

## WORKPLAN

# Solar and Energy Efficiency Improvements in Energy-Burdened Schools



## Section 1: Overall Project Summary and Approach

### Reduction Measures (Section 1.B)

**Provide a detailed description of each of the proposed GHG reduction measures to be undertaken.**

Solar projects accounted for 2% of investment in Alaska in renewable energy between 2010 and 2020, including the state's first utility-scale solar farms constructed in Healy and Willow. Solar generation in the spring and fall is often impressive in northern latitudes where clear skies, cool temperatures, dry air and bright, reflective snow all support solar generation. Solar photovoltaic systems can actually exceed their rated output during these times of year. At the same time, weatherization, energy efficiency measures, and beneficial electrification of Alaska's public schools have great potential to provide emissions reduction and broader community benefits through money saved on energy expenses.

Importantly, these measures are among the short list of efforts that can be undertaken expeditiously and with the available expertise by resource-limited governmental entities. In Alaska, the public sector is one of the largest economic sectors. This is reflected in many small communities where public facilities, such as schools, are critical infrastructure, serving a challenging role as lodging for out-of-town guests, emergency shelter, and community gathering space. AHFC's 2014 Energy Efficiency in Public Buildings Analysis, among other evidence, points clearly to the economic and environmental benefits

Denali Borough School District is comprised of three schools—Tri-Valley, Anderson and Cantwell. The facilities operate year-round and double as emergency evacuation centers during crises, as well as staging areas for fire management agencies during summertime forest fires. An independent assessment conducted in 2016 identified measures to be addressed for each of the three facilities. A more detailed list of project descriptions, timeline, and costs for measures to be undertaken is included as an attachment to this application.

**1) Tri-Valley School** spans 54,558 square feet, comprising five sections erected between 1971 and 1999. The school maintains its own 18,000-square-foot boiler building, housing both coal-fired and fuel oil boilers to sustain its hydronic heating system. Owing to its remote location and the extreme temperatures typical of interior Alaska, Tri-Valley faces among the highest fuel and energy expenses in the nation. In the 2022-2023 academic year, heating costs alone amounted to \$72,157.78, while electricity expenses totaled \$75,207.18 for 446,800 kWh.

Measures to be undertaken: 1) Installing programmable thermostats and HVAC zoning systems to optimize heating and cooling based on occupancy schedules; 2) Enhancing building envelope insulation to minimize heat loss and improve thermal comfort; 3) Implementing renewable energy solutions such as solar panels to offset electricity consumption. The project will:

- Enhance Energy Efficiency through Building Retrofit:
  - Goal: Develop and implement a comprehensive building retrofit plan to reduce operating costs for electricity and heat at Tri-Valley School.
  - Strategy: Upgrade the building envelope by replacing outdated exterior doors and windows dating back to the construction period between 1972 and 1999 with triple-pane Arctic-rated systems.

- Rationale: The existing doors, windows, and hardware exhibit significant wear and tear, surpassing their useful lifespan. Improving the building envelope will enhance heat retention, ensuring thermal comfort for occupants and yielding cost savings on fuel and coal consumption.
- Impact: The retrofit initiative will serve as a model for schools operating in sub arctic climates, providing valuable insights into energy efficiency measures.
- Expand Renewable Energy Sources with Photovoltaic (PV) System:
  - Goal: Increase the utilization of renewable energy by expanding the existing Solar Photovoltaic (PV) System installed at Tri-Valley School.
  - Strategy: Add 50 solar panels to the current array of 20 panels, forming part of a 30 kW Solar PV grid-tie system.
  - Implementation: Structural modifications have been made to accommodate the additional solar panels on the older sections of the building's roof.
  - Benefit: By leveraging solar energy, the project aims to halve the current electricity usage of the building, thereby significantly reducing operational expenses.
  - Additional Advantage: Participation in the Sustainable Natural Alternative Power (SNAP) program facilitated by Golden Valley Electric Association (GVEA) enables the school to receive credits for surplus electricity generated during long summer days, further lowering annual operating costs.

Impact: The proposed initiatives for Tri-Valley School align with the Denali Borough School District's commitment to sustainability and cost-effectiveness. Not only will the building retrofit and PV system expansion initiatives result in substantial energy savings, but they will also support the seamless integration of technology into education. By enhancing energy efficiency and increasing renewable energy utilization, Tri-Valley School sets a precedent for environmentally responsible practices, benefiting both current and future generations of students and educators.

**2) The Anderson School** encompasses 44,407 square feet comprising four sections built between 1973 and 1980. The school operates on oil fired boilers to run the hydronic heating system. Due to the remote location and extreme temperatures in interior Alaska, Anderson school is subjected to some of the highest fuel and energy costs in the nation. In the 2022-23 academic year, the Heating cost alone amounted to \$77,270.60. While electricity expenses totaled \$27,716.50 for 211587 kwh.

Measures to be undertaken: Focusing on upgrading the building control system is essential for optimizing energy usage and enhancing overall operational efficiency. A modernized control system can facilitate better monitoring and management of heating, cooling, ventilation, leading to reduced energy consumption and operational costs. Other measures include: 1) Installing programmable thermostats and HVAC zoning systems to optimize heating and cooling based on occupancy schedules; 2) Enhancing building envelope insulation to minimize heat loss and improve thermal comfort; 3) Implementing renewable energy solutions such as solar panels to offset electricity consumption. Activities will include:

- Upgrade Building Control System: Replace the outdated pneumatic building control system with a modern direct digital control (DDC) system. This upgrade will enable precise monitoring of temperature levels, programming room setbacks during unoccupied periods, and optimizing ventilation controls. By doing so, energy consumption can be reduced both in terms of electricity and fuel, leading to long-term cost savings and environmental benefits.



