

WORKPLAN
CPRG – PROPOSAL TO ADDRESS RURAL ALASKA’S CRITICAL ENERGY CHALLENGES

1. Overall Project Summary and Approach

a. Description of GHG Reduction Measures

The Alaska Energy Authority (AEA), the state’s energy office, submits this coalition application in partnership with Tanana Chiefs Conference (TCC) and the Northwest Arctic Borough (NAB) to address rural Alaska’s critical energy challenges and provide significant greenhouse gas (GHG) emissions reductions. AEA, as the lead applicant, will submit a Memorandum of Agreement signed by all coalition members by July 1, 2024. This grant application requests \$49,986,112 and encompasses several measures that will result in decreased greenhouse gas (GHG) emissions across the State of Alaska. The State of Alaska has produced its Priority Sustainable Energy Action Plan (PSEAP) in accordance with the guidance of the Climate Pollution Reduction Grant (CPRG) program, and which satisfies the requirements of a Priority Climate Action Plan (PCAP). AEA, TCC and NAB propose funding for five distinct initiatives in this application related to a measure in Alaska’s PSEAP under the electric generation sector that will reduce GHG emissions through energy efficiency upgrades to public buildings and infrastructure, distribution system upgrades, and diesel engine efficiency. AEA proposes programs conceptually similar to its current and past activities under the Diesel Emissions Reductions Act program (DERA), the Village Energy Efficiency Program (VEEP), and rural distribution upgrades program. These activities are included in the “AEA DERA, VEEP, and Rural Distribution Programs” measure on page 47-49 of the PSEAP. In addition, this measure in the PSEAP provides for AEA to subaward to coalition members for similar activities including rural distribution upgrades, diesel power plant upgrades, and energy efficient improvements to public buildings and infrastructure to better serve the unique needs of each community. TCC proposes to implement a program for upgrades to the distribution lines and power plants in nine communities in the TCC Region. NAB proposes upgrades at power plants and water plants in communities to maximize alternative energy use. The measures proposed in this application enable greater access and deployment of affordable, reliable, and emissions-reducing generation. These measures were chosen as a priority as they have the most potential to result in tangible improvements for rural, disadvantaged communities, including reductions in GHG emissions and lower energy burdens, they are ready to begin implementing upon funding being made available, and they will have a transformative impact by enabling future renewable integrations allowing for a transition to a clean energy economy in rural Alaska.

Addressing the issues with rural Alaska’s energy efficiency and resiliency is an on-going challenge. Compared to other states, Alaska contains many isolated non-road connected communities that must rely on islanded electrical grids. Approximately 30% of the state’s population resides in over 200 rural and tribal communities that rely on local and regional power generation. Typically, these community power plants have at least one diesel engine running continuously. Rural Alaskans rely on these engines for their prime power; however, many of these power plants are older and lack modern controls, emissions reducing technology, and operating efficiency is low. These islanded grids are owned and operated by approximately 100 utility operators, including cooperatives, tribal, and municipal entities. Many of these rural Alaska communities are only accessible by plane or marine vessel, with over half classified by the Denali Commission as distressed communities.

In addition to the sub-standard diesel engine inventory, many of Alaska’s rural communities suffer from degraded electric distribution systems and infrastructure. These systems were built for a 30-year life but are now approaching 50+ years old, with aging poles and sagging lines that create a life and health safety risk and lower overall system efficiency through line losses. Many poles are installed in permafrost and

with on-going climate change and the melting of this permafrost, many poles are subject to significant shifting.



Pictures of leaning poles and distribution lines in Oscarville

AEA Project Description

AEA is spearheading a comprehensive measure proposal aimed at addressing critical energy challenges faced by rural communities in Alaska. AEA requests \$30,031,791 to fund three key initiatives, each of which are a vital piece to the state's PSEAP: expansion of diesel engine and genset replacements, distribution system upgrades, and enhanced VEEP support. AEA, and the coalition members, are committed to making substantial, long-term emissions reductions while simultaneously delivering additional benefits to these remote communities.

The federal DERA program provides formula-based funding based on population. DERA encompasses a variety of project types, ranging from replacing school buses to upgrading railroad engines. AEA, on behalf of the State of Alaska, exclusively utilizes DERA funds to replace prime power diesel engines in rural Alaska. These engines are typically located within the village and have a substantial impact on its air quality.

In most rural Alaskan communities, the absence of a larger electric grid and road connections requires each community to generate electricity locally. Small diesel power plants are used for this purpose, creating isolated grids. The average rural power plant engines have about 90,000 hours or 10 years of run time, which is approaching the end of the typical operating life, meaning many are inefficient compared to newer models, resulting in increased fuel consumption and higher power costs. Installing newer, certified, and more efficient engines helps reduce emissions per unit of fuel and improves electricity generation efficiency. AEA's existing annual DERA work plan includes specific estimates for each community. With the money that would be awarded under this CPRG, AEA intends to issue sub-award grants in a DERA-like program to replace the oldest gensets and diesel engines in rural Alaska communities, enabling more engines to be replaced, and expanding the scope and reach of the EPA's DERA program.

Given the complexities of working in rural Alaska, the limited construction season, and supply chain challenges, AEA typically sees a two-year cycle for these replacement projects. Due to the volume of the funds, we intend to distribute the sub-awards over the 5-year period allowed by the grant and provide three rounds of funding opportunities. The milestones involved with this measure are: 1) confirm each rural community has an eligible engine and prepare emission tables and budget; 2) procurement of contractors and design of the engine/generator installations and development of specifications specific to each installation; 3) construction procurement; 4) submittals by contractors to AEA; 5) installation and commissioning; and 6) final closeout of award. Additional details related to milestones are included in Section 3 of the application.

The second initiative of the proposed measures is the upgrade of distribution systems in rural communities. The framework for this program will follow the process of AEA's existing Rural Power System Upgrade (RPSU) Program. AEA will issue sub-award grants to communities determined to be of the highest priority. AEA is currently working on a distribution inventory and assessment to rank the highest need communities. These microgrids, predominantly diesel-generated (as described above), are typically over 50 years old and in need of modernization. The upgrades will reduce line losses, diesel fuel usage, and ensure readiness for renewable energy integration.

AEA personnel will project manage the distribution upgrades in each community. Based on current staffing levels, consulting engineers, and statewide construction contractor support, it is reasonable to expect that AEA could construct two (2) distribution projects per year. Costs for the upgrade will vary significantly depending on the size of the community, the soil conditions, buried or above ground, and if above ground – the number of poles that need to be replaced. The milestones for this proposal are: 1) project planning, including selection of community, stakeholder engagement, development of a project management plan (PMP); 2) project design, including engineering and procurement; 3) construction and integration; and 6) final closeout of award.

The overall project timeline for each distribution upgrade is two years. The tasks in the first year include planning, design, permitting, and purchasing long lead items. Should AEA have funding for multiple projects, a bulk purchase of commonly used, BABA-certified transformers may be made. This would help move projects through the queue at a more rapid pace and potentially secure lower per-unit costs owing to bulk-order discounts. The tasks in the second year (or season) will be for construction. Most of Alaska's construction season ranges from early April to as late as October. Alaska's extreme climate conditions are always considered when planning construction projects accordingly. This is to minimize any risks that could lead to delays with project deliverables; any delay in project implementation will result in a corresponding delay in GHG reductions.

AEA's third initiative of the proposed measures is VEEP. The Alaska Legislature established VEEP in 2010 under 3 AAC 108.400, as an AEA-administered grant program aimed at reducing per capita consumption through energy efficiency. VEEP's objective is to actively implement energy and cost-saving efficiency measures in public spaces and facilities within small, high-energy-cost rural Alaskan communities.

Energy efficiency upgrades provide a rapid return on investment, significant cost savings, and corresponding GHG reductions. Project scope can range anywhere from smaller measures, such as replacing antiquated lighting technology with LED, to larger improvements, such as upgrading a building's thermal envelope by installing new windows and doors, ventilation systems, boilers, and water heaters. These projects generally take eighteen to twenty-four months to complete. AEA anticipates issuing 10-15 awards through one solicitation, targeting larger projects with maximum GHG reductions. The milestones for this proposal are: 1) project planning, including request for proposals, grants to communities, development of a PMP; 2) construction, including energy audits, punch list, and final inspection; and 6) final closeout of award.

Prior applicants to the VEEP program have been solicited through a competitive process and ranked based on cost, energy demand, cost match, administrative capacity, participation in other end-use efficiency programs, and equitable geographic distribution of funding. AEA intends to use similar scoring criteria for funds available through CPRG emphasizing GHG emissions reduction. Once selected, applicants are awarded a pass-through grant, which the community manages with support from AEA. The most recent solicitation was sponsored by the Denali Commission and Wells Fargo and awarded in 2019 and has successfully facilitated 56 projects. Collectively these projects have offset 1,098,688 kWh resulting in an estimated \$566,612 saved annually throughout the awarded communities.

