coalition for green capital

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A GREEN RECOVERY FOR MINNESOTA:

Job Creation, Environmental Justice, and Clean Energy

ABOUT THIS REPORT

The findings in this report have been determined through a process of stakeholder engagement, including interviews with government actors, developers, capital providers, nonprofit organizations and policy advocates.

ABOUT THE AUTHORS

Coalition for Green Capital has worked at the forefront of public-private investment in renewable energy and sustainable infrastructure for a decade. CGC has helped to establish multiple green banks in the U.S. that have driven over $5 billion of clean energy investment. Through strong partnerships with philanthropy, state/local government, non-profit peers, and others, CGC's pipeline of state and local green bank projects continues to grow.

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The McKnight Foundation is a philanthropic organization based in Minneapolis, Minnesota, in the US. The foundation's program interests include regional economic and community development, Minnesota's arts and artists, education equity, youth engagement, Midwest climate and energy, Mississippi River water quality, neuroscience research, international crop research, and rural livelihoods. McKnight's primary geographic focus is the state of Minnesota, with significant support also directed to strategies throughout the U.S. and in Africa, Southeast Asia, and Latin America.

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Executive Summary

Like many states across the US, Minnesota has seen massive unemployment due to the Covid-19 pandemic, with close to 260,000 workers, nearly 10% of the labor force still filing for unemployment insurance in August 2020[1]. In the wake of this crisis, Americans already know how they want their government to respond. According to recent polls, seven out of ten Americans want federal investment in jobs that support clean energy development.[2] To address this need, momentum is building to create a $35 billion green bank at the federal level that would supply states with funding to invest in clean energy through the green bank model. The green bank model, which uses public funding to crowd in private investment to difficult-to-finance portions of the market, has been successfully deployed in over 12 states to finance over $5 billion in clean energy projects.[3] By building on the past success of the green bank model and maximizing the current federal opportunity, Minnesota can create jobs, enable energy savings for Minnesotans regardless of their income or racial background, and fight the impacts of climate change.

This report provides a gap analysis of the current state of clean energy finance in Minnesota and presents the role a green bank could play in bridging those gaps to expand clean energy development across the state. Throughout the spring of 2020, the Coalition for Green Capital (CGC) met with over 35 stakeholders including developers, financiers, and clean energy experts in Minnesota to discuss gaps that prevent the state from realizing its full clean energy and energy efficiency potential. While gaps and solutions were identified across a number of sectors, this report will lay out some priority examples where a green bank could make the greatest impact.

Opportunities for a green bank in Minnesota include financial products targeted at job retention and creation, expanding access to low- and moderate-income communities and decreasing greenhouse gas (GHG) emissions. Recommendations include expanding Commercial PACE offerings to the agricultural sector as farms face increases in bankruptcies, credit enhancement solutions to expand financing to low income communities facing high energy burdens, and leasing solutions to transition transportation from the largest single GHG emitter in the state to electric vehicles. All of these solutions are focused on creating jobs by driving capital into the clean energy economy, reducing energy costs for all Minnesota residents including LMI communities, and reducing the GHG emissions of the state as it works to achieve its ambitious climate change targets.

As federal legislation gains traction to create a Clean Energy and Sustainability Accelerator that would fund a clean energy transition in the US, Minnesota should create a state green bank to receive these federal funds and appropriate any state funds available as part of its strategy to create clean energy jobs. This study represents phase one of a multi-phase project, of which the next step will include identifying available start-up funding sources for the Minnesota Green Bank and a potential location to house a green bank in the state.

The Clean Energy and Sustainability Accelerator has recently passed multiple legislative platforms, and has been included as a part of legislative plans including President Elect Joe Biden's Plan for Climate Change and Environmental Justice, the Biden Sander's Unity Plan, the US House Select Committee on Climate Crisis, and as a part of the House's $1.5

1 Federal Reserve Bank of St. Louis. Continued Claims (Unemployment Insurance). https://fred.stlouisfed.org/series/MNCCLAIMS
2 CGC Poling Results. https://coalitionforgreencapital.com/wp-content/uploads/CGC-Clean-Energy-Jobs-Fund-Polling.pdf
3 Green Bank Consortium *Annual Industry Report 2020*. https://greenbankconsortium.org/annual-industry-report

trillion infrastructure bill known as the Moving Forward Act. The Clean Energy and Sustainability Accelerator, as originally introduced in 2019 by Representative Debbie Dingell and Senators Ed Markey and Chris Van Hollen, is a proposed institution to be capitalized with $30 billion of federal funding meant to speed the transition to renewable energy by funding state and local green banks. Support for the Clean Energy and Sustainability Accelerator has been pushed through nearly 100 clean energy groups as they urge the senate to add the proposal in the next Recovery Package, and through new polling data, which reveals seven out of ten voters nationally want Congress to move forward on these bills.[4]

Introduction

WHY NOW: THE NEED FOR A GREEN ECONOMIC RECOVERY

In a time of crisis, battles are being fought on more than one front; states are forced to address the COVID-19 health crisis, the ensuing economic recession, the climate emergency, and extreme racial inequality all at once. Citizens are looking to the government for economic stimulus, job creation, climate action, and racial justice.

Since March, there have been 782,000 filings for unemployment in Minnesota. Although the Federal Government has spent $3.3 trillion as part of the three stimulus measures, not a dollar of that has gone to new job creation. In planning its economic recovery, Minnesota will need to create new jobs in a way that faces not just one of these crises, but all of them.

Due to these health, economic, and social crises, clean energy infrastructure projects in the state are now on hold due to the risk of COVID-19, and Minnesota's emissions reductions goals are on hold right along with them. Prior to the COVID-19 pandemic, Minnesota was behind on its climate goals and with state-wide shut downs, it is unlikely to be on track after it has recovered. Coronavirus has struck a significant blow to the overall economy, including the clean energy workforce. According to a study conducted by E2 and BW Research, Minnesota has seen a decline of 17.9% of clean energy jobs from pre-COVID to June.[5] Out of the 782,000 people who have filed for unemployment in Minnesota, approximately 12% are within the clean energy workforce.[6] Since 2015, US clean energy jobs have grown at a rate of 10.2%. This makes the clean energy industry one of the fastest growing industries in the US, but the hit from coronavirus has near wiped out the growth from 2019.[7]

While Minnesota has not yet met their emissions reductions goals, the effects of those emissions and environmental pollution are affecting communities of color the most, matching the pattern of both the health and economic crises in the state. Environmental impacts can clearly be seen across communities of color, and especially tribal lands.

4 100 Groups Urge Senate to Add Clean Energy Jobs Accelerator in Recovery Package: https://coalitionforgreencapital.com/media-center/the-clean-energy-future-blog/; Clean Energy Polling Survey Results, 2020. https://coalitionforgreencapital.com/wp-content/uploads/2020/05/Coalition-for-Green-Capital-Poll-Competititve-Swing-May-2020.pdf

5 Clean Energy Employment Initial Impacts from the COVID-19 Economic Crisis, 2020. https://e2.org/wp-content/uploads/2020/06/Clean-Energy-Jobs-May-COVID-19-Memo-Final.pdf

6 Unemployment Claims by State, 2020. https://www.nbcnews.com/business/economy/unemployment-claims-state-see-how-covid-19-has-destroyed-job-n1183686; 12% through interview with MN Housing Finance Authority

7 March 2020 Unemployment Analysis. https://e2.org/reports/clean-jobs-covid-economic-crisis-march-2020/

The Prairie Island Indian Community outside of the Twin Cities lives a mere 600 yards from 29 dry casks of highly radioactive spent nuclear fuel, which have been "temporarily" stored on the island for the last 26 years. According to Jessie Seim, the tribe's general counsel, "no other human beings are located that close to a nuclear power plant in this entire country."[8] Xcel Energy's aging Prairie Island Nuclear Generating Plant sits on Mdewakanton Dakota ancestral land and is required to pay the Minnesota state government on a yearly basis to pay for the storage on tribal land. In 2018, the Prairie Island Indian Community tried to access that money to transition their energy consumption to 100% renewables. However, the bill they put forth was vetoed as part of a larger omnibus and they have yet to access the fund for their energy needs.[9] Meanwhile, according to the Minnesota Department of Health, cancer rates among American Indians in the state are at least two times higher than for the nation as a whole.[10] With access to the right capital through a state green bank, the Prarie Island Indian Community could acheive their goal of transitioning to 100% renewables. Fenceline communities (communities that are immediately adjacent to companies or transportation hubs releasing harmful emissions or chemicals) often feel the brunt of emissions exposure, but are the last to feel the positive impacts of renewable energy. With a state green bank, fenceline communities, low income communities and environmental justice communities could access capital and technical assistance to see immediate positive impact.

The links between public health, environmental sustainability, clean energy and economic prosperity are clear and must be addressed by the MN green bank. A state green bank with the mandate to reduce GHG emissions, restore environmental justice to communities at risk, and generate job growth could leverage public capital and increase private investment to meet the state of Minnesota's growing energy, economic, and health needs. Capitalization for such a green bank could come from the state government, from foundations, or from the federal government, which could then leverage private capital for further impact. In order to receive federal funding for such an institution, the Minnesota Government should work in coordination with its congressional delegation to ensure passage of the Clean Energy and Sustainability Accelerator Act, which will fund the Minnesota Green Bank.

PROGRESS TO DATE: THE TRANSITION OF MN'S ENERGY MIX

While Minnesota has made progress on renewables development, the shift needs to be faster and larger. Renewable energy in the state now makes up almost 20% of its energy mix, but it must grow much larger than that to meet emissions reduction goals.

From the 1970s through until 2000, over 90% of Minnesota's electricity was generated from coal (~60%) and nuclear (~30%).[11] While that held stable for decades, Minnesota is now facing a changing energy landscape with many opportunities to make progress towards clean energy in their fuel generation mix.

In 2001 the Minnesota Legislature passed the Minnesota Renewable Energy Objective (REO): a voluntary renewable energy objective to obtain 10% of their Minnesota retail energy sales from eligible energy sources by 2015. By 2007 that legislation was modified

8 The Prairie Island tribe wants to get to net-zero emissions, 2019. https://www.minnpost.com/environment/2019/04/the-prairie-island-tribe-wants-get-to-net-zero-emissions-its-biggest-roadblock-may-be-house-dflers/

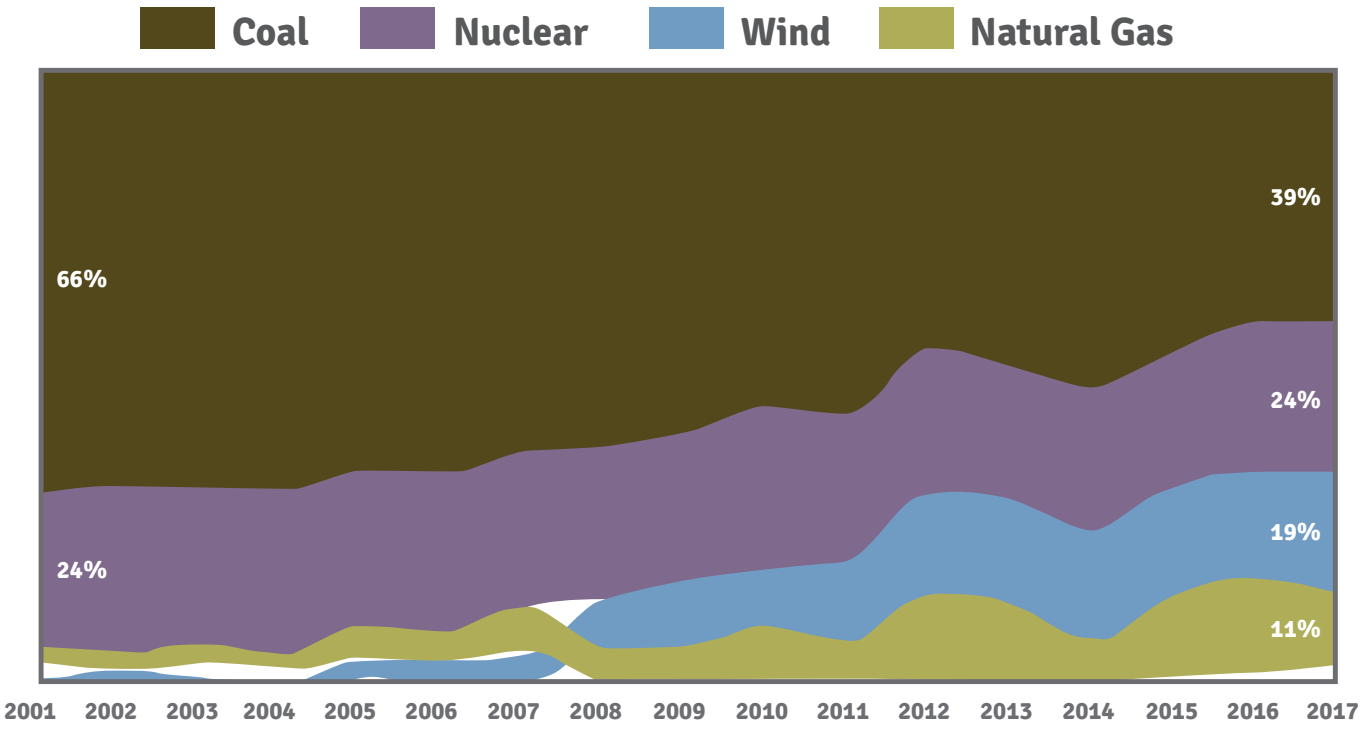
9 Ibid.

