INNOVATIVE, HIGH-IMPACT ENERGY EFFICIENCY RETROFIT FINANCING OPPORTUNITIES IN THE CANADIAN COMMERCIAL BUILDING SECTOR

Prepared for
TORONTO ATMOSPHERIC FUND (TAF)

May 2014

50 Ste-Catherine St. West, suite 420, Montreal, Quebec, Canada H2X 2T7 | T. 514.504.9030 | F. 514.289.2665 | info@dunsky.ca
www.dunsky.ca

SECTION 1: INTRODUCTION & OVERVIEW

The World Business Council for Sustainable Development found that carbon emissions could be reduced by 40% in six major building sectors with a payback period of just five years. Tapping into this vast opportunity requires capital, which in turn requires financing strategies and products that offer attractive terms to property and returns investors and appropriately allocate and mitigate risks.

The energy efficiency (EE) finance space has been evolving rapidly over the past several years: new, innovative products and models are available to deliver reliable assets to the capital markets and mobilize the funds needed to achieve the economic and environmental benefits of energy efficiency.

However, to keep growing the EE retrofit financing market, two interrelated sets of barriers must be addressed. The first set relates to the challenge of building sufficiently sized pools of financed energy efficiency projects that can attract large scale capital. The creation of such pools is currently inhibited by the lack of uniform standards for energy efficiency financing, limited data on project performance and a need to develop aggregation mechanisms to create project pools with a value of over $100M, a level many institutional investors observe as an investment threshold.

The second set of barriers relates primarily to the challenge of building a sufficient pipeline of projects to feed the investment pools. Risk allocation, program simplicity and marketability, attractive financing offers, support from key players (utilities, governments etc.) and providing up-front capital to get projects off the ground, all play a role in getting individual projects from the planning phase into the implementation and financing phase.

The Toronto Atmospheric Fund set out to identify several innovative, high-impact tools/strategies that would address barriers and accelerate and amplify investment in energy efficiency retrofits in Canada's commercial building sector.

The process, supported by Dunsky Energy Consulting, involved structured and targeted consultations with key industry players including: building owners and managers, power and gas utilities, banks, specialized investors, equipment suppliers, energy services companies, not for profit organizations such as industry associations, and other thought-leaders in this space.

Roundtable Participant Quote:

"EE Financing's challenge is not to raise capital, but it is more about how to connect existing sources of capital to the EE retrofit projects."

A scan of energy efficiency financing tools/strategies was prepared drawing on international industry, government, utility and private sector initiatives around the world was prepared to inspire and kick-start discussion. The following 20 were examined; see Appendix 1.

Financing Models

- Utility on-bill
- Property Assessed (PACE)
- Performance Contracting
- Savings Purchase Agreements
- Equipment Leasing
- Equity Financing

Credit Enhancement

- Loan Guarantees
- Loan Loss Reserves
- Savings Insurance
- Preferential Loans
- Interest Rate Buy-Downs
- Tax Treatments
- Direct Incentives

Capital Mobilization

- Bonds
- Securitization
- Loan Warehousing
- Revolving Loan Funds
- Acceleration Funds
- Regulated Returns for Utilities

A Roundtable (held in December 2013) involving over twenty senior representatives from these groups focused on three types of options (see Section 2):

- tools which appropriately allocate risk among the players;
- standardized protocols to guide development of retrofit projects and requests and evaluation of financing for retrofits
- enabling tools and synergies which support scale/aggregation

In early 2014, more targeted conversations were used to narrow down further. From the research and consultation three 'best-fit' tools/strategies emerged that are relevant in the Canadian context and have significant potential to mobilize capital for investment in commercial building retrofits, specifically:

1) Establishing concierge services to assist projects in the start-up phase by offering financing for project initiation costs and by linking energy opportunities analysis results to beneficial 3rd party financing offerings.
2) Creating standardization protocols that encourage consistency among projects, and decrease the project risk and the lenders' perceived risks.
3) Test running innovative financing models and tools that can apportion risk to the correct party in an EE retrofit project. For example the on-bill-repayment mechanism that can be used to reduce the lender's exposure to credit risk.

Each of these opportunities – what they are, how they work, how they address barriers that often prevent EE financing projects from getting through the start-up phase and on to implementation, how they can increase consistency across the sector and reduce the risks borne by each party involved in the financing transaction, etc. – are spelled out in Section 3.

Toronto Atmospheric Fund has a long history and track-record of advancing innovative low-carbon solutions, often using it's own endowment capital and sometimes co-financing, to actually demonstrate and de-risk the opportunity to implement and earn a return. A pilot plan for each of the three tools/strategies is sketched out in Section 4 that would demonstrate the business case and pathway to scale

SECTION 2: SCOPED OPTIONS CONSIDERED

Three 'bundles' of financing options were selected from the scan of 20 tools/strategies, specifically:

- tools which appropriately allocate risk among the players;
- standardized protocols to guide development of retrofit projects and requests and evaluation of financing for retrofits
- enabling tools and synergies which support scale/aggregation

Appropriate risk allocation tools

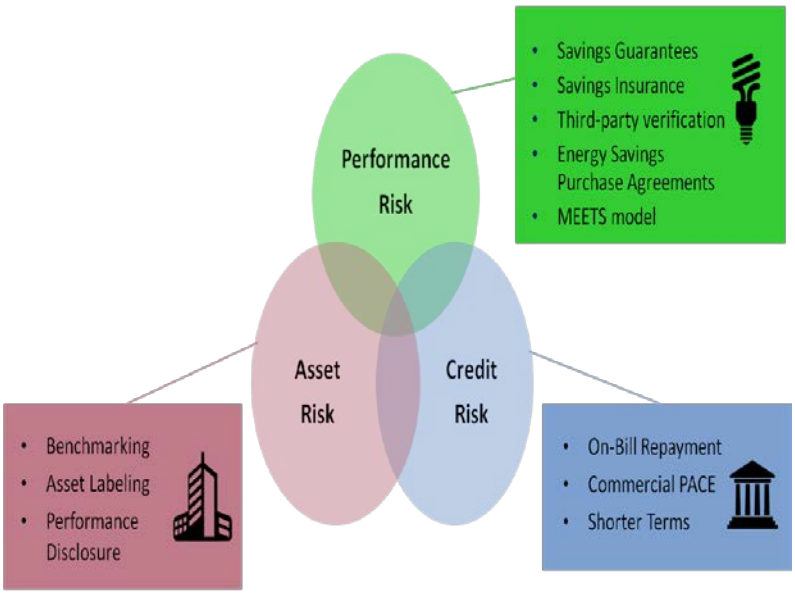
Apportioning risk appropriately is an important challenge in EE financing projects. During the consultations it was expressed that often building owners are left carrying the majority of the risk, whether they are comfortable with or aware of this or not. This feeds building owners' apprehension of pursuing EE retrofits, making it tougher to get owners on board.

The associated risks in a financed EE project can be broken down into three broad categories:

1) Performance Risk: the risk that the modifications will not provide the predicted savings
2) Credit Risk: the risk that the borrower (leaser) will default on the financing repayments
3) Asset Risk: the risk that the building value will change

In any EE financing project the credit risk is invariably carried by the lender, while the asset risk is carried predominantly by the building owner, except in the rare case where the lender takes an equity stake in the property. Credit risks can be mitigated by setting repayment conditions that carry significant consequences to defaults (such as the priority lien established in the Commercial PACE model, or cutting off of energy services under the Utility On-Bill repayment model). Asset risk can be mitigated through standardized and mandatory building efficiency labelling or energy performance reporting that allows the property's energy consumption to be compared among its peers. This can help off set the reluctance that building-owners have to enter into longer term financing obligations that remain attached to the property such as equipment leases and OBR or PACE type financing.

Figure 1: EE Financing Risk Allocation and Mitigation Strategies



Performance Risk: too often falls on the building owner's shoulders

Allocation of the performance risk on the other hand is less certain and the building owner may end up carrying all or a significant portion of the performance risk. This can become a significant barrier to building owners who do not have a deep understanding of EE retrofit technologies and projects.

Options do exist to transfer the performance risk away from the building owner including:

1) Savings Guarantees, that are typically offered by ESCOs. These require establishing an accurate baseline, and verifying the savings resulting from the project, which can add to the overall project costs and transaction costs.
2) Energy Saving Purchase Agreements such as the Energy Savings Agreements allocate the performance risk to the energy efficiency service provider who is paid back directly from energy savings.
3) Savings insurance can be issued to the building owner, equipment supplier, retrofit designer and/or ESCO to cover their losses in the case that the savings do not cover the initial investment.

Each of the options to transfer the performance risk away from the building owners carries further transaction costs. Energy savings insurance costs can significantly impact the annual savings returned to

Energy Savings Insurance (Underperformance Risk Protection)

Energy savings insurance is a tool to backstop the savings guarantee offered by an ESCO or Efficiency Contractor to property owners. The insurance helps to overcome uncertainties about the ESCO's ability to cover its own guarantee, and the policy can be held by either the ESCO or the property owners. There are also insurance products suited to vendor-financed projects. In exchange for a premium, the insurer agrees to pay over the term of the policy contract any shortfall in energy savings below a pre-agreed baseline, less a deductible. Other advantages of insuring energy savings are that it removes contingent liabilities from the property owner's balance sheet and increases lender security for third-party financed ESCO contracts. Energi is an example of a specialized insurance company that currently offers energy savings insurance.

building owners. ESCOs who offer energy savings guarantees typically incur significant transaction costs related to establishing the baseline energy use and verifying the savings attributable to the EE retrofit projects.

There is an assumption that savings insurances and guarantees are needed for all projects in order to protect the building owner. However, guarantees and energy savings insurance add further transaction costs to EE retrofit project and building owners with multiple properties may choose to bear this risk themselves as they become increasingly able to comprehend and quantify the risks associated with energy retrofits (particularly simple projects such as lighting and boiler retrofits).

De-Risking Project Start-up

The project planning phase can carry the highest level of risk, as there is no guarantee that significant savings opportunities will be found through the auditing processes, or that the owners and lenders can be convinced to support the retrofit projects identified. One option that emerged was the forming of pre-construction risk capital pools that can invest at this stage based on a clear understanding of the sector-wide risk profile. In return the risk pool provider would secure a role or appropriate return in the event that the project moves from planning to implementation.

Tenant-Landlord Tools and Options

Among the greatest barriers facing building owners when considering EE retrofit investments is the split incentive, wherein the tenant reaps the benefits from reduced energy bills while the building owner provides the upfront investment to improve the building's energy performance.

Often tenants and owners include have pass-through energy bill clauses in the lease, wherein the landlord pays the building's utility bills, and passes along these costs to the tenants based on sub-metering of spaces and/or a per-square foot of rented space basis. In other cases, tenants may have separate utility bill accounts that apply specifically to their space. Providing tools and financing options that address or eliminate the split incentive barrier can increase EE financing project uptake. Options to accomplish this include:

1) Sample green lease models or cost/benefit sharing agreements, including example lease clauses that fairly distribute the cost and savings between the owner and tenant.
2) Tenant-funded improvement programs that market to the tenants as well as the landlords. It was noted during the consultation session that in Class A real estate it is common for the tenant to demand environmental certification for the building, or to require energy improvements be made as a condition of the lease agreement. Marketing programs to tenants can provide another avenue to engage building owners, and provide them with a financing partner.
3) MEETS type financing models, wherein the utility bill payments do not change significantly but a portion of the energy efficiency savings are returned to the landlord by the energy services provider as a revenue stream, offer an opportunity to side-step the split incentive through cooperation with utilities.