By working as a coalition, this application will enhance the opportunities to improve the needs of specific remote communities in the state. The additional CPRG funding with more targeted outcomes will improve the outcomes during the 5-year period than if AEA was to administer the CPRG program on its own.

TCC Project Description

TCC proposes to implement a program for upgrades to the distribution lines and power plants of nine tribal communities in the TCC Region. The nine communities include: Allakaket, Alatna, Evansville, Bettles, Healy Lake, Eagle, Rampart, Northway, and Arctic Village. These tribes would work with the respective utilities in each community to implement upgrades to increase utility generation and distribution efficiency and unlock the ability to the electric utility to integrate high-penetration renewables. TCC will work with the respective utilities and complete estimates for all utility upgrades and integration requirements, to include engineering, construction, operations, and maintenance, etc. The proposed budget of \$10 million is based upon recent experience for distribution and power plant upgrades in similar remote, microgrid communities, including those who have implemented high penetration renewable energy. CPRG funding is a unique opportunity for these communities to dramatically change their generation to be more resilient, improve economic conditions through reduced energy burdens (expenditures for diesel), and create local jobs both during construction and for maintenance of the system.

NAB Project Description

The NAB represents and includes the 11 federally recognized and rural tribal communities of Kotzebue (Qikiqtabruk), Kivalina (Kivalieq), Noatak (Nautaaq), Selawik (Aqulibaq), Deering (Ipnatchiaq), Buckland (Nunachiaq), Kiana (Katyaak), Noorvik (Nuurvik), Ambler (Ivisaappaat), Shungnak (Issingnak), and Kobuk (Laugviik). NAB proposes upgrades at power plants and water plants in these communities to maximize alternative energy use. The NAB recently received a grant award from the Department of Energy (DOE), Office of Clean Energy Demonstrations (OCED) for up to \$54.8 million to implement solar and battery energy storage systems (BESS) for each community in the borough with the objective of significantly reducing diesel consumption, improving the heating of borough residences, and lowering the cost of living. The OCED project will also significantly reduce GHG emissions. However, achieving maximum diesel savings requires the ability to “turn off” the community’s diesel generators when sufficient power is available through the solar/BESS; unfortunately, the power plants and drinking water plants for each community require waste heat from the generators to keep these critical facilities warm. Shutting the diesel generators off for even a few hours during the sunlight-rich, but still very cold months of March and April could result in freeze-ups of the generators or the water plant.

This proposed initiative from NAB requests \$9,954,321 to fund the addition of external, electric boilers for these critical facilities. These boilers will be sized to operate with the anticipated excess electricity produced from the solar/BESS. Appropriate controls and thermostats will also be integrated with the units to enable the remote monitoring and control of the boilers. The proposed upgrades for Kotzebue

also include improvements to the power plant's intake air and cooling system that will significantly improve the overall plant's efficiency.

Similar to the smaller communities, an electric boiler is planned for the power plant to provide heat when wind/solar meets community demand and the diesel engines can be shut off. This will also heat the office area of the plant (currently the full building is heated with excess generator heat). Additional upgrades include protection of the plant cooling and intake air system to optimize the operation of the generators. Insulation and motorized dampers will be provided in this area to minimize the introduction of outside cold air when the engines are not operating.

Currently five communities in the Borough have implemented solar and/or BESS at varying levels (Kotzebue, Deering, Buckland, Noatak, and Shungnak). In these communities (such as Shungnak), the diesel engines are run at low levels (like 25-30% load), even when the solar/BESS system could meet the entire electrical demand of the community to ensure the power plants and water plants are kept warm. The OCED project will build-out these systems to a greater extent and build new systems for the other NAB communities. In each case, excess solar power is anticipated to be available to support the proposed electric boilers during periods of peak solar production.

TCC and the NAB expect projects in the communities they represent to be completed within 36 months of receiving funding. The risks associated with the projects are similar for all activities proposed in this application. The complexities of working in rural Alaska, the limited construction season, and supply chain challenges, may delay projects but there is sufficient time in the timeline to address any challenges that arise and successfully complete the proposed projects within the five-year period of performance of the grant. The milestones for TCC and NAB's proposals are: 1) project planning, including procurement and stakeholder engagement; 2) project development; 3) construction and integration; and 6) final closeout of award. Additional details related to milestones are included in Section 3 of the application.

AEA, as the lead applicant, would provide subawards to TCC and NAB to perform all activities related to this proposal. In line with the Alaska Municipal League's (AML) infrastructure program and long-term work with the Department of Environmental Conservation (DEC) on the State of Alaska's CPRG PCAP, AML will support the coalition with planning support, community outreach, progress tracking, and energy data needs. As a sub-recipient to this application, AML will support the coalition with workforce development infrastructure which will consist of aiding applicants with recruitment, skill development, career navigation, and wraparound services such as childcare, housing and living stipends.

b. Demonstration of Funding Need

In 2021, Alaska ranked first among U.S. states with a per capita energy expenditure of \$8,711, amounting to nearly 11.15% of its GDP. This ranking has remained consistent since 2015¹. The high energy burden experienced by Alaska residents is attributed, in part, to a small population and harsh climate. Funding for capital projects in rural Alaska is consistently challenging due to the lack of a tax base in these communities. The low populations and high costs for these communities also limit opportunities for most other forms of project financing. AEA, in collaboration with TCC and NAB is requesting funds through the CPRG program, because it is the missing link that will help Alaska meet its obligation of providing a better quality of life to its residents and environment by reducing GHG emissions. If awarded, the possibility of maximized energy efficiency and sustainability in Alaska's rural communities would quickly become a long-sought reality.

Most of the funding opportunities from the Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA) support the deployment of renewable energy generation and carbon

¹ https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_sum/html/rank_pr.html&sid=US

sequestration but there are no funding opportunities that provide for the infrastructure upgrades necessary to successfully integrate renewable energy sources into remote microgrids. These upgrades are an essential step in transitioning rural communities to clean energy. Furthermore, these types of activities do not qualify for any of the dozens of tax incentives authorized by the IRA. A tax credit is available for some energy efficiency upgrades to commercial buildings; however, that credit is not extended to public buildings and the energy efficiency tax credits are not eligible for elective pay, which provides the benefit of the credit to tax exempt agencies such as state, local, and tribal governments.

DERA, rural distribution upgrades, and VEEP have received funding from the local, state, and federal level in the past including state cost matching, the Denali Commission, the VW Settlement Trust Fund, and the U.S. Department of Agriculture's (USDA) High Energy Cost Grant program. Unfortunately, the demand for these initiatives far exceeds the available funding resources.

Starting in federal fiscal year 2015, AEA has received \$3.3 million in funds from the U.S. Environmental Protection Agency (EPA) through the DERA program. The state has consistently provided a 1-to-1 match of \$3.3 million for a total of \$6.6 million in project costs. This has enabled AEA to fund the replacement of 27 high-emission engines for higher tier 2 or 3 engines in 17 distressed communities. Due to recent inflation, the number of engines AEA can replace with existing federal and state funding has decreased. In 2020, only four engines were replaced compared to six the previous year (2019) and eight the year prior to that². In 2022, AEA received \$1,038,138 in DERA funds. That amount secured the replacement of four engines with new low-emission engines in two communities.

AEA and rural communities have requested funds for distribution upgrade projects through federal programs such as the Denali Commission, Bureau of Indian Affairs, USDA, as well as state matches. However, the funds currently available from these agencies do not meet the high demand for these upgrades and often these sources combined still fall short of fully funding a given project. Currently, five communities have active projects and several more are awaiting funding. For example, in Kipnuk, the distribution system is in extremely poor condition with leaning poles and aging infrastructure. The community had a new power system and tank farm constructed with AEA and Denali Commission funds as of 2017-2019 in addition to other funds sourced from AEA's Renewable Energy Fund (REF) program and other federal sources. The community was able to provide \$250,000 in cash for design. AEA matched their funds and took their story to the Denali Commission, which was able to secure Bureau of Indian Affairs funds in the amount of \$800,000. And still the total amount secured to date is insufficient to complete all the improvements needed.



Figure 1 Manokotak Utility Company performing repairs during power outage December 2023

Another example is the distribution upgrade for the Native Village of Manokotak. Manokotak is a small community located within the Dillingham Census Area. According to the Economic Innovation Group's distressed community index, Manokotak scores 88.9 (out of 100) which deems it as 'distressed' due to several economic factors. The community is isolated and powered by a diesel engine power plant that has no outside interties or local sources of

² www.akenergyauthority.org/what-we-do/rural-energy/diesel-emission-reduction-act-program

alternative energy. In November 2023, AEA applied for a \$3 million grant under the USDA's Rural Utilities Service High-Energy Cost Grant (HECG) program to provide Manokotak with the funds needed for its distribution and powerhouse upgrades. Although Manokotak was awarded partial funding in the amount of \$2 million, it still leaves the community roughly \$1.5 million short of being able to complete the project in its entirety.