10 Minnesota Department of Health Cancer Facts and Figures, 2015. https://www.health.state.mn.us/communities/environment/tracking/docs/cancerfandf.pdf

11 Generating Electricity: Minnesota's Changing Fuel Mix. https://www.house.leg.state.mn.us/hrd/pubs/genelectric.pdf

to create mandatory Renewable Portfolio Standards (RPS) which require public utilities to have at least 25% of retail electricity sales be generated or procured using eligible renewable sources by 2025, with a 2013 amendment including a solar carve out which requires all public utilities to have 1.5% of retail electricity sales be generated or procured using solar energy by 2020 and a statewide goal of 10% of retail electric sales from solar by 2030.[12] According to the National Renewable Energy Lab, Minnesota has the potential to generate up to 23% of energy sales through rooftop solar.[13] Despite these goals and clear potential, solar currently makes up only 1% of Minnesota's electricity and with COVID, setbacks may be expected to slow the development of projects in the coming year. [14] With the proper financing, solar and other renewables could be deployed much faster than they currently are moving.

Minnesota State Energy Mix, 2017[15]



In 2007, with bipartisan support, the state legislature passed Minnesota's Next Generation Act which set forth the goal to reduce greenhouse gas emissions in the state by 80% between 2005 and 2050 (15% down by 2015 and 30% down by 2025). Despite the growth in renewables the state fell short on their 2015 goal and is on track to miss their 2025 goal unless significant action is taken. Alongside the shortfall in GHG emission reductions, the 2007 Next Generation Act's goal of an 80% decrease by 2050 is now falling short of necessary actions, given the new information available. According to the 2018 Intergovernmental Panel on Climate Change (IPCC) report, emissions must decreased by 45% globally by 2030 (relative

12 Database of State Incentives for Renewables & Efficiency, 2020 https://programs.dsireusa.org/system/program/detail/2401

13 Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment, 2016 https://www.nrel.gov/docs/fy16osti/65298.pdf

14 Minnesota's Solar Capacity, MPR News, 2019. https://www.mprnews.org/story/2019/02/26/minnesotas-solar-capacity-jumped-almost-50-percent-last-year

15 How Does Your State Make Electricity? 2017. https://www.nytimes.com/interactive/2018/12/24/climate/how-electricity-generation-changed-in-your-state.html

to 2010) and net-zero by 2050 in order to limit the planet to 1.5°C of global warming.[16] In March 2019 Governor Walz proposed the One Minnesota Path to Clean Energy which requires 100% clean energy by 2050, however the bill was tabled by the Sate's Senate and amended to include coal and gas plants with partial carbon capture into the definition of "clean energy."[17] Minnesota is in need of a new set of goals and a significant investment for job creation and clean energy infrastructure to meet their emissions reductions goals and they are not yet on track legislatively or financially.

The Green Bank Model for Economic Growth & Environmental Justice

Clean energy deployment must happen faster and at a larger scale; a green bank can facilitate that transition. Green banks are job-creating, dedicated finance institutions (often public entities or nonprofit organizations) that use innovative financing techniques to connect clean energy projects with capital. Given the highly localized nature of energy markets, green banks are often created as local institutions. They are market-oriented, seeking to achieve returns on their investments, in part to demonstrate to private investors that attractive returns are possible. While they are not technically banks (in that they do not take deposits), they use various techniques to offer favorable terms to clean energy projects, including credit enhancements, technical assistance, and lower-cost or longer-term loans.

Green banks apply their specialized expertise in energy lending to undertake transactions that private sector capital providers are unlikely or unable to do on their own. They focus on scalable solutions, dedicating capital and staff time to demonstrate innovative financing structures that can be replicated across multiple projects.

Green banks have served as powerful tools to help states and cities achieve their sustainability goals and drive greater investment into clean energy markets by leveraging private capital. As reported in the American Green Bank Consortium's *2020 Green Bank Annual Industry Report*, for every $1 invested by a green bank, the organization is able to mobilize on average $3.6 in overall investment.[18]

For example, The Connecticut Green Bank, the state's quasi-public green bank, has used $250 million in public funding to drive over $1.6 billion in overall investment in the state's clean energy market. Michigan Saves, Michigan's independent, nonprofit green bank, has used $19 million in public and philanthropic funding to drive over $190 million of investment into the state's clean energy market. Overall, green banks across the country have helped drive over $5 billion of investment into clean energy projects as can be seen in.

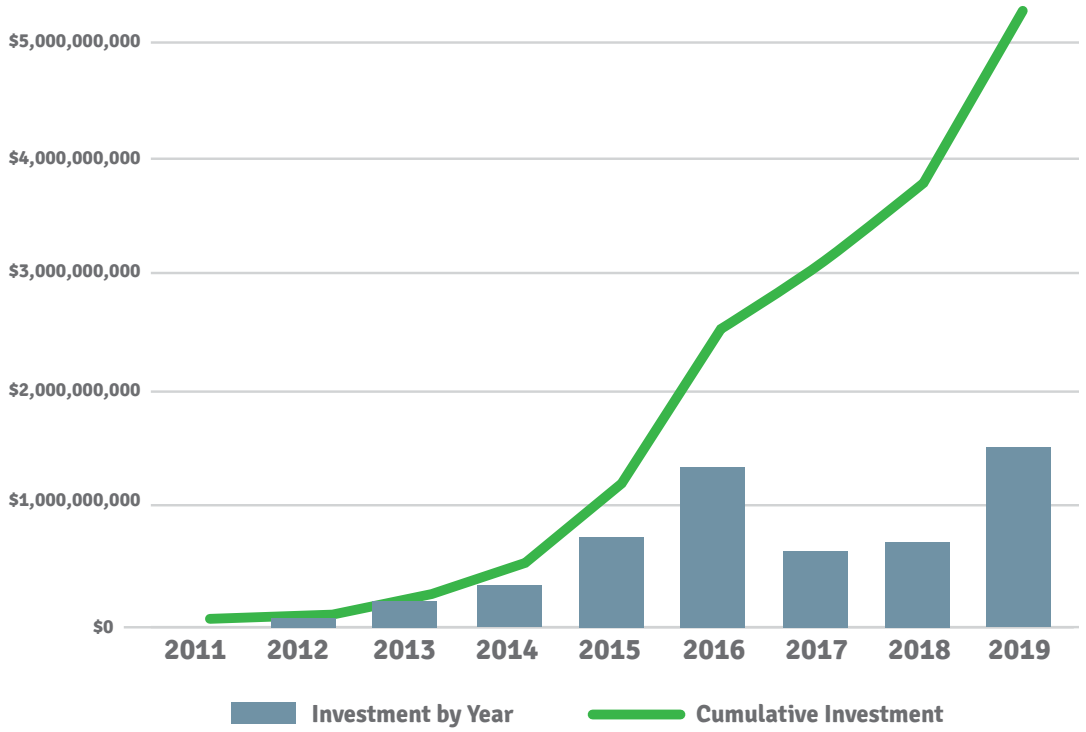
Given the concurrent crises requiring economic stimulus, reductions in pollution to support lung health, and immediate actions to support Black and minority communities in the state of Minnesota, budgets are tight and must be leveraged to increase the necessary impact; green banks are a proven way to do that.

16 Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments. https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/#:~:text=Global%20net%20human%2Dcaused%20emissions,removing%20CO2%20from%20the%20air

17 "Clean Energy First", Sierra Club, February 2020. https://www.sierraclub.org/minnesota/blog/2020/02/clean-energy-first-or-clean-energy-fake

18 Green Bank Consortium *Annual Industry Report 2020*. https://greenbankconsortium.org/annual-industry-report

Investment Caused by Green Banks [19]



ROLES OF A GREEN BANK

To characterize the types of solutions a green bank could offer in Minnesota, it is helpful to consider the roles green banks play in their markets. Typically, green bank activities can be organized around four broad roles *(see chart below)*.

Depending on the needs of the market they are trying to address, green banks have achieved impact in a variety of ways. Green bank financing solutions can take many forms including credit enhancement, co-investment or warehousing, dedicated debt to support structures like Property Assessed Clean Energy (PACE) finance or on-bill repayment programs, or market development like information

Sample Green Bank Financing Solutions and Roles

Barrier to Investment	Solution	Examples
Perceived project risk	Credit enhancement	Provide a loan loss reserve can mitigate risk and allow investment to flow at longer term of lower rate
Inefficiencies of scale	Aggregation & Warehousing	Aggregate small projects to meet scale to attract private capital
First-of-kind-transaction	Technical Assistance	Put in technical legwork that comes with closing more labor-intensive, innovative transactions
Marginal Economics	Co-Investment	Lend to a project, in senior or junior position, to improve overall economics for investors and customers

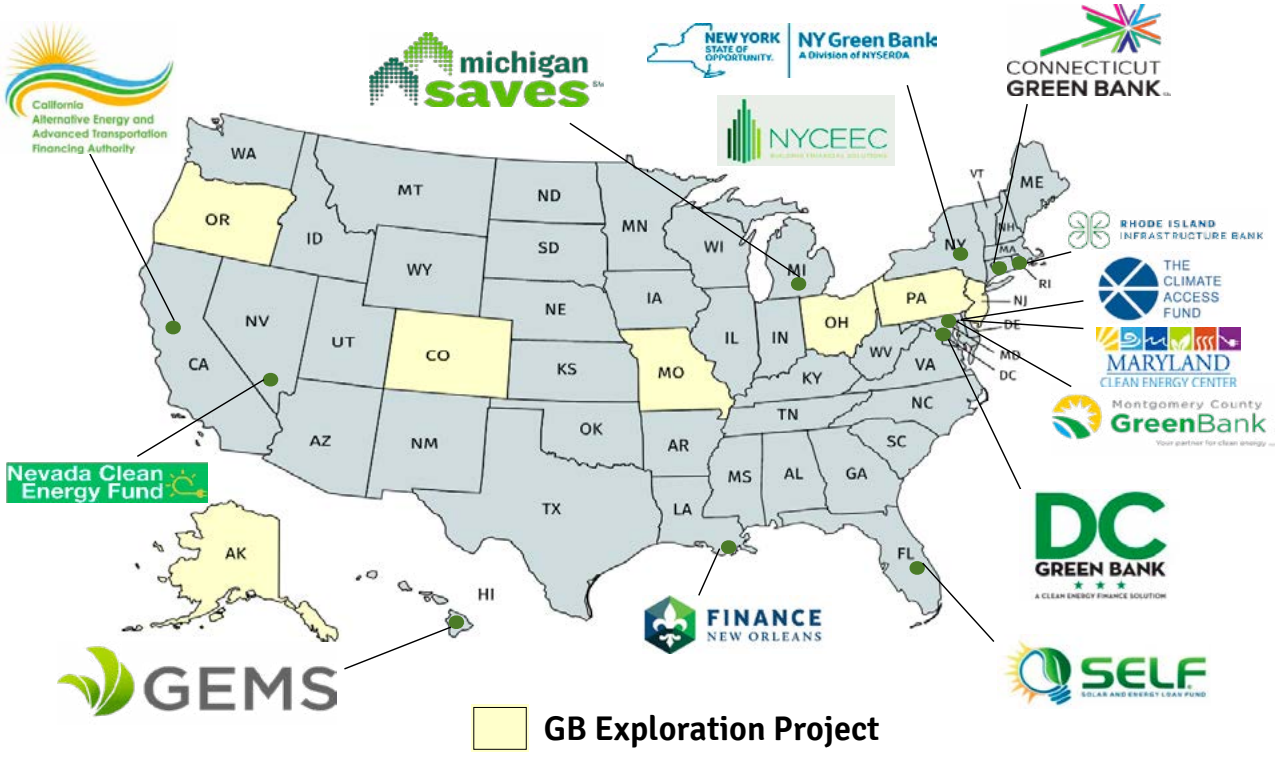
19 Ibid.

sharing, developer training, or program coordination. Not included in the roles described above is the administration of direct subsidies to lenders (e.g., interest rate buy-downs) or end-users (e.g., rebates). While some green banks are responsible for administering incentive programs, these types of programs are often best served by existing actors. Among other reasons, incentive programs are designed to lose money over time, and thus conflict with the goal of the green bank to achieve financial self-sufficiency over time. In designing its interventions, however, the green bank should carefully consider the incentive landscape, and design its offerings to complement existing programs. Earlier-stage green banks have traditionally focused on one or two solutions as they seek to establish themselves, while larger, more mature green banks have often expanded their offerings to include a suite of different solutions that can maximize their impact in a variety of markets.

