April 8, 2024

The Honorable Bryce Edgmon, Neal Foster, and DeLena Johnson
Co-Chairs of the House Finance Committee
Alaska State Legislature
Juneau, AK 99801

Dear Co-Chairs Edgmon, Foster, Johnson, and Members of the House Finance Committee,

The Nature Conservancy in Alaska (TNC-AK) supports H.B. 154, legislation intended to establish the Alaska Energy Independence Fund. Establishing this fund within the Alaska Housing Finance Corporation (AHFC) will create a mechanism for increased investment in sustainable energy development and deployment across Alaska. As Alaskans face some of the highest energy costs in the country, this investment is more critical than ever.

Between 2010 and 2020, more than $750 million in public and private investments were made across Alaska for residential sustainable energy efficiency, integration, and deployment – with AHFC playing a substantial role in facilitating the State's investment in many of these programs.[1] Establishing the Alaska Energy Independence Fund within AHFC would build off their record of success in deploying sustainable energy development programs. As well, it could allow the State to leverage funding and economic opportunities created by the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA) pertaining to the financing of clean energy and technology.

As supporting material, we are also submitting a new report, *Energy Financing in Alaska: Opportunity for a Statewide Green Bank*, as an attachment to this letter. This report, prepared in March 2024 by McKinley Research Group (formerly McDowell Group) for TNC-AK, summarizes the opportunity for sustainable energy investment, diversification, and independence that could be provided by a structure like the Alaska Energy Independence Fund. Notably, this new report states that a funding entity like this "holds the promise for bringing energy costs down throughout the state" and could be "an important tool for diversifying energy markets in Alaska, and in turn, contributing to energy diversification for the state."[2] This research builds on previous work by McKinley Research Group which notes that a state entity like that of the Alaska Energy Independence Fund "would be the most comprehensive way to make financing available statewide" for sustainable energy deployment.[3]

Thank you for your work to call attention to the role the Alaska Energy Independence Fund could play in facilitating sustainable energy investment in Alaska. We strongly support H.B. 154 and encourage its timely passage.

Sincerely,

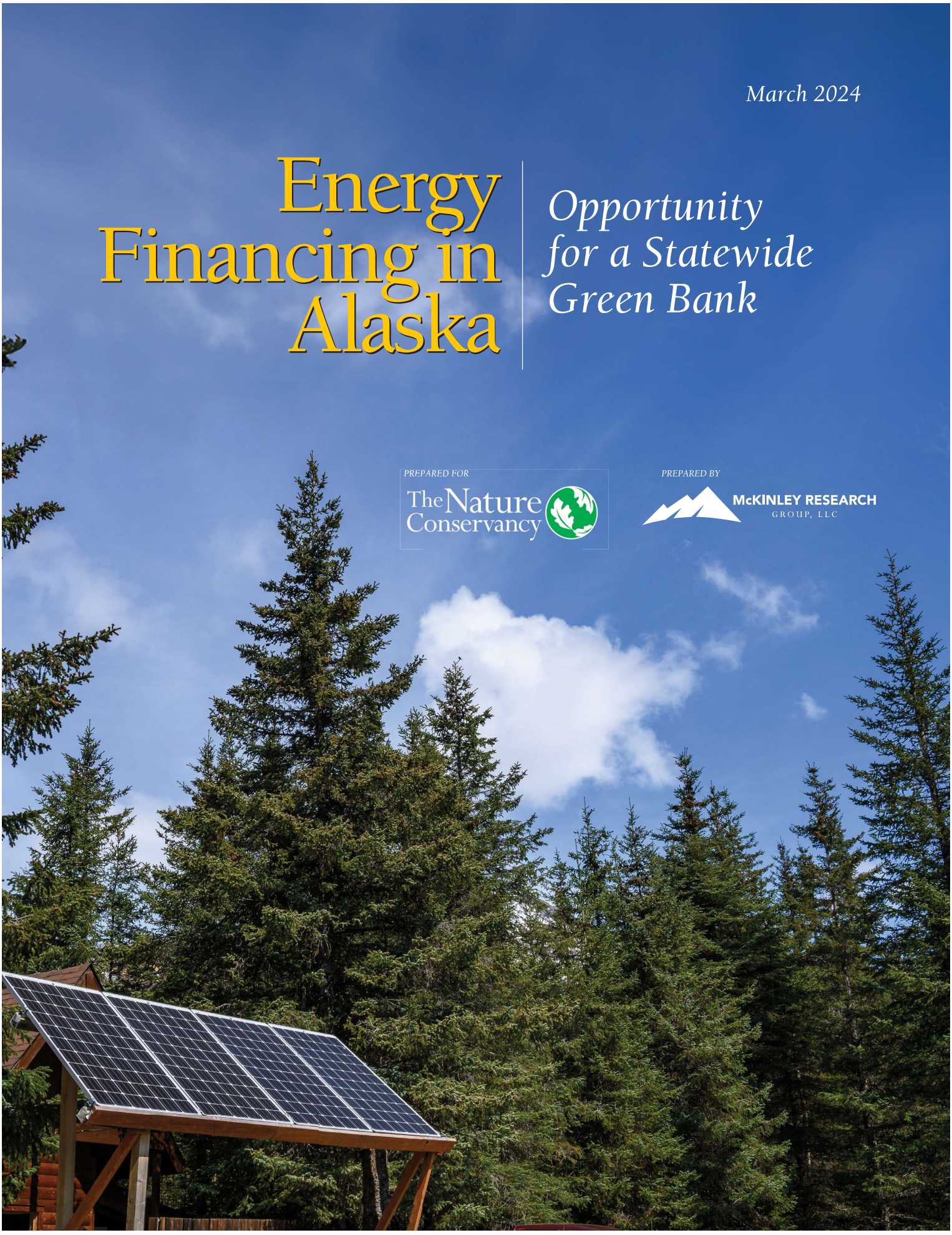
Ivy Spohnholz
Alaska State Director
The Nature Conservancy