Manokotak declared a state of emergency on December 21, 2023. The community lost power due to a winter storm, leaving 300 of the 450 without power and heating. As a result, pipes began to freeze and burst³. Many residents evacuated their homes to seek shelter in the local school which became an emergency shelter. AEA spent all of what remained in its contingency funds for the year to restore power to the community. In addition to harsh winter conditions, it was determined that the power outage was a direct result of degraded powerhouse and distribution lines in the community⁴.

In addition to the previously mentioned communities, AEA is aware of additional communities that require extensive upgrades to their distribution systems: Nelson Lagoon, Napaskiak, Venetie, Port Heiden, and Rampart. This list does not include many other rural communities that may be facing the same challenges. AEA is currently performing a distribution inventory and assessment. The inventory will help AEA to create a list of high-priority distribution upgrade projects that will be ranked by life, health, safety, and prioritized for potential CO₂ emission reductions.

Between 2016 and 2023, AEA conducted VEEP solicitations for a total of \$2.7 million of project funds administered. AEA has \$2.5 million in VEEP funding available from sources such as the Denali commission, Wells Fargo, Department of Energy's Energy Efficiency and Conservation Block Grant Program, and state legislature. But, like the DERA and distribution upgrade programs, the funds available do not meet the demand. There is no funding budgeted from the state for the current fiscal year, or for next year.

TCC Specific Funding Need

The nine TCC communities, seven microgrids, included in this proposal have not yet pursued funding for renewable energy projects due to the high barrier of entry required to include implement power plant upgrades to enable future renewable development. Alaska Power and Telephone (AP&T), as the major utility for seven of these nine communities, has led the way with renewable energy in rural Alaska with 75% of their energy generation coming from hydropower. This funding opportunity will allow for increased renewable energy generation by AP&T in the interior, where power is currently 100% generated by fossil fuels.

NAB Specific Funding Need

Funding capital projects for communities in the NAB is challenging for those aforementioned reasons mentioned in this section; the recent OCED award will provide a transformative change to the communities in the borough but cannot realize maximum diesel reductions unless the diesel engines can be shutdown. Auxiliary heating for the power and water plants is necessary to enable "engine off" conditions. Achieving the maximum diesel savings for each community will limit emissions, improve air quality, and provide economic opportunity due to lower power costs.

c. Transformative Impact

Alaska has the third highest per capita energy-related CO₂ emissions in the United States⁵. Communities in rural Alaska are experiencing some of the most significant impacts from on-going climate change,

³ [Manokotak issues state of disaster emergency \(kdig.org\)](https://kdig.org/manokotak-issues-state-of-disaster-emergency/)

⁴ [Power outage plagues Western Alaska town for days \(alaskasnewsresource.com\)](https://alaskasnewsresource.com/power-outage-plagues-western-alaska-town-for-days/)

⁵ [Carbon Emissions by State](https://www.epa.gov/state/carbon-emissions-by-state)

including coastal erosion, permafrost melting, and reductions in subsistence species populations that most communities rely upon as part of their food source. These impacts threaten the ability for several communities to continue to exist. As a result, these communities acutely understand the need to reduce GHG emissions and transform their economies. Efficient diesel power plants, upgraded distribution lines, and energy efficiency project funding will reduce GHG emissions, lower the energy burden of rural communities, improve resiliency to disruptive events concerning fuel conveyance, and provide opportunities for economic development. Upgraded distribution infrastructure will allow for the future integration of renewable generation sources.

CPRG funding for this application would have a transformative impact on the energy systems of disadvantaged, rural communities in Alaska. Replacing inefficient diesel engines is expected to provide fuel savings, emission reductions, and health benefits for many years into the future. Upgrades to rural distribution systems and power plants will reduce line losses, decrease diesel fuel usage, and ensure readiness for renewable energy integration. Making disadvantaged, rural communities renewable ready is an essential step towards ensuring environmental justice and equitable access to the benefits of clean energy. According to the International Energy Agency, integrating higher shares of renewable energy into the grid can decrease electricity system costs by 15-40 percent⁶.

The utility upgrades TCC is planning with AP&T, Rampart's Electric Utility, and Arctic Village's Electric Utility mark a significant stride towards fostering future renewable development in Alaska. These upgrades signify a crucial step in modernizing the energy infrastructure of these regions, laying a robust foundation for integrating renewable energy sources efficiently. With a focus on digital compatibility, these utilities are poised to seamlessly incorporate industry-leading power electronics into their systems, such as SMA and SolarEdge inverters, Woodward EasYgen, and ComAp diesel generator controls, among others. By ensuring compatibility with these technologies, the utilities are positioning themselves to accommodate the growing demand for renewable energy solutions, enabling smoother integration and management of solar, wind, and other renewable sources into their grids.

Distribution and efficiency upgrades facilitate the integration of advanced technologies such as smart grids and smart meters. These technologies enable better monitoring and management of energy use, reducing waste and improving overall energy efficiency⁷. Energy efficiency upgrades reduce long-term fixed energy costs in communities through improvements including outdoor lighting retrofits. Not only do these upgrades provide a rapid return on investments and significant cost savings, but they also add to the safety of these communities by increasing visibility in school yards, public work facilities, and streets. In particular, the proposed subaward to NAB will enable each community to achieve maximum diesel savings and optimize the benefits provided through the OCED grant. Furthermore, less fuel consumption means that fuel deliveries do not have to occur as regularly, resulting in greater resilience to disruptive events concerning fuel conveyance such as freight disruption by weather and disaster that may materially delay fuel shipments. It also reduces the opportunity for fuel spills or other releases.

If awarded, the work done with CPRG funding can provide a framework for a viable path to renewable integration in other rural communities. The transformative impacts of the proposed initiatives are strategically aligned with the broader goal of fostering a more sustainable energy ecosystem in Alaska. As the state continues to embrace renewable energy initiatives, improvements and upgrades funded by CPRG will play a pivotal role in accelerating the transition towards cleaner and more resilient energy systems, ultimately contributing to a more sustainable future for Alaska and its communities.

⁶ [Assessing the Economic Impact of Electrical Grid Upgrades An Investor Perspective \(energy5.com\)](https://energy5.com/assessing-the-economic-impact-of-electrical-grid-upgrades-an-investor-perspective)

⁷ [Assessing the Economic Impact of Electrical Grid Upgrades An Investor Perspective \(energy5.com\)](https://energy5.com/assessing-the-economic-impact-of-electrical-grid-upgrades-an-investor-perspective)

2. Impact of GHG Reduction Measures

The measures contained in this coalition application contribute to energy efficiency in rural communities through different means and will result in a significant reduction of CO₂ equivalent GHG by displacing large amounts of diesel fuel that would have been consumed if not for implementation of these measures. The sections below will address and quantify how each proposed measure will reduce emissions in five years and then in the next twenty-five years.

a. Magnitude of GHG Reductions from 2025 through 2030

For AEA's genset and diesel engine replacement, AEA anticipates having ten engines installed by the end of 2026, another ten by the end of 2027, and finally eight more online by the end of 2028. All upgrades will be fully operational and contributing to lower emissions in unison no later than the start of federal fiscal year 2029. By the end of federal fiscal year 2030, replacing 28 engines would reduce about 4,739 metric tons of CO₂ emitted.

A series of studies and simulations for rural distribution upgrades in four rural Alaska communities, performed by a contractor on behalf of AEA, were used as a proxy for determining potential GHG reductions that would result from CPRG funding. The four proxy projects would displace approximately 121,000 gallons of fuel and a reduction of 767 metric tons CO₂ equivalent for 2025 – 2030.

Although there is no way to specifically quantify GHG reductions for future projects not yet scoped, AEA used historical performance and funding, adjusted for inflation, to estimate the impact of CPRG funding for the VEEP program. From 2016 through 2023, 56 communities were awarded \$2.7 million under VEEP. This offset 1,189,463 kWh per year, totaling 830.9 metric tons of CO₂ equivalent. AEA anticipates VEEP funding through CPRG will offset 3,002,198 kWh per year and result in a reduction of 8,388 metric tons CO₂ equivalent for 2025 – 2030.

TCC's proposed measure will reduce diesel fuel use by over 72,000 gallons annually and reduce emissions by 774 tons annually based on the existing efficiency of the communities' systems compared to expected increased efficiency of 23.12% after the improvements.

NAB's proposed measure will reduce diesel fuel use by over 155,635 gallons annually and reduce emissions by 1,590 tons annually based on achieving maximum, feasible diesel off hours and the expected increased efficiency at the Kotzebue power plant.