The roles a green bank chooses to play are largely driven by the conditions present in the target market. Not all solutions work in all markets. For this reason, the role of green banks have differed widely across the country.

As of 2020, there are 15 green banks in the US, with several others under development.

Green Banks in the US, 2020



BUILDING A GREEN BANK

As the map above suggests, the flexibility and efficiency of the green bank model has made it a popular choice in a wide variety of states. Each of these geographies has its own energy market gaps, policy priorities, and budgetary landscape. As a result, the creation pathway for a green bank varies across geographies.

Many of the first green banks, like those in Connecticut and New York, were created as public institutions and capitalized with large amounts of public funding. Armed with a large source of public

capital and a clear mandate from the government, public green banks have been successful in catalyzing market development in their states. However, even when the public pathway is possible, there are potential drawbacks to consider. First is the amount of public resources (focus, money, and political capital) needed to create a new institution or re-purpose an existing one. Next is time it takes for public green banks to reach the market. Due to the large number of stakeholders and legal processes involved with a public green bank, the time between when a green bank is proposed and when a green bank begins to finalize their first deal can be significant.

Finally, and perhaps most significantly, these entities are necessarily exposed to political and budgetary whims outside of the green bank's control. Facing a state budget deficit in 2017, the Connecticut legislature opted to raid the green bank's dedicated stream of funding. The result was that the green bank needed to significantly alter some programs and curtail others.[20] This potential for "boom and bust" financing cycles is particularly detrimental to developing nascent clean energy markets, which often require a steady hand over the course of several years.

While the public model has been successfully implemented in states where public capital is available and legislatures are supportive of green initiatives, the conditions ideal for a public or quasi-public green bank are not found in every state. Other green bank models have been tried and tested to overcome these difficulties. In these cases, the green bank is often established as a nonprofit entity. Phase two of this work will determine the proper institutional structure and capitalization mechanism of a green bank in Minnesota.

If Minnesota is to move towards the Nonprofit Institutional model, some potential examples for the state include:

The Colorado Clean Energy Fund (CCEF)

Colorado began its exploration of the green bank with a study funded by a competitive grant from the US Department of Energy's State Energy Program. The Colorado Energy Office (CEO), CGC, and other partners explored the viability of various creation pathways and determined that a nonprofit model for green bank operations was the most promising. CGC incorporated a nonprofit called the Colorado Clean Energy Fund (CCEF) to act as the state's green bank. Colorado Governor John Hickenlooper then announced CCEF as the as the state green bank in December 2018.[21] CGC worked with national philanthropy to identify operating capital for the green bank and hired the first staff in late 2019. Since then, CCEF staff have been working to raise investment capital and further develop its line of products. CCEF expects to announce its first transaction, support for a municipal on-bill finance program, in the first half of 2020 and is currently raising a fund for small-scale C-PACE projects.

The Colorado model could be relevant to Minnesota if it is determined that creation of a green bank through legislation would be too lengthy a process, and a nonprofit model is determined the institutional model to pursue. The role of the Governor of Colorado might also be applicable to Minnesota in determining if there are key government supporters who might provide assistance outside of legislation.

20 Hartford Business. Financially wounded, pioneering CT Green Bank has a path forward. http://www.hartfordbusiness.com/article/20180108/PRINTEDITION/301039919/financially-wounded-pioneering-ct-green-bank-has-a-path-forward

21 Judith Kohler, "Colorado Energy Office helps launch 'green bank' to spur clean energy investments." *Denver Post*. December 11, 2018. https://www.denverpost.com/2018/12/11/colorado-launching-green-bank/

The Nevada Clean Energy Fund (NCEF)

Similar to Colorado, Nevada's first step towards green bank creation began with a study. Senate Bill 360 tasked Nevada's Governor's Office of Energy (GOE) to complete the study, and CGC worked closely with the GOE to complete this work.[22] In 2017, Governor Brian Sandoval signed Senate Bill 407, which established a Nevada green bank into law. The bill directed the GOE to create an independent, nonprofit corporation named the Nevada Clean Energy Fund (NCEF). The bill also established the board of directors for the nonprofit. While it is an independent institution, NCEF's board will have several public officials serving as ex officio board members. By early 2020, the state had identified public funds to serve as the initial operating capital for the green bank. The first task of the staff will be to identify public, private, and philanthropic sources of investment capital. As in Colorado, a limited but critical amount of public commitment (in the form of the study and operating capital) has enabled the green bank to take its first steps forward.

The Nevada model demonstrates how a green bank can come into existence through legislation even if the organization itself is separate from the state government; Minnesota might find this a possible way forward if legislation seems feasible without drawing out the creation of such an institution.

Green Bank in Cuyahoga County, Ohio

Cuyahoga County included the creation of a green bank its 2019 climate action plan. CGC has been working to establish a fund to catalyze clean energy development in the county in support of this goal. During 2019, CGC completed a market opportunity analysis of Cuyahoga County to explore the most promising markets for increased clean energy lending and develop products to support growth in those markets. Later in 2019, CGC and its partners selected one product from the potential green bank products identified through the report and began the work to raise capital and establish a fund in support of that product.

Working with a local nonprofit lender, CGC has begun incubating a clean energy fund within the existing business that will provide debt for the development of small-scale solar power purchase agreements in Cuyahoga County. CGC estimates that, for this green bank, start-up operations will cost approximately $250,000 per year for the first three years until the green bank can pay for itself through its loan portfolio.

The green bank in Cuyahoga County is structured to support capitalization from foundation program-related investments and low-interest loans from local government. The first tranche of investment capital was secured in February 2020 from a philanthropy, and the fund is actively raising more capital. Based on modeling to support a self-sustaining institution, CGC is targeting the creation of a $12–15 million fund.

The Cuyahoga County model demonstrates the ability for a green bank to be housed inside an already existing nonprofit, as well as the possibility of being funded by a foundation through program-related investments rather than through public funding at the state or federal level.

The pathway of these nonprofit green banks demonstrates that public sector priorities and stakeholders can play key roles in the development and ongoing operations of a green bank, without the public sector running the process itself.

22 Coalition for Green Capital, "Nevada Governor Signs Green Bank Bill." June 6, 2017. http://coalitionforgreencapital.com/2017/06/06/nevada-governor-signs-green-bank-bill-clean-energy-fund/

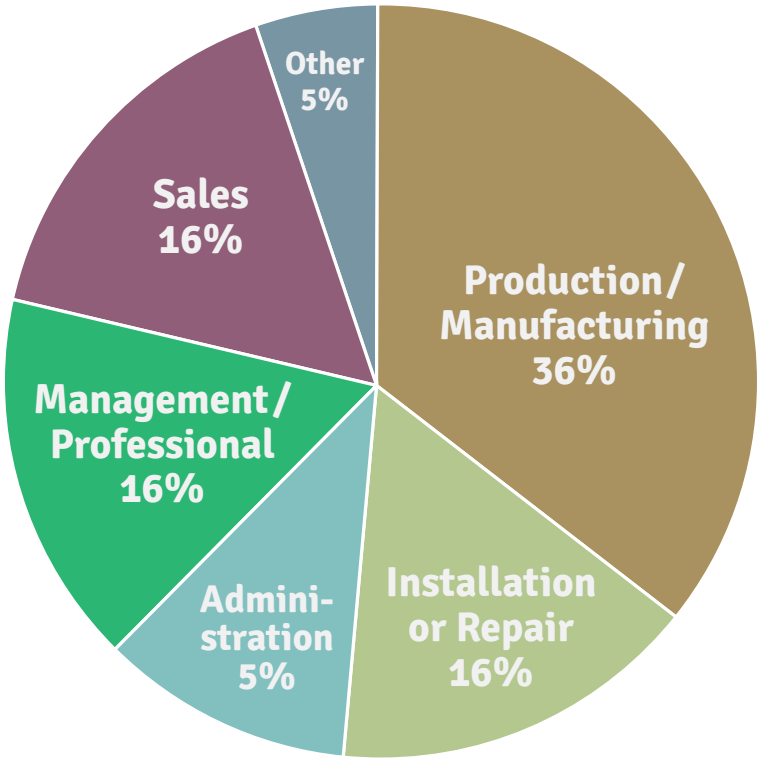
Benefits of a Green Bank for Minnesota

Alongside concurrent crises of unprecedented unemployment rates, global health concerns and the impending climate crisis, it is critical that public money is used in a way that has the largest "bang for its buck." A green bank is able to leverage $3 for every $1 of public money spent to address all three concurrent crises.

JOB GROWTH

According to a June Vivid Economics report, with $35 billion a National Clean Energy Jobs Fund could create 5.4 million jobs in its first five years of operation.[23] Given that sizing, it is estimated that, with $100 million in seed capital, a green bank in Minnesota could create 15K jobs within its first five years. Clean investments generate more jobs than fossil fuel investments, for the same level of spending. Not only that, but as initial investments are repaid and then reinvested by the green bank, job creation would continue at approximately the same rate. These jobs are based on the assumption of investment across seven priority sectors of (i) renewable energy, (ii) clean transport, (iii) grid technology, (iv) building efficiency, (v) industrial decarbonization, (vi) agriculture and (vii) climate-resilient infrastructure. The jobs outlined by the report estimate that almost two fifths of the new jobs created by green bank investments are expected in production and manufacturing jobs, with a sixth of all jobs in installation or repair, while also supporting a wide range of associated white collar sales, administrative, management jobs.

Green Bank Jobs Created by Type [24]



23 Bounce Back Greener, Vivid Economics. https://www.vivideconomics.com/wp-content/uploads/2020/06/Bounce-Back-Greener-The-Economic-Impact-Potential-of-a-Clean-Energy-Jobs-Fund-v3.pdf

24 Ibid.

EQUITY & ENVIRONMENTAL JUSTICE

Through mission-driven capital, green banks lower the barriers not just for clean energy, but also for equitable access to the benefits of clean energy. In all our current crises: climate change, COVID-19, and economic downturns, one thing remains the same; they all disproportionately affect low-income communities.

According to the US 2017 Census Bureau Data, 28% of African Americans in Minnesota live below the official poverty line ($25,100 for a family of 4) compared with 7% of White people.[25] Meanwhile, across the country, Black Americans are getting infected with the coronavirus and dying from it at disproportionate rates compared to their share of the population. The mortality rate for COVID-19 among Black Americans is 2.4 times higher than it is for white people.[26] Within Minnesota, Black people make up only 7% of the Minnesota population, but they account for 16% of the roughly 23,000 confirmed Covid-19 cases.[27]

During a pandemic that is attacking the lungs, the Minnesota Department of Pollution cites that, similarly to COVID-19, Minnesota's most vulnerable populations – seniors, the poor, people without health insurance and people with chronic health conditions – are being hurt most by poor air quality. Inequities like income, racial discrimination, education, and housing are major contributors to how health is affected by air pollution.[28] The links between clean energy, health, racial equity, and prosperity are not opaque, and it should be the focus of the Minnesota Green Bank to address them all through access to financing for improved health outcomes, improved financial savings, and improved environmental outcomes.

