GREEN BANK NETWORK

coalition for green capital

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GREEN BANK INSIGHT

Aggregation and Securitization

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ABOUT GREEN BANK NETWORK INSIGHTS

Green Bank Insights are a Green Bank Network (GBN) product that consist of short reports that highlight collective successes and innovations of GBN Members and Green Banks in specific areas. They are an opportunity for the GBN Members to share their experiences and engage in continuous dialogue with the broader green finance community. The authors would like to thank the following organizations for their contributions to this document: Clean Energy Finance Corporation (Australia), Connecticut Green Bank, NY Green Bank and Rhode Island Infrastructure Bank.

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About the Green Bank Network

The Green Bank Network (GBN) is a membership organization managed by the Natural Resources Defense Council and the Coalition for Green Capital. It was founded in December 2015 to foster collaboration and knowledge exchange among existing green banks, enabling them to share best practices and lessons learned. The GBN also aims to serve as a source of knowledge and a network for jurisdictions that seek to establish a green bank. The GBN founding members are the Clean Energy Finance Corporation (Australia), Connecticut Green Bank (US), Green Finance Organisation (Japan), GreenTech Malaysia, NY Green Bank (US), Green Investment Group (U.K.) and Rhode Island Infrastructure Bank. Visit us at greenbanknetwork.org/about-gbn.

About the Coalition for Green Capital

The Coalition for Green Capital (CGC) works to establish Green Banks on the state, federal, and international levels by conducting in-depth analyses, leading fundraising and business planning efforts, and providing specialized consulting services. With CGC's leadership and technical support, Connecticut created the first state Green Bank in the US with near unanimous bi-partisan support. CGC then followed that with work in New York, Hawaii, California, Maryland and many other states supporting Green Bank design and implementation.

CGC is working internationally on a number of Green Bank projects, including in South Africa where CGC worked with local stakeholders to design and raise capital the first Green Bank in emerging markets—the Climate Finance Facility—supported by the Green Climate Fund. CGC works on a number of other Green Bank scoping and design projects in Latin America, Africa and Southeast Asia.

Contents

Introduction

Green Banks employ a variety of strategies to unlock capital and drive investment into clean energy projects. Green Bank investment strategies have included participating in projects at the development phase, or under new regulatory regimes, with an eye towards spurring larger portfolios or securitizing completed projects to improve their marketability to traditional investors. Green Bank investments also include making cornerstone investments in project portfolios or in first-of-a-kind Green Bonds to encourage additional institutional investment in clean energy projects.

This paper discusses several examples of Green Banks working to facilitate private investment in projects through strategies of aggregation and securitization. The goal of this paper is to highlight successful Green Bank aggregation and securitization strategies to present best practices for unlocking new sources of private capital. The paper will first present an overview of securitization and aggregation before covering several specific Green Bank transactions.

There are three high-level roles that Green Banks take outlined in the paper: 1) Green Banks and partners working as loan/lease/power purchase agreement/energy savings agreement originators who aggregate projects into a warehouses; 2) Green Banks and partners acting as capital providers to originators/aggregators so that they may create, or increase the size of, asset portfolios or warehouses; and 3) encouraging, via cornerstone investment, large-scale and institutional investors to buy securitized assets after the originator/aggregator bundles assets for sale. Green Banks can play an active or supporting role in these various financing strategies to increase private sector participation in green projects in their local markets.

Overview

Definitions

Aggregation and securitization are strategies that work hand in hand to drive opportunities for tapping into new financing pools. In general terms, aggregation typically refers to a process whereby smaller assets are originated under a common (preferably identical) contract structure between the originator and the end user (or offtaker) of the energy improvement and bundled together. Securitization in this context refers to the process by which the bundled assets are monetized under a financing arrangement which could range from a commercial bank loan facility, a "bespoke" solar fund, or a tradable security sold on the capital markets (either via a private placement or a general note or bond issuance).

