Case 1: Boston

Renew Boston Trust - Commercial

Abstract

Renew Boston Trust - Commercial (RBT-C) exploits structured finance principles through a nonprofit and public-private partnership to channel private investor funds into energy efficiency and renewable energy projects in commercial-sector buildings. Now in its advanced design stages, the programme will integrate performance guarantees into projects. This will allow it to navigate commercial lease hurdles to ensure that both benefits and costs are properly shared, enabling all parties to benefit from reduced energy expenditures. A major feature of RBT-C are strategies to overcome split-incentive issues and uncertainty regarding financial and technical performance to foster deep energy retrofits and climate resiliency investments.
1. Programme context

Citywide reduction target(s)

As laid out in the 2014 Climate Action Plan (Greenovate Boston), the City of Boston is aiming to reduce its GHG emissions 25% by 2020, and 80% by 2050, compared to 2005 levels. Although highly complementary, the activities of RBT-C are not explicitly linked to these goals. The City of Boston is also targeting a 12.5% CO2 emission reduction from large buildings and institutions specifically.

Built environment context and programme background

The structure of investment cycles in the commercial real estate sector in Boston and across the U.S. is a major impediment to the acquisition of project financing for building retrofit projects. Commercial real estate in Boston and the national market typically operates on a 20-30 year refinancing cycle. During initial construction, and again when a building is refinanced, there will typically be a large investment in energy efficiency technology and building rehabilitation. However, this leaves a large period of time (referred to as the “mid-cycle”) where it is often difficult—or even expressly forbidden in an owner’s lease language—to make investments in retrofitting. This is because an owner’s collateral, in this case the building itself, is pledged under the initial mortgage. This is the only financing mechanism available for real estate in the U.S., and is called “mortgage finance”. Mortgage finance puts building owners in a difficult position. Even with access to capital, leases will prevent the acquisition of owner finance for retrofitting projects during this mid-cycle period. If in the case where an owner is able to secure financing from a third party, this party will be in a subordinate position to the mortgage holder on a building. That is, without permission from the mortgage holder, this third party is not entitled to repayment. This is the first set of problems that Retrofit Boston Trust Commercial (RBT-C) seeks to address.

RBT-C also seeks to tackle other factors hampering the growth of investment levels in energy efficiency projects in the commercial real estate market. Research informing the RBT-C initiative tells that there is presently around $642 million worth of unexploited energy efficiency investment opportunity in Boston’s commercial building stock. One major factor behind this unseized potential is that retrofitting projects in large commercial and multi-family buildings currently suffer from a lack of “bankability”. This term means that energy efficiency retrofitting projects—if considered an “investment” — will typically fail to provide the degree of certainty (which affects credit worthiness) and cash flow reliability (for loan repayments and returns for investors). A major reason for this uncertainty is that potential performance of energy efficiency upgrades is often based on engineering estimates provided by a contractor. To reduce liability, contractors are typically not willing to provide a guarantee on the operational performance of newly installed building technologies and materials. Technical and financial uncertainty put potential loan investors in an undesirable position. They are not protected against default should the retrofitting project fail to perform and...
provide a cash flow for repayment. Government subsidies for energy efficiency projects are widely available across the U.S. and mitigate to some extent these circumstances. Yet since in most cases subsidies provide only limited portions of necessary investment amounts for energy efficiency upgrades, private sector financing is still required for the remaining “gap”. These restrictive conditions and low bankability therefore reduce the attractiveness of retrofitting projects in commercial real estate properties for both large, mainstream investors and lending institutions.

Additionally, a lack of information is also preventing retrofitting projects from achieving their market potential. First, when creating credit ratings and assess default rates, large lenders and investing institutions require robust empirical data drawn from an extensive and historical accumulation of technical and financial performance of similar projects implemented across industry. In the case of commercial building retrofitting projects, such information currently lacks. Making matters worse, loan investors are typically more interested in new construction, where returns are higher and more certain. Since investors typically look to use real estate as a short-term investment strategy (two-three years), energy efficiency retrofitting projects requiring longer paybacks are deprioritised. Combined with the earlier described conventions of lease language and investment-cycles in the real estate industry, this array of factors is currently behind the underinvestment in energy efficiency projects for mid-cycle commercial real estate assets.