MEETING EMISSIONS REDUCTION GOALS

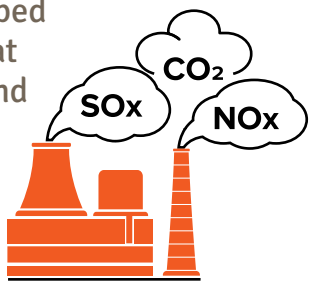
Given the state's 2007 goals to reduce GHG emissions by 80% below 2005 by 2050, significant investments are needed to build the necessary infrastructure and ecosystem support. According to the Connecticut Green Bank, based on their investments from 2019, they were able to reduce GHG emissions by 1,183,050 tons and have offset 120.7 million barrels of oil from being consumed.[29] In addition, their investments in clean infrastructure have also saved an estimated $42–96 million in public health spending. At a similar capitalization level, Minnesota could expect to get back on track with their GHG emissions reduction and public health goals.

Connecticut Green Bank Emissions Reductions, 2019 [30]

Pollution:

The Green Bank has helped reduce air emissions that cause climate change and worsen public health, including 5.1 million pounds of SOx and 6.3 million pounds of NOx.

5.8 million tons of CO_2



Public health:

Green Bank has improved the lives of families, helping them avoid sick days, hospital visits, and even death.

$206.7–$466.7 million of lifetime public health value created

25 Minnesota Department of Health, Poverty in by race 2019. https://data.web.health.state.mn.us/poverty_basic
26 APM Research Lab, 2020. https://www.apmresearchlab.org/covid/deaths-by-race
27 COVID 19's Impact on Black Minnesotans, 2020. https://www.vox.com/2020/5/29/21274731/minnesota-coronavirus-cases-protest-george-floyd
28 Minnesota Department of Health, 2020. https://data.web.health.state.mn.us/asthma
29 CT. Green Bank Annual Report, 2019. https://ctgreenbank.com/wp-content/uploads/2019/12/AR-FY19-layout-single-pages-1.pdf
30 CT Green Bank Impact Report, 2019. https://ctgreenbank.com/wp-content/uploads/2019/10/FY12-FY19-CGB-Impact-website.pdf

Minnesota Green Bank Capitalization & Opportunity

In each of the nonprofit green banks profiled under "Building a Green Bank," an upfront analysis has helped ground the subsequent green bank creation effort in the market realities of the geography. Most importantly, this allowed for an early identification of the roles and product(s) of the green bank, which is critical for capital raising. In absence of public funding, the key question of early nonprofit green bank operations is the source of its capital, both for investments and operations. Federal Funding from the Clean Energy and Sustainability Accelerator Act is becoming increasingly likely as President Elect Joe Biden has included it in his Climate Platform and the bill has passed the House twice in the last five months. The Clean Energy and Sustainability Accelerator nonprofit institution would have the ability to provide capital both to projects and local green banks. Other sources of capital include public funding from the State and grant dollars from Foundations.

Green Bank Sources and Methods of Capitalization

Source	Method
National Climate Bank	**Federal Legislation creating a Clean Energy and Sustainability Accelerator which could could fund a MN green bank**
State Funding	**Resilience Funds** • State allocation of funding from the Federal Emergency Management Agency
	Decarbonization Funds • If the state joins the Regional Greenhouse Gas Initiative (RGGI) and uses auction proceeds to capitalize the green bank • If the state mandates a carbon tax and some portion is used for the green bank
	General Funds • Budget Appropriations • Issuance of a Green Bond
Foundations	**Grants**
	Program Related Investments

The amount of capital needed by the green bank will necessarily vary depending on its market role and capitalization strategy. In order to achieve a meaningful impact and transformation in the market, CGC recommends a minimum investment capitalization of approximately $100 million. However, for a very lean organization a typical commitment for operating capital would be around $1–3 million, spread out over three years in order to ramp the organization up to larger funding. In terms of operating capital, a rule of thumb is for the green bank to achieve financial self-sustainability by the end of its third year of operations. This provides line of sight to funders about the length of commitment required and creates an early emphasis on financial sustainability.

Green Bank Pathways and Strategies for Creation

Pathway	Level of Capitalization	Method
BOOTSTRAP MODEL		
Bootstrap Model	$1-3 million	Seed funding used to design and implement at most one financial product which the green bank can use as proof of concept to then start raising additional capitalization funds in future years.
LEAN AND MEAN MODEL		
Lean and Mean Model	$10-50 million	Capital used to stand up a green bank and roll out one or two programs. As the green bank grows, additional capital can be added through foundations, government action, or balance sheet borrowing
TRANSFORMATION MODEL		
Transformational Model	$100 million or more	This level of capitalization would allow the green bank to launch multiple financial products in order to transform the state's energy economy to transition to clean energy and recover from COVID through job creation, and safer, more reliable, more resilient, and more equitable energy sources.

Given the sizing and related investment programming of other green banks, it is estimated that a green bank in Minnesota would need to start with seed capital ranging from $100–150 million for market transformation. However, this is dependent on the green bank's capitalization strategy; a green bank can be capitalized essentially as a startup using $1–$10 million in which the institution could possibly role out one product before attracting more capital. Or the green bank could be fully capitalized to transform the state's energy market to a zero carbon energy mix by 2050 which would require $100 million and above. The New York Green Bank started with seed capital from NYSERDA amounting to $210 million, with an overall plan to reach $1 billion, and Minnesota consumes 1.7x more energy per capita than New York state.[31]

MINNESOTA GREEN BANK MARKET OPPORTUNITY

This market assessment focuses on the key roles a green bank could play in a Green Recovery for Minnesota, through job creation and economic support, through market expansion to vulnerable communities and through greenhouse gas emissions reduction. CGC would recommend the green bank start with multiple products, with the priority goals of job creation and environmental justice by expanding financing to agricultural industry to save farms through lowered operating costs, and financing to low- and moderate-income communities to decrease their energy burden would be the starting products for a green bank.

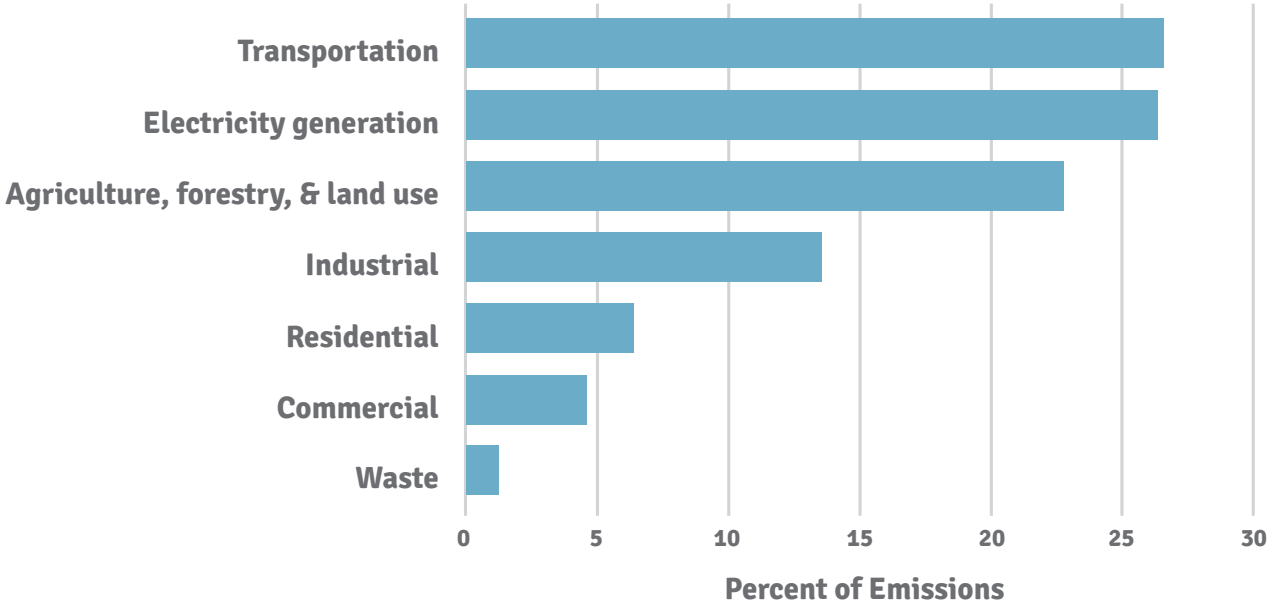
31 US States Energy

Green Bank Jobs Intervention: Lower Farm Operating Costs to Save Agriculture Jobs

BACKGROUND: INCREASE IN FARM BANKRUPTCIES & AGRICULTURAL UNEMPLOYMENT

Within Minnesota, a state with 55 million acres of land, 26 million acres are farmland (47% of the state's land) and agriculture is one of the top three GHG emitters of the state. Energy consumption by sector, as calculated by the US Energy Information Administration indicates in their energy consumption by industry report that the industrial sector in Minnesota is the largest energy consumer, using 187,741 GWh in 2018, of which agriculture accounts for the majority of the industry.[32] Within agriculture, the majority of greenhouse gas emissions comes from animal agriculture, followed by crop agriculture, and finally from inland waters that dry up and release CO_2 previously stored.

Share of Minnesota Greenhouse Gas Emissions by Sector, 2016 [33]



Despite the fact that Minnesota has the 4th highest agrarian income in the United States, profit margins in the agriculture industry have been declining in the last decade.[34] Farm bankruptcies rose 20% nationally in 2019 and 16% in the Upper Midwest.[35] The rise in bankruptcies can be attributed to poor weather and the ongoing trade war with China, as well as tariffs being imposed internationally on US Agricultural products.[36] Despite recent years of low interest rates, high land prices and the trade war bailout from the U.S. Department of Agriculture, farmers have had a hard time withstanding volatile conditions. For some farms, the Federal Market Facilitation payments, which were designed to offset losses from

32 US Energy Information Administration, Energy Consumption by Sector 2018. https://www.eia.gov/state/?sid=MN#tabs-2

33 Minnesota Pollution Control Agency, 2016. https://www.pca.state.mn.us/air/greenhouse-gas-emissions-data

34 What are the Biggest Industries in Minnesota: https://www.worldatlas.com/articles/what-are-the-biggest-industries-in-minnesota.html

35 Farm bankruptcies keep rising in Minnesota and U.S., 2020. https://www.msn.com/en-us/money/markets/farm-bankruptcies-keep-rising-in-minnesota-and-us/ar-BBZC3Mx

36 Ibid.

trade disputes, accounted for 100% of net income for the year.[37] Now with COVID-19, and months of lock down orders in the state, farmers are facing months of lost revenue.

FINANCING BARRIER: HIGH LEVERAGE, LITTLE STAFF TIME

It is clear that farms are in need of cutting costs; transitioning systems to more efficient energy use or clean energy could be the cost reduction that saves farmers in the coming years. The US Department of Agriculture cites that at least 15% of farm production costs are energy related and investing in energy efficiency or clean energy can produce savings from day one.

While there are some commercial financing programs that farms could qualify for, land owners often do not have the time, the expertise, or the resources to go through multiple application processes to access the proper funding from different program sources needed to develop energy efficiency projects or finance clean energy on their farms. Farms are often strapped for time and manpower, and energy is seldom the first priority when it comes to looking for cost savings or other streams of revenue.

When farm owners do decide to look into energy efficiency or clean energy, they often find it challenging to find the upfront capital or the right financing mechanism to develop a project. Farm debt across the US has been increasing for the last decade, moving to an average debt to asset ratio of ~16%, which can make finding financing for energy projects challenging to prioritize when farm owners need to keep open lines of credit for working capital. [38] Interviewees cited that family farms also tend to have one bank they work with for all their financing needs with relationships spanning decades. If that particular capital provider does not provide loans for energy efficiency or clean energy projects, it can be challenging for farmers to spend time researching all their financing options.

GREEN BANK SOLUTION: PROPERTY ASSESSED CLEAN ENERGY

Given that farms rarely have the time to layer on different grants with different timelines and multiple application processes to follow through on energy projects that are not their first priority, nor do they have financing readily available, a green bank in Minnesota would provide financing, technical assistance, and outbound project origination and assistance to farmers through each step of their installation or upgrade.