Aggregation

Individual small- and medium-sized projects can be complex to underwrite and originate, and the cost of those activities can be high compared with the small size of the deals. Aggregation is a strategy used to bundle small- and medium-sized individual projects to a sufficient size so that the task of evaluating the transaction and documenting the arrangements can be cost effective. This facilitates more efficient financing arrangements via large institutional investors (asset manager, private equity, pension funds and insurance companies, for instance). Green Banks can bundle small- and medium-sized projects to reach a scale where they become attractive for on-sale to large investors or for securitization through the monetization techniques noted above (loans facilities or bond issuances). Aggregation techniques such as loan warehousing can reduce transaction costs for private financiers and facilitate investment in bundled small-scale projects, thereby helping them reach scale. Aggregation techniques and bundling of small-scale projects can be instrumental to increasing project portfolios to a sufficient size to be attractive to a wider array of private investors in the market.

Securitization

Securitization is a strategy whereby non-traded or small-scale assets, such as cash flows from solar leases or power-purchase agreements, are transformed into a standardized, tradable asset.[1] By warehousing or aggregating smaller transactions, Green Banks or bond issuing authorities can take a pool of loans or leases and securitize them by issuing bonds to be repaid from the proceeds over time of the loan pool, or by providing bond-like returns or dividends on capital investments in the securitized pool of assets.

The securitization process most often consists of grouping assets with similar characteristics and then selling them to a separate entity like a Special Purpose Vehicle (SPV) or Trust, to protect the assets from any insolvency of the sponsoring entity or seller. The capital structure is then constructed to apply various claims on both the cash flows and (where relevant) market value of the project in the form of debt, equity and hybrid structures. Securitization takes this process a step further, with the SPV or Trust issuing distinct and marketable securities (typically in tranches), in order to create tradable securities such as asset-backed securities. Such tranches are ranked in order of their rights to the cash flow or other proceeds from realization upon the collateral backing the securities, with the tranches with the senior-most rights having the least risk and with the successive tranches having incrementally higher risk, typically in a cash flow waterfall (see example on next page).

1 While the process of monetizing pools of cash generating transactions can be achieved with a variety of techniques, such as term loan funding by commercial banks for pools of loans, this paper will focus primarily on the process of monetizing such pools via the broader capital markets.