To appeal to institutional or mainstream loan investors, mid-cycle energy efficiency retrofits must become an approved and investable asset class. This means meeting the standards of large investment entities and gaining access to investors of all types and sizes. To achieve this, however, requires gathering the necessary information to perform traditional financial analysis and secure access to financing in a building’s mid-cycle. Uncertainty on returns also must be eliminated through performance guarantees on technology upgrades to buildings. It is these exact functions that RBT-C has been designed to carry out.

### 2. Programme overview

**Overall goals and start year**

RBT-C has been in development since early 2014. Now in the latter stages of planning and having received political support in Boston, its implementation is scheduled for 2018. Targeting large commercial buildings, RBT-C is one of four components making up the umbrella initiative Renew Boston Trust. The focus of this case study is the commercial buildings (RBT-C) component. The other three market segments targeted by the wider Renew Boston Trust are municipal (RBT-M), nonprofit institutions (RBT-I) and multi-family properties (Deep Green Loan Pool). Emergence of Renew Boston Trust has been facilitated by the City Energy Project. This is a ten-city joint initiative between the Natural Resources Defence Council and the Institute for Market Transformation. The goal of this project is to create “on-ramps” to building energy efficiency in cities through new policies and institutions.
The immediate overall goal of RBT-C is to increase mid-cycle investment levels in commercial building energy efficiency, climate resiliency and renewable energy projects. This is to allow them to fulfill their market potential and become an investible asset class capable of attracting funds from private investment institutions. This will be achieved by explicitly tackling the various factors outlined earlier in the background.

In particular, RBT-C is designed to foster “deep retrofitting” projects. As defined by the Rocky Mountain Institute (2012), these are construction and upgrade measures targeting multiple systems across the whole building. They achieve a much larger energy cost savings compared to “shallow” projects, which focus on upgrading isolated building components, such as lighting or water pump replacement. In RBT-C, a key indicator for measuring the depth of retrofitting in commercial properties is the investment amount relative to Gross Floor Area (GFA). RBT-C is currently aiming to foster investment levels of around $4.00 to $7.00 per ft² per year. To put this in context, municipal buildings in Boston are currently investing only around $0.19 per ft² per year. As an interconnected goal, the programme will also finance climate resilience projects. These include building upgrade measures to strengthen preparedness for potential extreme weather events or electricity grid failures.

To reach these goals, the programme will form a public-private partnership. This will involve the establishment of a new, special purpose entity (SPE) organised as a nonprofit. This SPE will facilitate turnkey project design, implementation, and financing from private investors to realise energy efficiency improvements in commercial buildings. It will require energy savings guarantees from contractors. These guarantees will be used as a form of credit enhancement to improve project bankability. The SPE will outsource many of its functions to contractors. It will then collect repayments as utility charges from building owners and transfer these to the investors.

Programme target and scope

Since RBT-C seeks to foster large-scale and deep-retrofitting projects requiring high levels of investment, it will target the owners of existing and large commercial buildings or upper-market multi-family properties such as condominiums. Ideal candidates for the programme will be those real estate assets at mid-cycle, situated several years from both the initial construction and rehabilitation phases. Initially the programme will target assets within the City of Boston. It does however hold ambitions to expand to the surrounding region. At this stage a minimum GFA requirement has not been fixed.

As programme funding will need to be strategically allocated, participants will need to meet certain criteria. Many buildings in the U.S. have been caught by a dramatic change in efficiency standards in 2006 from the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). Buildings constructed in the years preceding these changes were built to less stringent standards and are now approaching their mid-cycle. These buildings are not well positioned to compete with newer more efficient buildings adhering to ASHRAE standards, and in principle, will be looking for options to finance improvements to reduce their operating costs.