- **Install Photovoltaic (PV) System:** Implement a photovoltaic system consisting of 70 solar panels, similar to the one proposed for the Tri-Valley school. These solar panels will harness renewable solar energy to offset a portion of the school's electrical consumption. Additionally, by participating in the Sustainable Natural Alternative Power (SNAP) program by Golden Valley Electric Association (GVEA), Anderson School can further support its commitment to sustainability while potentially benefiting from incentives or credits provided by the program.

Impact: By undertaking these energy improvements, Anderson School can enhance its operational efficiency, reduce its environmental impact, and demonstrate leadership in adopting sustainable practices within the community.

**3) The Cantwell School** encompasses 17,663 square feet comprising of three sections built between 1971 and 1999. The school has five forced air heating units and one hydronic boiler that run off fuel oil. Due to the remote location and extreme temperatures in interior Alaska, Cantwell school is subjected to some of the highest fuel and energy costs in the nation. In the 2022-23 academic year, the Heating cost alone amounted to \$34,317.29, while electricity expenses totaled \$14,658.83 for 114640 kwh.

Measures to be undertaken: Improvements to heating systems is vital to ensure consistent and efficient heating throughout the facility. Upgrading to more energy-efficient heating systems by replacement of two of the heating units installed in 1976 leading to reduced energy consumption and operational costs. Other measures include: 1) Installing programmable thermostats and HVAC zoning systems to optimize heating and cooling based on occupancy schedules; 2) Enhancing building envelope insulation to minimize heat loss and improve thermal comfort; 3) Implementing renewable energy solutions such as solar panels to offset electricity consumption. Activities include:

- **Upgrade Heating Systems:** Replace the outdated and inefficient oil-fired furnaces installed in 1977 with modern, high-efficiency units. The current furnaces have exceeded their expected lifespan and are no longer sustainable due to the unavailability of replacement parts. Upgrading to newer, more efficient heating systems will not only improve comfort levels within the school but also significantly reduce energy consumption, both in terms of electricity and fuel usage.
- **Install Photovoltaic (PV) System:** Implement a photovoltaic system consisting of 70 solar panels, each with a capacity of 30KW, like the one proposed for the Tri-Valley school. These solar panels will harness renewable solar energy to offset a portion of the school's electrical consumption. By participating in the Sustainable Natural Alternative Power (SNAP) program by Golden Valley Electric Association (GVEA), Cantwell School can further support its commitment to sustainability while potentially benefiting from incentives or credits provided by the program.

Impact: By undertaking these energy improvements, Cantwell School can enhance its energy efficiency, reduce its reliance on fossil fuels, and contribute to a cleaner and more sustainable environment for the school community. Additionally, these improvements can lead to long-term cost savings and potentially serve as a model for other educational institutions looking to adopt renewable energy solutions.

**Explain how these features, tasks, and milestones will ensure success of the measures.**

DBSD's GHG emissions reduction measures are responsive to extreme challenges facing the district and region, including the high costs experienced by these schools.

- 1) Tri-Valley faces among the highest fuel and energy expenses in the nation. In the 2022-2023 academic year, heating costs alone amounted to \$72,157.78, while electricity expenses totaled \$75,207.18 for 446,800 kWh.
- 2) Due to the remote location and extreme temperatures in interior Alaska, Anderson school is subjected to some of the highest fuel and energy costs in the nation. In the 2022-23 academic year, the Heating cost alone amounted to \$77,270.60. While electricity expenses totaled \$27,716.50 for 211587 kwh.
- 3) Due to the remote location and extreme temperatures in interior Alaska, Cantwell school is subjected to some of the highest fuel and energy costs in the nation. In the 2022-23 academic year, the Heating cost alone amounted to \$34,317.29, while electricity expenses totaled \$14,658.83 for 114640 kwh.

These measures will result in:

- Reduced use and cost of fuel, maintain thermal comfort of occupant, and improve indoor air quality.
- Provide electricity to school buildings, reduce operating costs, and reduce carbon emissions.

**Describe underlying assumptions and risks associated with those features, tasks, and milestones.**

Each measure was selected with the guidance of the Denali School District Facility Assessment, an independent study conducted in 2016 for each of the three facilities. The Assessment summarized existing conditions, observed deficiencies and recommended improvements to the buildings, sites and systems. A more detailed list of project descriptions, timeline and costs for measures to be undertaken is included as an attachment to this application.

**Discuss the extent to which GHG emission reductions may be affected by project risks.**

Based on the Action Plan analysis, DBSD is highly confident in the ability to implement reduction measures effectively, and with little interruption. DBSD has a strategy in place to mitigate risk and to realize the full extent of the potential GHG emission reductions.

**Explanation of how each GHG reduction measure included in the application relates to a GHG reduction measure included in the relevant PCAP(s), why each measure was selected as a priority, and a description of how each measure will meet the goals of the CPRG program.**

These facilities are a major driver of costs for governments that are already fiscally distressed or lack access to sufficient revenue to meet growing costs, especially when the buildings are not energy efficient and use expensive heating oil, which in some communities is priced as high as \$13/gallon.

With solar PV systems known for their long useful life and minimal maintenance requirements, these installations promise to provide sustainable electricity production for over three decades.

**Discuss risks that could reasonably lead to delays or interruptions in the development or implementation of a GHG reduction measure or could impact its effectiveness.**

DBSD has identified the following risks that could lead to delays or interruptions in implementation of a GHG reduction measure, or which could impact its effectiveness.