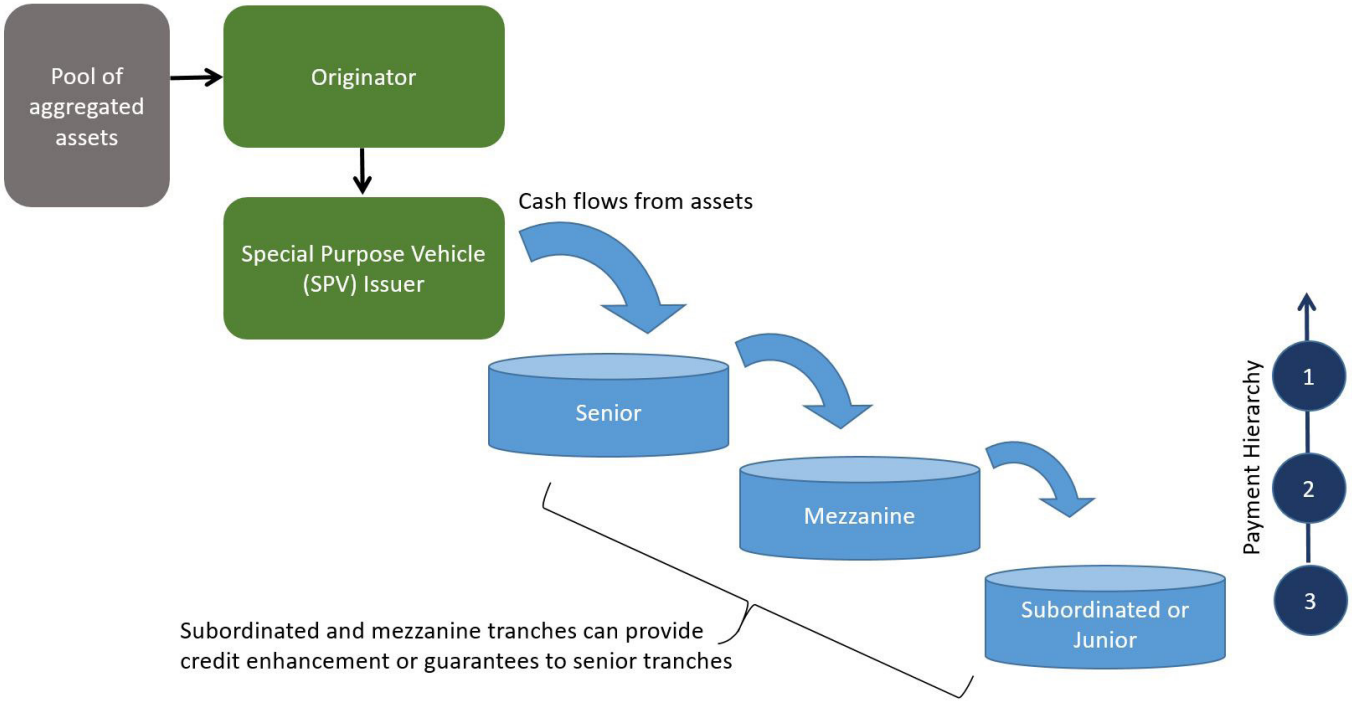

Figure 1. Example Securitization Structure: Low to High Risk Securities are Created from Aggregated Assets[2]

Importance of Aggregation and Securitization

Aggregation and securitization are important strategies for green projects because they unlock capital sources that might otherwise remain unavailable. In order to do this, aggregation and securitization provide value in the following ways:

Reduce Impact of High Transaction Costs of Small Projects[3]

Clean energy projects can come in a variety of different sizes, ranging from micro renewable projects smaller than 100 kW to large utility scale projects and various scale energy efficiency projects. However, fixed transaction and due diligence costs can be similar across project sizes. This puts smaller projects at a distinct disadvantage when competing with larger projects for the same capital. Small projects can be less attractive to traditional investors since they involve a relatively higher transaction costs per deal.

Aggregating small projects and utilizing standardized contractual structures across all of the projects can improve the overall marketability of each project by leveraging economies of scale to reduce each individual project's relative transaction costs.

Facilitate Investment under New Regulatory/Policy Regimes

Small or medium scale projects can struggle to secure finance when they are under a new regulatory or policy regime. By aggregating and securitizing small to medium scale projects that are first of their kind due to new policies or regulations, Green Banks can serve an important role as a first mover to draw investment to projects with which investors may not be familiar.

2 Diagram adapted from report by International Renewable Energy Association (IRENA). "Unlocking Renewable Energy Investment: The Role of Risk Mitigation and Structured Finance." 2016

3 International Renewable Energy Association. "Unlocking Renewable Energy Investment: The Role of Risk Mitigation and Structured Finance." 2016

Reduce the Overall Cost of Capital

Aggregation and securitization can reduce the overall cost of capital for projects, impacting a key lever that affects the overall viability of a project's economics (such as offtake price). This is achieved because projects, once they are fully post-construction, operational, and generating revenue under a clear regulatory environment, are much less risky than projects which have yet to be built. Under a project finance model, once a project reaches a final "term financing" stage, it is important to line up take-out financing that is lower in cost than the initial capital used to fund the project. Green Banks can facilitate this process and provide certainty along the way, by bundling and refinancing operational assets, passing on significant cost-of-capital benefits to the project. Such reduction in the cost of capital is important to make the end-user economics work and can help renewable energy projects be more competitive with traditional fossil fuel projects.