Under RBT-C, the City of Boston will mainly take a convening role, bringing together the institutions required to form the public-private partnership. Additionally, the City will also play a part in the creation of investment performance standards and processes to make these projects more attractive to potential investors. This may also involve providing incentives in the form of partial project financing. However the necessity or feasibility of this is still mostly unclear.

Programme structure and function

RBT-C will be organised by the City Energy Project through the Boston Department of Environment, Energy and Open Space. The implementing entity (i.e. the SPE) will operate as a public-private partnership and take the form of a nonprofit organisation. The public dimension of the partnership will be Boston’s Economic Development and Industrial Corporation (EDIC). Precise membership of the private entity is yet to be determined. It will however consist of multiple large loan investors with interests in commercial real estate finance, equipment leasing, project development and social or environmental impact investments.

The structure and function of the RBT-C is shown in Figure 1. The SPE and property owners will enter into a managed utilities service partnership. This resembles the function of a conventional Energy Services Company (ESCO). Through this agreement the property owners will consent to repay a fixed amount to the SPE, who will then pass repayments to the loan investor. This means that the SPE will pay energy utilities monthly as required, and then recuperate savings on energy expenditures (generated by the retrofit) to offer repayment of debt incurred from retrofitting. This process and other details are elaborated below.

To provide loan investors with enough credit enhancement (i.e. assurance that a debt will be repaid) a performance guarantee from the contractor must be secured. These guarantees will be provided through a performance contract. This will hold the contractor accountable for two aspects. First, the maximum price of project implementation, and second, a specified amount of savings resulting from improved operational building performance. Although these guaranteed “savings” refer to energy savings such as BTU/year and not literally “currency savings”, depending on energy prices, projects would generate a cash positive revenue. This performance contract will in effect remove both technical and financial uncertainties from a deep retrofitting project. Negotiating these guarantees will be the responsibility of EDIC. Once the performance of the implemented energy efficiency technologies is guaranteed, the loan investor will have sufficient protection against default. This is because, regardless of the operational performance of the energy efficiency upgrade, a building owner is legally obliged to make fixed utility repayments to the SPE. However, under the performance contract, the contractor has an obligation with the building owner to
obtaining this waiver will occur just prior to closing on project financing, after
enhance the market value of the mortgage holder’s asset. Negotiations for
the total mortgage for the building itself. Additionally, retrofitting projects would
cover an energy efficiency upgrade would only represent a small percentage of
this negotiation will prove relatively easy, since the repayment amounts to
secure a waiver that grants permission to collect repayments. It is anticipated
position to the mortgage holder. Thus the SPE, on behalf of the loan investor, will
make up any cash shortfall from energy savings the owner might experience as
a result of an underperforming retrofit. When they occur, shortfalls are payable in
cash to the owner, effectively covering the repayment amount to the loan investor.

However, before a loan investor will agree to finance a project, the SPE must
obtain and provide a waiver from the mortgage holder on the building. This
waiver is critical, as the SPE must have legal authority to collect repayments
from the property owner. The mortgage holder is the primary debt holder on the
building (i.e., the bank or investor) and is, generally speaking, given priority for
collection of debt repayment. However, for mid-cycle energy efficiency projects,
this means any project financier would place themselves in a subordinate
relationship with the SPE in the event of a shortfall in the owner’s ability to
make payments. To address this risk, SPEs may enter into agreements with RBT-C
that would address this risk by drafting an outsourcing contract between the
landlord and SPE for all utility service charges, including energy
utilties. “Utility charges” would be defined in the contract to include both variable
utility payments for electricity, gas, and other energy costs. “Utility charges”
would be defined in the contract to include both variable
utility costs. Performance guarantees reduce risk by insuring against
repayment shortfalls resulting from underperforming retrofits. If it is found to be the case, the project will be financed and the energy savings
effectively used to make repayment.