[1] *Resilient Homes: Alaskans Building for Climate Change*. McKinley Research Group, September 2021 (pg. 12).
[2] *Energy Financing in Alaska: Opportunity for a Statewide Green Bank*. McKinley Research Group, March 2024 (pg. 11).
[3] *Resilient Homes: Alaskans Building for Climate Change*. McKinley Research Group, September 2021 (pg. 21).

March 2024

Energy Financing in Alaska

Opportunity for a Statewide Green Bank



PREPARED FOR

The Nature Conservancy

PREPARED BY

McKINLEY RESEARCH GROUP, LLC

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Executive Summary

As Alaska focuses on energy diversification, green banks show promise as an important tool to help overcome financing challenges many Alaska energy projects face. The Nature Conservancy contracted with McKinley Research Group (MRG) to examine opportunities and considerations for a statewide green bank in Alaska.

Energy infrastructure in Alaska consists of one major transmission system that powers the Railbelt and more than 150 standalone microgrids that serve hundreds of rural and remote communities. Across the state, electricity prices are higher than the U.S. average. The price disparity is especially acute in rural parts of the state where electricity generation often relies on diesel fuel. Diesel fuel can lead to high prices, fuel storage challenges, and an unstable supply of power.

Many Alaska communities and residents work to reduce electricty costs, increase energy diversification and reduce reliance on diesel fuel through investment in diverse energy sources such as renewable technologies and energy efficiency. Such investment can be challenging via conventional financing, as perceived or potential risks for lenders, such as unfamiliar technologies, economies of scale, and insufficient capital, make many renewable energy projects difficult to finance. Government or philanthropic funding may help develop projects, though may not account for ongoing operation and maintenance. Thus, while traditional loans and grants may help with project costs, other financing mechanisms are often required.

One financing mechanism used in Alaska and worldwide to overcome such investment challenges is a green bank. Green banks offer structural and finance services to advance renewable energy and energy efficiency markets. Several local and regional green bank-type programs currently operate in Alaska. With upcoming federal funding available for green banks and energy diversification, Alaska has an opportunity to capitalize a statewide green bank and potentially leverage federal resources .

Tuluksak Electric Utility. *Photo Credit: Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community*

Research for this paper included interviews with renewable energy professionals, finance and technology experts, and individuals involved in green bank financing. Case studies were conducted on Alaska energy diversification projects as well. This research reveals important roles for a statewide green bank in Alaska. Among these roles, the bank could serve as:

- A source for **flexible, creative project financing**
- A **coordinating body** for energy diversification, working with other finance and funding opportunities in the state
- A **technical resource** to help with project conception, design, financing, and implementation
- An **education resource** for lenders and borrowers
- A monitoring body to track energy diversification **metrics**

This research also identified a set of considerations to account for when examining the opportunity for a statewide green bank. These include the following.