Animate Institutional Investors

In the current investment climate, there are increasingly large pools of capital held by institutional investors. In general, institutional investors can include: insurance companies, endowment funds, commercial banks, mutual funds, hedge funds and pension funds or "superannuation funds." These investors trade in such large amounts that they are eligible for preferential treatment and reduced commissions. In OECD countries, institutional investors manage over $70 trillion in assets, only $259 billion of which are potentially available for direct equity and debt investment in renewable projects.[4]

Institutional investors tend to have a low-cost capital, but also have a low risk tolerance. Many institutional investors also have a large minimum deal size thresholds of $100 million or more.[5] Aggregation and securitization are good vehicles for driving indirect institutional investment into renewable energy projects because they can both reduce the risk and increase the size of investment opportunities by combining multiple projects. Removing the "size" constraint alone would increase the potential for investment by institutional investment significantly.

4 Climate Policy Initiative. "Mobilising low-cost institutional investment in renewable energy Major barriers and solutions to overcome them." August 2017

5 Climate Policy Initiative. "The Challenge of Institutional Investment in Renewable Energy." March 2013

GBN Member Examples

Many members of the Green Bank Network have used aggregation and securitization to drive investment into clean energy projects. Several illustrative examples of GBN activities in aggregation and securitization are presented below as case studies presenting the successful use of these strategies.

NY Green Bank

NY Green Bank (NYGB) has successfully supported aggregation strategies for a number of developers, across multiple investments.

An example of NYGB's impact can be seen in a 2016 transaction with Solar Mosaic, a national financial technology company that provides loans to homeowners to finance the installation of solar systems on their homes. At the request of Guggenheim Partners (Guggenheim), a global investment and advisory financial services firm, and in partnership with Germany's DZ Bank, NY Green Bank participated in a $110 million senior secured credit facility in April 2016. Due to greater than expected demand, that credit facility was increased by $130 million in August 2016, including the provision of a further $40.0 million by NYGB, bringing NYGB's total commitment to the facility to $50 million. As a participant in the lending group, NYGB's capital facilitated Mosaic's financing of residential solar systems in New York State.[6]

When NY Green Bank was first approached by Guggenheim, the number of commercial banks participating in credit facilities funding residential solar loans to homeowners was growing but still limited. NY Green Bank's participation increased the credit facility size to a level that permitted greater deployment of Mosaic's products, and for the business to grow.[7] According to Caroline Angoorly, COO of NYGB, "NY Green Bank's participation as a specialty clean energy investor encouraged new potential bank lender entrants in the clean energy market. As the market has become larger and portfolios of residential solar loans have greater performance history, additional bank lenders began to enter the market. Further, as the track record of bank lenders being refinanced by institutional securitization lenders upon aggregation of sizable portfolios grows, additional banks will gain greater confidence in being refinanced as is intended."[8]

Since the NYGB transaction, Mosaic has gone on to secure even greater access to private capital as it has continued to build a strong track record and achieve additional scale. As a result of these activities Mosaic has now refinanced (and repaid) the NY Green Bank facilities. As Angoorly notes, "this is an example of NY Green Bank's mission in action, where it has effectively catalyzed greater private sector financing while avoiding crowding out private sector capital."[9]

In a separate deal, NYGB closed a $20 million commitment to participate in a $375 million senior secured revolving back-leveraged aggregation facility for Vivint Solar in March 2017. The aggregation facility provides Vivint with financing to expand its business in New York State and other parts of the country. Through this strategy, Vivint is effectively leveraging the size of its national operations to aggregate smaller-scale solar projects and apply for financing at scale to lower costs. The aggregation strategy is expected "draw new investors and financial institutions into the marketplace, decreasing the cost of

6 NY Green Bank. "Transaction Profile: Scaling Residential Solar & a New Asset Class to Advance New York's Clean Energy Goals, Solar Mosaic, Inc." May 2017. https://greenbank.ny.gov/-/media/greenbanknew/files/Transaction-Profile-Mosaic.pdf

7 LexisNexis. Expert Insights: NY Green Bank. "A Lexis Practice Advisor® Practice Note by Caroline Angoorly, NY Green Bank." January 2017. https://greenbank.ny.gov/-/media/greenbanknew/files/news-20190107-Lexis-Practice.pdf

8 Ibid.

9 Ibid.

capital for solar developers and installers, and, as a result, lowering the cost of solar power equipment sold or leased to homeowners."[10] This aggregation strategy is just one part of NYGB's greater engagement with Vivint Solar, to which NYGB also provides construction loan and term loan financing. This partnership shows how NYGB can combine multiple strategies to more effectively support clean energy development.

