GREEN BANK FINANCING
to Accelerate Clean Energy Deployment in Canada through the Canadian Infrastructure Bank

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ABOUT EVERGREEN

Evergreen is a leading Canadian charitable not-for-profit organization dedicated to urban sustainability issues. Through research, design and collaboration, Evergreen moves sustainable city building ideas to action. We believe that flourishing cities are created when inspired ideas help create progressive policy and enable bold action on the ground. Founded in 1991, we facilitate collaboration between government, industry, academics and civil society to help provoke new ideas for urban revitalization, preventing climate change, housing, transit, and innovations to support the green economy. With a head office at Evergreen Brick Works in Toronto and regional offices and associates across Canada, we draw from a broad network nationally and internationally. For more than 25 years Evergreen has connected, collaborated, and catalyzed people to do amazing things.

ABOUT THE COALITION FOR GREEN CAPITAL

The Coalition for Green Capital (CGC), a 501(c)(3) non-profit, is the nation’s leading advocate, expert and consultant on the topic of Green Banks—public or quasi-public clean energy financing authorities. CGC works directly with state governments and other key partners to identify ways public capital could stimulate private investment in mature clean energy technologies and accelerate the growth of clean energy markets. CGC often works with government to help create the institution, assessing various legal options to institutional creation and financial options for green bank capitalization. CGC also works with states to implement innovative clean energy finance and market development mechanisms through existing public institutions. CGC typically offers this support pro bono, as states are often eager to understand and implement these financing concepts, but do not have the know-how, institutional capacity, or funding to do the necessary work themselves.

ABOUT THE IVEY FOUNDATION

The Ivey Foundation is a private charitable foundation located in Toronto, Canada. It was incorporated as The Richard Ivey Foundation on 31 December 1947 by the late Richard G. Ivey, Q.C.,LL.D., and his son Richard M. Ivey, C.C.,Q.C.,LL.D. The mission is to help create a shared vision for Canada’s future—one that integrates economy and environment, achieves resource efficiency, and fosters innovation and investment for a smarter, sustainable economy. The foundation’s goal is to support a better understanding of the systemic changes needed to maintain Canada’s natural capital while enhancing the prosperity of all Canadians.

ABOUT THE TROTTIER FOUNDATION

The Trottier Family Foundation is a private charitable foundation located in Montreal, Quebec. It was established in 2000 by Lorne Trottier and Louise Rousselle-Trottier. The Trottier Foundation’s mission is fivefold and seeks to fund charitable organizations that work in the areas of science, education, environment or climate change, health, as well as community/international aid. The Trottier Foundation seeks to mitigate the impacts of climate change and seeks solutions that can benefit all Canadians.
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This report finds that the creation of a Green Bank division within the new Canadian Infrastructure Bank can fill an institutional and finance gap in Canada and spark greater private investment in clean energy infrastructure.

The Green Bank model has been deployed around the world to accomplish similar goals, and has proven effective. Canada is well suited to adopting the Green Bank model because of its greenhouse gas (GHG) reduction goals, its focus on “green infrastructure” investment, and its present lack of institutions dedicated to project finance for the broad deployment of commercially viable clean energy solutions. The new Infrastructure Bank would be an ideal institutional home for a Green Bank.

The Canadian federal government seeks to implement a broad new set of policies to support the reduction of GHG emissions and increase the deployment of clean energy technologies. This includes renewable energy generation, building efficiency, industrial efficiency, thermal fuel-switching and clean transportation solutions. The government has laid out a broad vision for increased investment and market incentives to drive technology deployment that will enable Canada and its provinces to satisfy its GHG reduction goals under the Paris Agreement. Simultaneously, the government seeks to use the expected surge in green infrastructure investment to spur economic growth and innovation in Canada.

However, the current program for green infrastructure investment almost entirely overlooks public investment in the actual deployment of GHG-reducing clean energy technologies. These markets are difficult to bring to scale purely relying on private sector activity because several barriers prevent rapid increases in demand and capital flows. These are the precise barriers Green Banks are designed to address, and have successfully overcome in many markets. By using innovative finance techniques, leveraging private capital, and developing markets to increase demand, Green Banks around the world have driven over USD 22 billion in total clean energy investment with just over USD 6 billion in public Green Bank capital investment.
There is no single model for a Green Bank, but they do have common operating principles. At their core, Green Banks are dedicated public or quasi-public institutions that use public capital to finance clean energy projects in partnership with the private sector.

As break-even entities that earn a return on their capital, Green Banks have a remarkably similar objective and operating model to the new Canadian Infrastructure Bank. That is why a Green Bank operating division within the Infrastructure Bank makes a logical marriage of institution, capital and need.

Therefore, the most expedient and logical way to implement Green Bank financing methods in Canada and accelerate deployment of clean energy would be to create a Green Bank division within the new Infrastructure Bank. The national Green Bank could directly finance large clean energy projects and provide seed capital to province-level Green Banks or other warehouses to then lend to smaller distributed projects. The national-level Green Bank could support an entire network of more localized Green Bank finance entities around the country, built to serve local market needs.

Though this paper exclusively focuses on the challenges and needs for financing the deployment of commercially mature clean energy technologies, it is important to identify the other forms of financial support that must exist in the clean energy ecosystem to enable market growth. For instance, commercialization financing to bring new technologies to market is also critical. Canada must foster the growth of new businesses, which often struggle to find growth capital. Existing federal institutions, some of which are described in this paper, are best positioned to provide this kind of financing, rather than a deployment-focused Green Bank.
INTRODUCTION

This paper explores the current energy landscape, the existing set of federal institutions, and the need for new and innovative solutions to drive and deploy the necessary investment.

CLEAN ENERGY DEPLOYMENT
FINANCING AS PART OF CANADA’S INFRASTRUCTURE INVESTMENT PLANS

To transition Canada’s energy platform from fossil fuels to renewable and efficient energy, there must be significant capital investment. Buildings must be retrofitted. New renewable generation plants—large and small—must be built. New and smart transmission and distribution will be needed. As is the case with all productive energy investment, this upfront cost must be paid through capital investment, which is then repaid over time through user fees, energy bills and energy savings. Just as energy users don’t pay the upfront cost to build a coal plant, individuals cannot be asked to pay the upfront cost of a wind farm. Third-party capital from a range of sources is needed at enormous scale. And that capital must be distributed throughout Canada’s economy to support clean energy infrastructure construction at all scales throughout the country.