Below are the estimates for each proposed measure:

Total GHG Reductions 2025 – 2030

- Genset Replacement Program – 4,739 metric tons CO₂
- VEEP – 8,388 metric tons CO₂
- Distribution Upgrades – 767 metric tons CO₂
- TCC Region Powerplant & Distribution Upgrades – 3,484 metric tons CO₂
- Northwest Arctic Borough Powerplant Upgrades – 5,565 metric tons CO₂

TOTAL: 22,943 metric tons CO₂

b. Magnitude of GHG Reductions from 2025 through 2050

Through constant equipment monitoring, proper operations, and preventative maintenance the durability and quantity of GHG reduction measures could continue reducing GHG emissions at the same rate year by year through 2050. To ensure proper operations and maintenance, AEA and coalition members will provide training and operator manuals to ensure operators have the information and skills needed. As part of its existing work, AEA provides comprehensive technical assistance to rural utilities to ensure infrastructure lasts its full economic life, preventing catastrophic electrical emergencies, and building community self-sufficiency. In addition, AEA has full time circuit rider positions that support

rural powerhouse operators. Assuming a best-case scenario, the total amount of GHG reductions could reach as high as 146,846 metric tons of CO₂ equivalent in that timeframe.

Below are the estimates for each proposed measure:

Total GHG Reductions 2025 – 2050

- Genset Replacement Program – 35,310 metric tons CO₂
- VEEP – 50,328 metric tons CO₂
- Distribution Upgrades – 4,873 metric tons CO₂
- TCC Region Powerplant & Distribution Upgrades – 18,968 metric tons CO₂
- Northwest Arctic Borough Powerplant Upgrades – 37,367 metric tons CO₂

TOTAL: 146,846 metric tons CO₂

c. Cost Effectiveness of GHG Reductions

Formula = (Requested CPRG Funding) / (Sum of Quantified GHG Emission Reductions from 2025-2030)

AEA's Proposals = (\$30,031,790) / (13,894 metric tons CO₂) = \$2,162 per one (1) metric ton CO₂

TCC Proposals = (\$10,000,000) / (3,484 metric tons CO₂) = \$2,869 per one (1) metric ton CO₂

NWAB Proposals = (\$9,954,321) / (5,565 metric tons CO₂ (2025-2030)) = \$1,796 per one (1) metric ton CO₂

Combined Cost Effectiveness = (\$49,986,112) / (22,943 metric tons CO₂) = \$2,179 per one (1) metric ton CO₂

The factors that impact the proposed measures' cost effectiveness are the higher cost of shipping and construction in rural, remote communities (many of which are not on the road system), the age and condition of the existing infrastructure, harsh climate, and short construction seasons.

d. Documentation of GHG Reduction Assumptions

The models and tools used to calculate GHG emissions reductions were the EPA Diesel Emissions Quantifier (DEQ), Heat Recovery Simulation Analysis, Power Cost Equalization Reports, EPA GHG Equivalencies Calculator and Microsoft Excel. Please reference the Technical Appendix enclosed in this application for a detailed breakdown of the GHG calculations, methodology, and assumptions.

3. Environmental Results – Outputs, Outcomes, and Performance Measures

a. Expected Outputs and Outcomes

Alaska Energy Authority

An expected output for the overall CPRG grant is timely reporting. As the lead applicant for the coalition, AEA will prepare and submit required progress reports and a final report including information regarding technical progress; accomplishments; milestones achieved; summary of expenditures; community engagement; strategy for mitigating environmental risks; and progress on job quality. The NAB and TCC will provide AEA with reporting on their measures to include in the required reports.

Outputs and Outcomes for Expansion of DERA-like program

Outputs: Over three rounds of subawards, AEA expects to install approximately 25-28 new gensets in 12-14 communities. AEA expects to create construction jobs to implement this measure.

Outcomes: AEA expects this measure to reduce GHG emissions by 35,310 metric tons between 2025-2050. Expected outcomes of this measure are reduced diesel usage, cost savings from reduced diesel usage, reduced GHG emissions, and improved public health and climate impacts due to GHG emission reductions. In addition, AEA expects to hire one circuit rider to support all activities in the CPRG grant.

Outputs and Outcomes for Rural Distribution Upgrades

Outputs: AEA expects to construct two distribution projects per year over the five-year period of performance for the CPRG grant. AEA expects to complete 3-5 rural distribution upgrade projects in total depending on the cost of each upgrade. Costs for the upgrade will vary significantly depending on the size of the community, the soil conditions, buried or above ground, and the number of poles to be replace. AEA expects to create construction jobs to implement this measure.

Outcomes: AEA expects this measure to reduce GHG emissions by 4,873 metric tons between 2025-2050. Expected outcomes of this measure are:

- Improved Environmental Impact: AEA expects benefitted communities will begin to integrate renewable energy sources because of this measure, contributing to sustainability. Upgrading the distribution infrastructure will improve overall system efficiency by reducing line losses and diesel fuel usage at the powerhouse. Distribution upgrades also ensure that the microgrids are well-equipped for renewable energy, enabling the local distribution systems to effectively manage the fluctuations introduced to the system.
- Reduced Diesel Consumption and Associated Savings: Less reliance on diesel generators lowers emissions, improving air quality and environmental health. It also reduces the potential for diesel spills and releases.
- Resilience: Modernized infrastructure enhances community resilience to disruptions, ensuring a reliable power supply.
- Health and Safety: Replacement of aging structures, leaning power poles, sagging lines, reduces accidents and enhances public safety and system reliability.
- Economic Opportunity: Reliable energy infrastructure attracts businesses, fostering economic development and job creation.
- Community Empowerment: Access to sustainable energy solutions improves overall quality of life, fostering education, skill development and entrepreneurship.

Outputs and Outcomes for VEEP

Outputs: AEA expects to issue 10-15 awards for VEEP through one solicitation but will have time for additional rounds if all funding is not expended with the first solicitation. Each award may benefit more than one community, depending on the subawardee. AEA expects to create construction jobs to implement this measure.

Outcomes: AEA expects this measure to reduce GHG emissions by 50,328 metric tons between 2025-2050. Expected outcomes of this measure are reduced diesel usage, cost savings from reduced diesel usage, reduced GHG emissions, and improved public health and climate impacts due to GHG emission reductions. In addition, VEEP projects benefit the community through increasing public safety by implementing energy efficient lighting projects in public spaces.

Tanana Chiefs Conference

The integration of high-penetration renewables and increased energy efficiency should lead to environmental benefits, such as reduced greenhouse gas emissions and mitigated environmental impacts associated with energy generation through diesel generators.

Upgrade Plans: Develop detailed plans for upgrading the distribution lines and power plants in each community, considering factors such as energy efficiency, reliability, and integration of high-penetration renewables.

Infrastructure Upgrades: Implement upgrades to the distribution lines and power plants in all nine communities according to the developed plans. This may include installing new equipment, upgrading existing infrastructure, and improving overall system capacity.

Collaborative Efforts: Foster collaboration between the Tribes and respective utility service areas to ensure successful implementation of the upgrades. This may involve regular meetings, joint planning sessions, and coordination of resources.

Outcomes: The proposed project will reduce diesel fuel use by over 72,000 gallons annually and reduce emissions by over 770 tons annually and 18,968 metric tons between 2025-2050.

Increased Energy Efficiency: The upgrades to distribution lines and power plants should lead to improved energy efficiency, reducing energy losses and optimizing overall system performance. The impacted power plants are anticipated to increase their efficiency by 23.12% after completion of this project.

Enhanced Reliability: By upgrading the infrastructure, the reliability of the electrical grid in the 9 communities should be improved, resulting in fewer power outages and disruptions.

Integration of Renewables: The upgrades should enable the electric utility to integrate high-penetration renewables more effectively into the grid, such as solar and wind power, thereby reducing reliance on fossil fuels and promoting sustainability. The proposed project will enable development of solar and battery energy storage infrastructure for each community that will result in an estimated 1.5M kwh of renewable generation annually and further fuel reductions of over 72,000 gallons annually.

Cost Savings: As a result of increased energy efficiency and reduced maintenance needs, the upgraded infrastructure should lead to cost savings for both the utility and the communities. Across the benefitting utilities, diesel fuel savings are anticipated to be over \$325,000 annually.

Community Empowerment: Through collaboration and capacity building, the project should empower local communities to take more active roles in managing their energy infrastructure, leading to greater self-sufficiency and resilience.

Environmental Benefits: The integration of high-penetration renewables and increased energy efficiency should lead to environmental benefits, such as reduced greenhouse gas emissions and mitigated environmental impacts associated with energy generation.

Northwest Arctic Borough

Outputs: Expected outputs for this project are efficiency upgrades for the overall electrical systems in the 11 communities through diesel use reduction.

Outcomes: This measure is expected to reduce GHG emissions by 1,753 tons of CO₂e annually and by 37,367 metric tons between 2025-2050.