Once an energy efficiency project was implemented, the property owner would
begin making fixed, regular payments to the SPE. This amount is calculated to
cover 1) projected energy expenditures (now reduced compared to before
the upgrade), 2) principal loan balance and accrued interest of project
implementation costs, and 3) a small fee to fund the SPE’s operations. The
advantage of this approach is that overhead costs of the SPE would be collected as
small transaction costs from a large number of projects. This leads to reduced
transactions costs for each project. Payments to the energy utility will be made
by the SPE on behalf of the building owner at a variable rate (determined by the
performance of the SPE’s operations and the cost of energy at the time). The
difference between the fixed, regular payment to the SPE from the owner and
variable but reduced payments to the utility will create the cash flow to repay the
providers of capital to a project.

In the case of a tenant-occupied building, these payments to the SPE would be
obtained from tenants. Many commercial leases in the U.S. contain language
allowing landlords to pass through capital costs to tenants as
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Unique and innovative features

RBT-C’s principle innovation lies in using the SPE to deploy an energy services agreement with energy performance contracts; that is, energy management services that include savings guarantees. This is crucial, since as explained, a lack of certainty regarding technical and financial performance has historically prevented financing for energy efficiency upgrades in commercial buildings. Certain types of energy services agreements such as power purchase agreements are widely used to secure financing for single, large and “meterable” projects like PV solar arrays or combined heat and power plants. These normally include a performance guarantee. RBT-C will use the SPE to extend the energy services agreement model to energy efficiency, which is harder to meter. It will also facilitate the realisation of large numbers of smaller projects that would not normally be feasible, given the high fixed costs of structured project finance. This approach will create a larger number of bankable projects. More projects will in turn drive a reduction in the minimum project size needed to qualify for financing.

Targeting levels of investment instead of environmental indicators such as GHG, kWh or energy use intensity (EUI) reductions is another innovative feature. Many programmes focus on end results as a key metric. In contrast, RBT-C envisions increased investment levels in mid-cycle energy efficiency to serve as the key indicator and driver of energy and GHG reductions across commercial buildings. This has the advantage of being easily measured and explained to funders. Furthermore, where performance guarantees are involved, investments that drive projects can be directly linked to reductions in energy and GHG emissions as climate change mitigation.

Lastly, exploiting funds from private sector investors outside Boston and the state of Massachusetts to fund local energy efficiency projects is highly novel. City programmes to advance energy efficiency in existing buildings often rely on incentives from local energy utilities or corporate finance operations of real
estate owners. In contrast, in addition to exploiting locally available subsidies, RBT-C will primarily draw on funds from any interested loan investors—both local and out of state. There is hence potential for RBT-C to channel a larger volume of investment funds into the Boston building stock than could be done with local funds alone.

**Incentive and support mechanisms**

The principle incentive for building owners engaging with RBT-C is the possibility of securing financing for energy efficiency improvements without traditional corporate finance—that is, RBT-C represents an additional source of capital for the owner, which because of its nature, is not available for any other use. Furthermore, upgrades use savings from reduced energy expenditures to pay for themselves, cash flow to repay project debt that is secured by a damages clause in the performance contract promising to make up the difference whenever there is a shortfall. Further incentives will flow from potential to improve the value and market competitiveness of a property by raising energy efficiency, as well as lowering operating costs. This increase in property value also incentivises the mortgage holder on a property to provide the SPE with the waiver necessary to collect repayment. Leveraging of utility incentives will also be critical to the success of the programme. They serve as additional sources of funding that will allow projects to attain deeper levels of retrofitting activity.

**Links to other programmes**

As mentioned earlier, RBT-C is strongly related to other complementary RBT programmes, covering both public and private sectors, each of which has unique financing requirements and appeal to different types of investors.

Early Boston efforts to provide resources for homeowners and small businesses to reduce energy costs by installing insulation and other energy saving measures shared many goals with the multi-sector Renew Boston Trust. It therefore proved logical to appropriate the name for the sake of ensuring continuity and name recognition.

### 3. Design and implementation

#### Design phase

**Timeline**

Planning of the RBT-C began in early 2014. The programme is still in the advanced stages of design and tailoring. Implementation of initial projects are envisioned for 2018. These will include a $50 million district energy plant, efficiency upgrades and a multi-user microgrid.