This paper explores the current energy landscape, the existing set of federal institutions, and the need for new and innovative solutions to drive and deploy the necessary investment. Public capital alone is not sufficient, nor is it strictly necessary. Because clean energy infrastructure investment is productive—meaning it generates a repayment stream—it should be attractive to private investors. But, for a range of reasons discussed in this paper, private capital is not flowing at scale to reach the myriad clean energy investment needs. There is an important role for the public sector to play in both animating private investment with innovative finance techniques, and in developing markets and demand so that energy users are eager to adopt clean energy. These activities, encapsulated in the Green Bank model, are critical to achieving GHG reduction targets in Canada. A carbon price alone will not cause a rapid adoption and transition from one clean energy technology to another (unless it is extremely punitive), because there is still an upfront cost to switching. Pathways must be built to enable the transition from one type of energy to another. Green Bank financing and market development offers that pathway for market participants in Canada.
56% of Canada’s GHG emissions come from electricity generation, buildings, industry and transportation.

**CURRENT CLEAN ENERGY MARKET CONDITIONS & NEEDS**

56% of Canada’s GHG emissions come from electricity generation, buildings, industry and transportation. These sectors are most suitable for transformation towards clean energy technologies like renewable generation, clean thermal-fuel switching and clean transportation, as well as building and industrial efficiency to reduce energy consumption.
Across all energy sectors, 70.5% of total primary energy supply comes from fossil fuels. This is primarily in the form of crude oil and natural gas.2

Electricity across Canada is relatively clean, with 63% of all power generated from hydro and 13% from nuclear.4 In residential buildings, 48% of heating is from natural gas and 8% is from fuel oil.5 67% of residential water heating is from natural gas, and 5% is from heating oil.6 In the industrial sector, 63% of all energy used is from fossil fuels.7 Together, these figures point to clean energy substitution needs in the building heating, industrial and transportation sectors, with efficiency suitable across the board because of its cost-effectiveness.

However, there is high variation across provinces. Energy policy, regulations and markets are almost entirely the domain of provincial governments in Canada. Nearly all generation investment decisions are dependent on market conditions and economic, policy and political factors determined at the provincial level. Wholesale and retail market are structured differently across provinces, and grids are managed under different institutional arrangements. This fundamental segmentation immediately points to the need for localized investment decision-making.
In addition, the actual energy and electricity mix varies tremendously across provinces and regions, making the clean energy technology needs and possibilities entirely different.

Figure 3: Electricity Market Structures in Canada

Figure 4: Energy Consumption by Fuel Type by Province
As shown in the chart above, the source fuel for actual end-use energy consumption varies tremendously across provinces. For example, energy consumers in Alberta rely almost entirely on fossil fuels (either through direct consumption or from electricity produced by fossil fuels), while in Quebec more than a third of all energy consumed comes from renewable sources. This picture is made even clearer when considering the fuel mix specifically for electricity within each province (below). Five provinces produce nearly 100% renewable or nuclear electricity, while others rely almost entirely on burning fossil fuels.

This picture of the current energy consumption situation in Canada points to the importance of localized investment decisions and activities. Though Canada is geographically large, most of the clean energy investments needed are relatively small in scale. But, some major large-scale clean energy investments of national strategic importance (to be discussed further below) will also be required. Most clean energy investments, though—building efficiency, industrial efficiency, fuel-switching, distributed generation—require relatively small projects, both in terms of physical construction and cost. Given the immense geographic size of Canada, and the distributed investment needs, Canada’s clean energy, and energy efficiency infrastructure could benefit from a surge in investment from a large, dedicated project finance entity capable of coordinating with local institutions.
Canada has history of supporting clean energy technology and business growth. This support has resulted in a number of dedicated, purpose-built entities related to federal government that offer financing. Though each has been successful at accomplishing its specific goal, a review finds that none of the entities is built for or well-suited for project-based deployment financing for mature clean energy technologies. Each of these entities supports the growth of cleantech in Canada in some way through financing, but none presently are mission aligned or operationally intended to act as a domestic project finance agency. In many cases, the mandates of existing entities can be and have been changed, in whole or in part through changes to their governing legislation. Business Development Canada, Export Development Canada and Sustainable Development Technology Canada (discussed below) have all seen their responsibilities and operations expand over the years. It is worth considering if creating institutional capacity for deployment financing of mature technologies best resides within one of the existing entities with an amended mandate.

Business Development Canada (BDC)
As the Business Development Bank of Canada, BDC’s mission is “help create and develop strong Canadian businesses through financing, advisory services and indirect financing, with a focus on small and medium-sized enterprises (SMEs).” BDC offers...
business loans for start-ups and SMEs, as well as private equity and growth capital. BDC could be a valuable financial driver to help grow businesses in the clean energy or cleantech space, but it does not offer long-term project financing for clean energy deployment.

**Sustainable Development Technology Canada (SDTC)**

SDTC is focused on deploying clean technology solutions and projects through grants. However, SDTC is focused on an earlier stage of the cleantech maturity cycle. Specifically, the SD Tech Fund is, "designed to support the development and pre-commercial demonstration of cleantech solutions. Our aim is to increase each solution’s chances of successfully making it to the marketplace, and help Canadian entrepreneurs carry out their innovation efforts within Canada." SDTC is not a bank—it distributes budgetary resources to businesses based on policy criteria. SDTC is focused on technologies at a much earlier stage of maturity than where Green Banks typically do. SDTC provides non-diluting grants not project financing. There is more risk, and a higher expectation of loss. SDTC also works with entrepreneurs to support business and technology growth in a way that Green Banks typically do not. It should also be noted that while 41% of SDTC funding goes to “Energy Utilization” and “Power Generation”, the remaining 59% of funding goes to technologies not directly tied to climate change mitigation. In fact, 22% of funding goes to “Energy Exploration & Production.” Therefore both SDTC’s technology maturity focus and broader sector mandate make it a difficult fit for a Green Bank.

**Export Development Canada (EDC)**

In many ways, EDC is the entity in the Canadian federal government that has the most attributes of a Green Bank. It provides financing and insurance to deploy foreign clean energy technology projects in support of Canadian exports and foreign investment, and has on occasion provided credit to domestic projects and transactions. It has a specific focus on this sector through its new usage of Green Bonds. And most of its financing methods, executed on occasion in partnership with private investors, look much like how a Green Bank would operate. However, as an export credit agency, EDC’s focus is specifically on financing trade for Canadian companies to operate outside of Canada. EDC is therefore not positioned under its governing legislation to finance clean energy deployment within Canada.
As described above, none of the existing federal entities that support financing in the cleantech space are currently positioned to offer deployment financing for mature clean energy technologies. The financing support they do and are suited to offer, particularly for commercialization and business development, are critical to the growth of the clean energy industry. But that functionality and capacity is distinct from project financing.