Risk	Description	Potential (1-5/ Low to High)	Mitigation
Disruption to Operations	Implementing energy efficiency measures often requires retrofitting existing systems or modifying building structures, which can cause disruptions to normal school operations. Construction work, equipment installation, and system upgrades may necessitate temporary closures, relocation of classes, or adjustments to schedules.	2	Schools are experienced at completing upgrades and repairs around the school schedule, to maximize a safe and active learning environment.
Maintenance and Performance	Energy-efficient equipment and systems require regular maintenance to ensure optimal performance. Schools may face challenges in allocating resources for ongoing maintenance, leading to reduced efficiency over time or unexpected breakdowns.	3	While CPRG funds will initiate improvements, school districts will have to plan and budget for necessary maintenance to ensure optimal performance. DEED Facilities will offer TA.
Budgetary Stress	One of the primary barriers to implementing energy efficiency measures is the initial investment required. Schools may struggle to secure funding for upgrades or lack the budget flexibility to prioritize energy efficiency over other pressing needs.	1	CPRG funds overcomes this initial hurdle, and DEED will need authority in the legislative budget to accept these and utilize them for intended purposes.
Technical Complexity	Energy efficiency projects may involve complex technical solutions, such as HVAC upgrades, lighting retrofits, or building envelope improvements. Schools may lack the internal expertise to design, implement, and monitor these solutions effectively, increasing the risk of errors or suboptimal outcomes.	2	DBSD has available technical expertise at AHFC, should help overcome any risk related to technical complexity of installation and maintenance of upgrades.
Regulatory Compliance	Schools must adhere to various regulations and building codes when implementing energy efficiency measures. Failure to comply with these requirements can lead to fines, delays, or legal issues, especially if renovations or upgrades are not properly permitted or approved.	2	DBSD is familiar with processes to ensure regulatory compliance, and will implement strong oversight measures as part of its subrecipient management.

## Demonstration of Funding Need

### Demonstrate a strong need for CPRG implementation funding that is unmet by other funding sources.

A letter from the Superintendent of Denali Borough School District is included as an attachment to the application, addressing DBSD's fiscal crisis. Flat per student funding from the State and a slowly declining student enrollment have reduced revenue in the face of expenses continuing to increase due to ongoing inflation. In the 2022 fiscal year DBSD had an operational deficit of \$607,582. In the current 2023 fiscal year it is expected that the deficit will be more than \$250,000; and the pattern is projected to continue into FY24 with more drastic reductions

expected, resulting in additional increased deficits. DBSD reserves are depleted, and operating revenue does not support student service needs. Funds to pursue energy efficiency improvements would reduce the operating costs, which would allow an increased revenue for instructional services.

**Explain if and how they have explored the availability of other federal and state grants, tax incentives, and other funding sources to implement their GHG reduction measures and why these sources are not sufficient.**

Acknowledging that State funds are unlikely, DBSD is exploring the availability of other federal funds to implement GHG reduction measures. DBSD is familiar with and evaluating:

- DOE's Renew America's Schools - <https://www.energy.gov/scep/renew-americas-schools> - is a competitive program.
- Investment Tax Credits are not directly available, but savings by contractors could be passed onto schools - <https://www.energy.gov/eere/buildings/179d-commercial-buildings-energy-efficiency-tax-deduction>
- The Inflation Reduction Act's Clean Heavy Duty Vehicles program (section 60101) is available for lower emission school buses.
- USDA's Community Facilities Programs - <https://www.rd.usda.gov/programs-services/community-facilities> - can finance school construction and rehabilitation.
- The [IRA Environmental and Climate Justice Program](#) provides \$3 billion to carry out environmental and climate justice activities to benefit underserved and overburdened communities. Schools are eligible entities for the program and can use the funding for facility improvements like HVAC upgrades.

The scale of need in rural, disadvantaged school districts means that it will take CPRG and many other resources to meet the needs in Alaska.

**Include a list of federal and non-federal funding sources (e.g., EPA's GHG Reduction Fund Solar for All program) that the applicant has applied for, secured, and/or will secure to implement the GHG reduction measures, if applicable.**

The district has made some inroads into school facility improvements, including solar retrofits and building envelope improvements. These are described below, through a combination of different types of non-federal resources, including self-funding.

Denali Borough School District has started its solar project with 20 panels at the Tri-Valley school site producing 8.7 KW. Part of this project was a donation of \$8,500.00 from Renewable Energy Systems of Alaska; total cost of the project \$26,364.00.

Other funding sources: State DEED

- 1) Anderson School K-12 School Partial Roof Replacement
  - Project Funding: State Department of Education and Early Development # GR-23-005
  - Description: Replacement of leaking and damaged roof sections reframed increased R value to R 48 and replaced with new tin.
- 2) Tri-Valley School K-12 Roof Replacement
  - Project Funding: State Department of Education and Early Development # 25-29
  - Description: Replacement of leaking and damaged roof sections reframe damaged sections, increased R value to R 60 and replaced with new membrane.

## Transformative Impact

**Describe the extent to which the proposed GHG reduction measures have the potential to create transformative opportunities or impacts that can lead to significant additional GHG emissions reductions.**

By investing in energy-efficient technologies and practices, schools can serve as catalysts for broader sustainability initiatives, driving systemic change and inspiring communities to adopt similar measures. These upgrades not only directly reduce the carbon footprint of school facilities but also create ripple effects throughout the community. For example, by retrofitting lighting systems with energy-efficient LEDs, schools not only lower electricity usage but also demonstrate the feasibility and benefits of such upgrades to students, staff, and parents. This educational component can lead to increased awareness and adoption of energy-saving behaviors both within and beyond the school environment, resulting in further emissions reductions.

