other Organizations Working in this Space:

- TBD

5. Accurate and reliable investment grade audits

Investment grade audits must provide accurate and reliable projections of the return on investment. For small- to mid-size buildings, it will be critical to keep the cost of the audit low.

Possible Action Items: RMI and/or NEEA can

- Work with industry to create standard protocols for energy audits that are inclusive of operational strategies, equipment upgrades, and integrated deep retrofits
- Work with tool developers and service providers to reduce cost, through tool/process automation for small- to mid-size commercial buildings, yet maintain accuracy

Other Organizations Working in this Space:

- Tool developers: Autodesk? Retroficiency?
- TBD

6. Measurement & verification

Proper measurement & verification enables the project developer, building owner and financier to

- Clearly judge performance, deciding corrective actions if needed
- Process appropriate financial payments
- Gain confidence and “proof of concept” from initial deep retrofit projects

Possible Action Items: RMI and/or NEEA can

- Work with industry to reduce the cost and hassle of setting up and implementing an M&V plan by simplifying current protocols to address smaller buildings
- Map M&V needs of different markets (utility, financial, real estate) and determine minimally appropriate strategies and tools

Other Organizations Working in this Space:

- Efficiency Valuation Organization's IPMVP Committee
- PECI (Portland Energy Conservation, Inc.)

Appendix C: Agenda

Location:

The Workshop will be conducted at The Boulderado hotel (the same place everyone is staying).
2115 13th Street, Boulder, CO 80302-4801, (303) 442-4344

Problem statement:

What actionable strategies or programs should RMI and NEEA pursue to rapidly increase the amount of investment in “deep renewal” projects in mainstream, small to mid size commercial office and retail buildings, and how best should the two organizations coordinate their efforts?

Workshop objectives:

- 1) Review market barriers, information gaps, and issues that prevent greater investment activity.
- 2) Prioritize the 2-3 most promising and actionable strategies and innovations for RMI and NEEA to pursue and next steps.

Agenda:

Thursday, April 7th 2011

10:00am - 12:00pm	Workshop Planning (RMI/NEEA Only) -Facilitator guidance
12:00	Welcome, Lunch and Introductions (at the Boulderado, Evergreen Room) -Top issues from participants (if you could spend \$1M on any issue, what would it be?)
1:15	Market context and barriers overview -Workshop objectives, logistics, ground rules -Intro to RMI and NEEA (strengths, other parallel efforts) -Market context presentation (What does the small building market look like? Who are the big players?) -Overview of barriers (summarized in pre-read document)
1:45	Prioritize Issues RMI/NEEA proposes the top 2 issues, group votes on the 3 rd issue
2:15	Breakout Groups: Focus on Issue #1, #2 and #3 Discussion to firm up the barrier, opportunity, engagement mechanism (audience and means to address), activities and outcomes.
4:00	Report out and discuss 15 minute report out from each group, 1 hour discussion, focused on strategies
5:30	Adjourn RMI/NEEA regroup, clean up outputs from day 1 (RMI/NEEA Only)
7:00	Dinner out (at Boulder Dushanbe Tea House, meet in lobby at 6:45 to walk to restaurant)

Friday, April 8th 2011

7:15-8:00am	Breakfast To be provided at the Boulderado, outside the Evergreen room.
8:00	Review and reassess strategies, key players, tactics Gut check, do the strategies still feel right? How does this link with current efforts by others, what gaps are there? What are some actions that need to be done?
9:00	Deep dive on each issue plan Walk through each focus area as a group (roughly 45 minutes on each)
11:45	Wrap up, closing remarks
12:00pm	Adjourn Lunch provided in boxes to go or as a group at the Boulderado
1:00pm	RMI/NEEA to organize outputs, discuss next steps (RMI/NEEA Only)