In addition to those existing entities, the government has announced the creation of a new Canadian Infrastructure Bank as part of a broad policy push for increased “green infrastructure” investment. This section reviews the broad plans for green infrastructure and more closely examines the Infrastructure Bank to consider its suitability for offering the necessary deployment financing for clean energy growth.

GREEN INFRASTRUCTURE PLANS

In 2016, the Trudeau administration and Infrastructure Canada put out a proposal for a five-year, C$17.7 billion infrastructure investment plan. This included C$3.4 billion for transportation, C$3.4 billion for “social infrastructure,” and C$5 billion for “green infrastructure.” There was another C$5.8 billion for rural broadband, public infrastructure across Canada, and investments in post-secondary institutions. The plan, on its face, would suggest that there would be a focus on clean energy...
investment, particularly as part of “green infrastructure”, but a closer analysis shows that very little of this money would go towards financing the actual deployment of mature clean energy technologies.

Despite having a budget of C$17.7 billion of infrastructure investment, with one of the three main buckets called “green infrastructure,” only approximately C$500 million of that is allocated to financing the deployment of mature clean energy technologies. Only 4.3% of the total budget is directed to financing renewables or building efficiency projects. The rest goes to traditional public infrastructure, water projects, housing and business development. These other pieces are certainly vital components of an infrastructure plan, but the lack of attention paid to deployment financing in the energy sector speaks to the continued need for increased institutional focus and the need to find solutions that leverage private capital.

CANADIAN INFRASTRUCTURE BANK

One component of the implementation plan for this new funding is the proposed creation of a national Canadian Infrastructure Bank (CIB). Early indications are that the CIB will be created by an act of Parliament as an independent crown corporation, owned by the Canadian government. Though the details of the CIB are still under development, it is likely that the CIB will be capitalized with C$35 billion in public capital, and would also channel private capital into infrastructure investment projects. Project types could include green infrastructure, public transportation, social infrastructure, and other forms of infrastructure that have traditionally received insufficient investment in Canada.

The CIB will act as a project finance bank, not a retail or commercial bank—it will not accept deposits. But instead it will be a source of institutional infrastructure investment, offering a range of forms of capital to support the financing and construction of various forms of green and conventional infrastructure. It will seek to work in partnership with the private sector. This means the CIB could co-invest CIB funds alongside private funds. Or it could directly raise funds for its balance sheet from capital markets via bonds, other investments, or loans from other institutional investors. These funds would be channeled into the projects it underwrites. In this way, the CIB could become the central vehicle through which public and private capital flows into Canada’s infrastructure.

If the CIB is given a commercial mandate, it will seek to generate returns. This would allow the Government of Canada to treat equity capital provided to the CIB as an investment on the Government’s books, not a budgetary expenditure. CIB would need to make loans with interest repaid over a period of time, or make equity investments intended to earn a return in the future. One option would be for the CIB to make subordinated, risk-mitigating investment to support senior, private market-rate investment. This kind of financing technique means that only certain forms of infrastructure projects would be suitable for CIB financing. For instance, there are many forms of economically valuable infrastructure, like roads and highways, which would provide positive economic returns, but would not be able to support debt repayment without the imposition of significant user fees or other forms of financial returns. This means the CIB will likely focus on infrastructure sectors that are expected to produce positive cash flow to repay CIB financing.

In this way, the CIB could become the central vehicle through which public and private capital flows into Canada’s infrastructure.
In sum, early indications show that the CIB will, in fact, be a project finance organization focused on deployment. This goes a long way toward filling the institutional gap identified above. However, to date, proposals for the CIB do not indicate it will have the clear and demand-oriented focus on clean energy deployment beyond big projects that happen to be proposed to the Bank by market actors. More creative forms of capital formation, deployment, demand generation and partnership will likely be needed, especially to reach distributed energy markets.

The new proposals outlined above show a marked step in the right direction to create the necessary institutional capacity for public and private finance of a range of infrastructure types. The collective sum of the existing entities, programs and new policy initiatives still leaves a gap, though, where deployment of mature clean energy technology remains a primary focus. Filling this gap is critical to achieving the country’s ambitious climate goals. Without a strong institutional focus on addressing unique clean energy market needs and barriers to investment and demand, it will be difficult for Canada to bring in and deploy capital at scale. Because deployment financing is such a tiny component of the overall infrastructure budget, there is a need to develop solutions that drive private investment. By rapidly scaling the deployment of existing cost-effective clean energy technologies with innovative public-private financing arrangements, Canada can lower energy costs, using public capital efficiently and draw in more private capital.
To fill the policy and finance gap, Canada can use Green Bank financing techniques. Green Banks are an increasingly common finance model that governments are deploying to drive more private investment into clean energy using limited public resources. Several nations, states and regions (including Ontario) either operate or are planning to launch dedicated, purpose-built finance institutions that use public-private partnerships to reduce barriers to investment and rapidly grow clean energy markets. This section will review the model, discuss examples, and summarize the proposed role of a federal Green Bank in the United States. This knowledge can inform the policy development of Canada’s federal government as it considers ways to support Green Bank development and clean energy investment in Canada.

WHAT IS A GREEN BANK

A Green Bank is a public or quasi-public institution that finances the deployment of renewable energy, energy efficiency, and other clean energy and green infrastructure projects in partnership with private lenders. Green Banks are typically capitalized with public funds, which are then used to offer loans, leases, credit enhancements and other financing services to close gaps in the private capital markets for clean energy projects. More mature Green Banks can issue bonds to recycle capital and further leverage private investment. In this way, Green Banks are not actually banks—they do not accept deposits and, to date, primarily lend their own capital...
Green Banks typically invest in the project deployment of mature, commercially viable technologies—not in early stage tech or in clean energy companies. The goal of a Green Bank is to accelerate the deployment of clean energy by removing the upfront cost of adoption, leveraging greater private investment in clean energy, and increasing the efficiency of public dollars.