- Initial bank **capitalization** must be sufficient to cover the time it will take the institution to become self-sustaining, particularly given Alaska project economies of scale.
- **Federal funding** opportunities for a green bank, including the Greenhouse Gas Reduction Fun, should be part of capitalization decision-making.
- Sustainability of projects supported by green bank financing, as well as appropriateness for specific locations should be considered. Considerations should include potential impacts on **Power Cost Equalization** calculations and opportunities to work with **Independent Power Producers**.
- **Cost/benefit analysis to mitigate financial risk** is an important part of deciding when green bank services are appropriate.
- Several entities currently operate programs that identify potential energy diversification opportunities and funding sources. A statewide green bank will benefit from **coordinating with existing entities**.
- Careful consideration of the **long-term maintenance and operation** needs of projects is essential for any project that involves green bank financing.

Introduction and Methodology

The Nature Conservancy contracted with McKinley Research Group (MRG) to develop a briefing paper that examines opportunities and considerations for a statewide green bank in Alaska.

Alaska's electricity landscape, which serves hundreds of rural and remote communities, operates with one major transmission system and more than 150 standalone microgrids. The major transmission system runs along Alaska's "Railbelt" from Fairbanks through Anchorage and the Kenai Peninsula. The system provides about 79% of the state's electrical energy.[1] About three-quarters (73%) of Railbelt electricity is generated from natural gas, with additional power generated primarily from hydroelectric resources.

Beyond the Railbelt, most communities are served by standalone electric grids. Rural power grids typically rely on diesel fuel to generate electricity. This power source can be unpredictable and expensive, especially in communities accessible only by water or air transportation. Along with high costs, many communities contend with volatile pricing, fuel storage challenges, and other barriers to accessing stable and affordable energy.

Overall, electricity rates in Alaska are high compared to the U.S. average. Rates in urban Alaska are approximately 20% higher, at an average $0.203 per kWh in 2023 compared to the U.S. average of $0.168 per kWh. Rural Alaska rates can be much higher, at $0.70 per kWh or higher even after state subsidies in some locations.

Photo courtesy of McKinley Management.

[1] Alaska Energy Authority and Renewable Energy Alaska Project, 2019. *Renewable Energy Atlas*.

Many Alaska communities and residents are working to diversify energy sources and reduce reliance on diesel-fueled power. From 2010 to 2020 in Alaska, more than $690 million in public and private investments were made in such energy diversification, with over 260 projects studied or developed in 160 communities.[2] Nearly half of these investments focused on hydroelectric projects, with additional funding for wind, biomass, geothermal, and solar projects.

Such investment can be challenging. Issues of scale in small Alaska communities, remote locations, extreme weather, high upfront costs, insufficient capital, and other perceived or potential risks for lenders make many renewable energy projects difficult to finance. For community projects, local governments and other governmental entities may not operate with revenue or profits needed to support interest-bearing financing associated with traditional loans. Thus, while traditional loans and grants may help with project costs, other financing mechanisms are often required to bridge funding gaps.

Green banks are employed in Alaska and across the world to deal with such energy financing challenges. Financing through green banks is often used to help diversify energy infrastructure.

Methodology

To understand the role a green bank might play in Alaska, MRG reviewed the state's energy needs and challenges, current energy infrastructure, current and past energy investments, and potential upcoming developments in infrastructure and funding. The role and function of green banks and their relevance in energy diversification were also assessed.

Case studies were completed to illustrate lessons learned, identify how green banks might contribute to Alaska, and understand successful capitalization models. A series of executive interviews were also conducted with individuals involved in Alaska energy infrastructure projects, rural utility operations, renewable energy funding, and finance. Interviews focused on understanding the perspectives of those with current and specific knowledge of Alaska's energy diversification and energy finance landscape. A list of interviewees is included in the appendix of this report.

[2] McKinley Research Group, 2021. *Renewable Energy Economy: Progress and Possibility*. Prepared for The Nature Conservancy.

Green Banks

Green banks are mission-driven public institutions, quasi-public partnerships, or non-profits, designed to advance renewable energy projects. These entities incentivize private investment and help borrowers access capital on nonstandard projects.

Photo Credit: Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community Photo Library.