Commercial Property Assessed Clean Energy (C-PACE) is a successful program which provides secure financing to energy efficiency and clean energy projects over a longer term. C-PACE rarely requires an upfront payment, allows commercial customers to access low cost, long term financing, and attaches the loan to the property rather than the individual so that in the case that the farm changes hands, the owner is not burdened with refinancing the project or paying the full debt. While PACE has expanded throughout Minnesota, with capital successfully provided through the St. Paul Port Authority and the Southwest Regional Development Commission, farmers have yet to grow as a customer base of these programs. According to one lending administrator, despite the fact that almost half their overall loan portfolio is extended to farms, only 20% of their clean energy loans are on farms.[39]

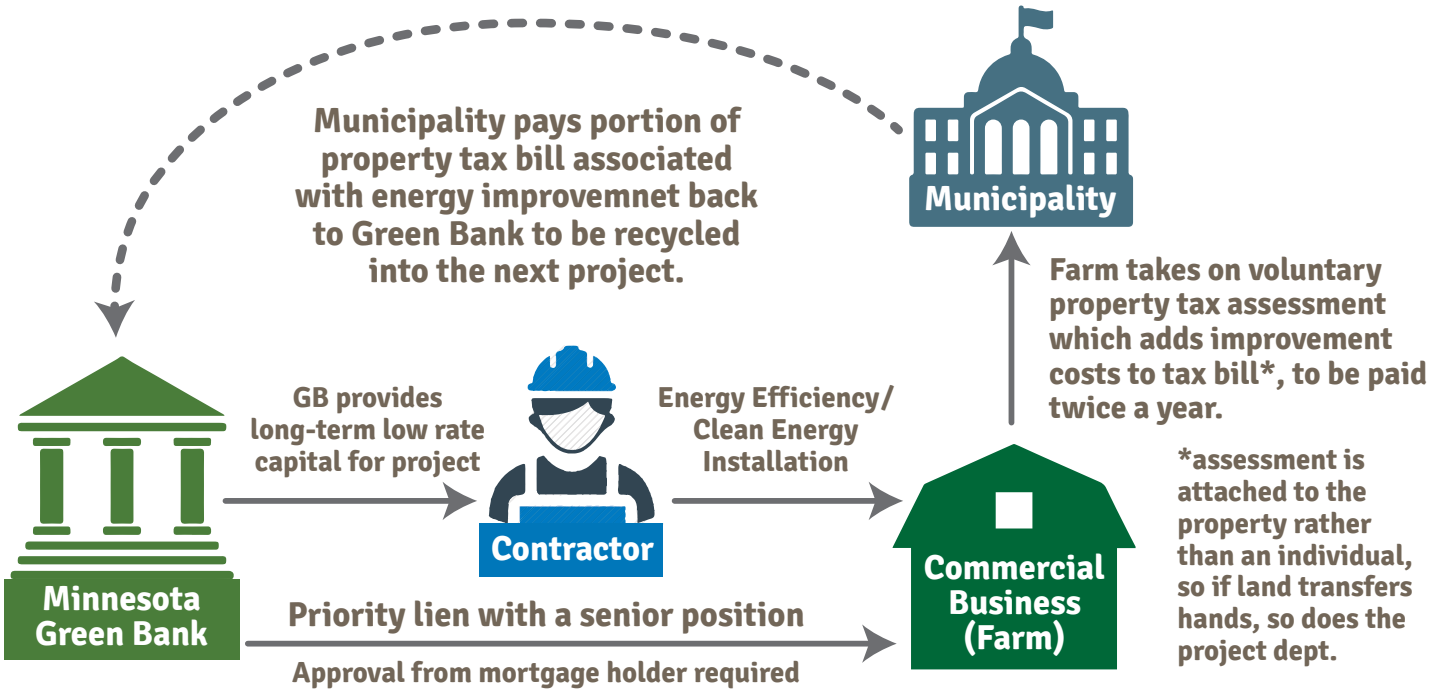
37 Dan Gunderson, Another Year of Narrow Margins for Minnesota Farmers, 2020. https://www.mprnews.org/story/2020/04/02/data-2019-another-year-of-narrow-margins-for-minnesota-farmers

38 Rising U.S. farm debt and the implications for farmland investors, 2018. https://www.nuveen.com/global/thinking/real-estate/rising-us-farm-debt

39 Interviews with PACE administrators

Despite the barriers to uptake, PACE is a particularly relevant financing mechanism for farms due to its positive impact on the corporate balance sheet. Some farmers and business owners may be concerned about how financing energy efficiency upgrades may affect the balance sheet. If these farmers were to take out commercial loans they would show up as a liability on the balance sheet. Under these circumstances it can be challenging for farmers to invest in an energy efficiency project or clean energy project when the pay offs are not sufficiently attractive in the short term. PACE financing solves this conundrum due to the face that just like other property tax bills, the special assessment used to repay PACE energy upgrades can be considered "off-balance-sheet" for accounting purposes.[40] That categorization must be determined through the property owner and his or her accountant (and depreciation may have to be factored in), but it provides a way to improve the balance sheet and the P&L statement through lower energy expenses. What might seem like a small technical change can make a large difference for farmers who are already highly levered or anticipate they may need more debt in the future and worry about taking too much on for energy related purposes. PACE can act as secure financing matching the farmer's needs and providing scalable access to capital through a revolving fund.

Commercial Property Assessed Clean Energy Financing Model for Farms



40 PACE Funding, The Energy Alliance Group, 2016. https://energyalliancegroup.org/wp-content/uploads/2016/03/MIA-Finance-3-12-16.pdf

Green Bank Equity & Environmental Justice Intervention: Expand Low-Cost Energy Access to Low- to Moderate-Income Households

BACKGROUND: LMI ENERGY BURDEN

Low and Moderate Income (LMI) Communities in Minnesota are not getting the support they need to pay their energy bills. Minnesota households with incomes below 50% of the Federal Poverty Level pay 32% of their annual income simply for their home energy bills.[41] This makes home energy a crippling financial burden and a priority for a green bank in the state. Poverty affects about one in ten adults and one in nine children in Minnesota.[42] The most recent five-year estimate for Minnesota indicates that approximately one in three people that identify as American Indian (29%) or as Black (28%) are in poverty, which is significantly higher than among the other racial/ethnic groups (with only 7% of white people being in poverty).[43] These individuals in poverty spend a higher percentage of their income on energy costs than their peers and are unable to access the benefits of renewables and energy efficiency due to high upfront costs and other barriers.[44]

FINANCING BARRIER: LACK OF FUNDING AVAILABLE

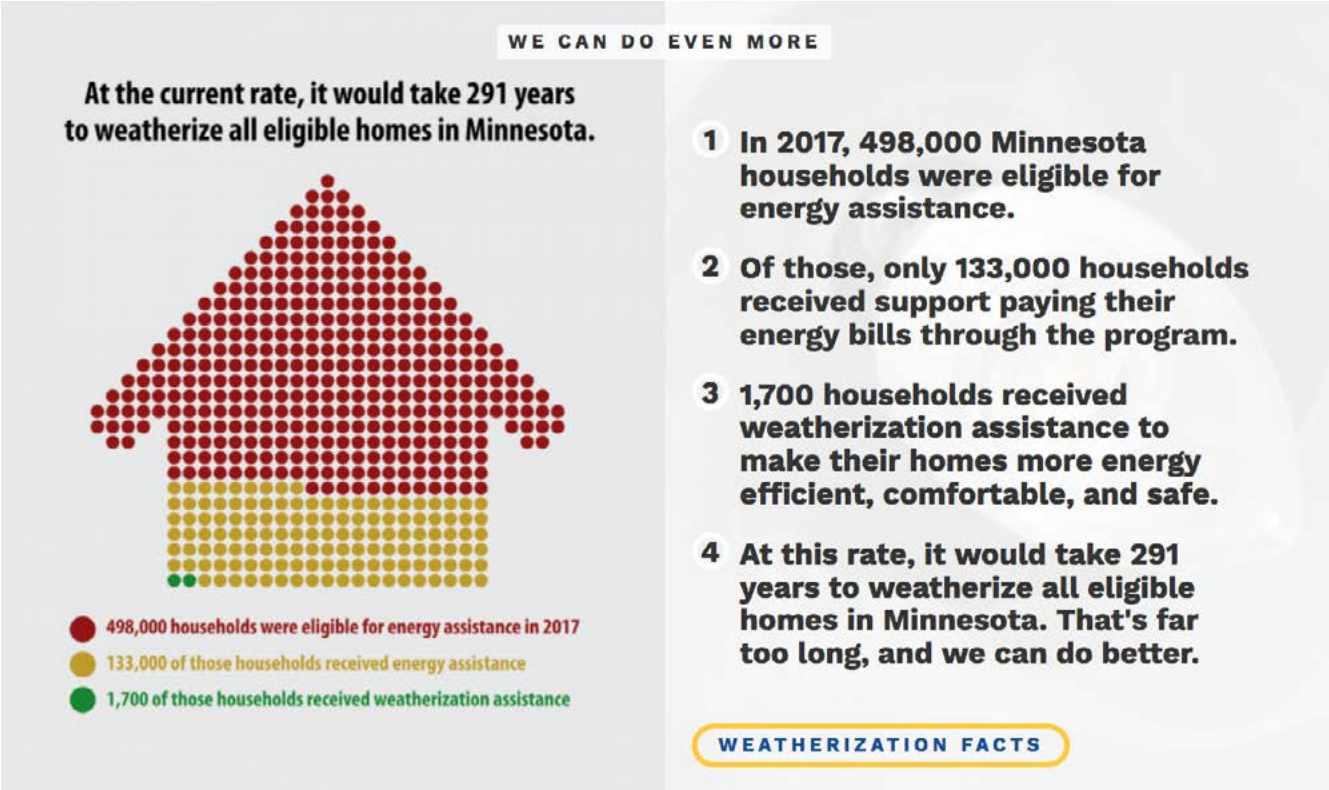
Minnesota currently has 160 policies and incentives to increase clean energy and energy efficiency. Out of those policies 53 are related to residential household efficiency and clean energy use, 40 are related to improving energy efficiency and clean energy for commercial entities, but only two are specifically focused on LMI communities: the Low Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program (WAP).[45]

The LIHEAP and the WAP programs are the primary source of funding in the state to help struggling families with their energy burden. They are both federally funded programs which provide grants to low-income households to help pay for energy bills and weatherization, respectively. On average, low-income families spend about $1,800 annually on energy bills.[46] The energy upgrades households are able to fund through the Weatherization Assistance Program saves families an average of $437 annually in heating and cooling costs, with additional energy and cost savings from lighting and appliance upgrades.[47] That means families have more money for other necessities, such as food, groceries, medicine, clothing and other essentials. In 2018, the WAP paid nearly 126,000 households in Minnesota an average of $545, according to the Department of Commerce, and in 2019 the program received $105M in federal funding.[48] Despite the yearly funds, the program has been able to weatherize only 8–9% of income eligible households since 2005. At that rate it would take 291 years to weatherize the homes of all those who qualify for the program.[49] Meanwhile, Minnesota's LIHEAP allocation has dropped from

41 Bill Glahn Rethinking Energy, 2014. http://blueprint.endorsecommunications.com/reports/4_ae_energy_FC.pdf
42 People in Poverty in Minnesota: https://data.web.health.state.mn.us/poverty_basic#:~:text=
43 Minnesota Department of Health, People in Poverty 2017. https://data.web.health.state.mn.us/poverty
44 https://irecusa.org/2016/03/how-to-bring-shared-renewables-to-low-moderate-income-consumers/
45 https://programs.dsireusa.org/system/program?fromSir=0&state=MN
46 US Department of Energy 2011. https://www.nrel.gov/docs/fy11osti/51242.pdf
47 Ibid.
48 Heating Assistance Program for Low Income Minnesotans Gets $105 Million in Federal Funds: https://www.mprnews.org/story/2019/11/12/heating-assistance-program-for-lowincome-minnesotans-gets-105-million-in-federal-funds
49 Information from an interview with the Minnesota Department of Commerce Division of Energy Resources

$160 million dollars in FY2010 to $114.5 million dollars in FY2017. With 628,945 eligible households in the state, only 126,149 could be served with that funding amount, leaving 79.9% of the states' most vulnerable households at risk of energy shutoff.[50]

Current Rate of Weatherization[51]