Figure 6: Simplified Green Bank Model

Through Green Banks, consumers and businesses can install clean energy technologies with little to no upfront cost while reducing energy costs, allowing governments to meet their public policy objectives to increase the amount of renewable energy generated and consumed in their jurisdiction. Because public dollars are used for lending, rather than subsidies, all public dollars are preserved through loan repayment. For a number of reasons, economically viable, low-risk clean energy projects are often unable to access affordable private financing. Green Bank financing methods “crowd-in” private capital to fill financing gaps by reducing real and perceived risk, and allowing private investors the chance to learn about a new market opportunity with the security of government partnership. As private lenders gain experience and information about the processes, risks and addressable market size in clean energy, they can become increasingly comfortable and confident lending into these markets. Green Banks have shown that with experience and data, private investors are eager to enter clean energy markets at scale, ultimately without any Green Bank support.
In addition to attracting capital in innovative ways, Green Banks ensure there is actually demand for that capital and clean energy solutions. With an equal focus on market development and demand generation, Green Banks don’t merely make money available to the market. Green Banks bridge the gap between capital supply and market demand by developing holistic, turn-key products and delivery pathways that enable broader clean energy adoption. Demand cannot be an afterthought. Some forms of Green Bank financing can be market responsive. For instance, making financing available for utility-scale projects as needed. But to finance smaller and less typical kinds of projects, Green Banks can be proactive in developing products, partnership structures and go-to-market channels that ensure capital is used. Green Banks can reside at different levels of capital supply chains, and therefore will operate accordingly.

**WHY IS A GREEN BANK NEEDED?**

Green Banks address barriers to market growth on both the capital formation side of the market and on the demand side. In this way, Green Banks play a critical role connecting capital to projects using methods that traditional financial intermediaries are uncomfortable taking on or are unfamiliar with. On the capital side, Green Banks offer risk-mitigation, pipeline development, and market development support to ensure capital gets deployed and offers an attractive return. Simply making capital available is not sufficient to grow clean energy markets. Institutional capital, or even local bank capital, made available at 1% interest for 15 years, in and of itself, will not produce significant uptake. Potential users of that capital aren’t necessarily aware the capital even exists, so there is a marketing challenge. But there are also a range of barriers to make it hard to use and deploy the capital. Projects are costly to develop,
energy savings are uncertain, figuring out what other capital might need to be brought to the deal, understanding what kind of rebates might be available and other “market development,” developing a network of contractors to bring the capital to products—these activities all require legwork and operating expenses. Investors and lenders are not used to taking on these kinds of activities, and rarely have the in-house expertise to do so. Green Banks address these barriers by taking on the market development and deal generation costs that others will not.

In addition, Green Banks provide credit enhancement and risk mitigation support to capital providers that might be unwilling to enter a certain market at a cost of capital that is suitable for attractive clean energy adoption. If the rate is too high or the term is too short, the positive economics of a clean energy project can disappear. Green Banks therefore often take subordinated positions to ensure the blended terms for the borrower are attractive, but that the private lender is still earning sufficient reward for the risk taken. It is worth noting that capital is often available for clean energy at some price. But, creating a match between investor needs and customer needs often requires a risk mitigation position.

Part of building the bridge between capital and projects often includes aggregation, or an intermediary that is willing to originate loans to relatively small and dispersed projects. Large capital providers will not finance projects below a certain scale because it isn’t cost-effective. Green Banks will address these smaller projects, aggregate them together, and then sell that group of assets to an investor once sufficient scale is reached.

And on the end-user side, Green Banks can convert “generic” capital into useful, turn-key products that are easily understood and adopted. The same barriers that make it difficult for capital to reach projects also inhibit clean energy adoption. The upfront cost of clean energy halts adoption, so financing is needed. But that financing must be readily available and designed to be used for specific applications. Green Banks address these adoption barriers through a number of practices described in detail below.

**COMMON GUIDING PRINCIPLES**

Green Banks around the world have been implemented in different ways, with varying organizational structures and objectives. However, they are all tied together by a common set of guiding principles.
Drive more private investment using limited public resources

The goal of all Green Banks is to drive more private investment with public funds. This is achieved through several financing approaches, but all Green Banks aim to stimulate more private clean energy investment. This approach is driven by the fundamental reality that achieving climate-related goals requires more investment than the public sector can reasonably be responsible for. Private investment is essential, and Green Banks aim to drive that investment.

Provides financing to underserved market sectors and segments

Green Banks do not offer subsidies or rebates. They provide financing with the goal of being self-sustaining and to build markets that are not reliant on subsidies. However, Green Banks only support financing for segments of the clean energy markets that aren’t already adequately served by private markets. By only addressing market gaps, Green Banks avoid crowding out private investment. For example, a Green Bank may not need to support financing for efficiency upgrades for buildings owned by AAA-rated corporations that can raise funds directly in capital markets. But small-to-medium businesses without a simple credit rating often struggle to get financing to upgrade the efficiency of their buildings and are a good Green Bank target.

Is market-oriented, aims to increase consumer protection, inform transparency, and ease of adoption

Green Banks aim to build robust and efficient markets for clean energy solutions. They seek to create markets where ample supply of capital and technology solutions meet sustained and growing demand from informed consumers. This means Green Banks take on a number of activities that support the delivery of financing, like increasing information transparency and standardizing documents/processes.

Is steadfast in the face of changing political landscape, budget changes, and administrative priorities

Green Banks are meant to be institutions that do not come and go, or waver significantly with changing political or budget conditions. As lending institutions with a financial foundation, they are stable and consistent, as this is what the market requires from lending partners. In this way, they are different from policy-based programs that are budget-dependent and could be eliminated year to year based on funding or other conditions.
Is a flexible and adaptable institution that reacts to market

As market-oriented finance institutions, Green Banks are responsive to market conditions and are willing to adapt as needed. Green Banks offer finance where it is needed, but will discontinue finance into a given market once private capital is flowing. And Green Banks learn from mistakes. If something doesn’t work, they’ll react and change, rather than continue to provide a service that has no demand or uptake. These operating changes do not require political approval, but are instead part of the organization’s regular governance & management structure.

BENEFITS

Green Banks produce numerous economic, fiscal and environmental benefits:

- **Reduce barriers to adoption** – By offering up to 100% upfront financing, Green Banks eliminate the upfront cost of clean energy adoption, a primary barrier to market growth.

- **Lower energy costs** – Green Banks only finance projects that are economically and financially viable. This means, just like private actors, they only finance the construction of projects that are value-creating for the user and generate revenues to repay the loans. This value could mean a lower price of energy to the end user, or a similar price but lower GHG emissions, lower total energy costs due to reduced consumption (efficiency) or some combination of these.

- **Create more local jobs** – Green Banks are effectively in the construction finance business. Everything Green Banks support requires construction and service at a specific location. There is no way to install efficient equipment without putting boots on the ground at the location. More investment means growing businesses and more jobs.