By simplifying the landlord-tenant relationship and providing a program that returns the benefits to the parties taking on the initial investment risk can increases the uptake and marketability of EE financing programs.

Standardization of EE retrofit financing projects and processes

Increased standardization in the EE financing field is a strategy with much potential to address a variety of challenges faced in bringing EE financing to a larger scale in the Canadian market. It can impact each step of the process from project selection and planning, to implementation and finally through to support energy efficiency results reporting. Addressing this need reinforces many of the other opportunities identified through the consultations, and it has been described as the big next step toward enabling energy efficiency financing market transformation (Bhargava, 2012).

Standardization Across the Field

Standardization needs to be applied at a large scale to have the greatest impact. Specific financing programs can develop standardized documents, procedures and due diligence processes to ensure that all projects within the portfolio adhere to a similar level of quality. This may aid programs in recapitalizing the bundled projects by increasing investor confidence in the loan repayments.

At a higher level, utilities and regulators can demand standardized financing procedures be used to access incentive programs, and they can facilitate this by offering standard energy data management tools or auditing processes. Finally, governments (provincial or federal) can establish underwriting and term conditions for EE loans, similar to residential mortgage rules established by the federal government through the CMHC. By offering standardization across a broad field, the financial industry may develop an increased comfort in the issuing, exchanging and bundling of EE loans, knowing that they are based on a clearly defined set of criteria and processes.

Planning Phase

In the initial phase of an EE project, efforts and resources are focused on quantifying the potential benefits and developing an agreement that balances the interested of the lender, service providers and building owners. Projects plans are based on projected savings assessed against a current baseline. EE results cannot be measured directly, but require a variety of methods to establish baselines and find the difference between the actual energy consumption and what "would have been" had the improvement not been carried out. Applying standardized base-lining methods across a financing program can build lender and owner confidence in the results by ensuring a higher level of precision, and making the results more comprehensible to all parties (Lacey, 2013).

Second, the use of standard contracts and document packages help to reduce the transaction costs and allow multiple players to get involved in markets where projects sizes may be at the smaller end of the

spectrum (Nelder, 2013). It will also increase all parties' comfort as the contracts become known, similar to the Canadian Construction Association standard documents. Creating a standard underwriting package, similar to an appraisal pack used in commercial real estate, can lead to a more efficient marketplace ideally leading to an increase in the number of EE financing deals completed.

Project Implementation

Standardization can also increase the quality and thereby the confidence in the project during the implementation phase. Requiring standardized credentials from key project team players (such as the involvement of a Certified Energy Manager or Professional Engineer, and adherence to ASHRAE standards) and equipment providers can ensure the selection of a qualified team and quality equipment. Second, projects can include quality control requirements, such as the involvement of a qualified commissioning agent, to ensure that the final product meets the initial design intent and that the systems are tuned to achieve optimal performance.

Post-Implementation

Creating standards for operations and maintenance of EE improvements and equipment, such as requiring regular commissioning or preventative maintenance of equipment can help to ensure the persistence of energy savings. The use of standard monitoring and verification protocols such as the IPMVP can increase the accuracy of energy savings estimates, and increase investor and building owner confidence in the results.

Standards and EM&V protocols for verifying energy savings are vital components to creating investment-grade energy efficiency loan pools. The development and wide application of standards will help to increase confidence in EE loan products, thus making a significant contribution to creating scale within the market.

Establishing enabling tools and synergies

Much is said about the need to offer a simple, comprehensible financing product that is easily accessed by building owners and managers. While there is merit in front-end simplicity from a marketing and management perspective, EE financing program designers should not overlook the variety of tools and mechanisms that are available to develop programs that successfully balance building owners' needs with the interests of capital providers and program managers.

Another emerging theme in the consultations and research is the role governments and energy utilities can play to reinforce financing opportunities and programs. Governments and utilities can enable EE financing in three ways; first, they can help to create a supportive environment for EE financing through effective policies and open access to utility data. Second, they can invest in EE financing initiatives by offering credit enhancements that increase the financing performance. And third, governments and

utilities can create financing programs and innovative repayment mechanisms that broaden the EE financing options in their jurisdictions.

A few of the ideas raised during the consultations of enabling mechanisms are described below. In each case the goal is to create a program synergy that turns a barrier in EE financing into an opportunity.

Concierge Service for EE Financing

Another interesting approach is that of a specialised in-take service for EE projects, similar to that offered in the US by NOESIS (NOESIS, 2014). Under this model, energy consultants, ESCOs, service providers, building managers and owners can bring their EE projects to the "concierge" service, who then evaluates the financing needs, and links the project with a loan provider. This specialised go-between service can be a valuable tool in connecting EE projects to the capital needed.

Other potential opportunities that could be combined in a concierge type service include:

- Standardized financing documentation package
- Energy savings insurance offering
- Bundling of smaller projects into a larger loan package to obtain a better rate
- The creation of buyers groups for standard equipment (lighting) to achieve better pricing

Combining Financing with Equipment/Service Delivery

The consultations and surveys highlighted an interest within the industry to see a combined service delivery and financing provider. While this may be somewhat available for smaller projects through vendor financing and equipment leases, these projects typically do not cover sufficient soft costs to allow building owners to carry out comprehensive retrofits. On the other hand, while some ESCOs do offer financing for larger projects, their financing rates are rarely competitive with those offered by financial institutions, forcing building owners to seek out financing elsewhere. Combining an affordable source of capital with a trusted and *bona-fide* ESCO could offer a turn-key project delivery model that is attractive to many building owners, and speed the project approval process.

Provide Access to Provincial or Regional EE Performance Data

Among the barriers facing EE financing is the lack of performance data needed to evaluate the risk associated with various investments, as compared to other loan products such as mortgages or car loans (Friedrich, 2013). Utilities, and in some cases, governments typically collect and process significant performance data through billing and evaluation processes that can provide valuable benchmarking data needed to establish financing programs (Denbo, 2011). Offering access to these databases, and/or compiling and sharing performance data for financed projects help build the case for establishing new EE financing programs and support the sale of aggregated EE loans in the secondary markets (Greg Kats, 2011). Moreover, by evaluating performance on a regional or program scale, as is done for EE incentive

programs, a clearer picture of the overall risk associated with EE financing will emerge, and more precise predictors or project performance will be available to attract building owners into programs.

Establishing Energy Codes and Mandatory Performance Reporting and Labelling

Another way that governments can encourage EE financing is through establishing local building energy codes and through mandatory building labelling and/or reporting. Energy codes increase uptake of EE products and retrofits as they become required to meet the regulatory standards (Morgan, 2012). Labelling or reporting of building energy performance helps to value efficiency in the real-estate markets, and mandatory reporting (private or public) helps drive energy audits and opportunities analysis, as is the case with New York City's Greener Greater Building Plan, which is driving demand for energy evaluations and will include mandatory upgrades in the coming years (NYC Resources, 2012).

Credit Enhancements

Governments and utilities can help facilitate the scaling of energy efficiency loan programs through credit enhancements such as offering interest rate buy downs, establishing loan loss reserves or offering loan guarantees. These help financing programs to offer lower rates over longer term financing windows, thus improving EE loan cash flows. These tools have an advantage over simple incentive programs because they are linked to financing that unlocks access to third party capital, thus helping building owners to obtain that majority or all of the capital needed to perform an EE retrofit project.

Governments can also establish preferential tax treatment to assist EE financing, such as accelerated depreciation of EE assets and tax-exempt status to returns from EE financing programs, as is done for Municipal bonds. Alternatively, allowing EE financed measures to stay off the balance sheet through favourable accounting regulations that allow longer term operating leases can benefit EE financing. These help to improve the financial picture for both the borrower and for the lender/investors.

Establishing Aggregation Mechanisms

Governments and utilities can also establish warehousing services similar to the WHEEL model that has been established by the Pennsylvania State government (Wolfe, 2013). Under the WHEEL model, governments or utilities can use their borrowing powers to establish an arms-length authority to aggregate EE loans, and sell them into the capital markets with a government backstop guaranteeing all or a portion of the credit risk. Similarly, long term loan funds can be established by governments through the issuing of bonds to provide funds to program intermediaries (Martin Tampier, 2008).

SECTION 3: THREE HIGH-IMPACT INNOVATIVE FINANCING APPROACHES

The outcomes of the stakeholder consultations led the team to identify three strategic areas for action that can impact EE financing in Canada's commercial building sector. While this is not a comprehensive list of all the elements needed to support the further growth and evolution of Canada's EE retrofit financing market, these approaches were selected based on their ability to increase uptake of EE financing products, the availability of market players to take on these initiatives, and their potential as pilot initiatives in the immediate future.

DE-RISKING PROJECT START-UP THROUGH "CONCIERGE" SERVICES

The first high-potential financing opportunity identified through the consultations was the need for concierge services to help kick-start new EE retrofit projects. This service aims to overcome the barriers facing EE retrofits in their early stages that can prevent opportunities from being identified and implemented. Building owners and managers, energy auditors, and ESCOs can bring their potential EE retrofit projects or building performance data to the concierge service who will then assess the opportunity, and provide a business case evaluation for the EE retrofit linked to preapproved financing. This integrated service opens new financing and de-risking options, as well as maintaining project momentum as it passes from planning to implementation.

In breaking down the EE retrofit start-up barriers listed in the table below, a concierge would likely focus efforts in three key areas:

1) Acting as an entry point for building owners to evaluate their EE retrofit opportunities
2) De-risking project start-up costs, including savings estimates, design and project management
3) Linking EE retrofit opportunities to the financing needed for implementation

While a variety of parties could fulfill each of these roles, it is likely that bringing this set of services under a single roof, and offering an integrated service will benefit building owners to the greatest extent and thus attract an increased volume of projects to the service.

Barriers Identified	Concierge Service Solution
Failure to recognize a property's potential savings and investment opportunity.	Providing an entry point for projects, including benchmarking and potential savings estimation services a low cost or free of charge.
Building owners' reluctance to invest in the upfront energy auditing, design and management costs associated with planning an EE retrofit, and lack of incentive for audit service providers to see projects implemented.	Providing financing and support to cover the upfront soft-costs in return for payment when the project is implemented (energy audits, savings estimates, retrofit designs and obtaining quotations).
A lack of awareness or understanding of potential EE retrofit financing options, including 3rd party financing and utility or government incentive programs.	Evaluating financing options (3rd party, internal, incentives etc.) alongside the energy audit results, to present the full business case for the project on a net-present-value basis.
Competing priorities for building managers' and owners' time and capital that can prevent opportunities from passing from the identification and planning stage to implementation.	Delivers EE retrofit evaluations with approved financing offers attached to streamline decision-making process in order to speed projects through to implementation.

ENTRY POINT FOR NEW EE RETROFIT PROJECTS

In order to attract potential projects, a currently operating concierge service provider called Noesis (see side box on the following page) offers building owners and managers use of a free web-based benchmarking tool and expert webinars on a range of building EE topics. This gives Noesis' concierge service access to information about which buildings may offer saving opportunities, and establishes a relationship between Noesis and its eventual clients, opening the door to their project start-up and financing offerings.