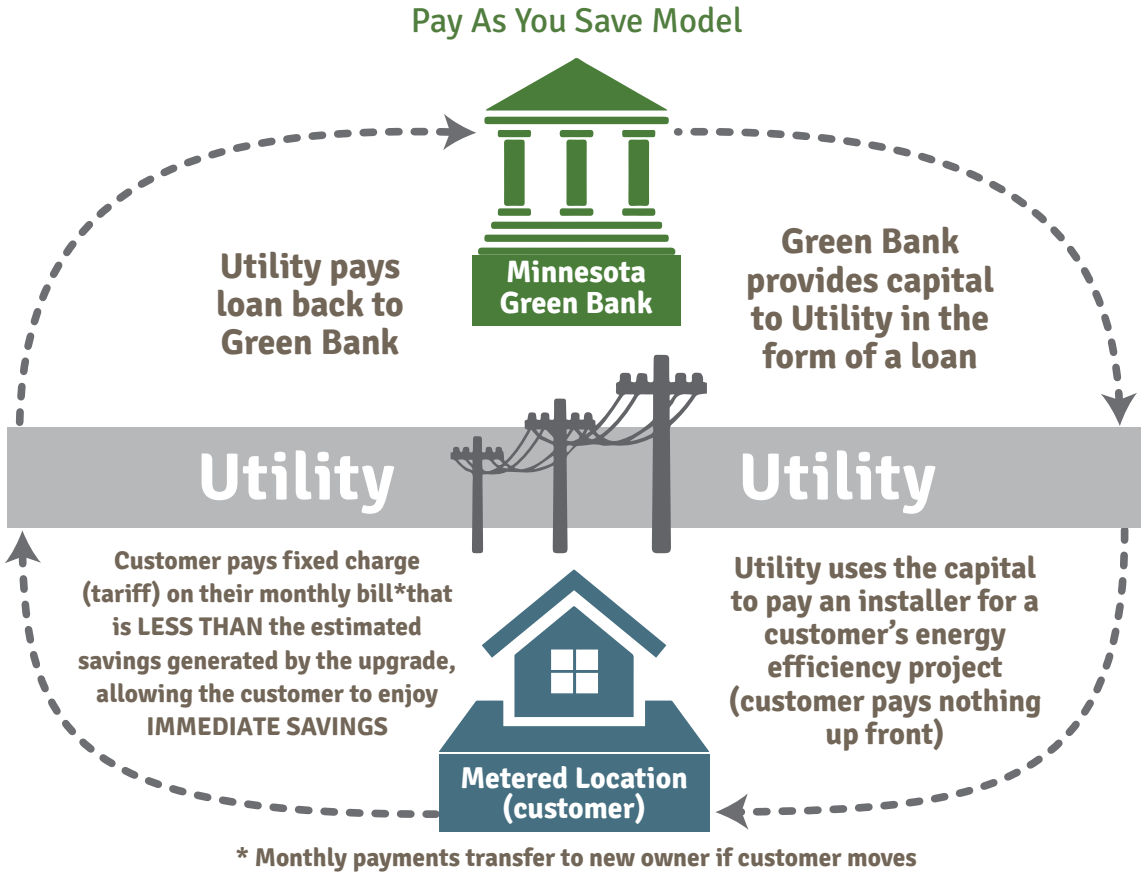
Despite the grant programs targeting these populations, there is still not enough funding available. Families are unable to access grants due to limited supply, unable to invest in the upgrade themselves due to a lack of up-front capital, and renters do not have the proper incentives to make efficiency investments in a property they don't own. Because of these barriers, hundreds of thousands of homes are significantly less energy efficient than they could be, which raises the utility costs for the entire rate base. There is a limited amount of grant money, and financing could compliment it; funds dispersed through a green bank would be repaid and recycled into the program to help decrease the energy burden of LMI individuals.

GREEN BANK SOLUTION: ON BILL TARIFFED FINANCING THROUGH PAY AS YOU SAVE®

In order to increase the accessibility of energy efficiency to low income communities (as well as moderate income communities), a green bank could offer the On-Bill Tariffed Financing product Pay as You Save (PAYS) to low and moderate-income communities. PAYS is a low risk solution which enables building owners or tenants to purchase and install money-saving resource-efficient measures with no up-front payment and no debt obligation. Those who benefit from the savings pay for these measures through a tariffed charge on their utility bill, but

50 National Energy and Utility Affordability Coalition, 2019. https://neuac.org/wp-content/uploads/2018/02/State-Sheet-FY19-Minnesota.pdf
51 Clean Energy Resource Teams, 2020. https://www.cleanenergyresourceteams.org/under5?mc_cid=32488033c2&mc_eid=0b35af7e53

only for as long as they occupy the location where the measures are installed. The monthly charge is always lower than the measure's estimated savings and it remains on the bill for that location until all costs are recovered. The capital for the energy upgrade would be provided by the green bank to the Utility (potentially in collaboration with private capital), and a third party certification is required for each project to ensure that the project will bear the customer savings from day one. PAYS provides immediate savings and offers a unique safeguard: if upgrades fail, customers no longer pay.



PAYS would be a particularly relevant financial product in Minnesota, as the most successful programs have been administered by electric cooperatives due to their flexibility and customer orientation. There are 45 different Electric Cooperatives across Minnesota, and several of them have already tried offering on bill financing programs like East Central Energy, Lake Region Electric Cooperative, Mille Lacs Energy Cooperative, and Lake Country Power.[52] These programs are successful but are not widely available to those who need it due to the barriers of utility territories. Areas with high energy costs, such as those in rural areas are also likely to have greater savings from energy efficiency projects, and these electric cooperatives are well poised to adopt solutions like PAYS. In addition, Inclusive Prosperity Capital has been working with the City of Minneapolis on their proposed CenterPoint Energy pilot project for PAYS in Minneapolis. City officials are pressing state regulators to approve a $50 million pilot which would reach around 10,000 households and make this the largest tariffed on-bill program in the nation. "The city's Clean Energy Partnership, a collaboration with CenterPoint Energy and electricity

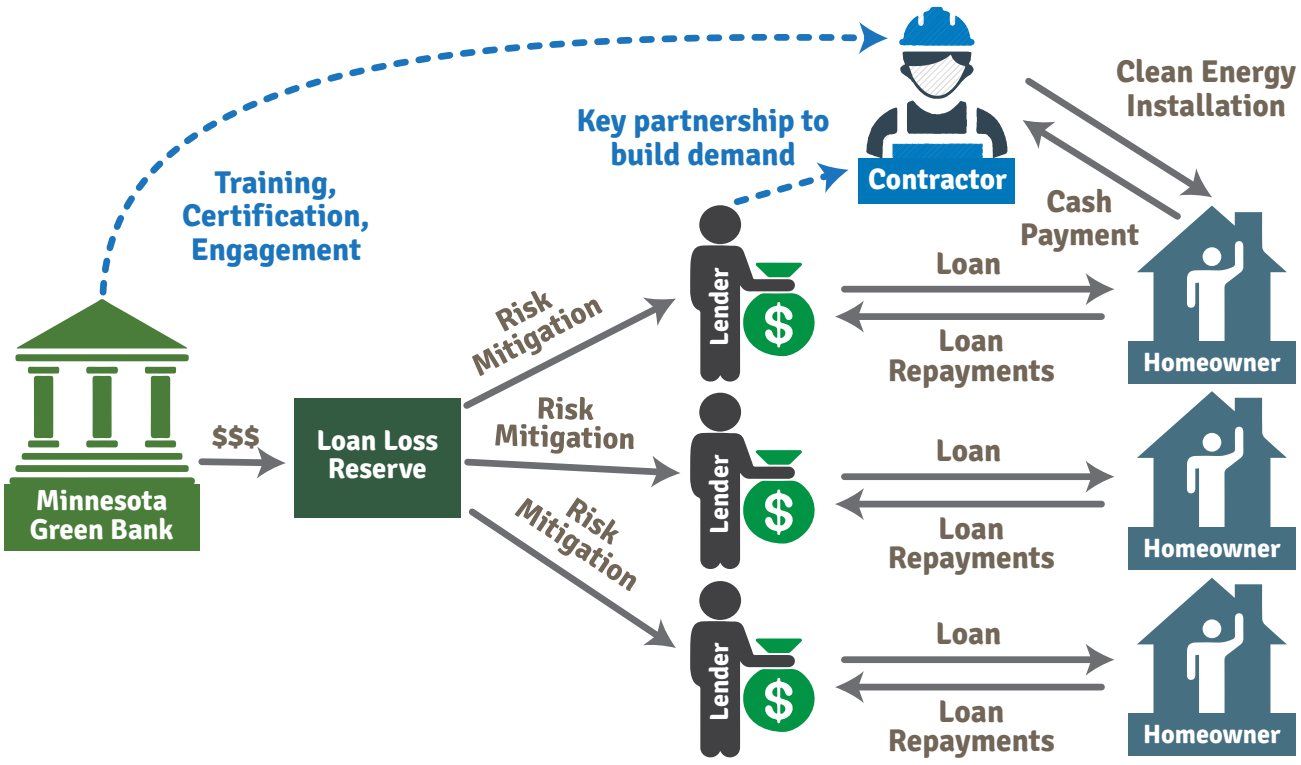
52 Minnesota Co-Ops Tap On Bill Financing, 2019. https://energynews.us/2019/10/24/midwest/minnesota-co-ops-tap-on-bill-financing-to-help-shift-consumption-overnight

provider Xcel Energy, has unanimously supported inclusive financing through a board resolution."[53] The partnership established a goal of seeing 75% of homeowners with whole-home retrofits by 2025, a number unobtainable without the addition of inclusive financing. This step forward could be supported and expanded with the partnership of the Minnesota Green Bank.

GREEN BANK SOLUTION: LOAN LOSS RESERVE

Another solution to increase access to energy efficiency measures for low- and moderate-income communities would be for a green bank to provide credit enhancement products. One such product a green bank could create would be a Loan Loss Reserve, an intervention which de-risks lending in a new asset class such as clean energy projects and encourages community lenders (e.g. credit unions, CDFIs, community banks) to expand their lending into more energy efficiency, renewable energy and resiliency projects and to clients who otherwise might not meet underwriting criteria. A Loan Loss Reserve is an intervention executed in partnership with a commercial lender; the green bank sets aside a loss reserve which represents an agreed upon percentage of loans originated by the community lender with which the green bank is able to reimburse the capital provider if the customer defaults on the loan (up to the amount in the loss reserve account). The Loan Loss Reserve is used to encourage the lender to offer lower interest rates and longer terms for unsecured loans, to mitigate the lender's losses, and to encourage customers to undertake measures that would prove uneconomical at higher interest rates. Through interviews with capital providers in the state, there was marked interested in the possibility of partnering with mission-driven capital in order to expand their lending capacity without increasing the risk of loans.

Loan Loss Reserve Model for Energy Efficiency



53 Minneapolis seeks Pay As You Save energy efficiency program. https://www.stamfordadvocate.com/news/article/Minneapolis-seeks-Pay-As-You-Save-energy-15506668.php

One example of a successful credit enhancement intervention is the Connecticut Green Bank's Smart-E Loan program which, through use of a $2.6M Loan Loss Reserve, has encouraged $68M of lending to energy efficiency and clean energy projects for over 4,000 homeowners from 2013–2019.[54] The Connecticut Green Bank spin-out Inclusive Prosperity Capital, in partnership with Michigan Saves, works with other green banks to bring this program model to scale in new markets. A green bank in Minnesota could similarly use this model to expand the market of commercial lending to energy efficiency projects, and could make energy efficiency and renewable energy savings as well as resilient and health and safety upgrades accessible for low- and moderate-income communities.

BACKGROUND: SOLAR ACCESS FOR LMI HOUSEHOLDS

Despite growth of solar in the state, low- and moderate-income households face many barriers in accessing the benefits of lower energy costs. A green bank in Minnesota would overcome those barriers to expand solar access to all.

In 2013 Minnesota passed a suite of laws creating an enabling environment for solar in the state. Since that time Minnesota has made significant progress and become a leader in solar energy capacity with their Community Solar Gardens, of which there are 208 projects in the state, representing one third of all community solar gardens in the US.[55] Of the laws passed in 2013, standouts include a mandate for Xcel Energy to provide $5 million in financial incentives each year for five years for systems 20 kW or less, the Xcel Energy Community Solar Garden Program, and the Made in Minnesota incentive that that provides rebate funding for PV systems under 40 kW that are made in the state.[56] While these mandates allowed for a boom in solar development in the years following 2013, the policies supporting smaller solar systems have now come to an end. Solar capacity has grown significantly over the last seven years, but it has mostly been through large commercial and utility scale projects, and the energy generation is still only about 1% of Minnesota's electricity.[57]

FINANCING BARRIER: PERCEIVED RISK OF LMI OFF-TAKERS

Commercial Banks are unwilling to lend to projects with LMI off-takers due to limited credit data, so projects will not be extended to LMI residents. A green bank can be used to prove out the borrowing capacity of LMI residents and develop credit history through utility bills for clean energy.