Green banks operate at international, national, state, regional, and local levels. Members of the Green Bank Network, an international organization of green banks, report leveraging $51 billion to attract private capital for a total $143 billion in investments through mid-2023.[3] In the United States, green banks have leveraged approximately $2.5 billion in funding to attract an additional $9 billion of investment.[4] Green banks can:

- Serve residential and commercial borrowers
- Mitigate risk for traditional lending institutions
- Include technical and technological assistance for clients
- Use creative lending products, such as loan loss reserve funds, loan guarantees, co-lending, tax credits, extended loan terms, and other credit enhancements

Costs for energy diversification projects, including renewable energy infrastructure and energy efficiency upgrades, are often covered by multiple streams of capital. Funding may come from external organizations, through grants, or from financing, such as loans from federal, state, and private institutions. Green bank products and services can serve as the nexus of these streams of capital, providing the flexibility, communication, and creativity needed to overcome gaps in funding, provide needed security for investors, and navigate project planning and execution.

[3] Green Bank Network calculations. greenbanknetwork.org/gbn-impact
[4] NRDC. *How Green Banks Are Financing the Fight Against Climate Change: Investing is risky business, but these institutions know that failing to fund clean energy is even riskier*. December 2022.

Financing Alaska Energy Diversification

Costs to develop and maintain current energy diversification projects in Alaska are covered through a mix of government and philanthropic funding and through various financing mechanisms. Financing can be in the form of traditional loans or alternative financing such as local or regional green banks and other programs employed with or independently from green bank financing.

Communities often rely on grants for project funding, sourced from federal, state, or philanthropic institutions. In Alaska this includes the State's Renewable Energy Fund (REF) operated by the Alaska Energy Authority. Community electric cooperatives can access funds from the National Rural Utilities Finance Corporation (CFC) and the USDA's Rural Utility Service (RUS). Consumers typically rely on loans with assistance from programs such as the Alaska Carbon Reduction Fund and the Clean Heat Incentive Program.

Green bank financing already occurs in Alaska at the community and regional levels, with current programs in Southeast, through Spruce Root's Native Community Development Financial Institution (CDFI), and Anchorage and Mat-Su through the C-PACER Program, as described below.

SPRUCE ROOT & COALITION FOR GREEN CAPITAL

Spruce Root, a Native CDFI, partnered with the Coalition for Green Capital (CGC) to establish a regional green bank in Southeast Alaska. The bank is reportedly poised to finance "an initial pipeline of green projects valued at $13B in public-private capital over the next several years," and prepared to leverage the Greenhouse Gas Reduction Fund (GGRF) to unlock additional funds.[5]

C-PACER PROGRAM

The Commercial Property Assessed Clean Energy & Resilience (C-PACER) program enables local government to offer commercial property owners low-cost, long-term financing for renewable

[5] Spruce Root, 2023. *Coalition for Green Capital and Spruce Root Announce Partnership to Deliver Clean Energy Investments in Alaska.*

energy and energy efficiency upgrades. The financing is repaid through a voluntary assessment on property tax bills. In 2022, the program expanded to allow for new construction, resiliency, and refinancing.[6] Alaska C-PACER programs are available in Anchorage and the Mat-Su Borough.[7]

Examples of Alaska funding and financing mechanisms that may be employed in tandem with or with support from green bank services follow.

NET METERING

The Alaska net metering policy is designed to provide incentives for individuals and businesses to invest in renewable energy systems and sell excess power to community grids. The metering policy requires large utilities to purchase up to 1.5% of their average load from customers who install renewable energy systems. Some utilities have voluntarily raised this percentage.[8]

RENEWABLE ENERGY FUND

The State of Alaska Renewable Energy Fund (REF) provides financial assistance for research, development, and integration of proven and nascent renewable energy technologies. The REF has funded 289 projects via legislative appropriations totaling $317 million.[9] In 2023, the REF was continued by law in perpetuity.

GRID RESILIENCE FORMULA GRANT

The Alaska Energy Authority administers a Grid Resilience Formula Grant with funding awarded to the State by the US Department of Energy under the Infrastructure Investment and Jobs Act (IIJA). Funding, to be allocated directly to eligible tribes in Alaska, is intended to improve grid resilience against disruptive events such as natural hazards.[10] Eligible projects include relocation of and reconductoring of powerlines, extreme weather-resistant and fire-resistant improvements, workforce training, and implementation of advanced modeling, monitoring, and controls.[11] Two of four program objectives focus on Alaska's "most populated and economically vital communities."