Energy efficiency is one of the most effective means of reducing diesel consumption in rural Alaska. Expected outcomes of this measure are reduced diesel usage, cost savings from reduced diesel usage, reduced GHG emissions, and improved public health and climate impacts due to GHG emission reductions. The proposed project will reduce diesel fuel use by over 155,635 gallons annually. Furthermore, decreased and stabilized energy prices will encourage opportunities for future economic development, offering potential job opportunities.

b. Performance Measures and Plan

As an extension of Alaska Municipal League's (AML) current support to the Alaska Dept. of Environmental Conservation (DEC), which is administering the CPRG planning grant, AML will work with DEC to establish a statewide tracking and reporting system for CRPG awardees. AML will work with DEC to establish a statewide tracking and reporting system for CRPG awardees to utilize. This system will include consistent reporting timelines, methodology consistent with the State's GHG emissions

inventory, and a dashboard providing reporting individually and cumulatively. This State-led effort not only complements EPA's own activities but ensures a platform for long-term accountability and progress. While targeted to meet the needs of CPRG and Tribal CPRG implementation awardees, the ability to report progress will be available to any state agency, or local or Tribal government, as aligned with measures described in Alaska's Priority (and eventually Comprehensive) Action Plan. AML will work with DEC and awardees to establish a consistent and simplified reporting structure, which will be completed through an online portal that leads to progress demonstrated via a publicly available dashboard. Reporting will be based on the outputs and outcomes identified in each awardee's implementation plan and built to include both unique measures and those that are similar across projects. AEA expects a robust subrecipient monitoring process that will require each sub awardee to complete timely reporting. AEA and sub awardees will implement a system of monitoring that is initiated through a baseline assessment that vets and downscales broadly available data, after which quarterly (depending on grant award terms) data is included and submitted for review and analysis. AEA will leverage the statewide reporting and monitoring effort led by DEC, through AML, such that subrecipient engagement is managed through a single entity across awards. This dedicated position will ensure consistency of data collection and alleviate any staff burden of AEA, TCC, and the NAB. The project's technical points of contact at AEA, TCC, and the NAB will track project's benefits and avoided disbenefits that are quantifiable and measurable, see table below. Baseline measures will be determined prior to project implementation and measured at each project's end.

Outputs/Outcomes	Measure
Decrease in Energy Burden	Energy Costs Savings
Decrease in environmental exposure	GHG Reduction
Upgrades/Improvements completed	Number of projects completed / communities benefited
Public health benefits	TBD
Increase in job creation and training	Jobs and training opportunities
Increased Efficiency	efficiency at power plants reduced line losses efficiency achieved through VEEP Reduction in diesel used
Enhanced Reliability	Reduction in power outages and disruption

c. Authorities, Implementation Timeline, and Milestones

Alaska Energy Authority

AEA will implement the DERA-like, rural distribution upgrades, and VEEP as described in this application, and has the authority to do so in coordination local governments and tribes; AEA will work local governments and tribes early in the planning phase for each measure to secure local approval and support. AEA has the authority to procure services and issue subawards. AEA is an independent and public corporation of the State of Alaska, est. 1976 and is governed by a board of directors with the mission to “reduce the cost of energy in Alaska.” AEA is the State Energy Office and lead agency for statewide energy policy and program development. AEA’s core programs work to diversify Alaska’s energy portfolio, lead energy planning and policy, invest in Alaska’s energy infrastructure, and provide rural Alaska with technical and community assistance. AEA’s enabling legislation, which includes authority to implement the programs described in this plan is in Alaska Statutes, chapter 44.83. The impact of AEA’s programs extend to the construction of rural power generation and bulk fuel facilities, distribution systems and transmission lines, renewable energy asset construction and integration, and ad-hoc maintenance and improvement of aging infrastructure. Rural Electric Utility Workers, under AEA’s circuit rider program, continuously travel to rural communities to administer itinerant training to rural utility operators, and diligently maintain an inventory and assessment record for nearly every rural powerhouse in the state by conducting comprehensive on-site assessments. This record informs the powerhouse construction schedule and ensures alignment with community needs.

The schedule below indicates what is typical for AEA’s projects under the DERA Program. Given the complexities of working in rural Alaska, the limited construction season, and supply chain challenges, AEA typically sees a two-year cycle for these replacement projects. Due to the volume of the funds, we intend to distribute the sub-awards over the 5-year period allowed by the grant and provide three rounds of funding opportunities. The table below reflects a typical genset replacement project schedule given its key deliverables (Task’) if it were to be funded through the CPRG program.

Measure 2 DERA	Round 1					Round 2								Round 3						
	24	2025				2026				2027				2028				2029		
Tasks	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Task 1:																				
Task 2:																				
Task 3:																				
Task 4:																				
Task 5:																				
Task 6:																				

Figure 1 Standard DERA Project Timeline spread across five years.

- Task 1: Confirm each rural community has an eligible engine and prepare emission tables and budget.
- Task 2: Design and identify specifications – Procure contractual assistance for the design of the engine/generator installations and development of specifications specific to each installation.
- Task 3: Construction procurement – Issue invitation to bid (ITB) to select a contractor that will provide engines, generators, and associated equipment, including any required assembly and testing, and installation.
- Task 4: Submittals – Contractor delivers submittals for AEA review and approval.
- Task 5: Installation and Commissioning – Install generator repowers/replacements and help integrate the electronically controlled engines with the existing switchgear, fuel, exhaust, and

cooling systems. If requested, AEA staff will offer technical assistance during the startup and commissioning of the engines.

- Task 6: Final closeout of award.

The table below reflects the schedule for and milestones for rural distribution upgrades. AEA will project manage these projects and expect individual projects will closeout at different times. AEA can complete 2 upgrade projects a year but timing can vary based on location, improvements, and supply chain. Distribution projects will be needs based meaning they will be selected based on needs from our distribution inventory and assessment database. Communities that have the greatest need for an upgrade will be selected to receive a project.

Mile	Task/Phase	Start	End	Deliverable
1.	Planning	Sep 24	Jun 25	
	Select Communities based on need	Sep 24	Dec 24	
	Meet with the Community	Sep 24	Mar 25	Resolution
	Project Management Plan	Jan 25	Mar 25	Signed PMP
	Grant to Community	Mar 25	Jun 25	Grant agreement
2.	Design	Jun 25	Jun 29	
	Engineering	Jun 25	Jun 29	Signed Notice to Proceed
	95% Design	Jan 26	Jun 26	Design documents, community acceptance
	Long lead items	Jun 26	Jun 27	Transformers
	Final Design, ITB	Jun 26	Jun 27	Design documents, permitting, ITB
3.	Construction	Apr 27	Sep 29	
	On-site construction	Apr 27	Aug 29	Field Reports
	Final inspection	Aug 29	Sep 29	Checklists, photos
4.	Close Out	Sep 29	Sep 29	Final Report

The table below reflects the schedule for and milestones for VEEP. Individual subawards will closeout at different times. These projects typically take 18 to 24 months to complete but can vary based on location, improvements, and supply chain.

Milestone	Task	Start	End	Deliverable
1.	Planning	Sep 24	Dec 24	Project Management Plan
	Request for Applications	Jan 25	Mar 25	Applications from Eligible Applicants
	Grant to Community	Mar 25	Jun 25	Signed Agreements

2.	Construction	Jun 25	Jun 29	
	Audit (if applicable)	Jun 25	Jun 26	Audit Report
	Construction	Jun 25	Jun 29	Monthly/Quarterly Reports
	Punch List	Sep 27	Aug 29	Punch List
	Final Inspection	Sep 27	Aug 29	Trip Report
3.	Project closeout	Dec 27	Sep 29	Final Report

Tanana Chiefs Conference

TCC will implement efficiency upgrades to power plants and water plants as discussed in this application and has the authority to do so for the tribes it represents.

Estimated Performance Period: September 2024 – August 2027

Task 1.0: Project Planning (September 2024 – December 2024)

Task Details: The project planning task includes RFP development, contract procurement, stakeholder engagement.

Subtask 1.1: Procurement: Negotiate with EPA for award allocation, formalize written agreements, develop RFPs for Engineering Services and Construction Contractors and complete competitive bid process.

Deliverables: Project and Risk Management Plans, RFPs, and contracts

Subtask 1.2: Community Engagement: Community meetings, informal interviews with village leadership, develop stakeholder engagement plan, presentations and listening sessions at annual and subregional meetings, coordinate and schedule trainings, contemplate cooperative labor agreements.

Deliverables: Documented engagement plan for life of project

Task 2.0: Project Development (January 2025 – July 2025)

Task Details: The project development task includes design, permitting, site control, and associated activities to prepare for construction, as detailed in the subtasks below.

Subtask 2.1: Engineering Design: Complete 35%, 65%, 95%, and construction ready drawings through standard engineering design and review process.

Deliverables: Construction ready drawing set, calculations, basis of design, specifications, review and version logs

Subtask 2.2: Permitting: Prepare permit applications, review, and submit to jurisdictional agencies for approval., as necessary.