- **Stimulate macroeconomic growth** – There is a massive global savings glut and decline in investment. This has contributed to sustained slow growth. Wise and sustained investment in clean energy through public-private partnership structures can close the savings-to-investment gap and spark higher growth.

- **Preserve public capital** – By using finance, rather than subsidies, the public capital invested in the Green Bank is preserved and can be recycled repeatedly for more clean energy investing. Every time public dollars flow back to the market they leverage new private capital. This preservation reduces the burden on taxpayers.
Green Bank Activities & Tools

Green Banks use a range of financing techniques to drive clean energy investment. Many Green Banks also focus on demand generation and market development to ensure efficient markets grow around the financing offerings, some of which tools are described below:

Finance

Though many individual investment structures are used (senior debt, subordinated debt, second loss reserves, etc.), most Green Bank financing methods can be categorized in three buckets.

- **Credit Enhancement** – Green Banks use various credit enhancement mechanisms to mitigate risks for private investors and incentivize investment on better terms. This technique is most useful for encouraging lenders who may be considering making capital available, but only at terms that prevent meaningful market penetration. This can be in the form of a first or second loss reserve, a partial loan guarantee or subordinated debt. Earning an adequate return for the risk being taken by the Green Bank may be an issue.

- **Co-Investment** – A Green Bank could directly lend into a project alongside a private sector partner. For instance, a Green Bank could provide 50% of the necessary project debt, and a private lender could provide the other 50%. This technique is most useful when there is a specific gap in capital needed to complete a project. It might also provide better financial returns for the Green Bank.
> **Aggregation, Warehousing & Securitization** – Aggregation is a critical Green Bank method of lending to and bundling small clean energy projects that are traditionally difficult to finance. Many clean energy projects, like distributed generation and building efficiency, are inherently small, scattered and have varying credits. These qualities make them unappealing to underwrite for private lenders. Green Banks can directly originate, or aggregate these kinds of loans to achieve scale and diversity of risk. This aggregation can lead to securitization, which allows the Green Bank to recapitalize its warehouse.

**Market Development**

Many Green Banks seek to build market efficiency and generate demand for clean energy solutions. Some do this activity internally, while others do so in partnership with other government agencies or private actors.

> **Turn-key product design** – Green Banks help deliver clean energy financing solutions that are simple for customers, which eases adoption. This includes everything from the terms of financing, to the application process, to the marketing channels, to the technical review process. To spark rapid market growth, clean energy customers must effectively bear limited burden in the adoption process. Good product and marketing design is essential.

> **Information transparency & simplicity** – For efficient markets to grow, consumers and businesses need access to simple and transparent market information that informs purchase decisions. Information on programs, technologies, pricing, contractor quality and financing must be accessible and easy to find. The more standardized the documents, contracts and information is, the better. Green Banks support implementing this kind of transparency either directly or in partnership with others.

> **Agency coordination** – Many governments offer a range of clean energy support programs, often across multiple agencies of government or utilities. This creates tremendous market confusion for participants and customers. Green Banks ensure that their financing activities are brought to market in coordination with others to streamline delivery to customers and minimize confusion.
A number of national and sub-national Green Banks currently operate around the world. They use varying business models and have different goals, but all operate with the same principles as those described above. A review of the business models, products and institutional forms can help identify the applicable Green Bank practices that are most suitable for the Canadian context.

**UK GREEN INVESTMENT BANK (GIB)**

The UK GIB is the United Kingdom’s national Green Bank. GIB operations formally launched in November 2012 as a state-owned corporation after initially operating within government. It was initially given a GBP 3 billion capitalization, which was later expanded by another GBP 800 million in 2013. Because it is a wholly-owned corporation of the British government and capitalized with public funds, the GIB had to receive approval from the EU in order to comply with state aid rules. The rules of the EU approval granted the GIB the ability to operate in three markets - energy efficiency, offshore wind, and bioenergy. To date, the GIB has not borrowed any capital for lending, solely using the initial government capital.15

The UK GIB operates much like a private sector infrastructure investment fund, with a double bottom line goal of being both green and profitable. It is not required to earn any specific return or remit profits back to the government. However, it chose the
operational model of seeking to earn market returns in order to prove market viability. The GIB has supported GBP 11 billion in clean energy infrastructure across 85 projects, using GBP 2.7 billion in the GIB’s public funds. These investments, over their lifetime, are expected to generate a 10% return on capital.

The GIB directly invests or lends to large infrastructure projects and also raises and manages funds with private co-investors. 60% of GIB capital has gone to offshore wind and 23% to bioenergy and waste. 50% of investment is in the form of direct equity investment, with only 19% in the form of debt. This is unique among Green Banks, as most primarily offer debt capital.18

CONNECTICUT GREEN BANK

The Connecticut Green Bank is a quasi-public instrument of government created through legislation in 2011. Rather than create a new purpose-built entity, Connecticut repurposed an existing clean energy-focused entity to become the Green Bank. The Green Bank is and continues to be capitalized by two sources of funds. The largest source is a ratepayer funded system benefit charge that the state had long collected for energy efficiency rebate funds, and redirected to the Green Bank. The other source of funding is a portion of the revenue the state earns from the sale of carbon emission allowances as part of the Regional Greenhouse Gas Initiatives. These two sources together provide the Green Bank roughly USD 30 million per year in new capital, and the stream from both sources is currently indefinite.

The Connecticut Green Bank employs a hybrid approach, acting as both a wholesale and retail lender. In some markets, like residential solar, the Green Bank acts as a direct lender to end-users for individual projects. But in other cases, the Green Bank is more of a wholesale lender, offering financing to other lenders who then directly underwrite projects. The Green Bank primarily focuses on distributed solar and building efficiency, taking a programmatic approach to both areas. For instance, it offers residential and commercial solar leases, provides credit enhancements to local banks to encourage residential efficiency upgrade lending, and operates a commercial building upgrade finance program that relies on property tax collections (PACE). In some cases, though, it uses more of a market-responsive approach, offering bespoke capital to finance one-off grid-tied projects like fuel cells, innovative hydro and anaerobic digesters.

Connecticut has used approximately USD 180 million in public funds to drive a total of USD 1 billion of investment, achieving a 5:1 leverage ratio.19 It’s most successful products are its Residential Solar Investment Program that provides upfront cash for residential solar projects in exchange for renewable energy credits, and the commercial PACE program.