Connecticut Green Bank

The Connecticut Green Bank (CTGB) has used both aggregation and securitization effectively to drive the clean energy market in Connecticut.

Notably CTGB has used aggregation and securitization strategies to improve the market for Commercial Property Assessed Clean Energy (C-PACE) projects in Connecticut. The aggregation process involved pooling 32 energy efficiency and solar PV projects across Connecticut and bundling the collective revenue streams for sale. Using an RFP process, CTGB solicited bids for the aggregated projects and encouraged bidders to suggest different structures and pricing for securitizing the portfolio. CTGB finalized the securitization process by selecting Clean Fund, a CTGB approved capital provider, to purchase a single class of senior bonds to fund 80% of the portfolio purchase price while CTGB retained ownership of two tranches of subordinated bonds. This private placement transaction was a watershed deal for commercial energy efficiency, as it represented the first securitization of C-PACE assets in the US.[11] The $30 million securitization deal allowed the CTGB to replenish the funds in its C-PACE financing warehouse and continue to directly finance projects in the market.

After CTGB's initial success with Clean Fund, CTGB was able to attract further investment for its C-PACE projects through a partnership with Hannon Armstrong. Attracted by the success of the first round of projects, Hannon Armstrong agreed to provide $100 million in funding for clean energy projects for commercial and industrial buildings and businesses. This transaction helped CTGB increase the size of its warehouse. At the beginning, CTGB had about $40 million of its own funds to originate projects into the warehouse. The additional Hannon Armstrong commitment allowed that warehouse to increase to $100 million so it could originate more projects which CTGB and Hannon Armstrong jointly funded using a SPV structure.

By acting as a first mover in the market, and closing the subsequent deal with Hannon Armstrong, CTGB attracted a "partnership that has streamlined the financing process for business owners, increased access to funds, and allowed the Green Bank to leverage private capital."[12] This example of cultivating buy-in from the private sector shows how a Green Bank's use of aggregation and securitization strategies can benefit local markets and grow clean energy businesses operating under new regulatory regimes.

10 NY Green Bank. Expanding the New York State Residential Solar Market Vivint Solar, Inc." June 2018. https://greenbank.ny.gov/-/media/greenbanknew/files/Transaction-Profile-Vivint-Solar.pdf

11 Connecticut Green Bank. "Sparking a Green Energy Movement." 2017

12 Connecticut Green Bank. "Sparking a Green Energy Movement." 2017

Clean Energy Finance Corporation

In Australia, the Clean Energy Finance Corporation (CEFC) has supported numerous clean energy projects through its aggregation approach, working with co-financiers to bring clean energy asset finance to a large number of individual projects, such as small businesses, manufacturers and agribusiness.

CEFC has developed aggregation partnerships with leading Australian commercial banks including NAB, ANZ, Commonwealth Bank, Macquarie and Westpac. The approach CEFC has taken for these transactions is a "credit intermediated" structure, whereby CEFC offers debt to the bank intermediaries, who then offer asset financing to their customers for eligible technologies including clean energy, building energy efficiency and efficient manufacturing and agricultural processes. CEFC takes risk on the intermediary institution (not the underlying borrowers or assets) meaning the loans are low risk, allowing CEFC to offer low-cost funding to its commercial bank intermediaries. Participating banks offer attractive terms to their end-customers, including discounted interested rates or loan tenors that are longer than those normally seen in the market. These programs are designed to help customers make better decisions and increase uptake of new efficient technologies that save on operating costs, but may have higher upfront cost or require longer tenors. The specific financing terms vary by program, but CEFC does require that participating commercial banks pass on concessional terms to their end-customers.