Low-income households face a multitude of challenges, including the lack of financing for small scale projects, the lack of upfront capital to invest in a system themselves, the high likelihood of being a property renter rather than owner, the necessity of roof improvements for rooftop solar, the lack of tax appetite to utilize the federal Investment Tax Credit (ITC) subsidy, and often not meeting underwriting criteria for commercial banks.

While there are some utility programs offering incentives to low income neighborhoods, the budgets for these programs only scratch the surface of demand. Minnesota Power launched a pilot project to offer

54 Connecticut Green Bank Financial Statements 2019. https://ctgreenbank.com/wp-content/uploads/2019/11/2019-Green-Bank-CAFR-FINAL-10-31-19.pdf

55 Minnesota's Solar Gardens, 2019. https://votesolar.org/files/1315/5691/0323/VS-Minnesota-Solar_Gardens-2019-Report.pdf

56 Minnesota State Solar Policy, 2020. https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/Solar/Files/MN-Statute-Enabling-Solar.aspx

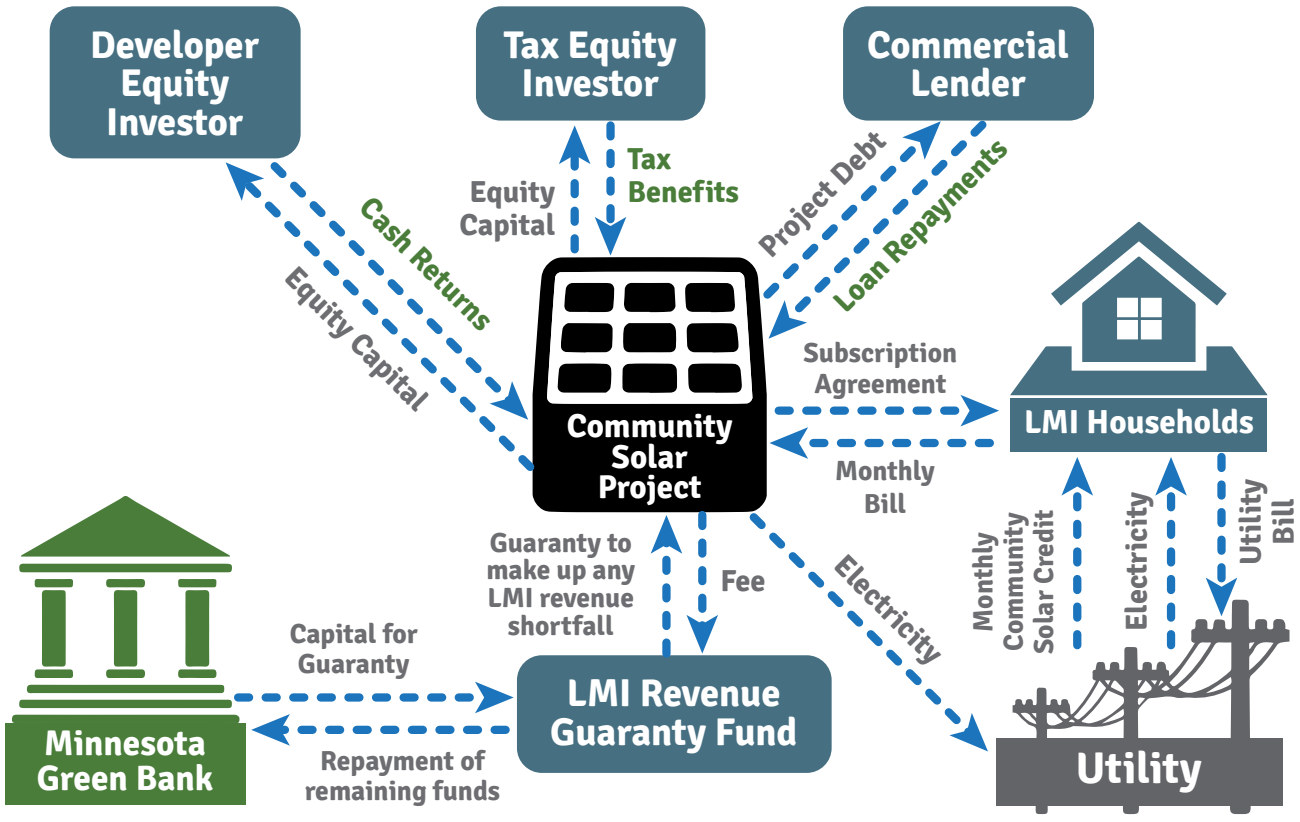
57 Minnesota's Solar Capacity, MPR News, 2019. https://www.mprnews.org/story/2019/02/26/minnesotas-solar-capacity-jumped-almost-50-percent-last-year

funding for solar projects that serve low income communities. The annual program budget is $55,000 and the program has run in 2017, 2018 and 2019.[58] The average Minnesota household needs an 8 kW solar system in order to offset all of their electrical usage.[59] With an annual budget of $55,000, and solar panel installation prices ranging from $2.68 to $3.62 dollars/W, then the Minnesota Power pilot project would only be able to do two to five projects a year in that pilot.[60] As of 2018 there are 529,000 Minnesotan households who have a family income below the official poverty threshold ($25,100 for a family of 4).[61] These utility programs are only accessible to customers within a given utility territory, which leaves the majority of low-income households either out of range of these programs, or unable to access the limited funding available.

GREEN BANK SOLUTION: REVENUE GUARANTY FUND FOR LMI COMMUNITY SOLAR

One solution a green bank could provide is a Revenue Guaranty Fund specifically focused on Community Solar Gardens (CSG). The advantage of community solar is that often low-income customers do not own their own homes, their roofs would require major reinforcements to have panels, and those projects can be very expensive. Community Solar Gardens have been proven in the Minnesota market as a successful mechanism to provide energy savings and stable pricing for households, and there are nonprofits working to include LMI households into CSG projects; however, those programs do not include any added incentive or increased utility credit for LMI projects. Working

LMI Revenue Guaranty Fund for Community Solar Gardens



58 https://www.mnpower.com/Environment/LowIncomeSolarPilotProgram
59 TruNorth Solar, 2016. https://www.trunorthsolar.com/an-average-minnesota-residential-solar-system/
60 Energy Sage Minnesota Solar Panel Pricing, 2019. https://www.energysage.com/solar-panels/mn/
61 Minnesota State Demographic Center, 2020. https://mn.gov/admin/demography/data-by-topic/income-poverty/

withing LMI communities, capital providers perceive repayment risk due to insufficient credit data and often won't finance projects for LMI households, or will charge high rates of return to make up for their lack of customer data. This means projects won't be built or projects charge customers prices that are too high and limit access. In order to address this barrier, a green bank in Minnesota could develop a credit enhancement mechanism to mitigate the capital providers' perceived repayment risk. This would be enacted through a Revenue Guaranty Fund, which would make up any revenue shortfalls the project may experience due to lack of payment by LMI subscribers. This would allow capital providers to earn their necessary repayments and returns, even if the repayment risk turns out to be real. It also allows developers to access lower-cost capital and offer greater savings to LMI households.

Green Bank Emissions Reduction Intervention: Electric Buses for Public Transportation

BACKGROUND: MN NOT MEETING EMISSIONS REDUCTION GOALS

While all the projects above will reduce emissions through expanding energy efficiency and clean energy access, a green bank must address transportation as it is the single largest GHG emitter in MN, making up 26.1% of GHG emissions in the state.[62]

The 2007 Next Generation Energy Act set a GHG reduction goal of 30% reduction by 2025 and 80% by 2050 (from 2005 baseline). According to the Minnesota Department of Transportation, this will require transportation to achieve a 37% reduction in GHG emissions by 2030.[63] The Federal Corporate Average Fuel Efficiency (CAFE) standards have driven progress towards that target, but despite the downward pressure on vehicle GHG emissions, reductions have been slow due to the trend of larger vehicles and more miles traveled.[64] In order to meet the Next Generation Emissions Reduction Goals, transportation must shift to electric vehicles and renewable energy sources for charging, transit buses and public school buses are a starting point that could move quickly with partnership from local government and the right financing available.

Electrification of vehicles and public transport is particularly important as Minnesota faces a reckoning of racial and social equity and a need to act on environmental justice. A 2015 study by the Minnesota Pollution Control Agency found that despite the fact that communities of color and low-income communities tend to own fewer vehicles, do less driving, and use more public transit than other groups, they are exposed to higher levels of traffic-related pollution due to the proximity of busy roadways and associated air pollution to communities of color and low income areas.[65] The increased exposure of air pollution and proximity of neighborhoods to urban interstates and rail yards is a remnant of historical redlining practices, and has left Black communities with after-effects like having disproportionately high rates of child hospitalizations from asthma.[66] Because low-income and communities of color rely more heavily on public transit, replacing diesel buses with electric versions will reduce emissions

62 Greenhouse gas emissions in Minnesota, 2016. https://www.pca.state.mn.us/sites/default/files/lraq-2sy19.pdf
63 Accelerating Electric Vehicle Adoption: A Vision for Minnesota 2019. http://www.dot.state.mn.us/sustainability/docs/mn-ev-vision.pdf
64 Greenhouse gas emissions in Minnesota, 2016. https://www.pca.state.mn.us/sites/default/files/lraq-2sy19.pdf
65 Accelerating Electric Vehicle Adoption: A Vision for Minnesota 2019. http://www.dot.state.mn.us/sustainability/docs/mn-ev-vision.pdf
66 Ibid.

in communities where they are most needed, and expand EV technology across the state.

Benefits of replacing diesel buses with electric buses include decreasing GHG emissions, improving public health, maintaining longer service life due to less maintenance needs, paying lower operation costs due to fuel savings, and finally EV buses can be used as a grid resource – charging when the electricity load is off-peak to better integrate renewable electricity and potentially serving as a storage resource. While some EV pilot projects have been tested in the state, such as the Electric Bus fleet in Duluth, MN, there hasn't yet been an effort at-scale to transition the state's public transportation to electric vehicles.

FINANCING BARRIER: HIGH UP FRONT COST FOR ELECTRIC BUSES

For many transit agencies, the upfront cost of an electric bus remains a barrier to implementing zero-emissions vehicles into their fleet. Despite the fact that over the long term electric buses are lower cost to maintain and fuel than diesel buses, the short term requires an outlay of capital investment. On average, electric transit buses cost around $200,000 more than diesel buses. However, the lifetime fuel and maintenance savings of electric transit buses are around $400,000. And while electric school buses cost around $120,000 more than diesel school buses, lifetime fuel and maintenance savings of electric school buses are around $170,000.[67] Despite these savings, many transit agencies have not considered the transition because of the nature of yearly budgets that focus on short term returns. Public transit agencies are funded through a combination of federal funding from the Federal Transit Administration and state and local funding from a mix of general fund expenditures and other streams of revenue for the state.

Since these funds are allocated on a yearly basis, for one municipal transit agency to request a large allocation of funds one year may mean a decrease in available funds in subsequent years, while the benefits of the EV investment go to the state overall rather than the individual transit agency.