Deliverables: Secured permits

Subtask 2.3: Community Engagement: Community meetings, implement stakeholder engagement plan, collect feedback and respond, create project webpage, post project information publicly, presentations and listening sessions at annual and subregional meetings, assess community needs for local workforce, coordinate training opportunities, stablish workplace committees for project hires, update webpage.

Deliverables: Formal coordination and documentation of workforce development requests, community needs assessment

Task 3.0: Construction and Integration (August 2025 – August 2027)

Task Details: The construction and integration task includes pre-construction activities, construction, inspection, and closeout, as detailed in the subtasks below over two years across the proposed communities. The tasks are generally the same for each community.

Subtask 3.1: Pre-construction: Review construction plans with selected contractor and confirm schedule, finalize contract, procure materials and mobilize

Deliverables: Construction contract, bill of materials

Subtask 3.2: Construction: Site preparation, improves to each power plant

Deliverables: Installed assets

Subtask 3.3: Community Engagement, Community meetings, update project webpage

Deliverables: Updates to project webpage, community meetings reports

Subtask 3.4: Inspection and Closeout: Substantial completion inspection and punch list, address punch list items, final and regulatory inspections, troubleshooting, operator training

Deliverables: Punchlist, inspection reports, training logs, signed transmittal from contractor to owner indicating completion and turnover

Northwest Arctic Borough

The NAB will implement efficiency upgrades to power plants and water plants as discussed in this application and has the authority to do so for the communities it represents.

Estimated Performance Period: September 2024 – August 2027

Task 1.0: Project Planning (September 2024 – December 2024)

Task Details: The project planning task includes RFP development, contract procurement, and stakeholder engagement.

Task 2.0: Project Development (January 2025 – July 2025)

Task Details: The project development task includes design, permitting, and contractor procurement for construction

Task 3.0: Construction and Integration and closeout (August 2025 – August 2027)

Task Details: The construction and integration task includes pre-construction activities, construction, inspection, and closeout. The tasks are generally the same for each community. We anticipate that the water/power plant upgrades for five communities will be completed in 2026 and upgrades for the remaining five communities in 2027. Construction for the proposed upgrades in Kotzebue will be completed in 2027. Required reporting will be complete throughout the project.

Alaska Municipal League

As a sub-recipient, AML will support the application with workforce development infrastructure which will consist of aiding applicants with recruitment, skill development, career navigation, and wraparound services such as childcare, housing and living stipends. Workforce development infrastructure is an ongoing effort, and the coalition will have access to these tools when the planning process begins in the fall/winter of 2024. AML will work with the Alaska Department of Environmental Conservation (DEC) to establish a statewide tracking and reporting system for CPRG awardees to combine data in a singular database. The system will supplement sub-awardees with technical assistance provided by partners to encourage timely reporting, with methodology consistent with the State's GHG emissions inventory. The tracking and reporting system will be piloted in time to complete the first round of semi-annual reporting required by the grant program. Lastly, AML will lead a statewide cohort of awardees to participate in CPRG planning and creation of a sustainability plan.

4. Low-Income and Disadvantaged Communities

The benefits from the measures proposed by the coalition in this application will almost entirely benefit low-income and disadvantaged communities.

Although AEA has not selected communities for its measures at the time the application was submitted, AEA expects almost all subawards to benefit communities that are in disadvantaged census tracts, Power Cost Equalization (PCE) communities, or communities where most residents are Alaska Native. The reasoning for this expectation is the type of work proposed by AEA and the criteria it uses to select projects for subawards. The PCE program is an endowed fund source that provides economic assistance to communities and residents of rural electric utilities where the cost of electricity can be three to five times higher than for customers in more urban areas of the state. This program serves over 88,000 Alaskans in over 190 communities that are largely reliant on diesel fuel for power generation. Of the PCE communities, only five communities are considered not disadvantaged and another seven communities are considered partially disadvantaged, details are provided in the attachment to this application. Please note the CEJST disadvantaged status was adjusted to reflect the presence of federally recognized tribes in a community to reflect the intent for these tribal communities to be included in the definition of disadvantaged. For communities where there are tribal governments and >50% of the population is Alaska Native, our list presumes full disadvantaged status; for communities where there are tribal governments and <50% of the population is Alaska Native, this list presumes partial disadvantaged status.

For the 20 communities that will benefit from the work performed by TCC and NAB, only the community of Bettles is considered not disadvantaged. Bettles is included in the application because Evansville and Bettles are electrically intertied and neighboring communities; Evansville is a federally recognized tribe. The table below includes residential electricity rates for these communities, before PCE assistance.

NAB Community	Residential Utility Rate (\$/kW-hr)	TCC Community	Residential Utility Rate (\$/kW-hr)
Kotzebue	\$0.41	Allakaket	\$1.10
Kivalina	\$0.66	Alatna	\$1.10
Deering	\$0.67	Evansville	\$0.78
Buckland	\$0.50	Bettles	\$0.78
Selawik	\$0.67	Healy Lake	\$1.00
Noatak	\$0.67	Eagle	\$0.89
Kiana	\$0.73	Rampart	\$0.81
Noorvik	\$0.69	Northway	\$0.65
Ambler	\$0.86	Arctic Village	\$1.00
Shungnak	\$0.77		
Kobuk	\$0.77		

The replacement of older diesel engines and gensets through a DERA-like program are expected to result in immediate fuel savings and emissions reductions. Energy efficiency improvements through an expansion of VEEP will reduce diesel consumption, providing immediate cost savings and this program also enhances community safety through improved lighting in public areas and buildings. Upgrades to

rural distribution systems are anticipated to significantly reduce line losses, improving energy efficiency and environmental impact. Reduced reliance on diesel generators will lead to lower emissions, better air quality, and lower consumer costs.

The work proposed by TCC in this application will provide improved electricity reliability, energy savings costs, access to future renewable energy integration, jobs, community empowerment, and health and safety benefits, and environmental protection to the nine communities benefitted.

The work proposed by the NAB in this application will improve efficiency enabling each community to achieve maximum diesel savings and optimize the benefits provided through the recent DOE OCED grant. These improvements will improve reliability, reduce energy burden, create jobs, and provide health and environmental impacts. Four NAB communities (Noatak, Ambler, Shungnak, and Kobuk) receive fuel via air shipment, resulting in per gallon diesel prices in excess of \$16.

The project's technical points of contact at AEA, TCC, and NAB will track project's benefits and avoided disbenefits that are quantifiable and measurable. Reduced GHG emissions from all measures in this application will provide improved public health and mitigate climate impacts over the long term. In addition, less fuel consumption means that fuel deliveries do not have to occur as regularly, resulting in greater resilience to disruptive events concerning fuel conveyance such as freight disruption by weather and disaster that may materially delay fuel shipments.

The coalition does not anticipate negative effects on benefitted communities. AEA, TCC, and NAB will solicit feedback from communities and engage stakeholders throughout the projects to identify and address potential negative impacts.

Community Engagement

AEA, TCC, and NAB are accustomed to engaging with local governments and tribal entities through permitting and regulatory processes for rural energy projects. The applicable projects would establish milestones urging earlier dialogue with local governments and Tribal entities. These talks should begin early enough to inform project development in response to local communities' needs and concerns. Local governments and Tribal entities are uniquely situated to help identify the most effective actions the projects can take toward partnerships that advance workforce issues; diversity, equity, inclusion, and accessibility; and the flow of project benefits to disadvantaged communities.

AEA, TCC, and NAB also have established relationships with tribal entities, local governments, and other State departments, with a focus on workforce, permitting, and community development. Early engagement with these stakeholders will help ensure the project is responsive to local energy plans and goals.

In line with the infrastructure program and long-term work with the State of Alaska's CPRG PCAP, the Alaska Municipal League intends to support AEA with planning support, community outreach, progress tracking, and energy data needs. AEA, TCC, NAB will coordinate with AML to develop a stakeholder engagement strategy that focuses on rural, disadvantaged communities and includes municipal and Tribal governments, and public and cooperative utilities. Communication with the public will flow both ways, and outreach will occur at recurring events and in stand-alone community meetings. The community outreach and engagement plan will include: public meetings, both in person and virtual; social media posts; updates on participating organization's websites; participation in recurring events, such as, Alaska Municipal League Office Hours, Tribal Council meetings, City Council meetings; and, participation in more informal settings, such as the Alaska Federation of Natives Convention, Alaska Rural Energy Conference, the Alaska State Fair, and other energy and environmental conferences held throughout the state. One recurring conference, which AEA, TCC and NAB participate in, that is critical to

sharing information amongst rural communities is the Alaska Rural Energy Conference (AREC), scheduled this year for October 2-4, 2024⁹, in Fairbanks, Alaska. The AREC enables communities and experts from around the state to work together and share practical information on energy projects.