NEW YORK GREEN BANK

In January 2013, New York Governor Andrew Cuomo announced his plan to build a USD 1 billion financing institution to fill financing gaps in the New York clean energy capital market. It was determined from the outset that legislation would not be needed to create the financing entity. The state’s energy office, the New York State Energy Research & Development Authority (NYSERDA), had all the legal authorities a Green Bank would need to provide financing. The New York Green Bank (NYGB) would therefore be a division within NYSERDA.
Separately, it was determined the best source of funding for the NYGB would be similar to those chosen in Connecticut. The NYGB would be capitalized by redirecting a portion of the ratepayer surcharge funds collected annually to support grant programs. The NYGB would also receive a one-time infusion of state’s RGGI proceeds. Redirecting the ratepayer funds to the NYGB required approval by the Public Service Commission (PSC). NYSERDA produced a detailed business plan and explanation of the importance of financing to support its petition to the PSC. This led to PSC approval of NYGB funding in December 2013, initially allocating USD 165.6 million in ratepayer dollars. More recent PSC decisions have laid out the pathway through which, over the next 8 years, the NYGB will receive further infusions of ratepayer funds until the total capitalization reaches USD 1 billion. At that point, no more funding will go to the Green Bank.

The NYGB operates exclusively as a wholesale clean energy finance lender. Rather than design specific financing products and programs, the NYGB is looking to the market to learn what financing is needed. The NYGB aims to earn a return over time and offer the equivalent of market rates. Its goal is to be a break-even operation by 2018. It is similar to the UK GIB, as it too operates more as an infrastructure fund. In February 2014, the NYGB issued an open-ended RFP seeking applicants for funding that could demonstrate they could not find private funding elsewhere, and that NYGB deal participation would produce “market transformation.” As of its latest quarterly report in November 2016, NYGB has committed USD 198 million in public capital to support USD 953 million in total investments. It has an active pipeline of application projects over USD 600 million, and to date it has received applications requesting over a billion dollars in NYGB capital. The majority of NYGB investments support portfolios of smaller underlying projects that are originated by the private partners (making it different than the UK GIB). This includes investments in commercial and residential efficiency programs, distributed wind projects, residential solar and fuel cells.

AUSTRALIA CLEAN ENERGY FINANCE CORPORATION

Established by the Clean Energy Finance Corporation Act of 2012, the Australian Clean Energy Finance Corporation (CEFC) invests commercially to increase the flow of funds into renewable energy, energy efficiency and low emissions technologies. It is an independently governed government institution that operates like a traditional financier. The CEFC’s mission is to accelerate Australia’s transformation towards a more competitive economy in a carbon-constrained world by acting as a catalyst to increase investment in emissions reduction. It was created through legislation which established the quasi-public corporation, and committed to fund the CEFC with AUD 2 billion per year for five years, starting in 2013. This public capital is then used for lending and other financing activity.
As a large national institutional investor, the CEFC primarily operates like an infrastructure fund, investing in one-off grid-tied projects. However, CEFC does also operate several programs to address smaller, disaggregated clean energy technology markets. In this way, the CEFC offers both project finance and aggregation finance. Like, NYGB, it has an open-ended window for market participants to submit finance proposals. Through FY2016, CEFC had invested AUD 2.3 billion to support AUD 5.7 billion in total project finance.24

CEFC has three strategic focus areas: clean power solutions, better built environment, and new sources of capital. These represent renewables, efficiency and innovative co-investments with private sector actors. Capital commitments are split roughly equally between renewables and efficiency. The CEFC has a required level of return that it must earn on its portfolio; the current mandate is a return of 3-4% above an Australian Government Bond.25

RHODE ISLAND INFRASTRUCTURE BANK

The Rhode Island Infrastructure Bank (RIIB) was created through legislation in the summer of 2015. The governor and treasurer of Rhode Island both campaigned on the promise of creating a Green Bank to support green infrastructure investment in the state. Rather than create a new entity, the state leveraged their existing know-how and institutions by tapping the state’s Clean Water Finance Agency (CWFA) to become the Green Bank. The CWFA was a quasi-public entity tasked with financing water projects using state and federal funds. The legislation expanded the CWFA scope to include clean energy deployment financing, and renamed the whole entity the Rhode Island Infrastructure Bank.

RIIB was initially funded with only USD 7 million in public capital. Rather than rely on a large infusion of new capital to effectively operate as a large revolving loan fund, RIIB will take advantage of the legacy balance sheet of CWFA and finance projects by issuing bonds against its own existing credit rating. RIIB was assigned responsibility for two specific financing programs in the legislation. The first is a PACE program, which is similar to that used by the Connecticut Green Bank. RIIB was also tasked with designing and implementing an Efficient Buildings Fund (EBF), which will finance energy upgrades for municipal buildings in the state. This past year, RIIB completed the first round of EBF funding, which used an innovative structure and partnership with the state energy office to finance 17 municipal projects across 6 towns with USD 17.2 million of capital.26 The projects are cash flow positive and will save USD 20 million in energy costs for citizens.
PROPOSED GREEN BANKS

In addition to these operating Green Banks, a few other proposed, but not yet operational Green Banks should be examined. The new Ontario Green Bank entity and the proposed federal U.S. Green Bank provide helpful data points to specifically explore the relationship between federal and local Green Banks, as well as the interpretation of the Green Bank concept in Canada.

The Ontario Green Bank

In 2016 Ontario announced plans to create a provincial Green Bank as part of its Climate Change Action Plan. As initially described, the Green Bank would be capitalized with revenue from the province’s cap-and-trade system, and focus on deploying distributed clean energy technology in the residential efficiency and industrial sectors. The Climate Change Action Plan said the Green Bank would be designed as a hybrid between the NYGB, which is a wholesale level clean energy infrastructure finance fund, and Efficiency Vermont, a traditional ratepayer-funded efficiency subsidy operation.

Since it was initially announced, the strategy of the Green Bank (now officially called the “Ontario Climate Change Solutions Deployment Corporation”) has become more defined, and it looks more like Efficiency Vermont. It will be a quasi-public crown corporation. It will operate mostly at the retail level, focusing on direct deployment of distributed technology. And it will primarily, at least initially, provide rebates and subsidies, rather than financing. In some ways, this looks most similar to the Connecticut Green Bank because it operates at a retail level. This focus makes sense, as a province-based institution that sits closer to markets can more easily operate in this way. But because it will be a grant-making entity (similar to those already in operation across Canada) and not provide financing, the entity will not be very much like a Green Bank.