A concierge service can operate either as a full service provider or act as a central coordinator that links clients to all the services they need to initiate and implement their projects including energy auditing, engineering and design, financial planning, financing, and general contractors or equipment suppliers. In order to effectively offer a seamless transition from project initiative to implementation, a concierge service would likely need to encompass the following:

- Auditing services (EE retrofit opportunities analysis)
- Estimate resulting energy savings, including computer modelling of building performance where needed
- Provide retrofit project budget, estimated at the business-case level of precision
- Tie the project to start-up and implementation financing (more details on how this can be accomplished is provided in the following sections)
- Develop project management plans and procedures including quality standards and M&V protocols
- Prepare engineering and architecture plans of proposed upgrades
- Offer these services to a wide range of potential clients.

DE-RISKING AND SUPPORTING PROJECT START-UP

The project initiation phase typically carries the highest level of risk, as there is no guarantee that significant savings opportunities will be found through the auditing processes, or that the owners and lenders can be convinced to approve the retrofit projects identified. One option that emerged through the consultations was to form pre-construction risk capital pools, which can apply an understanding of the sector-wide risk profile to offer project start-up capital. In return the risk pool provider would generate a return once the project moves from planning to implementation. This return can be generated by accessing a portion of the eventual savings, receiving a finder's fee attached to the larger project financing, or through holding the rights to implement the project. The yield generated must be sufficient to cover the invested costs as well as covering the costs incurred by projects that did not proceed to implementation.

Other potential roles that a concierge service could play to de-risk projects include:

noēsis® ENERGY / FORWARD

Noesis (www.noesisenergy.com) is an energy services and financing initiative established with the support of two specialised investment companies in the US.* Noesis combines online energy project analysis tools, quick and easy access to project financing and web-based project collaboration, to support the uptake of EE retrofit financing projects.

Their business model demonstrates the potential for a concierge-type service to introduce EE retrofit opportunities to building owners through their web-based benchmarking and energy analysis services, and to link the resulting saving opportunities to 3rd party financing offers. They fall short of offering financing for the up-front project soft-costs, (design, modeling and project management) but instead have created low-costs web tools with which energy managers can perform savings analyses free of charge to get projects moving.

Noesis offers its services to building owners, energy managers, consultants, equipment vendors and lenders. More than just focusing on projects, Noesis regularly produces industry webinars and technology assessments. This complements their free on-line tools, and increases their profile within the EE retrofit industry as a strategy to attract more projects to their services.

* Noesis has recently begun to offer its financing and analysis services to the Canadian market.

- Evaluating the cost/benefit of purchasing savings insurance to protect the building owner from the project performance risk
- Providing a higher level of quality assurance by applying accepted industry standards such as ASHREA energy auditing procedures, or applying the IPMVP to quantify the resulting savings.
- Developing a pool of experience that supports accurate project budgeting in the planning phase.

LINKING TO FINANCING SOURCE

The final element of a successful concierge service is linking the project start-up phase to the implementation by developing a sound business case for the project, and accessing the financing needed to realize the EE measures. The consultations indicated that building owners may be wary of a service that is too closely tied to a particular financing or equipment provider. However, the Noesis concierge service does benefit from having an established link to a pool of capital that its clients can access. Thus there is likely a balance to be struck between making a fair and transparent offer to the building owners, and having a strong enough relationship with lenders and equipment suppliers to negotiate the preferential conditions needed to generate a return for the service.

Alternatively the service could be established by a not-for-profit, utility or government agency, who will put emphasis on meeting EE targets rather than on generating a return from the financed projects. This service would by nature likely maintain a greater deal of independence than the profit generating model.

Other ways the concierge service could connect EE retrofit projects to attractive financing offers include:

- Work with lenders to establish fair and reasonable underwriting procedure/criteria – ideally leading to preferential financing terms for the EE projects it develops
- Steer projects to lenders or financing products that are best suited to EE project types, by considering:
    - Financing that relies on the merits of the project vs. the merits of the borrower
    - Equipment leases vs. unsecured loans for projects with significant soft costs such as commissioning
    - Balancing internally financed portions with 3rd party financing
    - Identifying the ideal repayment mechanism to meet all parties' needs
- Bundling many smaller projects into a larger loan package in order to obtain better rates
- The creation of buyers' groups for standard equipment (lighting) to achieve better pricing

STANDARDIZATION OF EE FINANCED PROJECTS AND FINANCIAL PRODUCTS

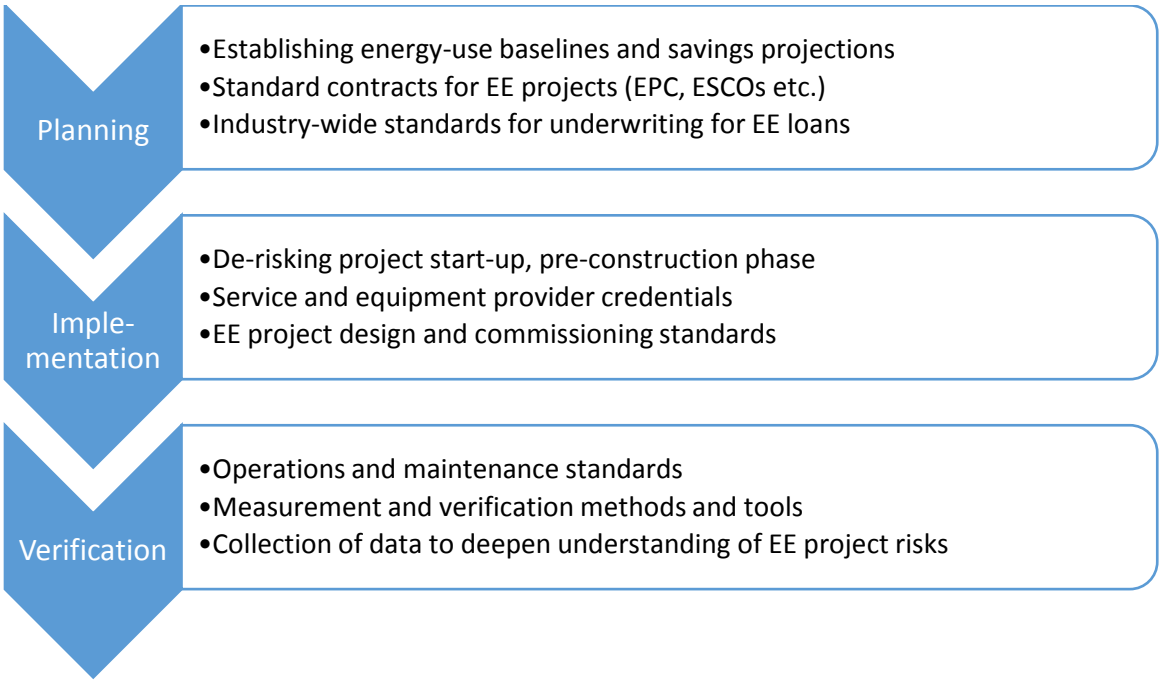
Increased standardization in the EE financing field is a strategy with much potential to address a variety of challenges faced in bringing EE financing to a larger scale in the Canadian commercial buildings market. It can impact each step of the process from project selection and planning, to implementation,

and finally through to support energy efficiency results reporting. Addressing this need reinforces many of the other opportunities identified through the consultations, and it has been described as the big next step toward enabling energy efficiency financing market transformation.

While there has been significant guidance regarding the technical elements of retrofits, studies show that the business case is still not well understood. Including the use of existing standards and procedures within financing contracts and decision-making processes can help ensure project quality, and give financing providers increased confidence in the successful outcome of the project.

Standardization offers benefits at each stage of the project financing work flow, from planning to implementation and through to the on-going monitoring and verification of the resulting energy savings. Tools such as standardized formats for presenting EE retrofit financing requests, 3rd party verification of savings estimates, project quality and measured savings, as well as the application of recognized professional protocols can play a key role in encouraging new investments in the market.

Figure 2: Standardization opportunities at each stage in a financed EE project



PLANNING PHASE

In the initial phase of an EE project efforts and resources are focused on quantifying the potential benefits and developing an agreement that balances the interests of the lender, service providers and building owners. Project plans are based on projected savings assessed against a current baseline. EE results cannot be measured directly, but require a variety of methods to establish baselines and find the difference between the actual energy consumption and what "would have been" had the improvement not been carried out. Applying standardized baselining methods across a financing program can build lender and owner confidence in the results by ensuring a higher level of precision, and making the results more comprehensible to all parties. Further requirements in a planning standard can include assessments of facility energy purchasing, load profiles, peak usage, and time-of-use charges to improve the accuracy of EE project costs and savings projections.

Finally, the use of standard contracts and document packages can help to reduce transaction costs and allow new players to get involved in markets where projects sizes may be at the smaller end of the spectrum. It will also increases all parties' comfort with EE projects as the contracts become known, similar to the Canadian Construction Association standard documents. Creating a standard underwriting package, similar to an appraisal pack used in commercial real estate, can establish a a more efficient marketplace ideally leading to an increase in the number of EE financing deals completed.

PROJECT IMPLEMENTATION

Standardization can also improve the quality of EE retrofits, and thereby confidence in the project, during the implementation phase. Requiring standardized credentials from key project team players (such as the involvement of a Certified Energy Manager or Professional Engineer, and adherence to ASHRAE

INVESTOR CONFIDENCE PROJECT

The Investor Confidence Project (ICP) (www.eeperformance.org) seeks to increase the marketability of EE retrofit financing. It is working with a coalition of partners to establish standards and protocols that support investor-ready energy efficiency projects, by reducing transaction costs and engineering overhead, while increasing the reliability and consistency of savings.

ICP seeks to address the wide disparity in savings generated among projects by standardizing the process of planning, implementing and verifying EE retrofit savings projects. To accomplish this the ICP has established three complete protocols that reflect the range of commercial building projects in the market:

- Large Commercial
- Standard Commercial
- Targeted Commercial

ICP is also establishing an open database of EE financing program results, including project by project performance data, in order to help lenders and program designers assess the real risks and performance factors that impact EE retrofit results.

Finally ICP produces regular EE market reports to keep the industry informed of emerging trends and developments.

standards) and equipment providers can ensure the selection of a qualified team and quality equipment. Second, projects can include quality control requirements, such as the involvement of an experienced commissioning agent, to ensure that the final product meets the initial design intent and that the systems are tuned to achieve optimal performance.

Standards for proposing and selecting project financing can impact outcomes and help to de-risk investment decisions. Due diligence guidelines for evaluating for EE financing requests can help to increase lender confidence in selected projects, including methods to assess the client (for building types and ownership structures), the retrofit plan (measures, implementation timeline, sensitivity to external factors, etc.), the proposed service providers (engineers, contractors, commissioning agents), and the monitoring & verification plan (equipment, alerts and response, etc.).

POST-IMPLEMENTATION

Creating standards for the operations and maintenance of EE improvements and equipment, such as requiring on-going commissioning or preventative maintenance of equipment, can help to ensure the persistence of energy savings. The use of standard monitoring and verification protocols such as the IPMVP can increase the accuracy of energy savings estimates, and increase investor and building owner confidence in the results.