5. Job Quality

AEA and the coalition members are focused on ensuring the CPRG grant funds and GHG reduction measures offer high-quality jobs within a diverse and skilled workforce. The coalition expects to create new job opportunities, primarily in construction, while implementing the GHG reduction measures outlined in our proposal. We expect to create local jobs that will likely be seasonal, part-time work which would provide meaningful employment. The goal is to recruit a diverse pool of workers that is also representative of the communities impacted by these measures. As with most projects in Alaska, those with Alaska experience are preferred. AEA anticipates adding one circuit rider position to support the measures proposed in this application. AEA offers competitive wages, comprehensive health and retirement benefits, tuition reimbursement, 11 paid holidays, and generous leave accrual.

As a state agency, AEA is obligated to a fair and transparent procurement process for the bid and selection of all our intended labor per 2 CFR § 200.317. We are committed to fostering safe, healthy, and inclusive workplaces with equal opportunity free from harassment and discrimination and will utilize these funds in alignment with the U.S. Dept of Labor and Commerce Good Jobs Principles. Work performed with this funding will be done in compliance with Alaska public contracting law, which contains provisions for local hire, registered apprenticeship training, prevailing wages, equal employment opportunity and other forward-looking policies. TCC follows a Native preference policy per the requirements of section 7 of Public Law 93-638. The coalition fully intends to follow federal guidelines by including clauses in construction contracts that require construction contractors and subcontractors to pay wages at rates not less than those prevailing, as determined by the Davis-Bacon Act wages and submit certified payroll when necessary.

The coalition will participate in the statewide workforce development activities organized by the Alaska Municipal League (AML) for applicants to CPRG implementation grants. This program provides a pathway for the coalition and sub awardees to leverage existing but coordinated recruitment and retention resources, as well as skills development. Funding will be available to provide opportunities for:

- Recruitment – AML’s partnership with the Associated General Contractors includes the ability for projects to participate in AGC’s *We Build Alaska* public outreach campaign, which has the ability to geofence and target social media messaging.
- Skills Development – AML works with the Alaska Safety Alliance, Alaska Works Partnership, University of Alaska, and Alaska AFL-CIO to identify appropriate workforce training opportunities. As workforce needs are identified, including the need for reskilling, they can access any of these partnerships.
- Career Navigation – AML will coordinate with DOL&WD for access to Alaska Job Centers, as well as through AFL-CIO and other programs, to support project workforce career navigation, including pathways for certification, apprenticeship, and degree programs.
- Wraparound Services – AML works closely with multiple partners who have mechanisms in place to facilitate childcare, housing, and housing stipends for staff and contractors, especially in conjunction with infrastructure investments across Alaska.

AEA and its partners are committed to competitive wages, comprehensive benefits, collaborative health and safety planning, utilization of skilled labor from Registered Apprenticeship programs, collaboration with labor organizations, implementation of second chance hiring policies, and expanding outreach to disadvantaged communities with high unemployment.

6. Programmatic Capability and Past Performance

a. Past Performance

AEA is an independent and public corporation of the State of Alaska, est. 1976, and is the state's energy office and leading agency for statewide energy policy and program development. AEA is governed by a board of directors with the mission to "reduce the cost of energy in Alaska." Our core programs work to diversify Alaska's energy portfolio, lead energy planning and policy, invest in Alaska's energy infrastructure, and provide rural Alaska with technical and community assistance. As the state's designated energy office, AEA has managed hundreds of millions of dollars in federal, state, and private funds to plan and build infrastructure in urban and rural Alaska and is the hub for information exchanges, technical assistance, multiagency coordination, and dynamic pilot projects informing policy decisions and funding solutions for energy and efficiency projects in the future.

AEA staffs a full suite of highly qualified individuals, including engineers, planners, project developers, project managers, accountants and finance officers, and policy analysts. AEA has successfully managed, completed, and closed well over three-hundred grants in the last decade, several of which were grant funds from the EPA. We are registered at Grants.gov and SAM.gov, have a UEI number, and have the legal authority to enter a financial assistance relationship with the EPA CPRG program.

AEA has mature staff and management systems in place to administer awards. AEA's Finance and Accounting departments manage the fiscal compliance and reporting requirements for grants and sub-awards. Additionally, AEA staffs a grants department that includes a grants manager and a coordinator. Internal control procedures are in place for compliance reviews, budgetary controls, invoice approvals, project status and financial reporting. AEA hires an independent audit firm to report on compliance for each major federal program, report on internal control over compliance, and report on the Schedule of Expenditures of Federal Awards required by the Uniform Guidance. AEA's FY2023 Single Audit Report found that the Alaska Energy Authority complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2023. AEA policies and procedures are published on our website, including for Procurement, Governance, Annual Reports, and Audits.

The wide array of current and past programs, and grant management experience, ensures that AEA is prepared to manage this project, including through a subaward and project delivery and assessment process. Following is a sample of the many awards AEA manages from federal agencies:

Alaska Energy Authority

BIL Preventing Outages and Enhancing the Resilience of the Electric Grid

Agency: Department Of Energy (DOE)

Assistance Agreement No.: DE-GD0000002

CFDA: 81.254

Description: This project is in direct support of Section 40101(d) of the Infrastructure Investment and Jobs Act (i.e., Bipartisan Infrastructure Law). This project's objective is to improve the electric grid's resilience against a disruptive event such as being preventively shut off, or cannot operate safely due to extreme weather, wildfire, or a natural disaster.

Contact: Lucas Greza, lucas@greza@netl.doe.gov, (304) 285-4663

2022 Black Rapids Training Center Line Extension

Agency: U.S. Department of Defense (DOD)

Assistance Agreement No.: DOD-HQ00052210045

CFDA: 12.600 (contract 31201)

Description: A 34-mile electrical power line extension to connect the Black Rapids military installation to supply safe, reliable, and efficient grid power.

Contact: Tim Robert, timothy.b.robert.civ@mail.mil, (916) 557-7315

State Clean Diesel Emission Reduction Act 2016-2022

Agency: Environmental Protection Agency (EPA)

Assistance Agreement No.: DS-01J63901

CFDA: 66.040

Description: Partially fund the replacement of up to twenty-five non-certified and lower tier diesel engines with Tier 2 and 3 marine engines and low PM emitting nonroad engines based on a community prioritization list.

Contact: Lucita Valiere, valiere.lucita@epa.gov (206) 553-8087

Tanana Chiefs Conference

Federal Low Income Home Energy Assistance Program

Funding Source: U.S. DHHS Administration for Children & Families

Funding Source Award #: 21PNAKE5C6

Contact: Desiree Joseph desiree.joseph@tananachiefs.org (907) 452-8251, Ext. 3521

Description: This grant provides funds for The Low-Income Home Energy Assistance Program (LIHEAP) helps keep families safe and healthy through initiatives that assist families with energy costs. LIHEAP provides federally funded assistance to reduce the costs associated with home energy bills, energy crises, weatherization, and minor energy-related home repairs. Reporting History and Status: TCC provided regular and timely reporting per the terms of the grant and completed delivery of the varied scope of work.

Federal Diesel Emission Reduction Project Manley Hot Springs

Funding Source: U.S. EPA GAP Program

Funding Source Award #: DE-01J89201

Contact: Sherry Davis davis.sherry@epa.gov 907-271-6322

Description: The project replaced two unregulated diesel gensets located in Manley, AK that were producing at a very inefficient rate with two Tier 3 diesel gensets that are more efficient for the community. The project also included the replacement of manual switchgear with an automatic control system to safely switch between gen-sets, balancing runtime and maximize the life of the system; as well as allow for the power generation system to be prepared to accept renewable power in the future. The project dramatically reduced emissions (75.7% reduction in NOx and 81.5% reduction in PM2.5) positively impacting community health and wellbeing simply by the increased efficiency and is expected to reduce annual diesel usage in the community by 16.4% or 7,154 gallons.

b. Reporting Requirements

Alaska Energy Authority

BIL Preventing Outages and Enhancing the Resilience of the Electric Grid

Performance Period: 7/24/2023 - 4/30/2028

This award is active and requires quarterly project and award management reporting. DOE also requires that all projects under this grant adhere to BABA and Davis-Bacon requirements. AEA was awarded at the beginning of the Q3, 2023 and has been obligated to submit for two quarters. AEA has successfully managed grant requirements to-date through close communication with the DOE project officer.

2023 Q3 – Submitted 10/23/23

2023 Q4 – Submitted 1/10/2024

2022 Black Rapids Training Center Line Extension

Performance period: 9/1/2022-3/31/2027

This is an active project and AEA has worked cooperatively with the owner agency, Office of Liaison Defense Community Cooperation (OLDCC), and Golden Valley Electric Association (GVEA) to review the conflicts and keep the agency apprised of the revised schedule. AEA submits progress and financial reports through the OLDCC project portal.