Additionally, energy efficiency upgrades often involve the integration of renewable energy sources, such as solar panels or wind turbines, which further decrease reliance on fossil fuels and contribute to a cleaner, more sustainable energy mix. Furthermore, by investing in modern, efficient building systems and technologies, schools can future-proof their facilities against rising energy costs and increasingly stringent environmental regulations, ensuring long-term sustainability and resilience. Ultimately, energy efficiency upgrades in schools have the potential to not only reduce GHG emissions directly but also to inspire broader societal change, fostering a culture of sustainability and environmental stewardship for generations to come.

## Section 2: Impact of GHG Reduction Measures

### Magnitude of GHG Reductions from 2025 through 2030

**Describe the magnitude of cumulative GHG emission reductions and the durability of the reductions that will be achieved through implementation of each GHG reduction measure for the period 2025 through 2030.**

Action	Estimated Emissions Reduction (Annual)	Estimate Emissions Reduction (Cumulative, through 2030)	Year online
Tri-Valley door/window	54 MT CO <sub>2</sub> e	217 MT CO <sub>2</sub> e	2027
Tri-Valley audit-discovery	365 MT CO <sub>2</sub> e	1,460 MT CO <sub>2</sub> e	2027
Anderson audit-discovery	55 MT CO <sub>2</sub> e	166 MT CO <sub>2</sub> e	2028
Cantwell Furnace	88 MT CO <sub>2</sub> e	175 MT CO <sub>2</sub> e	2029
Cantwell audit-discovery	97 MT CO <sub>2</sub> e	193 MT CO <sub>2</sub> e	2029
All solar	24 MT CO <sub>2</sub> e	122 MT CO <sub>2</sub> e	2026
<b>Total</b>	<b>683 MT CO<sub>2</sub>e</b>	<b>2,333 MT CO<sub>2</sub>e</b>	



**For each GHG reduction measure, applicants should provide estimated metric tons of CO<sub>2</sub>-equivalent emission reductions resulting from the measure.**

Action	Estimated Emissions Reduction (Annual)	Estimate Emissions Reduction (Cumulative, through 2030)	Estimated Emissions Reduction (Through 2050)	Year online
Tri-Valley door/window	54 MT CO <sub>2</sub> e	217 MT CO <sub>2</sub> e	1,302 MT CO <sub>2</sub> e	2027
Tri-Valley audit-discovery	365 MT CO <sub>2</sub> e	1,460 MT CO <sub>2</sub> e	8,758 MT CO <sub>2</sub> e	2027
Anderson audit-discovery	55 MT CO <sub>2</sub> e	166 MT CO <sub>2</sub> e	1,274 MT CO <sub>2</sub> e	2028
Cantwell Furnace	88 MT CO <sub>2</sub> e	175 MT CO <sub>2</sub> e	1,928 MT CO <sub>2</sub> e	2029
Cantwell audit-discovery	97 MT CO <sub>2</sub> e	193 MT CO <sub>2</sub> e	2,124 MT CO <sub>2</sub> e	2029
All solar	24 MT CO <sub>2</sub> e	122 MT CO <sub>2</sub> e	610 MT CO <sub>2</sub> e	2026
<b>Total</b>	<b>683 MT CO<sub>2</sub>e</b>	<b>2,333 MT CO<sub>2</sub>e</b>	<b>15,997 MT CO<sub>2</sub>e</b>	

Using the modelled emissions reductions explained in the technical appendix and detailed in the calculation sheet, the table above provides the cumulative emissions reductions in MT (metric tons) for “realistic baseline” improvements, which can be assumed for each project as well as “audit-discovery” that approximates the potential improvements that may result as part of the audit in each facility. These calculations presume that improvements are commissioned in a linear manner, beginning with a portion of projects fully online for calendar year 2027 and all projects completed by 2029.

**Provide the sum total of GHG reductions resulting from all measures in the application.**

<b>Total</b>	<b>683 MT CO<sub>2</sub>e</b>	<b>2,333 MT CO<sub>2</sub>e</b>	<b>15,997 MT CO<sub>2</sub>e</b>
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**In describing the durability of the GHG emission reductions, applicants should discuss the extent to which the measures will result in a permanent reduction in cumulative GHG emissions.**

While this project’s improvements can lead to significant and long-lasting emissions reductions, DEED recognizes that they may not be entirely permanent or static. Continued monitoring, maintenance, and proactive management are necessary to preserve and maximize the benefits of energy efficiency initiatives over the long term. Additionally, schools should view energy efficiency as part of a broader sustainability strategy, incorporating ongoing efforts to reduce environmental impact and promote resilience in the face of future challenges. This project’s activities will include new equipment installations that have a longer lifespan than traditional materials. DEED will encourage regular maintenance and proper operation of energy-efficient equipment, which are essential for ensuring optimal performance and longevity. Changes in energy usage patterns, such as increased occupancy, expanded facilities, or shifts in operational practices, can affect the sustainability of emissions reductions over time. Technological advancements and innovations in energy efficiency may offer opportunities for further improvements or upgrades in the future. Schools can ensure longer lasting benefits by encouraging energy-saving behaviors, promoting awareness, and providing ongoing education and training that can help sustain the positive impact of energy efficiency initiatives. DEED has less control over external factors, such as changes in energy prices, regulatory requirements, or environmental policies that may influence the effectiveness and durability of emissions reductions achieved through energy

efficiency improvements. However, this project’s measures will strengthen the capacity of school districts and the base from which future improvements may be made.