This approach of working with intermediaries allows CEFC to tap into smaller projects and to take advantage of the existing relationships and processes in place between commercial financiers and their customers, essentially allowing CEFC to tap into a larger distribution platform. Participating banks have benefited from participation in the CEFC programs by being able to offer new products and loans to their customers. These aggregation partnerships have resulted in over A$800 million in investments to more than 5,500 small-scale projects across Australia.[13]

CEFC has also supported securitization to pair large-scale investors with clean energy projects. CEFC is working to attract capital from superannuation funds, which are Australia's form of pension funds. Now holding more capital than Australian commercial banks, Australia's superannuation funds are the third largest holder of pension funds in the world.[14] Increasing their investment in green will be critical to the clean energy transition, and to meeting investment targets under the Paris climate agreement.[15] Superannuation funds, like pension funds, generally have low risk tolerance and high investment thresholds. To unlock their investment capital, it has been important for CEFC to support securitization techniques that tailor investments to their needs.

CEFC has made a $50 million investment through Firstmac to fund business and personal asset finance leases and loans to boost the uptake of energy efficient equipment and low-emission and electric vehicles.[16] By using Firstmac as an aggregator for the smaller business and personal asset leases, CEFC acts as a warehouse provider, helping Firstmac to securitize leases and in anticipation of subsequent investment from larger capital providers like superannuation funds.

13 Green Bank Network. "Australia CEFC's Approach to investing in Small Scale Energy-Efficiency and Clean Energy." March 2017

14 KPMG. "Super Insights Report." 2017

15 Green Bank Network. "Australia CEFC's Approach to investing in Small Scale Energy-Efficiency and Clean Energy." March 2017

16 Clean Energy Finance Corp. "CEFC and Firstmac $50m asset finance fund targets cleaner cars, solar and clean technology." July 2015

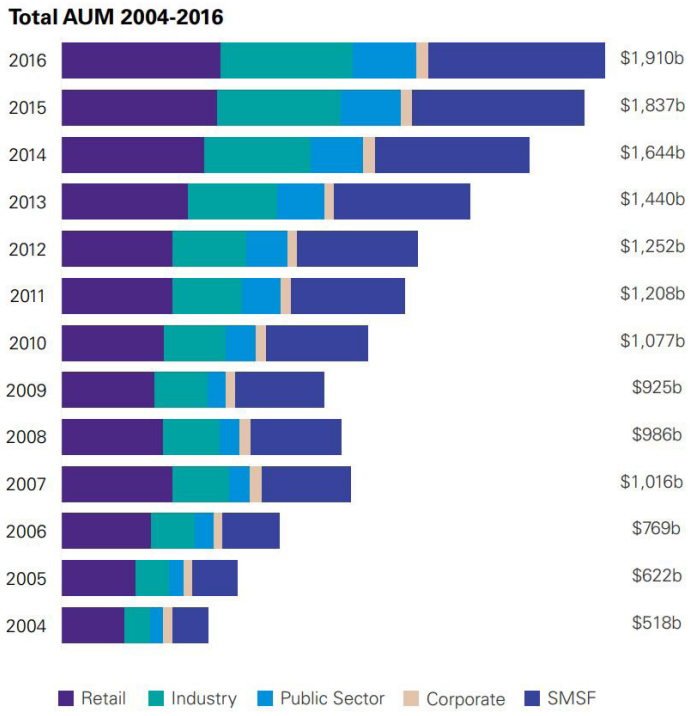

Figure 2. Superannuation Funds (Pension Funds) Have Grown Rapidly In Australia in the Past Decade[17]

CEFC has also made cornerstone investments in Green Bonds to securitize clean energy assets. In 2016, CEFC made a cornerstone investment of $20 million in FlexiGroup's $50 million securitization initiative for solar and renewable energy assets.[18] This commitment was for the funding of the first certified ABS Green Bond, and the CEFC invested alongside a range of larger capital providers in the portfolio of consumer receivables related to small scale renewable assets. Due to the success of this first initiative, CEFC made a second $20 million commitment in another of FlexiGroup's securitization initiatives in 2017.[19]