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[6] Alaska Energy Authority, 2024. *Alaska Energy Authority: About Alaska C-PACE.*
[7] Mat-Su C-PACER, 2022. *Mat-Su Commercial Property Assessed Clean Energy & Resilience (C-PACER).*
[8] Renewable Energy Alaska Project, 2024. *Net Metering: State net metering policies.*
[9] Alaska Energy Authority, 2024. Renewable Energy Fund.
[10] Alaska Energy Authority, 2024. Grid Resilience Formula Grant Program – IIJA 40101(d).
[11] Alaska Energy Authority, Bipartisan Infrastructure Law: Section 40101(d), Grid Resilience Formula Grants, 2023.

Alaska Statewide Green Bank

Efforts to expand green bank financing in Alaska have culminated in legislation to establish a statewide green bank. The proposed entity, most recently described in legislation as the Alaska Energy Independence Fund, would be capitalized by leveraging State general funds to access federal funding and attract private investment.

> *"An overarching recommendation is to increase flexibility to better account for the unique and varied structures, capacities, and circumstances in rural Alaska communities."*
>
> - *DeerStone Consulting Report*

Previous legislative initiatives to establish a statewide green bank in Alaska envisioned various organizational structures for the institution. These include a green bank housed within the Alaska Industrial Development and Export Authority (AIDEA) or as a nonprofit subsidiary of the Alaska Housing Finance Corporation (AHFC).

If a statewide green bank is established in Alaska, the state will join many states across the nation served by such an institution. These other statewide banks operate either as standalone institutions, as programs housed within larger institutions, or as a consortium of existing entities. Examples of green banks include the NY Green Bank, Michigan Saves, Rhode Island Infrastructure Bank, Energize Delaware, and Nevada Clean Energy Fund.

Research for this paper focused on understanding how a statewide green bank could best support energy diversification in Alaska's unique operating environment. Interviews and case studies revealed several important considerations related to implementation. These include the role of the green bank as a coordinating body, the importance of technical assistance and education for both lenders and borrowers, institutional design, and upfront attention to potential downstream impacts of green bank funding, particularly in rural Alaska communities.

Coordination

As described in this document, many individual entities in Alaska are currently working to identify, plan, finance, and implement renewable energy and energy efficiency projects. A statewide green bank could serve as a coordinating body to harness these efforts across the state and increase communication, exchange of information and experiences, and impact. Two key opportunities for coordination identified through this study are pooling and sharing of

technical assistance and education and the ability to establish and track metrics in the energy financing sector.

Technical Assistance and Education

A statewide green bank can serve as an educational and technical resource for borrowers in search of financing, as well as for financial institutions. For borrowers, a statewide green bank can supplement technical and administrative processes that many municipalities and consumers do not have the capacity to navigate without support. Such processes include project predevelopment, identification of appropriate technologies, project design, and completion of loan applications and other paperwork.

For financial institutions, a green bank can share information about new technologies, discuss economic feasibility of projects, and build understanding about financial risk mitigation. This prospective green bank-provided service requires staff expertise and funding.

Measuring Impact

One coordination service a statewide green bank can provide is development and tracking of metrics. Such metrics might include amount and types of investments made in the state, progress toward renewable energy and energy efficiency targets, and other indicators of progress and impact. Such tracking will be an important component for attracting more funding for communities and consumers who do not have the capacity to monitor and report impacts internally.

Ouzinkie Dam. *Photo Credit: Department of Commerce, Community and Economic Development; Division of Community and Regional Affairs' Community Photo Library.*

Institutional Design

The Green Bank Network recognizes criteria that impact institutional stability over the long-term. These elements include mandate; implementation factors, such as governance structure, management team, commitment to public reporting, and investment transparency; and capitalization. The design of an Alaska statewide green bank needs to account for these criteria and will be most successful if designed specifically for the Alaska operating environment. Research for this paper revealed considerations for initial bank capitalization as well as many implementation factors.

Capitalization

Green banks are typically capitalized by government appropriations, foundations, nonprofits, and the private sector. In many cases, green banks do not receive additional appropriations or concessional finance after initial capitalization.[12]

Green banks can take years to establish transaction amounts and volume necessary to cover operating costs. Thus, initial capitalization must be sufficient for the institution to operate until it is self-sustaining. With this in mind, initial capitalization must consider the potential scale of green bank operations and projects in Alaska given economy of scale issues in the state.