### Magnitude of GHG Reductions from 2025 through 2050

Applications should describe the magnitude of cumulative GHG emission reductions and the durability of the reductions that will be achieved through implementation of each GHG reduction measures for the period 2025 through 2050.

Action	Estimated Emissions Reduction (Annual)	Estimated Emissions Reduction (Through 2050)
Tri-Valley door/window	54 MT CO2e	1,302 MT CO2e
Tri-Valley audit-discovery	365 MT CO2e	8,758 MT CO2e
Anderson audit-discovery	55 MT CO2e	1,274 MT CO2e
Cantwell Furnace	88 MT CO2e	1,928 MT CO2e
Cantwell audit-discovery	97 MT CO2e	2,124 MT CO2e
All solar	24 MT CO2e	610 MT CO2e
<b>Total</b>	<b>683 MT CO2e</b>	<b>15,997 MT CO2e</b>

For each GHG reduction measure, applicants should provide estimated metric tons of CO2-equivalent emission reductions resulting from the measure.

Action	Estimated Emissions Reduction (Annual)	Estimated Emissions Reduction (Cumulative, through 2030)	Estimated Emissions Reduction (Through 2050)	Year online
Tri-Valley door/window	54 MT CO2e	217 MT CO2e	1,302 MT CO2e	2027
Tri-Valley audit-discovery	365 MT CO2e	1,460 MT CO2e	8,758 MT CO2e	2027
Anderson audit-discovery	55 MT CO2e	166 MT CO2e	1,274 MT CO2e	2028
Cantwell Furnace	88 MT CO2e	175 MT CO2e	1,928 MT CO2e	2029
Cantwell audit-discovery	97 MT CO2e	193 MT CO2e	2,124 MT CO2e	2029
All solar	24 MT CO2e	122 MT CO2e	610 MT CO2e	2026
<b>Total</b>	<b>683 MT CO2e</b>	<b>2,333 MT CO2e</b>	<b>15,997 MT CO2e</b>	

Provide the sum total of GHG reductions resulting from all measures in the application.

<b>Total</b>	<b>683 MT CO2e</b>	<b>2,333 MT CO2e</b>	<b>15,997 MT CO2e</b>
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### Cost Effectiveness of GHG Reductions

Information demonstrating the cost effectiveness of the GHG reductions anticipated from the measures included in the application.

By reducing coal usage, energy efficiency measures at Tri-Valley School in particular are among the most cost-effective solutions for reducing energy usage in the district. Additionally, the solar systems are among the highest ROI generation sources available to the district now and are important for displacing carbon-intensive electricity from the Railbelt grid, even if they mainly produce in the summer.

Energy improvement Project	Cost Estimate	Expected Gains
Tri-Valley building envelope upgrade	\$1,446,358	Reduced use and cost of fuel, maintain thermal comfort of occupant, reduce carbon emissions
Tri-Valley solar	\$117,978	Provide electricity to building, reduce operating cost and reduce carbon emissions
Anderson DDC system	\$1,230,901	Reduced use and cost of fuel, maintain thermal comfort of occupant, reduce carbon emissions
Anderson Solar	\$129,225	Provide electricity to building, reduce operating cost and reduce carbon emissions
Cantwell furnace replacement	\$941,097	Reduced use and cost of fuel, maintain thermal comfort of occupant, reduce carbon emissions
Cantwell solar	\$134,135	Provide electricity to building, reduce operating cost and reduce carbon emissions
<b>Total</b>	<b>\$3,999,702</b>	

**Calculation of the requested CPRG implementation grant dollars divided by the quantified GHG emission reductions for the period 2025-2030 calculated to meet criterion 2.a for the set of measures included in the application.**

<b>Total Budget</b>	<b>\$3,999,702.00</b>
<b>\$/MTCO<sub>2</sub>e through 2030</b>	<b>\$1,714.13</b>

Based on the estimated cumulative reduction through 2030, and including all budget categories, this project reduces emissions at a cost of approximately \$1,714.13 \$/MTCO<sub>2</sub>e.

**Qualitative narrative explaining any factors that affect the measures' cost-effectiveness (e.g., sector dynamics, expected beneficiaries of the measures, prevailing costs in the implementation areas, or other circumstances).**

[Alaska's cost of living has always been higher](#) than in the continental U.S. states. Data collected and tracked by the Council for Community & Economic Research (C2ER) shows that Alaska's costs are always above the national average. For the four Alaska cities tracked, the cost of groceries and healthcare are consistently higher than other parts of the country, with two cities having consistently higher housing and utility costs as well. In 2023, Alaska ranked 4th in the state for the cost of health care premiums, according to the Alaska Department of Labor & Workforce Development.

Alaska's high costs are attributable to its geography and population. The state is nearly 600,000 square miles, or almost twenty percent of the combined land mass of the other 49 states. The population of Alaska in the 2020 Census was 733,391 – smaller than all but two other states. According to the Alaska Department of Transportation & Public Facilities, 82% of Alaska's communities are not accessible by road. Anchorage, the state's main market and distribution center, is more than 2,400 road miles from Seattle. Transportation for goods, services, and people is expensive, time-consuming, and often hindered by bad weather.

[Energy costs are also higher in Alaska.](#) Transmission between most communities is not possible due to long distances. Electricity is generated in rural communities by burning diesel fuel, which must be transported. The cost of electricity can be three to five times higher for rural consumers than for customers in more urban parts of Alaska, according to the Alaska Energy Authority.

The harsh weather conditions make building and maintaining all types of infrastructure more expensive and complicated in Alaska than the rest of the country. Construction standards must account for climates that can have 150° F differences in temperature between summer and winter. Building new infrastructure and performing maintenance can happen only in the short summer construction season.