**Inputs**

Three years of funding was required to organise Renew Boston Trust and was provided through the City Energy Project by Bloomberg Philanthropies, the Kresge Foundation and the Doris Duke Charitable Foundation. When sealing a Memorandum of Understanding with the City Energy Project, the City of Boston opted for a focus on investigating and implementing financial solutions for spurring energy efficiency in the built environment. The advisor chosen for this role then carried out the design and background research for the Renew Boston Trust. This individual had accumulated experience working with multiple C40 cities such as Houston and Melbourne from 2006 to 2010 as a program director with the Clinton Climate Initiative. The implementing partners of City Energy Project, Natural Resources Defence Council and Institute for Market Transformation, together provide administrative support to RBT-C.

**Key collaborations**

Although development was carried out by a single advisor to the City of Boston, implementation of RBT-C will be carried out through multiple persons and public-private partnerships. As mentioned, the nonprofit SPE will be the main implementing agent. It will unite EDIC, the core public partner, with numerous private lenders and investment institutions. During implementation, the SPE will also exploit external grants from funders to employ staff to assist with legal requirements, project management and to build programme capacity with city government. Once established, the SPE will operate independently from loan investors and contractors, but receive technical support from partner organisations.

EDIC will be responsible for processing project applications and proposals, as well as maintaining relationships with lending institutions. EDIC is an existing quasi-public entity that functions as a board of the City of Boston, and is appointed by the Mayor. This board operates in tandem with the Boston Planning and Development Agency and is mandated to promote and finance infrastructure projects in the city. These organisations will be critical to the operations of the SPE. Having existed for many years, they will provide a framework for which to evaluate project proposals, and will already have support from the city.
Precise membership of the private entity is yet to be determined. It will however consist of multiple large loan investors with interests in commercial real estate finance, equipment leasing, project development and social or environmental impact investments. These loan investors will provide project financing, and EDIC will act as facilitator and disperse funds for projects.

**4. Outcomes and impacts**

**Environmental**

Although explicit targets have not been fixed, the fostering of deep retrofitting projects in large, commercial and multi-family buildings will enable significant reductions in energy and water consumption and GHG emissions in key Boston landmark buildings. The particular focus on deep-retrofitting will also ensure that differing components of buildings are brought into a synergistic and energy efficient alignment. This can achieve greater environmental savings than isolated shallow retrofitting projects of single building components. In addition, since several projects will be implemented to boost climate resiliency, those buildings will be significantly strengthened against events such as flooding and power shortages.

**Social**

Using the SPE to implement energy service agreements will increase building owner access to mid-cycle financing without the need for strategic capital. As mentioned earlier, lack of mid-cycle financing opportunities is a key barrier hindering retrofitting in the U.S. at present. Also important, RBT-C can eliminate any split-incentive issues that exist. As explained earlier, this will be achieved by outsourcing the owner’s utility payments to the SPE, and redefining “utility charges” in the contract to include costs incurred in upgrading a building to lower energy expenditures. This approach will allow a building owner to pass on costs of energy efficiency projects to tenants, who would then see these amortisation charges offset by lower energy expenses. As an additional social outcome, performance contracts will incentivise project contractors to perform due diligence regarding the use of efficiency technologies. This is to avoid the situation where underperforming upgrades would force them to cover financial shortfalls for the building owner. This would ensure monitoring of completed retrofit projects to ensure that full environmental benefits (i.e. reduced energy and water consumption) were captured.

**Market**

The greatest potential market impact will be the creation of a new asset class of investment-grade efficiency returns that has never existed before. This will open the door to institutional investors interested in sustainable environmental investments. Performance guarantees and accumulation of data from multiple projects will allow traditional credit underwriting to be performed. The SPE facilitated public and private collaboration will allow the design of bankable projects. These would overcome much uncertainty involved in predicting financial performance of building energy efficiency upgrades. Consequently, future projects implemented through RBT-C could possibly attract substantial private risk capital to finance mid-cycle building upgrades that tap energy efficiency savings. As well as improving the market value of commercial buildings, these would lead to a dramatic expansion of the current retrofitting market, which is currently far below its potential. Additionally, this increase in retrofitting activity will create green construction jobs and spur diffusion of green building technologies.