A fundamental consideration in initial capitalization is how a statewide green bank could position Alaska to benefit from federal green bank capitalization opportunities. In 2023, the $27 billion federal Greenhouse Gas Reduction Fund (GGRF) – part of the Inflation Reduction Act - was approved. The fund aims to reduce greenhouse gas emissions and deliver benefits of renewable energy projects, particularly to low-income and disadvantaged communities. The program awards grants to eligible organizations, such as green banks, which in turn provide loans, grants, and technical assistance to local projects.[13]

Under the GGRF, federal funds are awarded through Environmental Protection Agency (EPA) grant competitions:

- **National Clean Investment Fund** ($14 billion) provides grants to two to three national nonprofit clean finance institutions for partnering with private businesses. The funding is intended to finance clean technology projects. At least 40% of funding is designated for low-income and disadvantaged communities.
- **Clean Communities Investment Accelerator** ($6 billion) provides grants to two to seven hub nonprofits that will deliver funding and technical assistance to community lenders, such as green banks, to finance clean technology projects; 100% of funds will go to low-income and disadvantaged communities.
- **Solar for All** ($7 billion) provides up to 60 grants to states, territories, tribal governments, municipalities, and nonprofits to increase investment in solar energy projects in disadvantaged communities.

[12] Green Bank Design Platform, 2020. *State of Green Banks 2020.*
[13] Environmental Protection Agency, 2023. *EPA's Implementation Framework for the Greenhouse Gas Reduction Fund.*

Implementation

A statewide green bank may prove an important tool for diversifying energy markets in Alaska, and in turn, contributing to energy diversification for the state. Such diversification with renewable energy and energy efficiency projects also holds promise for bringing energy costs down throughout the state.

However, without careful attention to how a green bank is implemented within Alaska's current energy infrastructure and policy environment, unintended consequences may result. Of particular importance is how implementation might account for the impacts on energy cost and availability and to manage for full project lifecycles, not only start-up capital. Research for this paper identified factors important to consider in green bank implementation. These include the role of independent power producers (IPPs) and the Power Cost Equalization program.

Power Cost Equalization

Electricity rates are high across Alaska, particularly in rural communities. As discussed earlier in this report, in some remote communities, power costs can be three to five times higher than rates paid by residents of urban communities in

Case Study: Shungnak-Kobuk Community Solar

Overview: The Shungnak-Kobuk Community Solar Independent Power Producer (IPP) generates solar electricity via a solar array and battery storage facility for Shungnak and Kobuk in the Northwest Arctic Borough. The Native Villages of Shungnak and Kobuk own this IPP, selling power to the microgrid utility.

Funding: The $2.1 million project was funded by a U.S. Department of Agriculture high energy cost grant and a local village improvement fund grant.

Outcomes: Electricity costs are stabilized for residents, who receive renewable power during portions of the daylight season instead of power from diesel generator. This energy diversification occurred without an increase in electric rates nor a reduction in the PCE subsidy. The PCE formula accounts for the cost of the utility purchasing power from the IPP (in comparison to a loss of PCE subsidy if the utility owned the solar array).

The project allows more local control of energy, retention of money in the communities, and the IPP offers local jobs. Grant-funded equipment can be donated to an IPP. This first IPP is a model for the borough, which aims to develop IPPs in 11 more communities within five years.

Alaska.[14] Alaskan communities outside the Railbelt rely on electric cooperatives, Power Cost Equalization (PCE) program funding, and a variety of grant and loan programs to mitigate power costs. Some communities augment diesel generators with renewable energy to stabilize electricity availability and reduce costs.

Alaska's Power Cost Equalization (PCE) program, established in 1985, provides critical financial assistance to communities with high energy costs. The Alaska Energy Authority (AEA) and the Regulatory Commission of Alaska (RCA) administer the program, which serves about 82,000 residents across 193 Alaska communities.[15]

The program subsidizes electricity rates for communities with high electricity costs. The RCA determines utility program eligibility and calculates a per kWh subsidy using a formula that accounts for fuel costs and non-fuel expenses, such as utility salaries, insurance, parts and supplies, and interest.[16] Additional costs incurred by power purchased from independent power producers are included in eligible non-fuel expense categories. Commercial customers and state and federal government customers, including schools, are not eligible for the program.[17]

Decreases in overall fuel expenses that result from integration of renewable energy can affect PCE subsidy rate calculations if they are not offset by non-fuel operating expenses, leading to the possibility that ratepayers experience no cost savings or even pay higher rates following integration of renewable energy, depending on the type of funding used to implement the new energy source.[18] Partnerships with IPPs and other entities that allow PCE savings to continue are an important consideration for green bank financing.