Standards and EM&V protocols for verifying energy savings, are vital components to creating investment-grade energy efficiency loan pools. The development and wide application of standards will help to increase confidence in EE loan products, thus making a significant contribution to creating scale within the market.

Finally, establishing accounting rules and standards specific to EE retrofit savings may be able to help solidify the business case by treating energy bill savings as income, including variants for insured and un-insured options.

RISK APPORTIONMENT

Developing repayment mechanisms, financing products and savings insurance/guarantees offers promise to expand the financing product space by transferring or mitigating the project risk borne by one or another of the involved parties. These new products and solutions may enable projects where the owner, service provider or lender previously felt that the risk they were taking on out matched the potential returns.

Apportioning risk appropriately is an important challenge in EE financing projects. During the consultations it was expressed that often building owners are left carrying the majority of the risk, whether they are comfortable with it, or aware of this, or not. This feeds building owners' apprehension of pursuing EE retrofits, making it tougher to get owners on board.

The associated risks in a financed EE project can be broken down into three broad categories:

4) Performance Risk: the risk that the modifications will not provide the predicted savings
5) Credit Risk: the risk that the borrower (leaser) will default on the financing repayments
6) Asset Risk: the risk that the building value will change

In any EE financing project the credit risk is invariably carried by the lender, while the asset risk is carried predominantly by the building owner, except in the rare case where the lender takes an equity stake in the property. Credit risks can be mitigated by setting repayment conditions that carry significant consequences to defaults (such as the priority lien established in the Commercial PACE model, or cutting off of energy services under some Utility On-Bill repayment models). Asset risk can be mitigated through standardized and mandatory building efficiency labelling or energy performance reporting that allows the property's energy consumption to be compared among its peers. This can help offset the reluctance that building-owners have to enter into longer term financing obligations that remain attached to the property such as equipment leases and OBR or PACE type financing.

SHIFTING PERFORMANCE RISK FROM THE BUILDING OWNER'S SHOULDERS

Appropriate allocation of the performance risk is less clearly defined than the allocation of credit or asset risk, and as a result the building owner may end up carrying all or a significant portion of the performance risk, despite the fact that the owner has little capacity to ensure the project's performance. This can become a significant barrier to building owners, especially for those who do not have a deep understanding of EE retrofit technologies and projects.

Options do exist to transfer the performance risk away from the building owner including:

1. Savings Guarantees, that are typically offered by ESCOs. These require establishing an accurate baseline, and verifying the bill savings resulting from the project, which can add to the overall project costs and transaction costs.

Energy Savings Insurance (Underperformance Risk Protection)

Energy savings insurance is a tool to backstop the savings guarantee offered by an ESCO or efficiency contractor. The insurance helps to overcome uncertainties about the ESCO's ability to cover its own guarantee, and the policy can be held by either the ESCO or the property owners. There are also insurance products suited to vendor-financed projects.

In exchange for an annual or monthly premium, the insurer agrees, over the term of the policy, to pay any shortfall in energy bill savings below a pre-agreed baseline, less a deductible. This ensures that whether the EE retrofit performs as predicted or not, the building owner will receive as a minimum the insured value of energy bill savings.

Other advantages of insuring energy savings are that it removes contingent liabilities from the property owner's balance sheet and increases lender security for third-party financed ESCO contracts.

2. Energy Savings Agreements allocate the performance risk to the energy efficiency service provider who is paid back directly from energy bill savings.
3. Savings insurance can be issued to the building owner, equipment supplier, retrofit designer and/or ESCO to cover their losses in the case that the savings do not cover the initial investment.

Each of the options to transfer the performance risk away from the building owners carries further transaction costs. Energy savings insurance costs can significantly impact the annual savings returned to building owners. ESCOs who offer energy savings guarantees typically incur significant transaction costs related to establishing the baseline energy use and verifying the savings attributable to the EE retrofit projects.

There is an assumption that savings insurance and guarantees are needed for all projects in order to protect the building owner. However, because guarantees and energy savings insurance may add further transaction, building owners with multiple properties may choose to bear this risk themselves as they become increasingly able to comprehend and quantify the risks associated with energy retrofits (particularly less complex projects such as lighting and boiler retrofits).

TENANT-LANDLORD TOOLS AND OPTIONS

Among the greatest barriers facing building owners when considering EE retrofit investments is the split incentive, wherein the tenant reaps the benefits from reduced energy bills while the building owner provides the upfront investment to improve the building's energy performance. This is less of an issue under gross-leases, where the building owner covers all energy and maintenance charges, but for net-leases solutions are needed to return a portion of the resulting savings to the owner when they invest in building efficiency improvements.

Often commercial leases include pass-through energy bill clauses (triple-net lease), wherein the landlord pays the building's utility bills, and passes along these costs to the tenants based on sub-metering of spaces and/or a per-square foot of rented space basis. In other cases, tenants may have separate utility bill accounts that apply specifically to their space. Providing tools and financing options that address or eliminate the split incentive barrier can increase EE financing project uptake. Options to accomplish this include:

1. Sample green lease models or cost/benefit sharing agreements, including examples of lease clauses that fairly distribute the cost and savings between the owner and tenant.
2. Tenant-funded improvement programs that market to the tenants as well as the landlords. It was noted during the consultation session that in Class A real estate it is common for the tenant to demand environmental certification for the building, or to require energy improvements be made as a condition of the lease agreement. Marketing programs to tenants can provide another avenue to engage building owners, and provide them with a financing partner.
3. MEETS type financing models, wherein the utility bill payments do not change significantly but a portion of the energy efficiency savings are returned to the landlord by the energy services provider

as a revenue stream, offer an opportunity to side-step the split incentive through cooperation with utilities.

Simplifying the landlord-tenant relationship and providing a program that returns the benefits to the parties taking on the initial investment risk can increases the uptake and marketability of EE financing programs.

ADDRESSING THE CREDIT RISK BARRIERS

While savings insurance can transfer performance risk away from building owners, it does little to guarantee lenders that they will be paid back. Equipment leases are secured against repossession of the EE measures, but they do not always return the full outstanding value due to removal costs and difficulties to resell used equipment.

Innovative financing mechanisms and tools can help to mitigate credit risks by tying repayment to the property ownership, or to the utility services. Defaulting on property assessed financing can lead to a tax impact and sale of the property to recover the unpaid portion of the outstanding financing, however this can be seen as a heavy-handed approach and may not be acceptable for all the lenders of record on a given property.

Utility on-bill repayment (OBR) emerged from the consultations as a particularly relevant alternative as it connects the financing to the utility service to the property. For building owners, a primary advantage of OBR is that it creates a repayment mechanism attached specifically to the bill savings, making cash-flow positive EE retrofits more recognizable and appealing.

Lenders may find OBR appealing because property owners are typically inclined to stay current on their utility bills, which keeps OBR default and delinquency rates low. In some cases (but not all) failure to repay OBR obligations can lead to cessation of the energy services to the property. This is a strong incentive to property owners to stay current on their payments, but is less heavy handed than litigation, a PACE-financing tax impact, or the repossession of equipment under an equipment lease. While OBR can be used for any kind of EE retrofit, it can be particularly useful approach to backstop soft-cost investments (installation and design costs, or retro-commissioning) that may fall outside of the scope of conventional equipment leases.

SPECIALIZED RISK-ADJUSTED FINANCING

Finally, an opportunity was identified during the consultations to develop financing products that match the specifics of certain retrofit project categories. An existing example is equipment leases that match the equipment useful life, and include a portion over and above the vender pricing cover the installation costs. Financing products tied to specific EE retrofits can be adjusted to account for the actual performance risk and be secured appropriately considering the actual equipment value, and the useful

life of the measure. This can be an effective tool to shift the focus of underwriting criteria away from the borrower's credit standing, to the merits of the EE retrofit project itself.

Examples of specialized product offerings discussed include:

1. Specialized financing for operational improvements, such as commissioning, that can be coupled with equipment leases or other standard secured financing options
2. Creating financing tools for specific EE project bundles with well-understood risks and returns, for example:
    a. Weather-proofing, cladding and windows replacement packages, likely targeted at multi-unit residential properties with high heating and cooling bills.
    b. Power plant replacement coupled with the installation of ground source heat pumps (or other high efficiency heating and cooling equipment).
3. Developing underwriting tools that focus on the factors that affect project performance, rather than on the building owner's credit score. This would stem from an analysis of financing program results to build a more accurate risk-return profile from real-world data.

SECTION 4 – PILOT PLANS

Based on high-potential energy efficiency (EE) retrofit financing opportunities identified through consultations with building and financing industry representative, a set of three pilot models are proposed in order to test drive these approaches in the Canadian commercial buildings market. The pilot initiatives outlined below each include:

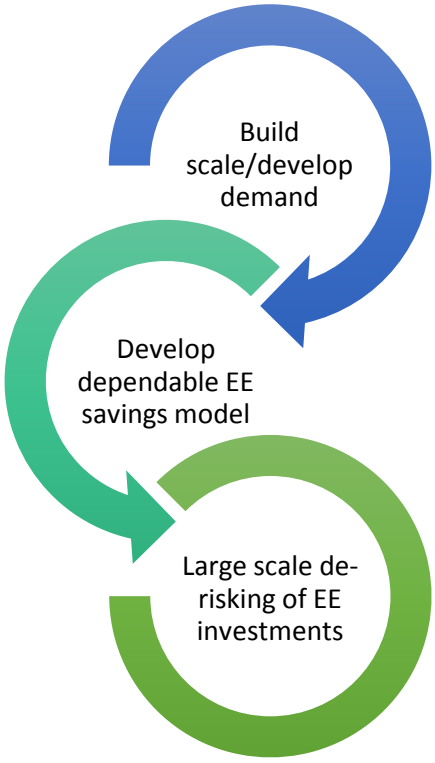
- A listing of the key questions or goals that the pilots seek to respond to;
- A listing of identified actors who could be approached to join the initiative, and finally;
- A brief overview of specific tasks and outcomes that the pilot should focus on.

In each case the pilots must establish a clear set of targets, that, once achieved, will clearly demonstrate the potential of the piloted financing approach and encourage the transformation to a marketable financing product or service.

Overview of the Financing Pilot's Role in Building the EE Retrofit Market

STANDARDIZATION PROTOCOLS FOR FINANCING OF EE RETROFITS

- Development of a range of EE retrofit financing protocols
- Influence on existing insurance and real estate protocols
- Interaction with existing model in the USA (Investor Confidence Project)



CONCIERGE SERVICE

- De-risking the front end of EE transactions
- Financing the pre-retrofit soft costs of chosen candidates
- Payment through actual energy savings from realized retrofits
- Use of standardized tools for assessing opportunities

RISK APPORTIONMENT

- Credit risk alleviation through on-bill repayment
- Performance risk alleviation through other financing tools (insurance, repayment conditions, etc.)

PILOT 1: TEST RUN A CONCIERGE SERVICE

A concierge service aims to streamline and support the evolution EE retrofit projects, starting with the identification of the EE opportunities, right up to the project financing and realization. It specifically addresses a few key barriers early in the EE project development by linking energy benchmarking and audits with specific financing offers, while also financing the upfront project costs to get the ball rolling. The service can be offered to building owners, or to energy auditors, ESCOs and other technical service providers, allowing them to develop and present EE opportunities with a type of "pre-approved" financing that can facilitate the project's move toward implementation.