U.S. Federal Green Bank

Legislation to create a federal U.S. Green Bank was first introduced in 2009, and passed the House of Representatives as a bi-partisan amendment to the broader cap-and-trade bill. A companion bill also passed out of the Senate Energy & Natural Resources Committee with bi-partisan support. However, the Senate never took up discussion on the broader cap-and-trade proposal, so the national Green Bank bill died with it.

Under that original proposal, the national Green Bank would have looked similar to the UK or Australia national Green Banks, in that it would directly finance projects all over the country. There was little debate about this approach, as at the time there were no state or local Green Banks. Since then, the national landscape has changed, so national legislation has changed with it.
The Green Bank approach is based on making long-term, relatively low-risk investments or loans to clean energy projects that pay for themselves through savings or power purchases.

Legislation was re-introduced in 2014 and then again most recently in the summer of 2016. In neither case was there realistic expectation of passage due to political gridlock in Washington. In both cases, the bills had been adapted to suit new conditions. In 2014, the national Green Bank proposal had changed so that half of the capital would be used for direct project financing, and the other half would be used to capitalize state/local Green Banks. This was in response to the initial success of the state Green Banks, demonstrating the importance of local institutions. The 2016 version of the bill continued that evolution, so that the federal proposal would have the national Green Bank operate solely as a funding mechanism for state/local Green Banks. This was in response to increasing growth and interest in Green Bank creation at the state/local level, and the shortage of funds that most governments had in starting up the institutions.

Current legislation calls for an initial USD 10 billion capitalization of the federal Green Bank, with funds coming from the issuance of Treasury bonds. Total capitalization could eventually reach USD 50 billion. As written, the national Green Bank would set eligibility rules to determine what qualifies as a Green Bank. Importantly, the legislation also allows for funding Green Banks that are non-profits, or other quasi-public structures that may not be directly part of government.

LESSONS LEARNED FROM OTHER GREEN BANK MODELS FOR CANADIAN CONTEXT

Other operating and proposed Green Banks help illuminate key lessons on Green Bank form, operating models and techniques that can inform a Canadian approach to addressing clean energy deployment barriers.

Project v. Business Finance

Effectively all Green Bank finance is directed toward projects, or groups of projects, rather than companies. The Green Bank approach is based on making long-term, relatively low-risk investments or loans to clean energy projects that pay for themselves through savings or power purchases. The underwriting and deal process for financing a project is quite different from lending to a business (even if it’s in the clean energy space). Some Green Banks do make equity investments (especially the UK GIB), but rarely is an investment or loan made to a business. The risks are counter to the Green Bank financial proposition, and mixing business and project finance in one organization can be operationally difficult. As stated above, business development finance is certainly vital to the growth of this industry and could be well placed within existing federal entities that already operate business lending programs.
National vs. Local

Some countries have created national Green Banks, while in the U.S. sub-national Green Banks have been the norm. There is no single approach, and there are likely different target markets and sectors suitable to be addressed by each approach. For instance, a national Green Bank may be well-suited to making large, utility-scale project investments. Or it could seed warehouses for smaller, more local investments, where the national warehouse would aggregate the smaller loans made locally. This would more easily facilitate securitization. A provincial Green Bank, which sits closer to markets, could be better suited to facilitating the actual project financing for smaller, distributed projects like energy efficiency that typically require a close touch with the customer. A national Green Bank could easily operate in partnership with local Green Banks, offering capital to local institutions for local lending, similar to the manner in which bank capital flows downward from a central bank to more local institutions.

New vs. Existing Institution

Of the operating Green Banks described above, one was created as a new division of an existing organization, one was created by fully repurposing an existing entity, one was created by expanding and rebranding an existing entity, and two were created as brand new entities. This variety shows there is no one correct way to create a Green Bank. Rather, it demonstrates the need to define clearly the desired financial principles and conditions for such a bank, and be thoughtful and opportunistic in using institutions and organizational infrastructure and know-how when in exists. As already discussed at length, housing Green Bank functionality within some of the existing entities might not be the best fit. However, the new Infrastructure Bank is a logical home for a Green Bank. This is discussed in more detail below.

Infrastructure vs. Clean Energy Specifically

Though most Green Banks have been created specifically to finance clean energy projects (generation or efficiency), the Rhode Island Infrastructure Bank is a broader infrastructure bank that puts water and clean energy finance under one roof. There is strong logic and opportunity to this approach, as structures, cash flows, and risks of clean energy finance are similar to those in other forms of infrastructure (discussed at more length below). Clearly there is an opportunity to combine clean energy Green Bank financing with other forms of infrastructure finance.

Wholesale vs. Retail Lending

Green Banks can either lend directly to end-users of the clean energy solutions, or can finance those projects through an intermediary. For example, a Green Bank can originate loans directly to home owners, or it can provide wholesale financing to an origination company that makes the loans.
Market Responsive vs. Programmatic

A Green Bank can create defined products for specific market segments in a programmatic manner, or it can simply make its capital available for investments in response to requests from market participants. Green Banks can implement both, offering defined products for some segments, while being responsive through an RFP, for instance, for others. Market responsive approaches are most suitable for wholesale level financing where the Green Bank’s customers are other financial institutions (as is the case with the NYGB). A market responsive approach is unlikely to be effective at the retail level where energy end users are the actual customers.
As discussed above, national plans for new “green infrastructure” largely overlook the need for investment to actually deploy at scale the climate mitigating technology that must ultimately be constructed.

The clean energy market opportunities are immense, with strong federal policy supporting a clean energy future. A number of existing, successful Canadian institutions exist to support a clean energy ecosystem. However, the tools and institutions needed to address specific market barriers and finance project deployment are not in place. The Green Bank model is well suited to fill this institutional and market gap.

As other Green Bank creators have done, Canada should consider the existing institutions and programs in place that could support Green Bank operation. With this in mind, the logical home for federal Green Bank activity is the new Canadian Infrastructure Bank.
A Federal Green Bank as Part of the New Infrastructure Bank

A Green Bank division would be a natural fit for the new Infrastructure Bank. The Bank, in its current design, intends to finance productive infrastructure projects capable of supporting debt. It will not be a grant-making entity; it will specifically offer project finance in partnership with the private sector to projects that can produce sufficient cash flows to repay investors. Clean energy projects are perfectly suited for this approach, and can fit within the broader infrastructure portfolio of the Bank.