Shungnak-Kobuk Community Solar Independent Power Producer. *Photo Credit: U.S. Department of Energy.*

[14] Alaska Energy Authority, PCE Program Overview.
[15] Alaska Energy Authority, 2024. *Power Cost Equalization Program*.
[16] McKinley Research Group, 2021. *Renewable Energy Economy: Progress and Possibility*. Prepared for The Nature Conservancy.
[17] Alaska Energy Authority. *Power Cost Equalization Program Guide*. September 2019.
[18] University of Alaska Anchorage, Institute of Social and Economic Research. *Power Cost Equalization Funding Formula Review*. March 2012.

Independent Power Producers

Independent Power Producers (IPPs) are a potential source of renewable energy for rural communities and an important factor in energy project financing. IPPs own facilities and generate electric power for sale to utilities and end users. In northern Alaska, tribes may be prime candidates to become IPPs, and, in turn, generate local jobs and keep money in their communities.

One incentive for a rural utility to work with an IPP is that purchasing energy from an IPP is considered a non-fuel operating cost and therefore can offset potential changes to Power Cost Equalization (PCE) subsidies from reduced fuel expense. The complex formula for PCE subsidies hinges largely on diesel fuel consumption. When a utility creates renewable energy to displace diesel use, PCE subsidies often decline so that residential customers do not reap intended benefits.

Case Study: Kotzebue Electric Association

Overview: Kotzebue Electric Association (KEA), a nonprofit electric cooperative with about 875 members in Kotzebue, aims to produce 50% of its energy from renewable resources. In 1997, KEA built the first utility-scale wind farm above the Arctic Circle. They now operate both wind turbines and solar panels and inverters.

Outcomes: KEA has decreased annual diesel fuel use by 20%. Residential electric rates have not changed much, due to Power Cost Equalization (PCE) program calculations, though commercial rates decreased by at least 10% over the past decade. Residential customers do receive a secondary cost benefit as commercial rates allow local businesses to keep prices lower.

Moving forward, KEA has limited staff capacity to complete predevelopment work and grant applications. They are considering loans and the possibility of buying energy from independent power producers (IPPs). The organization's ultimate decisions heavily consider how PCE calculations will impact consumer rates.

Services

Green bank services, as described in this paper, include a flexible, informed, and creative approach to energy financing. Within the Alaska context, these services will need to include mitigation of financial risks and technical challenges presented by Alaska's population, resource, and infrastructure distribution. Ongoing facility maintenance and operations within this environment must also be a consideration.

Financial Risk

Despite the recent investments in renewable energy technologies statewide, many Alaska communities – particularly rural ones - face issues of scale that can limit their ability to cover costs of energy and infrastructure projects. Many rural communities operate on small-scale standalone energy grid systems that serve a limited population. Thus, integration of new technologies that can reduce energy rates or increase energy efficiency can be costly and may or may not be profitable. Even with competitive rates on loan repayments, many communities struggle to make payments for energy projects. This cost/benefit analysis generates perceived financial risk for private lenders, increasing the importance of alternative financial packages such as those offered by green banks.

Technical Challenges

To be financing-ready, energy diversification projects must incorporate technological solutions, often costly predevelopment effort (design, engineering, work permits, business plan, etc.), and knowledge of how to navigate financing options. Human, technological, and financial resources are also needed for successful project implementation.

Interviewees for this paper, as well as previous studies, summarize the financing needs and challenges present in Alaska as follows. [19]

- High costs of living: transportation, supplies, and labor
- Communication issues
- Limited financial resources
- Small community and project sizes limited by economies of scale
- Traditional cost /benefit analyses
- Extreme weather conditions
- Land title complexities
- Compliance costs

[19] Alaska Venture Fund, *Energy & Infrastructure Funding in Rural Alaska: Barriers & Potential Solutions*, December 2023. Prepared by DeerStone Consulting.