Offering a new financing product that covers the up-front "soft costs" associated with developing an EE retrofit project is central to the concierge services added value. Specifically, the covered costs may include energy use benchmarking, energy auditing, project management, and even engineering design and modelled estimates of savings. In order to succeed, the concierge service will need to be able to generate a profit in return for taking on the upfront risk associated with the EE project. This can be achieved either through playing a key role in implementing the project (the current ESCO model), or through repayment from eventual savings.

QUESTIONS TO BE ADDRESSED BY THE PILOT

1) **What scope of services should a concierge offer to the EE retrofit process?**
    a. Should it be deeply integrated into the project development, offering the full set of services as a one-stop shop, or be more of a high-level service focussed on providing access to financing.
    b. Who can best drive or deliver the service: the technical service providers or the lenders?
    c. What are the most effective tools to attract clients (e.g. free benchmarking).
2) **What of sources of funds can a concierge service access, and how can repayments be structured to create a viable financing model focussed on covering the project's upfront costs?**
    a. Should concierge repayments be linked to eventual savings, a finder's fee attached to the EE retrofit financing, or the right to carry out the EE retrofit?
    b. How can the concierge secure the rights to implement the project after financing the initial investment in the soft costs?
    c. Define the appropriate sources of financing available to the concierge for each stage.
    d. How can a concierge service balance projects with self-financed and externally financed portions, and how can these options best be presented to the building owner?
    e. What incentives are available through governments and utilities, and how can these be used to support the concierge service?
3) **What would a concierge pilot need to achieve in order to demonstrate its potential in the market and encourage uptake of this service model?**
    a. What is the necessary EE retrofit completion rate for the service to be financially viable?

b. What are the specific criteria to assess pre-retrofit soft-cost financing in terms of building characteristics, likely retrofit outcomes and borrower creditworthiness, and the credit risk associated with the upfront soft-cost financing?

RELEVANT STAKEHOLDERS AND PARTNERS

The concierge service can be driven by any of several stakeholders, ranging from utilities wishing to promote and simplify energy savings, to technical service providers looking to act as a link between retrofit market players. Trust, transparency and neutrality may impact the success of the concierge service *vis-a-vis* building owners who have grown weary of all-in-one service providers that failed to offer them a range of options for possible retrofit projects and financing.

The following stakeholders are relevant to developing a pilot concierge service offering:

Noesis provides technical and planning assistance for EE retrofits, and also offers concierge service that matches commercial building owners with specialized financers and retrofit contractors.

Technical service providers: Energy auditing companies, ESCO's, engineering and design companies should be involved to provide the needed expertise to identify the retrofit projects and quantify the financing requirements.

Specialised or institutional lenders: One relevant example is Bridgepoint Capital, an equity investor that offers financing for construction and renovation project start-up costs.

OPA and BCHydro are willing to capitalize on their knowledge of the commercial building market and the trust they enjoy among building owners to operate or contribute to a concierge service that would be a driver of the retrofit market. Other utilities may also be interested.

Other players who have an incentive to see energy savings in the market place including large municipalities, NRCan, provincial government bodies. They can also provide relevant information through their energy audit and retro-commissioning support programs.

Other industry groups and relevant players including the CEEA, BOMA, CaGBC, ASHRAE may provide a conduit to potential pilot project partners and projects.

EXPECTED OUTCOMES AND ROADMAP

The pilot focuses around setting up a concierge service to test drive the financing model. It may be best to start the service through a loose coalition of various service providers and lenders with a central coordinating party who acts as the entry point to potential projects and offers the upfront financing.

The implementation steps will include:

1) Identify and reach out to parties who want to do more EE retrofits to build the needed team to deliver the service: utilities, lenders, technical service providers.
2) Secure start-up funding and a source through which to offer the upfront financing to potential clients.
3) Establish links with lenders and service providers and develop a flexible range of services through partnerships – establish the contractual models upon which the financing product will be based.
4) Refine the marketing strategy to attract projects, establish tools such as on-line benchmarking, testimonial case-studies and marketing materials to sell the service.
5) Deliver the concierge service through a streamlined process that assists clients from the initial inquiry to the implementation of EE upgrades.
6) Develop key performance criteria for evaluating the pilot's effectiveness in driving EE retrofits and financing, and revise the service accordingly.
7) Communicate the results to the EE retrofit industry through articles, conferences, web-based information and communication with the pilot project partners.

PILOT 2: STANDARDIZATION PROTOCOLS FOR FINANCING OF EE RETROFITS

The Standardization Pilot will seek to establish accepted industry protocols for retrofit projects that can increase their attractiveness to institutional investors and reduce the perceived risk associated with the projects. It will largely focus on the planning, implementation and verification of energy savings retrofit projects, based on existing industry qualification, protocols and certifications.

This pilot will seek to join, or follow closely, existing efforts in this direction, recognising that some progress has already been made. For example, the Investor Confidence Project (ICP) has developed a range of EE retrofit financing protocols for the US market, which could act as a starting point for a pilot in Canada. In this instance the Canadian pilot would adjust the proposed protocols to fit the needs of the Canadian model, while offering valuable feedback to ICP that increases the robustness of its approach in the US. The insurance industry and real-estate industry may also have relevant protocols that can be altered to fit the Canadian EE retrofit financing market; these can also be explored further through the pilot.

QUESTIONS TO BE ADDRESSED BY THE PILOT

1) **What market players are most concerned with standards for EE retrofit financing, and which parallel initiatives can be used to establish a consensus approach for the Canadian market?**
    a. What interest do the parties involved in EE retrofit projects have in standard protocols – how can this bring further value to their projects and investments?
    b. What tools and certifications carry the greatest respect in the Canadian market?
    c. What protocols currently exist for real-estate financing underwriting or for insurance providers that serve a similar purpose in those industries?
    d. What adjustments are needed to adapt existing standard protocols to fit the Canadian EE retrofit financing market?
    e. Whose buy-in is needed to establish a standardization protocol over the long term?
2) **What are the primary areas of uncertainty that standardization can address, and how can existing tools best be combined into a protocol to address this uncertainty and de-risk EE retrofit financing.**
    a. What is the correct level of standardization burden – too little undermines confidence, too much becomes onerous – for each stage in the EE retrofit project flow.
    b. What are the costs associated with the proposed protocols and certifications, what is their impact on the overall financial viability of an EE retrofit project?
    c. Which data, could help lenders and owners reliably evaluate the real value of an EE retrofit, and de-risk their investments?

3) **What tools and methods can be used to create standard financing and accounting rules for EE retrofit financing**
    a. What are the most promising methods to structure energy savings as an income stream returned to the owner for EE retrofit projects applied to properties under net or gross leases (e.g. the MEETS model – income returned from utility under EE PPA model)
    b. Can accounting rules be developed that allow building owners to enter verified savings under the income column in their bookkeeping?

POSSIBLE DRIVERS AND CONTRIBUTORS

In order to be helpful and meaningful for the market, the standardization effort must be spearheaded by the stakeholders who are likely to adopt the developed procedures. Therefore, the initiative should be driven through cooperation among building owners, lenders and the service providers interested in developing a common framework for evaluating energy efficiency investments. To strengthen the confidence in the proposed standardization tools, government involvement should be sought to endorse the proposed standards and procedures.

The following stakeholders could provide valuable input to an EE retrofit financing standards pilot and help build consensus within the industry:

Standards organisations can contribute valuable insight into the impact and value of their existing certification tools and protocols. (ASHRAE, ISO, IPMVP, CSA, etc.)

Professional associations that represent the key service providers can help ensure that the standardization pilot meshes well with existing professional practices and certifications (CICA, CPA, Order of Engineers, Order of Architects, CAMA, BOMA)

Energy service providers, such as ESCOs, engineering companies, contractors, and energy auditors are essential to the conversation to help identify gaps in the industry and to provide real-world perspectives on the value generated by various standards and protocols.

Lenders (banks, lease companies, utilities) who are seeking to increase their EE retrofit financing involvement and are looking for ways to quantify and mitigate risks behind their investment.

Federal, provincial and municipal government bodies that are developing and applying different forms of energy efficiency standards for buildings.

Utilities can be engaged to provide retrofit performance data, and can also include standardization protocols in their DSM program requirements to add momentum to the standardization movement. Moreover, utilities may have a direct interest through future OBF and OBR programs.

PARALLEL INITIATIVES IN OTHER JURISDICTIONS/MARKET AREAS

The following initiatives may provide a starting point for standardization protocols suited to the Canadian market:

1) **The Investor Confidence Project (ICP**) has developed a set of energy efficiency retrofit protocols in cooperation with a broad network of stakeholders in the energy efficiency and financing sector. The long term aim of the project is to transform energy efficiency financed projects into an investment class unto itself by applying standard protocols to reduce and quantify the associated risks.
2) **Real-estate underwriting procedures** may offer insight into protocols currently in use that could be adapted to the EE retrofit financing market.
3) **The insurance industry** may also have protocols for assessing and mitigating risk associated with mortgage insurance and savings insurance that may be applicable to EE retrofit financing.

EXPECTED OUTCOMES AND ROADMAP

The desired outcome for this pilot is the establishment of a leadership group that is dedicated to the ongoing development of energy retrofit standards, and to build consensus within this group as to the appropriate level of standardization required within the industry. To achieve this, the following milestones would be sought:

1) Consultation with a representative group of the relevant stakeholders
2) Establishment of a standards collation or body to develop a program (similar to ICP)
3) Consider options to adapt existing standards and protocols to serve the Canadian commercial building EE retrofit market
4) Obtain a commitment from key parties to move forward in establishing protocols.

The result is a consensus among key players to engage in a longer term plan that can increase confidence around EE retrofit project as an investment opportunity for lenders, and eventually evolve into a product that can be sold into capital markets as an asset backed security.

PILOT 3: RISK APPORTIONMENT THROUGH ON-BILL-REPAYMENT (OBR)

Ensuring that the risk associated with EE retrofit project investments is borne by the correct stakeholder can help to increase uptake of EE retrofit financing. Two key challenges that hinder the accomplishment of EE retrofits are addressing the perceived credit risk, which is often overestimated in the eyes of the lender, and the tendency for retrofit projects to burden building owners with the all of the project's performance risk.

While there is a range of tools and financing models available to address these barriers, utility on-bill repayment (OBR) options emerged from the consultations as an area of high interest and high potential to demonstrate through a pilot financing initiative.

Lenders may find OBR appealing because property owners are typically inclined to stay current on their utility bills, which keeps OBR default and delinquency rates low. In some cases (but not all) failure to repay OBR obligations can lead to cessation of the energy services to the property. This is a strong incentive to property owners to stay current on their payments. For building owners, a primary advantage of OBR is that it creates a repayment mechanism attached specifically to the bill savings, making cash-flow positive EE retrofits more recognizable and appealing.

OBR models focus on reducing the lender's credit risk and can be combined with other mechanisms (such as savings insurance or novel repayment conditions) to address the building owner's exposure to performance risk. The pilot will seek to combine OBR with complementary financing tools to establish a recipe for risk apportionment that can help broaden the EE retrofit financing market.