State Clean Diesel Emission Reduction Act 2016-2022

Performance Period: 10/1/2017 - 9/30/24

In 2015 AEA received the DERA funds via Reimbursable Services Agreement from Department of Environmental Conservation (DEC) and reported through DEC. Starting in 2016, AEA's relationship was directly with the EPA. AEA's quarterly reporting, both financial and progress reports, have always been on time. AEA conducted several site monitors, which have resulted in no findings. For this program, AEA submits a final technical report at the end of each award.

Tanana Chiefs Conference

Federal Low Income Home Energy Assistance Program

Start Date: 11-Mar-21 End Date: 30-Sep-22

Reporting History and Status: TCC provided regular and timely reporting per the terms of the grant and completed delivery of the varied scope of work.

Federal Diesel Emission Reduction Project Manley Hot Springs

Funding Source: U.S. EPA GAP Program

Start Date: 1-Oct-20 End Date: 30-Jun-23

Reporting History and Status: TCC provided regular and timely reporting per the terms of the grant and completed delivery of the varied scope of work.

c. Staff Expertise

Alaska Energy Authority (AEA):

Business Point of Contact: Curtis Thayer serves as the Alaska Energy Authority (AEA) executive director. Previously, he was the commissioner for the Department of Administration and cabinet member for Governor Sean Parnell, responsible for 1,100 public employees and an annual budget of \$350 million. As part of his public service, he served as the deputy commissioner of the Department of Commerce, Community, and Economic Development, and worked in Washington, D.C. with Alaska's Congressional Delegation. A graduate of the United States Department of Energy's National Renewable Energy Laboratory Executive Energy Leadership Institute program, Thayer has gained a comprehensive understanding of advanced energy technologies that has helped him guide his organizations in making energy-related decisions. The project budget and work plan anticipate a 3%-time commitment from Thayer to the project.

Tim Sandstrom is AEA's Chief Operating Officer and will represent Mr. Thayer, directly overseeing the rural energy team. He has been with AEA since 2011 and served as director of rural programs. Sandstrom oversees the management of AEA's Rural Power System Upgrade, Bulk Fuel Upgrade, Circuit Rider, Emergency Response, and Training Programs. As a senior management team member, he is also responsible for implementing AEA's strategy and budget management for his programs. With over 35 years in construction, project management, and engineering project management throughout Alaska, Sandstrom brings a broad range of private sector experience to his work. The project budget and work plan anticipate a 3% time commitment from Sandstrom to the project.

Technical Point of Contact: Rebecca Garrett, Rural Programs Manager, has been with Alaska Energy Authority since 1997 and has managed projects and programs in varying size and complexity since 1998. She earned her project management professional (PMP) certification and keeps an active registration.

She will take on the day-to-day administration of this award, starting by preparing the Project Management Plan. From there, she will assign individual projects to qualified project managers who will provide project oversight, review, and accept plans, procedures, deliverables, and reports. Ms. Garrett will be responsible for project communications between contractors, consultants, and the AEA team. She will track specific contractual deliverables against the schedule to ensure contractors are on track to meet critical milestones. She will be the primary point of contact for the award. The budget and work plan anticipate 25% of Garrett's time committed to this project.

Program/Project Managers: AEA has a team of highly qualified project and program managers who work under Rebecca Garrett, Rural Programs Manager, and Audrey Alstrom Director of Renewable Energy and Energy Efficiency. Staff assignments will be made as projects, and the technologies they will implement become clear.

Financial Management: AEA's Controller will oversee the project's financial progress. Once the Project Management Plan is accepted, a grant agreement will be issued to the individual project sites. Each Project has a unique project code and grant number used to track each funding source and required match. The finance team will certify financial reports for EPA's reporting requirements. AEA's Grants Manager will oversee the award from the EPA and the grant agreement documents with remote Alaskan communities and ensure AEA's compliance with grant requirements and related reporting.

Tanana Chiefs Conference (TCC):

Dave Messier, TCC Infrastructure Division Director | Dave Messier will serve as the Project Manager of the project. He has overseen more than \$40M in grant funded infrastructure projects in rural, Tribal communities over the past 8 years. Dave manages TCC's Rural Energy program; in that capacity he works with the various remote power utilities in the TCC region. Dave has many years of project management experience working for small Tribes across the state. He is well equipped to manage the team, develop contracts, provide contract oversight, and operate in accordance with grant provisions. Dave will act as the liaison for all the stakeholders including participating Tribal communities, landowners, contractors, and Tanana Chiefs Conference. Dave has an undergraduate degree with a minor in business from Cornell University, received his MBA in 2012 and is a Certified Project Management Professional.

Ben Shilling, TCC Chief Financial Officer | Ben Shilling will oversee all financial aspects of this grant. Ben oversees TCC's financial reporting, accounting and procurement departments which are directly responsible for the financial management of grants and managing procurement. Within these departments Ben has a team of 22 employees under him at TCC. TCC has over \$470 million in assets and over \$250 million in annual revenues. Under Mr. Shilling's leadership TCC has maintained an A+ Bond Rating and has had many years of clean audits with no findings. Ben has been a CPA since 1989 and Certified Information Systems Auditor since 1994. Ben also leads the distribution of both restricted and unrestricted funds to TCC tribes. Dave and Ben will be supported by **Edward Dellamary, TCC Rural Energy Specialist** to conduct day to day oversight and review of technical deliverables, perform community outreach, prepare grant reports and review technical deliverables. **Cortnie Doan, TCC Grants and Office Manager** will review invoices and financial account.

Northwest Arctic Borough:

Ingemar Mathiasson, NAB Energy Manager, works in the NAB's Economic Development Department. He will be the Project Manager and oversee all aspects of the project. He has developed and managed renewable energy and energy efficiency projects in all 11 communities within the Borough and has been the Project Manager for successful solar, battery, and diesel hybrid systems in Buckland, Deering, Shungnak, and Noatak, along with a biomass construction project in Ambler. Mr. Mathiasson will also ensure community engagement and outreach, in coordination with the Northwest Arctic Energy Steering Committee's education and outreach efforts.

Angie Sturm has been the NAB Treasurer since 2016. Ms. Sturm received her Bachelor of Business Administration degree in Accounting and Management from the University of Alaska Anchorage. Before accepting her position at the Borough, Angie was an Auditor for KPMG, an international accounting firm with an office in Anchorage. She will oversee all financial transactions and financial reporting associated with this project.

Alaska Municipal League:

Nils Andreassen, AML's Executive Director, has worked with communities across Alaska for more than 15 years, including to serve in a management role at nonprofit organizations for 10 years. Nils has contributed to State efforts and helped draft its Arctic policy, as well as its Climate Action Plan. Nils serves on the Denali Commission, served on the Governor's Broadband Task Force, and is on the board of directors of the National League of Cities (NLC). His role in this project is to maintain and cultivate relationships that strengthen delivery of the program, assist with outreach to communities, and contribute input into the strategic direction and deployment of the project. The Alaska Municipal League (AML) is a member-based service organization that works to strengthen Alaska's 165 cities and boroughs. AML has responded to Executive Order 14008 and the federal prioritization of tackling climate change, environmental justice, and inequity by providing a suite of services that help local governments meet associated goals. AML members and associated Tribal governments can utilize our shared service program to contract for a coordinated approach to addressing equity and environmental justice within the context of project development and implementation.

7. Budget and Timely Expenditure of Grant Funds

a. Budget Detail

The budget detail is included as an attachment to this application.

b. Expenditure of Awarded Funds

AEA, TCC, and NAB have developed a project budget and schedule that is reasonable and achievable within a 5-year period of performance. This plan is grounded in previous experience with the type of work proposed in this application and recent cost estimates for equipment, such as diesel engines and electric boilers.

AEA, TCC, and NAB have extensive experience in issuing and managing contracts to complete the type of work proposed. The coalition's procurement teams will issue contracts that include specific deliverables with expenditures linked to milestones and associated completion dates. Reimbursement will be based on completion of specific deliverables and contracts will be written to ensure compliance with the CPRG objectives and timelines. AEA will regularly assess the subawardees' and contractors' performance against the timeline and milestones and adjust the plan accordingly to ensure timely completion. AEA, TCC, and NAB use financial management systems that allow for tracking of expenditures and comparison to budgets and will meet regularly with the project teams to assess progress. Each coalition member has experienced financial staff.

c. Reasonableness of Costs

The proposed budget is grounded in previous experience with the type of work proposed in this application, knowledge of site conditions, and recent cost estimates for equipment, such as diesel engines and electric boilers. Labor rates used in this cost estimate were based on prevailing wage rates for this region as currently established by the US Department of Labor. Additionally, travel was included in the budget for site visits to account for the remote nature of the work. The budget detail attachment includes a narrative description of the budget that supports the values used and the corresponding excel attachment includes a detailed breakout of budgeted costs for each measure.