Several organizations in Alaska are working to identify, design, and package energy projects for long-term success in rural areas. As examples, Launch Alaska and DeerStone Consulting both work with communities on energy infrastructure in partnership with technological experts. One concept is to pool projects together to overcome issues with economies of scale. Another is coordination of multiple complementary projects into one larger project (i.e. roads and water lines, broadband, etc.).

Maintenance and Ongoing Operations

Operation and maintenance are an ongoing challenge for energy infrastructure and utilities in Alaska.[20] Government-funded grants, while often essential elements of project success, often focus on predevelopment needs and capital construction, rather than maintenance of costly equipment over time. Once a facility is constructed, communities are often left to operate it and may face a situation in which they have insufficient funds for maintenance. Small communities may also lack employees skilled in operation and maintenance, or training programs for

Case Study: Launch Alaska Energyshed Program

Overview: Launch Alaska seeks to address economy of scale and infrastructure operation and maintenance cost hurdles in Alaska energy projects. The Energyshed program concept, based on pooling resources and attracting private capital, focuses on 12 communities in Southeast Alaska and Northwest Arctic Borough.

Program staff gather infrastructure data using drones, 3-D modeling, and other methods to help aggregate, prioritize, and design projects. Aggregating projects allows for bulk purchases of items or packaging of energy upgrades.

Outcomes: Private investors require a detailed and credible plan for operation and maintenance. This requirement contrasts with many grant-funded projects solely for initial construction costs. This program offers creative funding and technological expertise that can contribute to projects' long-term success.

[20] Steve Colt, Scott Goldsmith, and Amy Wiita, Institute of Social and Economic Research, *Sustainable Utilities in Rural Alaska: Effective Management, Maintenance and Operation of Electric, Water, Sewer, Bulk Fuel, Solid Waste*; July 15, 2003.

potential employees. In addition, obtaining parts and transporting them to remote communities can add months or years to needed repairs.[21]

Utility rates need to cover operations and maintenance, and, in many cases, this cost can outweigh energy cost savings from renewable energy or energy efficiency projects.

Green banks, through use of private investment, can help with financial planning for ongoing operations and maintenance. This is primarily because private investors require plans that account for the entire lifetime of their investment and, thus, require that financial sustainability be considered during initial financing.

Tazimina Falls. *Photo Credit: Iliamna Newhalen Nondalton Electric Cooperative, Inc.*

Case Study: Iliamna-Newhalen-Nondalton Electric Cooperative

Overview: INN Electric Cooperative (INNEC) is a village electric cooperative on Iliamna Lake. Since 1983, the cooperative has provided electric power through Tazimina Hydro to about 300 customers in Iliamna, Newhalen, and Nondalton.

Funding: Tazimina Hydro was paid for through a mix of sources, including State of Alaska grants, federal funds, and loans. INNEC has also received funding for plant upgrades from the Denali Commission.

Outcomes: Hydropower now supplies the communities with 95% to 99% of power annually. System operation and maintenance is challenging and expensive in this remote location, with harsh weather, challenges finding skilled labor, increasingly high equipment costs, and wait times for parts and supplies. The costs of operation, maintenance, and debt service on the facility are shouldered by a small population which translates to higher electricity rates.

[21] Interview with George Hornberger, general manager, INN Electric Cooperative, January 24, 2024.

Appendix A - Interviewees

Interviewees

Mary Miner, Vice President, Community Development, Alaska Growth Capital; C-PACER Task Force

Tashina Duttle, Partner and Chief Operating Officer, DeerStone Consulting

Gavin Dixon, Owner, Cumbre Consulting

Penny Gage, Managing Director, Launch Alaska

Issac Vanderburg, President & CEO, Launch Alaska

Shaina Kilcoyne, Energy Transition Program Director, Alaska Venture Fund

Jodi Mitchell, CEO, Inside Passage Electric Cooperative

Richard McKinstry, Lending Officer, Alaska Housing Finance Corporation

Jessa Coleman, Director of Sustainability and Programs, Nuveen Green Capital, C-PACE Consultant

Antony Scott, Economic and Regulatory Affairs Director, REAP

Chris Rose, Executive Director, REAP

Matt Bergan, Project Engineer, Kotzebue Electric Association

George Hornberger, General Manager, INN Electric Cooperative Inc.

Ingemar Mathiasson, Energy Manager, Northwest Arctic Borough

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