QUESTIONS TO BE ADDRESSED BY THE PILOT

1) **What criteria are useful to lenders and owners when quantifying project risk?**
    a. What level of risk does each party consider acceptable in an EE retrofit project, and can the parties be convinced to accept the appropriate risks?
    b. Identify the information that is currently used to assess retrofit project financing risk.
    c. What de-risking tools are preferred by building owners, lenders and service providers?
    d. How many projects must the OBR pilot deliver in order to demonstrate its viability and attractiveness as a tool for Canadian utilities DSM programs?
2) **How can an OBR mechanism be established to offer financing to hitherto under-served parts of the commercial building market?**
    a. What functional model is acceptable to the utilities, lenders and building owners?
    b. What costs and responsibilities does this add to the utility's service delivery?
    c. What are reasonable consequences for repayment delinquencies and defaults, and what real costs do the lenders and utility incur in each case?
    d. What other tools are best linked with the OBR pilot to increase its attractiveness?
3) **Who is interested to provide capital for an OBR financing product**

a. Should the OBR financing pilot be attachable to self-arranged financing obtained by building owners?
b. Can the OBR pilot be linked to a source of capital provided through the utility (3rd party or provided by the utility itself) to create an OBF type product?
c. Can different the OBR products be targeted to various types of buildings and/or borrowers? (portfolios vs. individual buildings, MURBs, commercial spaces, 1st tier vs 2nd tier commercial buildings, smaller buildings etc.)
d. Can OBR successfully merge financing for equipment and soft costs by integrating equipment leases?

POSSIBLE DRIVERS AND CONTRIBUTORS

Utilities: the OPA and BCHydro both expressed interest in this model. BCHydro has some OBR experience through a recently implemented residential pilot program. Other Canadian utilities may be interested to join efforts to develop a workable OBR model to apply across their service areas.

Lenders: under the OBR model a lender or group of lenders will be needed to provide project financing.

Building owners will have an important role to play in defining an attractive program. Later they will need to be marketed to in order to achieve the OBR pilot's success.

Technical services providers can be engaged to provide input into the OBR pilot design, and then to market the financing product to their clients.

Energi and other insurers offer products that transfer performance risk from the building owner, this may have value as an option within an OBR program.

EXPECTED OUTCOMES AND ROADMAP

This pilot would likely require two-steps. The first step would be an investigation into OBR design options that can be targeted to specific market segments. This will also entail forming a consultative group with representation from each of the parties involved in delivering OBR supported EE retrofit projects. This group will act as a resource team to support the design of the OBR pilot. The second step would be to reach out to interested lenders and/or insurers to develop a product that successfully responds to at least one of the key risk impact factors identified.

1) Establish a consultation group of interested parties to develop the OBR pilot offering, including a committed utility and a committed lender or lenders.
2) Reach consensus within the group over the OBR financing configuration. Included within this would be a process to encourage each of the parties to recognize the appropriate exposure to the various types of risk associated with their role in EE retrofit projects.

3) Establish the OBR pilot financing program and promote it in the desired commercial building market segments. Make clear the place of OBR compared to competing financing options (self-finance, EPC, ESCO etc.)
4) Establish a marketing strategy to attract projects, establish tools such as on-line applications, testimonial case-studies and marketing materials to sell the OBR financing.
5) Verify results and evaluate the effectiveness of the OBR pilot. Communicate the results to market players and promote other utilities and lenders to adopt the successful strategies identified.

The end result will be a demonstration of an OBR program that indicates the key factors that impact the success of OBR initiatives and can be used to engage other Canadian utilities to establish similar repayment mechanisms.

WORKS CITED

Bhargava, V. D. (2012). *The Role of Appraisals in Energy Efficiency Financing.* Oak Ridge, TN : U.S. Department of Energy.

Brandon Smithwood, R. H. (2013). *Power Factor: Institutional Investors' Policy Priorities can Bring energy efficiency to Scale.* Ceres. Boston MA: Ceres.

Denbo, R. (2011). *How Governments Should Fund Retrofits.* Toronto ON: Zerofootprint.

Doom, J. (2013, 11 21). *SolarCity Next Bond Offering May Reach $200 Million: CFO*. Retrieved 01 02, 2014, from Bloomberg: http://www.bloomberg.com/news/2013-11-21/solarcity-next-bond-offering-may-reach-200-million-cfo.html

Friedrich, K. (2013, 03 08). *Energy Efficiency Loans Encounter Obstacles in the Secondary Market*. Retrieved 01 02, 2014, from Clean Energy Finance Center: http://www.cleanenergyfinancecenter.org/2013/03/energy-efficiency-loans-encounter-obstacles-in-the-secondary-market/

Greg Kats, A. M. (2011). Retrieved 09 27, 2013, from http://www.cleanenergyfinancecenter.org/wp-content/uploads/EE-Financing-Models-and-Strategies-Oct.-2011.pdf

Kidney, S. (2013, 03 07). *US States compete on Green Banks, with CA the latest / Penn's warehouse issues $31m energy efficiency bond - See more at: http://www.climatebonds.net/2013/03/us-states-compete-on-green-banks-with-ca-the-latest-penns-warehouse-issues-31m-energy-efficiency-*. Retrieved 01 02, 2014, from Climate Bonds Initiative: http://www.climatebonds.net/2013/03/us-states-compete-on-green-banks-with-ca-the-latest-penns-warehouse-issues-31m-energy-efficiency-bond/

Lacey, S. (2013, 12 18). *A Step Forward for Efficiency Project Standards: Next Up, Securitization?* Retrieved 01 03, 2014, from Greentech efficiency: http://www.greentechmedia.com/articles/read/a-step-forward-for-standardization-in-efficiency

Martin Tampier, P. (2008). *A Canadian Loan Fund for Residential Energy Efficiency and Renewable Energy* . Ottawa ON: CMHC.

Morgan, S. (2012). A Roadmap to Significant Reductions in Energy Use for Existing Buildings. *Retrofit 2012 Conference* (pp. 1-10). Cambridge, MA: http://cleanenergysol.com/.

Nelder, C. (2013, 11 09). *Financial innovation is the next big thing in clean energy and efficiency*. Retrieved 01 03, 2014, from SmartPlanet: http://www.smartplanet.com/blog/the-take/financial-innovation-is-the-next-big-thing-in-clean-energy-and-efficiency/

NOESIS. (2014). *Efficiency Project Financing*. Retrieved 01 03, 2104, from noesisenergy.com: https://www.noesisenergy.com/site/content/efficiency-project-financing

NYC Resources. (2012). *PLANYC Green Buildings and Energy Efficiency*. Retrieved 01 06, 2014, from Greener, Greater Buildings Plan: http://www.nyc.gov/html/gbee/html/plan/plan.shtml

PRWeb. (2013, 10 22). Commercial PACE Provider Figtree Financing Issues Third Bond Just 3 Months After Its Last. San Diego, CA.

Wolfe, M. (2013). *WHEEL: A Sustainable Solution for Residential Energy Efficiency.* Retrieved 12 23, 2013, from NASEO: http://www.naseo.org/wheel

APPENDIX 1 – SCAN OF 20 INNOVATIVE FINANCING STRATEGIES

Several excellent reports by governments, non-profits and corporations that survey various energy efficiency financing approaches, including by the UN and World Bank, the European Commission, the Energy Foundation, American Council for an Energy Efficient Economy, and the Institute for Building Efficiency. This document presents a scan of innovative financing approaches for energy efficiency that are in use, have been piloted, or have been floated. These can be roughly categorized according to the financing program structure, which is a function of the type of financing offered, the primary financier, and the repayment mechanism used (including the recourse in case of delinquency). In addition, credit enhancement tools are identified that can improve the financial product's commercial-attractiveness within the various program structures. Moreover, a range of capital mobilization mechanisms are identified that can be employed by financing programs to access sufficient pools of capital.

While not a financing approach per se, **aggregation** is a common theme that arises in the discussion of energy efficiency financing. Indeed, many of the approaches profiled require aggregation to be viable since only by bundling many energy efficiency projects together will the opportunity become attractive to larger, mainstream investors.

Similarly, **approaches that build a solid understanding of the business case for energy efficiency** are key to mobilizing capital in this space, as are policies that promote efficiency improvements (codes, portfolio standards), introduce additional costs (i.e. carbon pricing), and create awareness and market competition (i.e. labelling).

Dedicated sources of funding for energy efficiency must not be confused with financing mechanisms, although it can be very helpful to have funds available to accelerate uptake of innovative financing. This has been a priority for Toronto Atmospheric Fund which has invested approximately $50M over 20 years, with a priority on demonstration and de-risking of financing for urban energy efficiency opportunities.

Characteristics of **commercially-attractive** financial products for energy efficiency include financing that limits or does not add debt to the property, covers the full project costs, minimizes up-front capital investment by the property owner, and is structured to allow repayments to be classified as operating expenses. Financing must be affordable and be payable over an appropriate period such that projects can achieve positive cash flows.

The financing tools described below have not yet been analyzed or compared based on their effectiveness/impact, practicality, or other criteria. The goal of this initiative is to present a range of options and through ongoing consultation with stakeholders and industry experts, narrow down to a short-list that can be game-changing in accelerating investment in energy efficiency in the Canadian context.

Overview of Innovative Financing Mechanisms Explored

Type of Financing	Financier	Repayment Mechanism	Credit Enhancement	Capital Mobilization
Debt Financing: a collateral asset secures the financing (on book)	Private finance company or Bank, including ESCO	Lease Payment	Loan Loss Reserve	Bonds – Aggregate
		Loan Payment	Loan Guarantee	Bonds – Individual
	Equipment Vendor	Lease Payment	Insured Savings	Revolving Funds
		Loan Payment	Interest Rate Buy-down	Warehousing
Project Financing: non-collateral loans, tied to savings (can be on or off book)	Government	Property Assessed	Preferential Underwriting	Securitization
	Utility	On bill	Favorable Taxation	Acceleration Funds
	Private finance company or Bank	Loan Payment	Direct Incentives	Shared Savings Incentives*
	ESCO/Third party	Savings Purchase Agreements		Rate of Return Incentives*
		Energy Performance Contracting		
		Feed in Tariffs		
Equity Financing: tied to an ownership stake enterprise	Self Financed			
	Corporate mechanisms	Dividends (e.g. REITs), Joint Ventures		

**Utility Financing Incentives (Regulated Equivalent Return)*

1. INNOVATIVE FINANCING PROGRAM STRUCTURES

Innovative financing programs are typically founded on three key elements: the type of financing (i.e. collateralized debt, or non-debt options), the financier, and the repayment obligations and mechanism. Arriving at the right financing program structure will depend on the local market conditions and identified barriers, as well as the involving the right actors. However, selecting a viable financing program structure alone may not ensure success of the program. Credit enhancement tools (such as interest rate buy-downs) may be needed in order to improve the business case to property owners and ESCOs. Moreover, the program may need to establish a renewable source of program funds by accessing the secondary capital markets.

Each of the financing program structures outlined below can be combined with a range credit enhancement and capital mobilization mechanisms. By balancing these factors, programs will seek to create an attractive program to both lenders and property owners, programs that allocate risk to the appropriate parties and return benefits accordingly.