Everything costs more in rural Alaska, and shipping plays a primary role in those higher costs. [Transportation costs](#) increase with the distance from hub communities, leading to huge differences in cost between Alaska's rural and urban areas. Prices are lower on the road system and in areas with year-round barge access (Southeast and Gulf Coast) and highest in places with small populations where goods must be barged longer distances (often up long rivers) or flown in.

### Documentation of GHG Reduction Assumptions

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**For each GHG reduction measure, applications should demonstrate the quality, thoroughness, reasonableness, and comprehensiveness of the methodology, assumptions, and calculations described for developing the estimated GHG emission reductions. The application should document the method for estimating GHG emission reductions, including the basis for emission scenarios, relevant assumptions, and models or methods used and any uncertainties in these calculations.**

The project scope school district facility models are constructed in EnergyPlus, the industry standard building energy simulation tool, using the automatic generation capability of the Constellation Navigator software. Because only the 5 main variables were available, all other energy-relevant building data was taken from the most applicable of the approximately 1,000 representative building energy models developed by NREL, PNNL, and DoE. The most applicable data source for each building was determined by comparing the year of construction, zip code, building type, and heating fuel (as assumed from other fuels in the building).

It is planned to calibrate the reference case to measured historical utility fuel delivery quantities at the state level. This was accomplished by joining the ARIS buildings with the AK PARCEL AND LOT set to ensure all commercial buildings in the state are represented. This step ensures that models at the building level are not over- or under-estimating any fuel usage, and it also helps us refine the assumptions made for heating fuel at the building level.

The difference between the reference (base) case and the modeled changes in energy due to the modeled adoption of measures discussed above, is the activity data being used to estimate the reduction in GHG. For example, after buildings are simulated using the tools and assumptions above, the estimated reduction or increase in different types of fuels, such as natural gas, coal, liquid fuels or electricity, is converted from MMBTU or its energy equivalents, into MT CO<sub>2</sub>e using the corresponding emission factors for that fuel type, across the constituent CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O. Next, EPA's 2022 GWP values are used to convert to each MT per GHG type into aggregated annual MT CO<sub>2</sub>e – using 1 for CO<sub>2</sub>, 298 for N<sub>2</sub>O and 25 for CH<sub>4</sub>. Whenever appropriate, the emission factors of electricity are matched using the community the buildings are in, and either the PCE based emission factors, or the grid-rates for the sub-region.

**All applicants should provide measure-specific assumptions and data elements needed to calculate GHG emission reductions. The rigor of the methodology and assumptions used in GHG emission reduction calculations should be commensurate with the level of funding requested in the application.**



To inform modeling, DBSD has provided the following measure-specific data elements:

- Utilities usage data
- Contractor reports estimating solar array generation
- Detailed facilities information, including square footage, build year, etc.

In order to model the varying scope of projects included in this application, top-level project descriptions were mapped to a set of standard improvements modeled for each facility that meet various ASHRAE standards as described in the technical appendix.

The quantification does not assume any impacts of “joint strategies” – that is, the simultaneous impact of multiple projects at a single location. In other words, if a project analyzes the reduction of grid emissions based on upstream integration of renewable energy, the new emission factors of electricity are not being used to measure the impact of electrification or efficiency of end-use equipment, as stated above. Instead, the reference emission factors will be used. Similarly, if competing efficiency projects are modeled such that they are not additive, but are substitutes of each other, the extent of overlap is not being modeled or predicted. Additionally, the baseline models assume annualized load profiles – and actual building performance may differ, such as from partial usage or occupancy, etc. Lastly, there are no weather normalizations done on either the activity of the reference scenario or modeled measures.

For projects where DDC is a component, such as Anderson’s proposal, we did not directly quantify emissions impact is especially as our modelling is not able to reliably model DDC impacts, as this depends on detailed usage data in addition to qualitative information on a given baseline scenario which was difficult to establish with high confidence due to the number of parameters involved.

Additional information on methodology and assumptions is available in the attached technical appendix.

### Section 3: Environmental Results – Outputs, Outcomes, and Performance Measures

#### Expected Outputs and Outcomes

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**Applicants should identify the expected outputs and outcomes (see Section I.C) for each GHG reduction measure. Specific outputs and outcomes should be provided and may include short- and longer-term activities.**

Output:

- One school district’s receive funding to make energy efficiency and energy-related improvements that are consistent with measures proposed to reduce GHG emissions.
- 3 schools located in rural, disadvantaged communities make improvements that are anticipated to result in reduced GHG emissions.
- Reduced energy consumption - this reduction can be measured in terms of kilowatt-hours (kWh) of electricity, therms of natural gas, gallons of heating oil, or other relevant units, depending on the specific measures implemented by the school district.
- Cost savings - lower energy consumption leads to reduced utility bills, resulting in cost savings for the school district. These savings can be significant over time and can be reinvested in educational programs, facility improvements, or additional sustainability initiatives.

### Outcomes:

- Reduction in cumulative metric tons of GHG emissions from 2025 through 2030:
- Reduction in cumulative metric tons of GHG emissions from 2025 through 2050:
- GHG reduction measures in annual amount of CAP and/or HAP emissions in 2030:
- Reduction in annual amount of CAP and/or HAP emissions in low- income and disadvantaged communities in 2030.
- Improved indoor air quality from 2025 through 2030 – school districts report baseline and improved air quality.
- Enhanced resilience and reliability from 2025 through 2030 – school districts report fewer disruptions to operations

### Performance Measures and Plan

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**Describe the proposed performance measures that will be the mechanism to track, measure, and report progress toward achieving the expected outputs and outcomes for each GHG reduction measure.**

DBSD will utilize the following to track program toward outputs and outcomes.