Historically, only some parts of the energy sector may have been considered “infrastructure.” Transmission, distribution and grid components typically fall into this category. Generation and efficiency, however, are not always included under this umbrella. But from a functional and finance standpoint, the components of a clean energy platform clearly constitute infrastructure suitable for inclusion in the new Bank. Because the Infrastructure Bank will offer finance and not simple cash payments, it means the Bank will need to focus on those sectors of infrastructure suitable for both public and private investment. Infrastructure like roads and highways typically does not produce cash flows suitable for repaying investors and is therefore broadly the domain for public expenditure. Because the Infrastructure Bank will need to earn a return, it will have to focus on those forms of infrastructure that are suitable for private investment.

Clean energy infrastructure is ideal for this investment approach. It is a form of infrastructure that produces cash flows and should primarily rely on private capital. For various reasons, private capital does not easily flow into this sector. The Canadian Infrastructure Bank can use its capital, using Green Bank techniques to drive both public and private investment into this sector. By considering clean energy investment in tandem with water and certain kinds of transportation investments (like toll roads), the Canadian Infrastructure Bank could identify opportunities and synergies for more efficient infrastructure investment.

Direct Finance for Large National Projects

A Green Bank division of the Infrastructure Bank could play two roles. First, it could directly finance large projects of national significance, such as transmission projects, large generation projects like hydro dams, or other projects that might impact multiple provinces. This approach would be similar to that used by the UK GIB and the Australian CEFC. Pursuing this role would look similar to the other financing going on in the Infrastructure Bank. It would likely be market-responsive and operate like a traditional infrastructure fund.

Wholesale Lending to Local Institutions for Small Projects

The other role a Green Bank division could play would be to act as a wholesale financial partner for local institutions and distributed projects. It could follow the model laid out in the most recent U.S. federal Green Bank legislation, where the national Green Bank would help capitalize and finance local Green Banks (Ontario would be well-suited for this structure). Those local institutions would then make smaller, more distributed clean energy investments. In addition, the Green Bank division could provide wholesale finance to private partners who would use the capital for retail project finance. This would follow the NYGB model, where Green Bank capital is made available to project developers who actually construct and finance distributed wind, efficiency, solar and fuel cell projects, for example.
To make this concept a reality requires institutional definition, capital commitment, product and distribution. First, the government and the CIB leadership need to commit to have a dedicated component of the CIB be exclusively dedicated to clean energy financing in order to operate like a Green Bank. Defining the institution also requires more specifically formulating the kinds of financing activities the Green Bank will engage in. For instance, will it offer both direct project financing and wholesale financing to seed the creation of a downstream distribution system of more local Green Banks? Or will it commit to one activity first, and then the other? Definition also includes clarifying the kinds of returns the Green Bank will require, as that will affect the downstream economics of project finance and viability. If the Green Bank division will provide financing to downstream activities in this way, the CIB will also have to decide what kind of services and support it might offer in addition to making capital available. Will it, for example, provide technical assistance to help more local Green Banks form?

In addition to institution definition, the CIB would have to allocate a certain portion of its capital to support the Green Bank division. This body of funding could be used to 1) provide financing; 2) form partnerships for project lending; 3) support the raising of more balance sheet lending. On the last point, the Green Bank could decide that it will hold a certain portion of its own capital to sit as a reserve to support the issuance of bonds, thereby “leveraging” its own capital to raise more. Or, the Green Bank could
The Green Bank division could even form a pilot relationship with Ontario’s Green Bank as a test to see how federal Green Bank capital flows to a province-level entity to support local lending.

act similar to a fund manager, receiving the investments of private parties directly onto its balance sheet in order to invest private capital alongside the public funds. Part of the capital raising includes finding co-lending partners who wouldn’t invest directly into the Green Bank but whose dollars the Green Bank would drive into certain projects. The Green Bank may also need to decide how much capital will be used for direct project financing, and how much will be made available to seed the formation of downstream Green Banks or products. More broadly on this front, it will be important to develop a pro forma income statement and balance sheet to demonstrate how the Green Bank would be a self-sustaining operation, and how much loan capital must be put to work to achieve that objective.

Next, the Green Bank division will need to decide what products and solutions it will offer. What forms of capital will be available? For instance, it could offer senior loans, subordinated debt, warehousing debt, and various forms of credit enhancements/guarantees. It will also need to decide if it will be market-responsive or programmatic. It is likely that, for direct finance of large energy projects, being largely market-responsive makes the most sense. This is typical of large governmental infrastructure lending programs. But for smaller, more distributed projects, the Green Bank division could choose to offer capital in specific ways downstream to support project finance. For instance, it could actively design a standardized solar loan product, which would be distributed through local Green Banks and other financial retailers. Or the division could eschew this approach leaving the product design up to more local institutions.

Finally, the Green Bank division will need to cultivate and develop its downstream distribution channel, assuming that route is pursued. It will need to work with provincial governments, federal ministries and other financial stakeholders to identify the most appropriate pathways for capital to flow from the institutional level down to local markets. The Green Bank division could even form a pilot relationship with Ontario’s Green Bank as a test to see how federal Green Bank capital flows to a province-level entity to support local lending.

Together, these actions can fill the financial and institutional gap within the federal government, and spark the kind of innovative solutions and capital flows needed to support deployment of economical clean energy. Further research and stakeholder engagement will follow to support the implementation of these Green Bank solutions.
ENDNOTES


3 Ibid.


6 Ibid.


11 https://www.bdc.ca/en/about/who-we-are/pages/default.aspx


13 https://www.sdtc.ca/en/portfolio/projects


15 The Green Bond financing method used by EDC is different from what could be used by a Green Bank. The EDC’s Green Bonds are ordinary general obligation bonds backed by the full faith and credit of the federal government. The proceeds of the bond are then pledged to be used for “green purposes”. The bonds are repaid by general revenue, not from specific cash flows from the projects that are financed with the proceeds—there is no actual financial link between the project and bond repayment. A Green Bank could theoretically use the same method, of issuing a Green Bond to proactively raise capital for new projects. A more likely approach is that a Green Bank would make several loans, and then sell those loans through a securitization. In this way, a Green Bank’s Green Bond would be financially tied to the underlying projects, as the credit quality and repayment of the bond are directly dependent on the projects themselves.


17 The UK GIB is currently going through a complex privatization process where the government is seeking to sell its sole ownership in the organization.


27 As described earlier, these additional activities, which are critical to spurring adoption, often require a Green Bank to incur more opex and overhead than a private lender might. This is partly why Green Banks rely on government capital, which has no cost of repayment.

28 Some point to the Canada Housing and Mortgage Corporation of an example of this kind of top-down capital market support, with a national entity enabling local lending to smaller “projects”.