UTILITY ON-BILL FINANCING

Type of Financing	Financier	Repayment Mechanism	Credit Enhancements
Non-collateral, Project Financing, off book (non-debt)	Utility	On-bill	Often include interest rate buy-down

On-bill financing is a vehicle employed by utilities to allow property owners to access funds for energy efficiency retrofits, and to pay back the financing through a monthly charge applied to their energy utility bill. An advantage of this financing vehicle is that the repayment obligation stays with the utility bill account if there is a change of ownership, and is therefore attached to the property that is generating the savings benefits. Failure to repay the financing can result in the cancelling of energy utility services to the property.

To date Canadian programs have focused on the residential market (BC, Manitoba, Enbridge Gas), and most programs require that that energy efficiency retrofits yield cash-flow positive savings such that the value of the average monthly savings are greater than the monthly financing payments.

Example Programs: BC Pay as you save (PAYS), Manitoba Hydro Power Smart, Enbridge Gas Distribution

PROPERTY-ASSESSED FINANCING

Type of Financing	Financier	Repayment Mechanism	Credit Enhancements
Project Financing, off book (non-debt). Can result in tax sale of property if repayment is in arrears.	Municipality	Loan payments by property-owner to third-party financer, or through net energy bill savings captured by the ESCO.	Interest Rate Buy-Down, Loan-Loss Reserves, Loan Guarantees, Preferential Underwriting

Property Assessed Clean Energy (PACE) financing is gaining momentum on the US in both the residential and commercial sectors. Under the PACE model, the municipal government establishes a PACE ordinance that allows energy efficiency improvements to be financed on private properties and repaid through a special assessment on the property tax. The financing can be provided by the municipality or through a third-party financial institution, who is then repaid by the tax fees collected by the municipality. Given the large size of individual commercial PACE financing envelopes, a range of capital mechanisms can be employed by the financier including municipal revolving funds, issuing aggregated bonds, or establishing bonds attached to individual retrofit projects.

The PACE financing establishes a priority lien on the property, that can stay with the property after a change in ownership, or can be repaid in full by the property owner at anytime (i.e. to clear the assessment prior to selling the property). To prevent disputes over lien priority, commercial PACE programs typically require written consent from all mortgage lenders on the property.

Current Programs: There are currently sixteen commercial programs are currently accepting applications in the US. In Canada the first PACE-type financing program is being established by the City of Toronto, who is applying Ontario's recently amended Local Improvement Charge mechanism to offer property assessed energy efficiency financing to small residential as well as multi-unit residential buildings.

ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC)

Type of Financing	Financier	Repayment Mechanism	Credit Enhancements
Non-collateral Project Financing, on or off book	Third party or ESCO	Loan payments by property-owner to third-party financer, or through net energy bill savings captured by the ESCO.	Benefits from existing incentives and

Energy Service Companies (ESCOs) typically offer performance-based contracting for energy services only, or performance-based contracting for energy services and financing. In either case, an ESCO acts as the energy efficiency technology provider to the property owner, delivering design-build energy

efficiency projects that aim to meet a target energy saving performance. ESPC projects typically involve deep retrofits and usually have relatively long paybacks periods of ten years or longer.

Financing can be provided by the ESCO, or a third party arranged by the property owner. Most financing for projects developed by ESCOs in the North America has been guaranteed savings, where financing is provided by financial institutions to the property owner and the ESCO guarantees the delivered savings. It is often not necessary to undertake an in-depth credit analysis of the energy services project since the financing is not a non-recourse financing. Moreover, third-party financing through an ESCO transfers the technology and management risks away from the end-user to the ESCO.

SAVINGS PURCHASE AGREEMENTS

Type of Financing	Financier	Repayment Mechanism	Credit Enhancements
Non-collateral Project Financing, non-debt (off book)	Third party or ESCO	Repayments by property-owner to third-party financier, or through net energy bill savings.	Buy-down the internal rate of return can increase savings passed on to property owners.

Under the Savings Purchase Agreement (SPA) model, sometimes called “managed contracts”, a third - party invests in energy efficiency upgrades in a property, in return for a portion of the resulting savings. Typically the overall savings are verified through metering and benchmarking, and a portion of the savings is returned to the building owner, and the financier, as per the initial agreement. Under this model, the financier accepts all of the risk, and creates a revenue stream for the property owner. The property owner does not incur any debt on their books. After a pre-specified time period, or upon reaching an overall repayment target to the financier, ownership of the energy efficiency measures passes to the property owner, who then receives the full benefit of the energy savings equipment for the duration of its useful life.

Example Programs: TAF’s Energy Savings Performance Agreement program applies the SPA model, covering up to 100-% of the initial retrofit project costs, then receiving a portion of the resulting verified savings until the terms of the initial investment repayment have been reached.

The Metered Energy Efficiency Transaction Structure (MEETS) applies a similar model wherein a third-party investor and energy efficiency supplier (ESCO) secures the right to invest in energy saving measures in a particular property, in return for a monthly or annual fee paid to the property owner. The property owner continues to pay their full pre-retrofit energy bills (benchmarked to account for weather and occupancy variations) to the energy supply utility. The utility then pays the third-party financier the difference between the actual billable metered energy use and the pre-retrofit energy bill payments. This model involves the energy utility to access the repayments, and creates a revenue stream tied directly to verified energy savings.

VENDOR FINANCING

Type of Financing	Financier	Repayment Mechanism	Credit Enhancement
Typically collateralized loans or leases	Equipment Vendor (possibly with a financial services company)	Loan or Lease payments.	Preferential lending rates and loan conditions may be applied to attract customers. Leases may be subject to favourable taxation.

Vendor finance programs are delivered at the point of sale, and can be undertaken by the vendor forming a finance company or through a relationship between a vendor and a financial services company. The vendor may be a manufacturer, distributor or retailer of energy efficiency equipment – basically the entity that is motivated to advance uptake of the goods and/or services. The vendor aggregates capital demand, and potentially through pooling of sufficient transactions, could create a secondary market for the portfolio, if the credit can be evaluated as a whole. The aggregation can help reduce transaction costs since the vendor has responsibility for a share of all the administrative, reporting and other transaction costs. Vendor financing is best-suited to financing mass-market, high-volume goods and services with a large, specific customer base.

LEASING

Type of Financing	Financier	Repayment Mechanism	Credit Enhancement
Debt financing – on book	Financing Company	Lease payments	Preferential conditions may be applied to attract customers. Leases may be subject to favourable taxation.

Energy efficiency equipment leasing programs offer debt-like financing to property owners that can cover the full up-front cost of purchasing and installing the equipment. It is a commonly used tool for businesses to lease equipment, based on a few key benefits such as creating a fixed cost expense not subject to interest rate variations, avoiding the need for the property owner to make an up-front capital investment, and they offer potential tax treatment advantages. As mentioned above energy efficiency equipment leasing can be offered by an equipment vendor, or a third party financial services company.

EQUITY FINANCING, CORPORATE STRUCUTRES

Type of Financing	Financier	Repayment Mechanism	Credit Enhancement
Equity Financing	Self financed, corporation, partnerships etc.	Dividends or other pre-arranged profit-sharing mechanism	

Equity financing models involve the financier receiving a stake in the ownership of the property in return for their investment in energy efficiency retrofits. This can be simply an owner accessing existing funds to increase the value of the property, or alternatively forming a joint venture or other arrangement with a financing partner. The key difference between equity financing and project or debt financing, is that the financier only gains a return when the overall property yields a profit.

The corporate financing sector has a wide range of models and various tax-advantaged vehicles that could be extended to energy efficiency assets. These models, including real estate investment trusts (REITs), General or Limited Partnerships and Joint Ventures are familiar to investors and may offer an attractive model for energy efficiency financing.

REITs are liquid (often publicly listed and traded), have steady income streams (because they must distribute 90 percent or more of their taxable income), and offer investors substantial tax advantages. There are already well understood aggregate real estate investment tools that could be extended to energy efficiency financing. For example San Francisco's Renewable Energy Trust (RET) is applying the REIT structure to the solar power industry to lower the cost of capital by as much as 20 percent.

Joint Ventures may be attractive to many smaller energy project developers who do not have the reserves to finance projects using the on-balance sheet route, or the time and skills to set up a limited recourse project-financing package. In this case, co-development (joint venture) with a stronger partner able to raise the necessary finance (perhaps an electricity utility) may be suitable.

2. CREDIT ENHANCEMENT TOOLS

Energy efficiency investments are often perceived as risky by banks because of their unfamiliarity with the technologies and investment structures used, as well as the monitoring needed. Property owners can typically only borrow money to finance these measures if they have good credit and give the lender recourse to their assets as a guarantee. As a result of the perceived risk, banks and financial services companies may impose strict underwriting criteria and set interest rates higher than are available for other similar investments in the real estate sector. These can pose significant barriers to property owners, ESCOs and service providers seeking to finance energy efficiency retrofits.

Credit enhancement tools seek to lower these barriers by improving the financing conditions. Backstopping the risk can help to encourage financiers to offer financing at competitive rates, or to lighten eligibility restrictions. Alternatively, programs may instead increase the attractiveness of financing by covering a portion of the borrowing costs. Finally, other instruments that seek to reduce uncertainty around the achievable savings in order to encourage lenders may be applied.

The credit enhancement tools below outline many of the most promising approaches currently in use. Effective application of these within innovative financing programs can increase program success by encouraging uptake and reducing delinquency.

LOAN GUARANTEES

When a public agency with good credit offers a loan guarantee to backstop energy efficiency financing, banks can lend at lower interest rates and/or extend the term of the loan because the guarantor has promised to ensure timely repayment. Individual loans or a portfolio of loans can be covered by either partial or full risk guarantees. Because the guarantee is based on the credit worthiness of the backer this mechanism is largely limited to government agencies.

Between 2009 and 2011 the US DOE Loan Guarantee Program disbursed over $30 billion in loan guarantees on energy efficiency and renewable energy projects. The DOE still has authority to issue Loan Guarantees (up to $10 billion available) for projects that "avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued" and promotes projects in three categories: (1) manufacturing projects, (2) stand-alone projects, and (3) large-scale integration projects that may combine multiple eligible renewable energy, energy efficiency and transmission technologies.

LOAN LOSS RESERVE FUNDS (LLRF)

An LLRF is another way of backing energy efficiency loans. If the borrower defaults, then the lender is paid back out of the reserve fund, reducing or eliminating repayment risk. An LLRF can secure a single loan or a portfolio of loans, and is often used for the latter. In either case it be structured to repay full or partial losses in case of default, and can backstop property-assessed financing or commercial loans. An LLRF could be seeded by public funds but become self-sustaining if funded by a fee on each loan. By ensuring that dedicated reserve funds are made available in an escrow account, LLRFs guarantee loans without relying on the credit of an institution as the guarantor.

Example Program: The Global Environment Facility and the International Finance Corporation, as part of the China Utility-Based Energy Efficiency program, set up an LLRF that guarantees loans made by local commercial banks to energy management companies who finance upgrades for their customers. This "Loss Sharing Facility" will refund 75% of the first 10% of the loan amount in case of default, and 40% of any losses on the remaining 90% of the loan amount. With $50M in loss reserve funds contributed by the GEF and IFC, the program seeks to mobilize up to $1.5B for energy efficiency project financing from the private sector.