- **Capacity Increase Metrics:** Quantify short- and long-term school district capacity increases. Collect data on the nature of capacity development (e.g., training programs, hiring initiatives) and assess the impact on districts and local governments.
- **Stakeholder Participation Metrics:** Establish benchmarks for sustained participation of historically excluded stakeholders, including metrics on the frequency and depth of their involvement in planning and decision-making processes.
- **Impact Metric Development:** Collaborative work with school districts to establish and regularly update community-defined impact metrics, relative to local values and goals.
- **Positive Benefits Metrics:** Quantify and qualify positive benefits specifically for disadvantaged communities. Factors of consideration will include attendance, health, and education attainment.
- **Committee Effectiveness Metrics:** Evaluate the establishment and effectiveness of public advisory committees by measuring their influence on decision-making, the diversity of representation, and the extent to which community input is incorporated.
- **Quality of Documentation:** Assess the quality of documentation by examining factors such as completeness, accuracy, and timeliness. Ensure that documentation effectively communicates progress toward achieving expected results.
- **Effectiveness of Web-Based Assets:** Evaluate the usage and impact of web-based assets, considering factors such as user engagement, accessibility, and the ability of online forms and datasets to convey meaningful information.

**Describe their plan for tracking and measuring progress toward achieving the expected outputs and outcomes established in Section 3.a of the workplan.**

DBSD will participate in a coordinated approach led by the Alaska Municipal League (AML) as an extension of its current support to the Alaska Dept. of Environmental Conservation, which is administering the CPRG program. AML will work with DEC to establish a statewide tracking and reporting system for CRPG awardees to utilize. This system will include consistent timelines for reporting, methodology that is consistent with the State's GHG emissions inventory, and a

dashboard that provides 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.

The school districts 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.

DBSD 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 at DBSD. Ultimately, this process will mean that DBSD staff can focus on project and measure implementation, while support for monitoring is provided by a third party who then has the technical capacity and expertise to augment this line of effort.

### **Explain how the results of each GHG reduction measure will be evaluated, including details on the approach to quantify and disclose the actual GHG emission reductions and associated CAP and HAP changes (if applicable) accomplished by each GHG measure.**

If awarded, DBSD will work with AML to complete more detailed emissions reduction estimates for each project included in this application. Based on these project-level estimates and working with school district staff, DBSD will verify the effectiveness of measures in energy use and emissions reduction once projects have been completed and documentation of this reduction will be disclosed via the aforementioned reporting structure. In order to quantify and disclose reduction in criteria and hazardous air pollutants, DBSD and AML will employ emissions factor-based measurements and CAP remote sensing tools being deployed as part of the CCAP being developed by DEC.

For projects where DDC is a component, quantification and verification of emissions impact is especially important as our modelling was not able to reliably model DDC impacts as this depends on detailed usage data in addition to qualitative information.

### **Authorities, Implementation Timeline, and Milestones**

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#### **Describe the parties responsible for implementing each GHG reduction measure, including roles and responsibilities for each party, including sub-awardees (including other members of a coalition), contractors, and other entities, whose cooperation is necessary for success of the measures.**

DBSD is the prime applicant and will manage the overall program for successful implementation. DBSD will maintain reporting responsibilities, and overall financial management consistent with 2 CFR 200.

The project will be managed by the DBSD Superintendent. The school board is the final authority in the district, conferring to the superintendent sufficient legal authority to implement the board's policies and run the day-to-day operations of the district.

DBSD will participate in a statewide cohort of awardees, led by AML through DEC's CPRG planning and sustainability plan. Essentially, implementation plan awardees can choose to participate in quarterly calls where lessons learned are shared, challenges identified, and best practices introduced. This cohort approach will also identify additional partners that can complement implementation, including the Alaska Energy Authority (AEA) and the Alaska Housing Finance Corporation (AHFC), and the University of Alaska.

**Which party or parties have the authority to carry out each proposed measure or, in the case where they do not currently have authority, provide a clear plan and timeline to obtain it during the grant period.**

School districts in Alaska are divided into municipal school districts (with facilities owned and maintained by a local government, in most cases) and Regional Education Attainment Areas (REAA's). In both cases the school district has facilities staff who are responsible for building improvements. In the case of municipal school districts, project development and implementation may be accomplished collaboratively. In all cases, as political subdivisions of the state, the school district and/or local government have the authority to implement, and that decision-making authority is independent of DEED.

**All other entities whose cooperation or participation is necessary for GHG reduction measure implementation.**

DBSD will collaborate with AML, a statewide nonprofit dedicated to strengthening local governments, but whose services have been extended to meet the needs of both state agencies and Tribes. This broader effort is focused on ensuring that Alaska can make the most of federal infrastructure investments, including through CPRG. AML's role will continue to be as a convener and facilitator of information sharing, and working with all partners to help deliver community benefits and overcome barriers to implementation. AML is an eligible subrecipient, with strong governance and financial management systems in place. The Denali Borough is a member of AML.

**Detailed implementation timeline for each GHG reduction measure included in the application.**

A detailed timeline table for project procurement, planning, and construction has been included as an attachment to the Work Plan, and includes the activities that will take place to implement each of the three schools' GHG reduction measures.

Below is a summary of all project activities as part of an implementation timeline.