CEFC works closely with its private financial partners to structure securitization deals, typically in a bankruptcy-remote SPV structure (see figure 1), and terms vary by transaction. CEFC does impose requirements on use of proceeds for eligible assets, and CEFC takes limited exposure to the credit performance of the underlying assets, with a level of loss protection provided by the equity sponsor and potentially other third party investors.[20]

Rhode Island Infrastructure Bank

The Rhode Island Infrastructure Bank (The Bank) has used an aggregation strategy to drive greater investment in energy efficiency projects in its market. Its Efficient Building Fund offers a close up example of how the aggregation process can develop in real time. The Bank used an aggregation, and eventually a capitalized pooled loan approach that allowed for below-market interest rate loans to municipalities, school districts and quasi-state entities to invest in clean energy projects.

As part of its new mandate in 2016, the Bank was tasked with providing affordable financing for municipal governments to engage in energy efficiency projects through an Efficient Building Fund. To do this, the bank initially planned to aggregate and securitize municipal bonds using its long history in capitalized pooled financing and the diversity of a pool of underlying loans to achieve a lower cost of financing then any single borrower could achieve in the financing market by themselves.

To overcome a lack of standard independent information among cities and towns with energy efficiency projects, The Bank used a separate pool of grant funding to help cover the upfront costs of energy efficiency audits in municipalities before rating the economic value of potential projects. The program helped to drive several rounds of energy efficiency and renewable energy projects secured by municipal bonds, with the intention to aggregate and securitize the debt securities.

After the initial round of solicitations, the portfolio contained $17 million of underlying projects, undertaken by six municipalities. Working with its financing team, The Bank understood that at least 10 municipalities

17 KPMG. "Super Insights Report." 2017

18 Clean Energy Finance Corp. "CEFC supports Australian green bond market with investment in innovative securitisation." April 2016

19 Clean Energy Finance Corp. "CEFC support for new climate bond signals growing investor appetite for renewables." March 2017

20 Green Bank Network. "Australia CEFC's Approach to investing in Small Scale Energy-Efficiency and Clean Energy." March 2017

would be needed in order to have sufficient diversification and achieve a sufficiently high credit rating for a public bond issuance. Therefore, instead of issuing Efficient Buildings Fund bonds, the Bank borrowed short term in the bank market to fund the initial transaction while hedging interest rate risk in preparation of a future Rhode Island Infrastructure Bank bond upon having enough assets to bundle. The Bank then issued a second round of solicitations, bringing the total portfolio to 10 municipalities with a portfolio of over $28 million. The Bank added to its short term portfolio with the second round of funding. These private placements were designed to be a bridge toward reaching a sufficient portfolio of projects in the Efficient Building Fund, at which point the bond issuance can take place.

In November 2018, upon completion of its third round of financing under the Efficient Building Fund, the Bank was able to reach a sufficient number of participating municipalities, with a portfolio of projects with sufficient size, composition and diversity to support a rated bond offering, or securitization. The Bank's inaugural $18.3 million Efficient Buildings Fund Green Bond, announced in November 2018, was given a rating of "AA" by Standard and Poor's (S&P) and rated an E1 for an independent green evaluation completed by S&P.

By mobilizing long-term private capital in the bond market, the Bank was able to leverage the limited initial Efficient Building Fund's capital to provide financing for clean energy projects across more municipalities. Since the program started, the Bank has provided $31 million in loans to twelve municipalities across the state of Rhode Island. By accessing the bond market, the Bank was able to finance more projects than would be have been possible with the limited amount of capital in the initial program.[21]