INSURANCE (ENERGY SAVINGS UNDERPERFORMANCE RISK PROTECTION)

Energy savings insurance is a tool to backstops the savings guarantee an ESCO or Efficiency Contractor offers to property owners. The insurance helps to overcome uncertainties about the ESCO's ability to cover its own guarantee, and the policy can be held by either the ESCO or the property owners. There are also insurance products suited to vendor-financed projects. In exchange for a premium, the insurer agrees to pay over the term of the policy contract any shortfall in energy savings below a pre-agreed baseline, less a deductible. Other advantages of insuring energy savings are that it removes contingent liabilities from the property owner's balance sheet and increasing lender security for third-party financed ESCO contracts. Energi is an example of a specialized insurance company that currently offers energy savings insurance.

PREFERENTIAL LOANS

Innovative financing programs may seek to offer preferential loan terms to borrowers to increase the attractiveness of energy efficiency retrofits. By offering lower rates, longer repayment terms, different security (such as considering the energy savings as part of the security) than standard loans, programs can help to advance new projects. This type of offer is likely limited to utility or government delivered programs that can accept lower returns on their capital in order to meet macro energy savings goals.

PREFERENTIAL UNDERWRITING

Almost all financing programs will involve underwriting of the proposed retrofit projects. Deep energy retrofits in existing buildings may require analysis of the whole building and application of multiple, interacting energy conservation measures. Technically sound, consistent, practical and fully transparent best practices are emerging for underwriting that can provide financing program managers with the confidence they are looking for.

A recent example is the ICP Protocol for Standard Commercial Projects that seeks to strike a balance between sound engineering and measurement practices, with the need for streamlined and cost-effective approach to developing standardized quality energy efficiency investments. The ASTM E2797-11 Building Energy Performance Assessment (BEPA) Standard, The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Level II and Level III Energy Audit Guideline, and The International Performance Measurement and Verification Protocol (IPMVP) all provide well documented tools to assess energy savings estimates.

Application of sound underwriting processes reduces lender uncertainty, which can lead to improved financing conditions (lower interest rates, better terms). Moreover, sound underwriting practices can be valuable when selling aggregated loans in the secondary capital markets, which can ensure financing programs have access to on-going sources of funds at competitive lending rates.

INTEREST RATE BUY-DOWN

Interest rate buy-down is a relatively straight forward approach wherein the program sponsor (typically a utility or government agency) seeks to reduce the borrower's cost of capital from a third-party lender. In the approach taken in PACE or on-bill type financing programs the program sponsor will pay the lender for a portion of the interest charges. This can be accomplished either through periodic payments following the borrower's repayment terms, or as an up-front single payment to cover the lifetime net-present value of a portion of the interest charges on the loan. The end result is lower borrowing costs for the program participant, which can increase the attractiveness of the financing offer.

FAVOURABLE TAX TREATMENT

Favourable tax treatment is a tool that can be utilised by governments to encourage energy efficiency financing. Examples include offering property tax holidays or ensuring that the value of equipment upgrades will not appear on future property tax assessments (for municipal government PACE-type programs). Federal and provincial governments may offer favourable treatment to financing through accelerated capital cost depreciation or special treatment for interest and leasing charges on commercial income taxes. The overall goal is to improve the financed project's business case by raising its potential net operating profit after tax.

DIRECT INCENTIVES

Direct incentives are often available from utilities or government agencies to encourage the uptake of energy saving measures and equipment. These can be highly complementary to energy efficiency financing programs by offering an additional source of funds that support the business case for the overall investment. Direct incentives can be creatively dispensed and conditioned to help address key barriers to financing. While measure-specific incentives are currently the standard model applied in most programs, a pay-for-performance approach provides a strong driver for scaling efficiency, by offering greater incentives for increased energy savings. A fee-bate structure, where a fee is placed on less efficient energy consuming equipment, can provide strong financing signals for efficiency investments.

Example Program: Seattle's Pay for Performance Program targets buildings with a specific minimum energy footprint, and works to implement energy efficiency projects across multiple systems, such as lighting, windows, and HVAC. Once a program member's energy savings exceed a certain threshold (often 15 percent), they become eligible for an annual rebate per kWh saved each year from the utility. This provides for annual ongoing savings based on verified energy conservation performance, in contrast with traditional one-time rebates for a particular piece of energy efficiency equipment (such as upgraded lights).

3. CAPITAL MOBILIZATION MECHANISMS

Many tools exist to deliver energy efficiency financing assets to the capital markets. They can be aggregated into bonds or asset-backed securities, or for larger projects, resold as an individual program bond into the market. Specialized tools such as warehousing and revolving funds can be used to create Ultimately the goal is to establish a mechanism to ensure a sufficient flow of capital to the financing program either by repackaging the loans for resale in the capital markets, or to establish a pool of funds of sufficient size as to become self sustaining.

BONDS

Municipal or private bonds are commonly used to support PACE and on-bill financing programs. A key characteristic of the bond is that its rating is tied to the credit worthiness of the issuers, rather than the loans themselves. For smaller retrofit projects the financing program can establish the loan conditions with the property owner, and then issue a bond to cover the value of the aggregated loans for resale into the capital markets. Many commercial PACE programs allow for owner-arranged financing, where the property owners arrange the financing terms with their current bank and the PACE program establishes the repayment of the financing through the municipal property tax collection., issuing a bond to cover the financial obligation to the bank. Commercial energy efficiency retrofits can also be large enough (upwards of $1M) to warrant establishing bonds connected to the financing of individual projects.

SECONDARY MARKET RE-FINANCING (SECURITIZATION)

Refinancing packages of 'retail' loans and/or contracts with public market funds can offer an attractive source of capital to financing programs. By establishing standardized contracts adopted by a wide variety of loan originators, such as banks, utilities, ESCOs and other retail outlets, a re-financing fund then agrees to buy loans using the standardized contract (thus driving adoption) which then taps the wholesale financing markets.

The rating of the resulting asset-backed securities will be dependent on the quality of the investment contained within, and securitized assets with better ratings will be more attractive to the capital markets. Establishing sound underwriting criteria can help improve confidence in the resulting financial products. This helps drive demand in the secondary market, leading to lower yields which can be passed along to borrowers in the form of lower interest rates.

Securitized asset products are mostly attractive to institutional investors (retirement and insurance funds, investment banks etc.) however they could also be repackaged for the consumer market. To

attract mainstream investors the products can be positioned as economically rather than responsible-investment driven, complementary in existing investment portfolios (i.e. aligning the security with existing long-term markets such as credit cards, car finance social housing or mortgage backed securities), and have a simple and a clearly articulated value proposition recognizing that there may be extra costs for due diligence of novel products.

Example Program: The Climate Bonds Initiative is an investor-focused not-for-profit working to mobilize capital markets to finance climate change solutions. It promotes investment in projects and assets necessary for a rapid transition to a low-carbon economy.

WAREHOUSING

Aggregation of 'retail' transactions requires an off-taker, such as a bank warehousing facility, that can gather project finance debt across different local authorities and repackage them as capital market vehicles. Warehouse facilities make early re-financing possible and bring significant efficiencies to the roll-out and expansion of energy efficiency financing programmes.

Example Program: Warehouse for Energy Efficiency Loans (WHEEL) aims to provide low cost, large scale capital for state and local government and utility-sponsored residential energy efficiency loan programs. WHEEL purchases unsecured residential energy efficiency loans originated in participating programs, aggregates them into diversified pools, issues rated asset backed notes sold to capital markets investors. Proceeds from the note sales recapitalizes WHEEL, allowing it to continue purchasing eligible loans from state and local programs for future rounds of bond issuance.

REVOLVING LOAN FUNDS

With an initial injection of capital, a revolving fund can be established that is large enough to deliver energy efficiency loans over a particular program period (year, quarter, pilot phase etc.) Revolving funds are regenerated either through the repayment of the loans, or by aggregating the loans and selling them into the capital market.

Example Program: Efficiency Maine's applied $20M of federal government ARRA funding to create a revolving loan fund that supports both the PACE Maine program and the Home Energy Savings Loan Program.

ACCELERATION FUNDS

Acceleration funds create a capital pool in order to demonstrate and de-risk innovative financing approaches. With funds derived from government, carbon market returns or utility bill rate riders, a central acceleration fund can be established and operated similarly to a revolving fund. Typically the fund would lend to intermediaries (ESCOs, Utilities, Local Governments etc.) who would receive fixed long-term low interest rate loans in order on-lend these funds to individual property owners, adding a marginal administration cost. Alternatively, some intermediaries may choose to subsidize the loan rates to their customers to further accelerate the uptake of the funds, or reduce their corporate cost of capital to the borrowers, which would allow the intermediary to develop higher risk or lower return financing programs.

Example Program: The European Energy Efficiency Facility (EEEF) was launched July 2011 by the European Commission with € 265 million to provide different types of loans, guarantees and/or equity to local, regional and (if justified) national public authorities. EEEF aims at financing energy efficiency (70%), renewable energy (20%) and clean urban transport (10%) projects through innovative instruments, in particular promoting the application of energy performance contracting. A technical assistance grant support is available for project development services (technical, financial) linked to the investments financed by the Fund.

REGULATED EQUIVALENT RETURN (UTILITIES)

Power utilities are often subject to regulated rates of return on their overall enterprise. This can create a barrier to energy efficiency as some utilities may be able to generate higher than the specified rates of return by increasing energy sales volumes. Mechanisms exist to allow utilities to generate rates of return for energy efficiency investments that are higher than regulated rates for energy supply. These can encourage utilities to invest further in energy efficiency and to channel more capital into financing and incentive programs.

Shared Savings Incentives allow utilities to share some portion of the net benefits of a successful energy efficiency program with the ratepayers, instead of allowing all benefits to flow to the latter. The Minnesota PUC, for example, has the authority to share the net savings from energy efficiency programs between ratepayers and the utility undertaking the program. Utilities are awarded with a set percentage of net savings from successful programs, with the award increasing as savings increase.

Rate of Return Incentives allow utilities to earn a rate of return on investment that is roughly equal to the return on supply-side investments, which aligns with financial responsibility to shareholders, but requires utilities to capitalize their energy efficiency programs (which may be seen as a barrier). In some cases this can lead to higher earnings for shareholders compared with an energy efficiency program, even though the latter delivers incremental resource requirements at lower cost.

Performance Target Incentives provide payment to the utility for the achievement of specific savings targets. These increase the profitability for the overall energy savings programs.

Energy Efficiency Resource Standards (EERS) establish specific, long-term targets for energy savings that utilities or non-utility program administrators must meet through customer energy efficiency programs. An EERS can apply to either electricity or natural gas utilities, or both, and can be adopted through either legislation or regulation. EERS send a clear market signal and create expectations and certainty thus encouraging sustained, large-scale investment in energy efficiency.

ABOUT DUNSKY ENERGY CONSULTING

Dunsky Energy Consulting is a Montreal-based firm specialized in the design, analysis and implementation of energy efficiency and renewable energy programs and policies. Our clients include leading utilities, government agencies, private firms and non-profit organizations throughout Canada and the U.S. To learn more, please visit us at www.dunsky.ca.