**5. Lessons learned for replication**

**Strengths and drivers**

*Clear and attractive benefits for both owners and tenants*

The success of RBT-C will be propelled by a set of explicit and attractive benefits for both building owners and tenants. As explained earlier, building owners will be incentivised by the prospect of upgrading their asset without the need to raise additional capital. This is because energy efficiency projects are designed to be self-funding, and capital charges are passed on to tenants as operating expenses (i.e. as “energy utilities”). As for tenants, they will be incentivised by the prospect of benefiting from permanently reduced energy expenditures. This would occur once the energy efficiency upgrade was paid off and the portion of the “utility charges” associated with the project’s financing was erased from monthly invoices from the owner. Also, during the upgrade project financing cycle, monthly energy related payments to the building owner would not effectively rise relative to the situation before project implementation. This is because energy expenditures would be immediately reduced after implementation, and project payments generated by capturing funds that would otherwise flow to energy utilities. In summary, this set of clear benefits for both sides will serve as a powerful strategy to overcome any potential split-incentive issues between owners and tenants when planning energy efficiency upgrades to mid-cycle buildings.

*Exploitation of private sector funds*

Instead of relying on funding from government sources or utilities, RBT-C takes advantage of generally underutilised private risk capital to finance mid-cycle building projects for energy efficiency, renewable energy and climate resiliency. Performance guarantees from contractors (capping maximum project costs and assuring minimum levels of energy efficiency performance) will significantly increase the interest of institutional loan investors. This is because the performance guarantees offered by contractors would effectively protect against project default. This will remove both technical and financial uncertainty from funding projects, enhancing the credit worthiness and bankability of projects. Based on
the global amount of private capital available that is seeking yield with safety, RBT-C is therefore well positioned to grow and support an increasing number of projects.

**Speed in establishment and potential scalability**

RBT-C works within the bounds of existing legislation. Since it does not require the formation of enabling legislation, it has the potential to be replicated and up-scaled in most regions of the world in a relatively quick and efficient manner.

**Challenges, limitations and countermeasures**

**Obtaining support from the city**

Lacking a history of public-private partnerships (PPPs) in Boston, it has proved challenging to muster support for the SPE and PPP model from other officials and departments in the city. Several factors however have aided in winning support. First, RBT-C represents an important opportunity for the city to pursue ongoing economic development investments and improve large parcels of city-owned land. Second, the nonprofit SPE is designed to be self-sufficient by operating with funds and grants from external sources and small transaction fees collected from projects. This eliminates the need for any specific budget from the city. Finally, the programme represents an important strategy for the city in its Climate Action Plan.

**Long-term approaches required to achieve market transformation goals**

It is expected that the goal of transforming the Boston and national retrofitting market in Boston by turning deep energy retrofitting projects into an approved asset class will be a slow and challenging process. This is apparent when considering that currently, the U.S. commercial retrofitting projects market is estimated to be attaining only 10% of its full potential. In addition, the nature of the deep-retrofitting projects targeted by RBT-C therefore is long-term, with many projects planned to reap paybacks over a decade or more. As such, long-term commitments and strategies are required from all parties participating in RBT-C and its SPE.

**Obtaining a waiver for multi-family properties**

Challenges are anticipated in targeting the multi-family sector. These properties are often owned by a group of investors rather than an individual. Convening this group and making the argument for the repayment waiver could prove difficult for logistical reasons. Additionally, multi-family properties developed under affordable housing schemes can also have federal restrictions against taking on additional debt. These essentially prevent “opening up” of contracts for mid-cycle investment. For this reason, it is expected that RBT-C will see more success in addressing the market-rate and luxury segment (i.e. condominiums) than the so-called affordable end of the multi-family housing market.

List of references