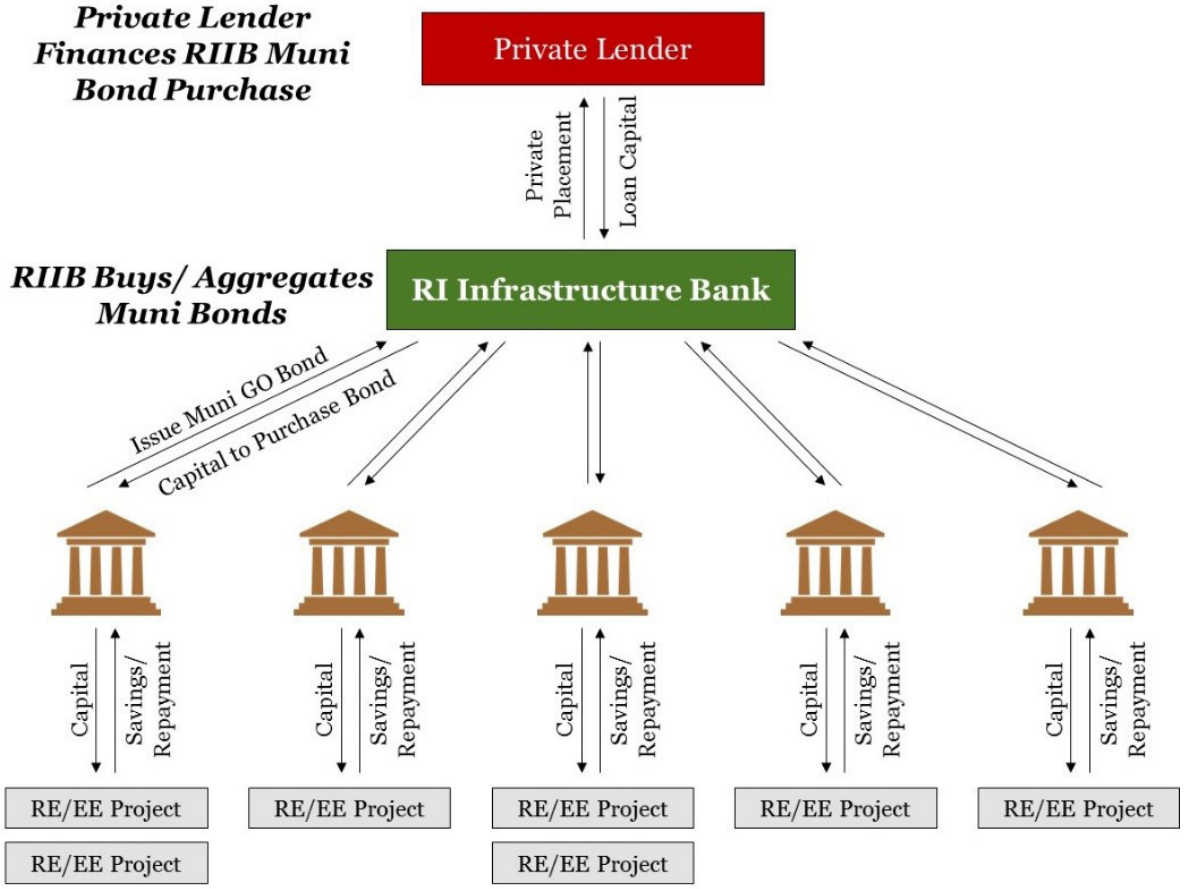

Figure 3. Initial Efficient Building Fund Model

21 Rhode Island Infrastructure Bank (RIIB) "RI Infrastructure Bank Issues First Public Market Green Bond." 30 November 2018

Conclusion

Many members of the Green Bank Network have used aggregation and securitization strategies to unlock capital for clean energy investment. These strategies can reduce the impact of transaction costs, facilitate movement in new markets, reduce overall costs of capital, and animate investment from institutional capital providers. The Green Bank strategies run the gamut from working as loan/lease originators to aggregate projects into a warehouses, acting as capital providers to originators/aggregators so that they may create asset portfolios or warehouses, or encouraging, via cornerstone investment, institutional investors to buy securitized assets after an originator has bundled assets in a securitization structure.

Learning from the examples presented by the Green Bank activity highlighted above, new Green Banks and mission-aligned financing institutions can employ aggregation and securitization strategies to bring similar impact to more low-carbon technologies and markets.