GREEN BANK SOLUTION: PAYS & LEASING MODELS

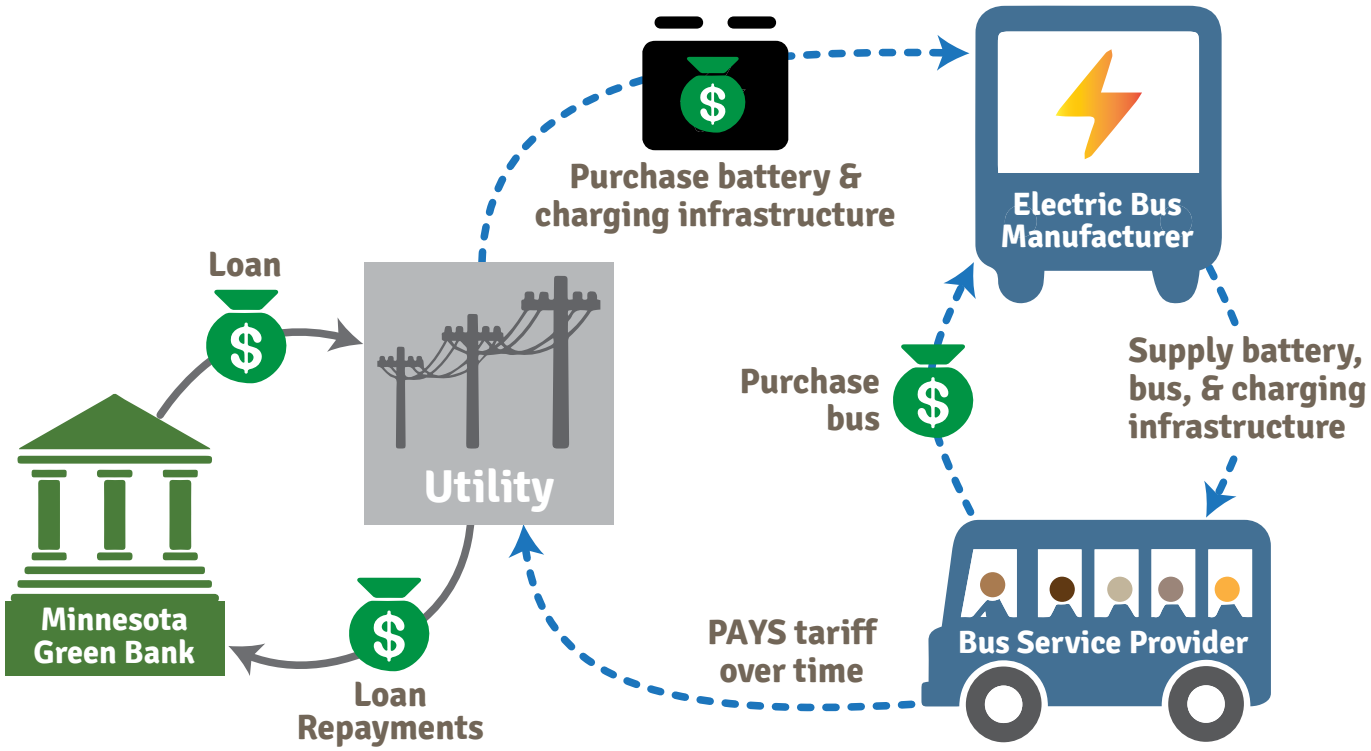
In order to overcome misaligned incentives, a green bank could provide assistance in multiple ways, including a Pay as You Save model for Clean Transport or a Battery Leasing model in order to help municipalities transition to electric buses.

In a Pay as You Save model, the Minnesota Green Bank would partner with a utility in the state to provide a loan, which the utility would use to purchase the battery and charging infrastructure. The electric bus manufacturer would supply the battery, the bus and the charging infrastructure to the municipal transit agency, which would then pay for the usage over time through a tariff on their charging bill to the utility. The benefit of this solution is that it takes out the upfront investment for the municipality to purchase the extra investment of the battery and charging infrastructure outright.

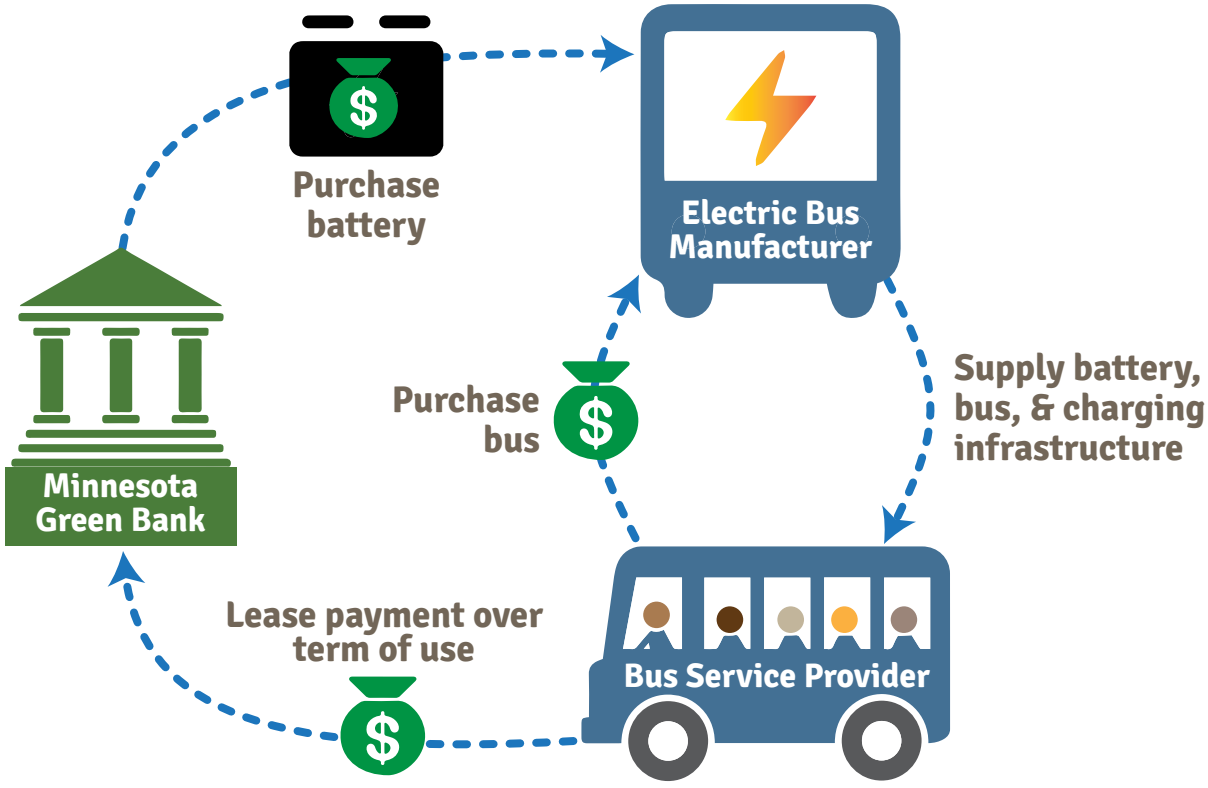
Another model which could help municipal transit agencies transition to electric buses would be for the green bank to partner with an electric bus manufacturer to provide financing to municipalities to extend their transition and avoid an upfront cost. Similar to the partnership electric bus manufacturer Proterra has with the investor Mitsui to provide customers with a financed battery, the green bank in Minnesota could act as a partner to finance the batteries for public transportation electric buses.

67 Paying for Electric Buses, Environment America 2018. https://uspirg.org/sites/pirg/files/reports/National%20-%20Paying%20for%20Electric%20Buses.pdf

Pay As You Save for Clean Transport



Green Bank Leasing Model



Other Opportunities for Green Bank Intervention

EXPANDING DISTRICT ENERGY PROJECTS ACROSS THE STATE

District Energy systems are long lived assets which increase energy efficiency and decrease GHG emissions through connected heating and cooling; while they provide long term savings, they are expensive to build, and projects are limited by development capital. Minnesota has been a leader of District Energy with their projects in St. Paul and Duluth, but development of new projects in the state has been slow due to limited funding for upfront development costs. According to a District Energy developer in the state, projects can take years of predevelopment work, and they have to bear the cost of that work until the project is financed years later. This limits the number of projects they are able to undertake at any given time to one or two projects, due to the limit of predevelopment capital to fund testing and design.

Due to these barriers of predevelopment, a green bank could help finance the early stages of District Energy projects to move projects forward to completion. According to Evergreen District Energy, a national company working out of Minnesota, $300K of pre-development loans would ultimately lead to projects totaling investments of $30M and more. While permanent financing is available for projects that are designed and ready to break ground, the predevelopment work is currently going unfunded. A green bank would take on the role of predevelopment loans, ultimately leading to significant investment in energy efficiency infrastructure for municipalities.

INCREASING THE UPTAKE OF RESIDENTIAL SOLAR THROUGH REC FINANCING

The upfront cost of a rooftop solar system is significant, and financing can overcome this barrier. Renewable Energy Credits (RECs) are meant to create an additional value stream to lower the price of solar electricity. However, because the value of the RECs is uncertain and stretches into the future, it is hard for customers to realize the full value of the RECs. As a result, many projects that produce RECs do not capture any of the value, leaving savings for the customer on the table, and making the price of solar power higher than it should be.

In order to increase the uptake of residential solar, a green bank could provide the solution of Renewable Energy Credit financing, which allows households to realize their REC value through an upfront payment from the Minnesota Green Bank in exchange for the lifetime supply of RECs from that project. The upfront payment is large enough to significantly lower the price of solar to the customer, but also low enough to allow the green bank to sell RECs to utilities to recover capital. Utilities in turn purchase RECs at prices lower than market to reduce cost of Renewable Portfolio Standards compliance. In this scenario the green bank, not customer, bears the risk of fluctuation in price/policy for RECs in the future.

CHANGING ELECTRIC VEHICLE INCENTIVES TO MILES TRAVELED NOT VEHICLE PURCHASED

Another challenge related to transitioning vehicles to clean transportation requires a look at passenger cars and how to best measure the reduction of GHG emissions in transportation. The right goal for reducing

the greenhouse gas (GHG) emissions in the transportation sector can be explained in a formula:

(GHGs/Gas-Powered Mile)
x Total Gas-Powered Miles = Total GHG.

Current subsidy strategies target the purchase of electric cars, while ignoring how many miles those cars drive. This subsidy strategy is expensive and doesn't specifically target cars that drive the most miles. Instead, subsidization should be provided to vehicles that travel the most of gas-powered miles. Based on Uber, Lyft and taxi projections, about four million drivers will rack up about 50,000 miles each per year on average carrying passengers in the US. If all these cars were paid enough per mile to go electric, that's 200 billion miles cut into tailpipe emissions.[68]

A green bank solution for this would match the public transport leasing model, in which the Minnesota Green Bank could finance the bulk purchase of ride-sharing vehicles, which it would then lease to companies such as Uber, Lyft or Taxi services to transition the cars traveling the most amount of miles.

ANAEROBIC DIGESTERS

Yet another opportunity for growth in the agricultural industry is to expand the deployment of anaerobic digesters (AD). The three common types of AD projects include Source Separated Organic Matter (primarily Food Waste), Waste Water Treatment Facility (WWTF) sludge and Animal Waste. The anaerobic digestion process collects and pumps livestock manure or organic matter into a closed system that captures the biogas produced when microorganisms break down organic material. The energy in this gas can then be converted into heat and electricity. While the Rural Finance Authority (RFA) of the Minnesota Department of Agriculture has a Methane Digester Loan Program, there is still a large opportunity to expand that work and increase deployment of ADs. According to the EPA Anaerobic Digester Database, there are currently three livestock ADs deployed in Minnesota.[69] By providing financing to compliment the grant program deployment of ADs could move much more rapidly.

Steps Forward

There is a strong need in the Minnesota market for a green bank to facilitate job creation in the clean energy economy, to expand energy equity, and to decrease emissions in the state. If the Clean Energy and Sustainability Accelerator Act is passed, it has been proposed as a "Day One" action for the next administration and could be executed quickly in 2021. In order to prepare to receive Federal funds, Minnesota must form a dedicated clean energy financing institution (a green bank or Clean Energy Fund) or identify an existing actor that can fill the role of the green bank prior to that time. The next step is for stakeholders to come together to support the Clean Energy and Sustainability Accelerator and to demonstrate readiness to receive and deploy funds into the MN clean energy market. Stakeholders who will need to be engaged include government, other stakeholders in the ecosystem currently serving the market, foundations, commercial capital providers, the environmental advocacy community, and community development finance institutions.

68 Coalition for Green Capital, 2019. https://coalitionforgreencapital.com/a-powerful-tool-to-decarbonize-transportation-incentivizing-electric-vehicle-miles/

69 EPA, Anaerobic Digester Database. https://www.epa.gov/agstar/livestock-anaerobic-digester-database

Appendix: Interviews Conducted

MN Institute for Sustainable Agriculture
Minnesota Housing Finance Authority
Cooperative Energy Futures
Citizens Utility Board
Solar Bear Developer
Rural Energy Alliance
Fresh Energy
Minnesota Department of Transportation
Evergreen Energy
MN Government Tribal Liaison
Clean Energy Resource Teams
Renewing the Countryside
University of Minnesota, Energy Transition Team
Minnesota Institute for Sustainable Agriculture
Minnesota Department of Commerce
Novel Solar Solutions
Stearns Bank
Minnesota Interfaith Power & Light
Apadana Solar
MN Green Step Cities Program
Foresight Bank
Decorah Bank
Southwest Regional Development Commission
St. Paul Port Authority
Minnesota Center for Energy and Environment
MNSEIA
Minneapolis Finance and Property Services
City of Minneapolis Director of Sustainability
Eutectics
Representative Todd Lippert
Representative Jamie Long

coalition for green capital