# WORKPLAN: SOLAR AND ENERGY EFFICIENCY IMPROVEMENTS IN ENERGY-BURDENED SCHOOLS

Project Schedule		Year 1				Year 2				Year 3				Year 4				Year 5			
Activity/Milestone		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Stakeholder Engagement and Cohorts																				
1.1	School facilities manager and statewide cohort calls																				
1.2	Schools baseline/improvement survey																				
1.3	Best practices shared email communication																				
1.4	Online trainings for small groups																				
M1	Project informed by local stakeholders																				
2	Project Deployment																				
2.1	Procurement																				
	Tri-Valley Door and Window Replacement																				
	Solar Installation																				
	Anderson Buildings Controls																				
	Cantwell Furnace Replacement																				
2.2	Planning and Engineering																				
	Tri-Valley Door and Window Replacement																				
	Solar Installation																				
	Anderson Buildings Controls																				
	Cantwell Furnace Replacement																				
2.3	Construction																				
	Tri-Valley Door and Window Replacement																				
	Solar Installation																				
	Anderson Buildings Controls																				
	Cantwell Furnace Replacement																				
2.4	Evaluation																				
M2	Audit, planning, procurements, construction																				
3	Monitoring Reductions																				
3.1	Dashboard development and data integration																				
3.2	Air quality sensors deployed																				
3.3	Data analysis and utilization																				
M3	Engagement in monitoring network																				
4	Reporting																				
4.1	Quarterly Evaluation of Performance																				
4.2	Annual Report on Outputs and Outcomes																				
4.3	Final Project Evaluation and Scalability																				
M4	Annual and Final Reporting Compliance																				

## Section 4: Low-Income and Disadvantaged Communities

### Community Benefits

**Discuss and quantify, where possible, direct and indirect benefits and potential disbenefits to low-income and disadvantaged communities from the proposed GHG reduction measures**

Among the benefits when addressing proposed GHG reduction measures for the Denali Borough is the prospect of Increased job opportunities to increase local capacity and strengthen the community overall.

The State of Alaska’s Priority Sustainable Energy Action Plan shows that GHG reduction measures in Alaska have the ability to result in increased investment in the workforce in Alaska’s LIDAC communities. Measures could result in job creation and business development, and sponsors may work individually and together to identify ways in which this can be maximized, not just in project development and delivery, but in the long term. This includes local hiring goals and cross-promoting hire between projects that occur within a region.

The Department of Environmental Conservation (DEC) anticipates that there will be opportunities or community strategies to be established as a direct result of projects. Agencies will be encouraged to reference DOE’s Community Benefit Agreement Toolkit (CBA). The outcome of the CBA will be 40% of benefits allocated to communities of color, indigenous peoples, low-income communities, and other marginalized groups.

The Denali Borough Community Health Needs Assessment (CHNA) that was conducted in 2022 included a community-wide survey as well engagement with focus groups throughout the community. The CHNA studied social determinants of health within the Borough, such as healthcare access, education, housing, transportation, access to food, and economic stability that affect health outcomes. The CHNA also aimed to identify common health challenges and health outcomes, including prevalence of medical conditions and causes of mortality, and compare these to state outcomes low-income residents and seasonal employees facing greater barriers to accessing care.

The CHNA noted the ongoing health disparity concerns in the Denali Borough that exist in populations across Alaska among low-income populations, and rural communities due to poverty, lack of housing, jobs and transportation. These populations experience higher rates of morbidity and mortality; reduced access to medical care; and greater exposure to risk factors, such as pollution. Healthy food remains inaccessible to low-income residents due to high costs, and low-income populations face greater barriers to accessing care because they have limited transportation options and are less likely to have health insurance.

Housing is a key social determinant of health, as substandard housing, high rent burden, and difficulty finding affordable housing can contribute to poor physical and mental health outcomes. In the CHNA, affordable and improved housing was the most commonly cited service needing improvement in the Denali Borough among survey respondents. The need for improved housing options was identified in previous assessments of the Denali Borough as well. As highlighted in a focus group during the development of the CHNA substandard housing in Denali Borough means living off of substandard roads, which often means no power, no water, and no access to healthcare or other needs. An estimated 34% of Borough residents live in substandard housing, which is defined as “lacking complete plumbing facilities, lacking complete kitchen facilities, with more than one occupant per room, and housing cost burden among renters and owners”.

Transportation is also a critical social determinant of health, which affects ability to access healthy food, medical care, employment opportunities, and recreational activities. Given the remote nature and low population density of the Borough, public transportation options are limited. Community members who are of low socioeconomic status face greater barriers when accessing healthcare, healthy food, housing, mental health and substance use treatment, and care for chronic diseases. Although remoteness affects all residents of the Borough, poverty causes greater challenges, as low-income residents cannot afford associated transportation costs for long distances to services.

Another key priority noted by community members in the CHNA was the need to feel better protected from health risks due to emergencies. Wildfires are a common occurrence in the Borough as one example of an event that requires emergency preparedness; the CHNA report noted that a significant portion of community members are not prepared.

When addressing improvements to the Schools: Improved opportunities for indoor recreation and physical activity education is a health priority within the Denali Borough especially during the wintertime. Limited access to indoor recreation can negatively impact physical and mental health. The number and quality of recreation facilities was the third most common survey response for services needing improvement in the Denali Borough. Long winters were the top response for issues most negatively affecting quality of life; despite outdoor recreation opportunities, mental health and physical health can decline in the winter season due to sedentary behavior and increased time indoors. Physical inactivity can contribute to obesity, heart disease, high blood pressure, and diabetes. Research has found that obesity and physical inactivity were the greatest risk factors for death in Alaska.

**Thoroughly describe any anticipated negative impacts to low-income and disadvantaged communities and concrete strategies for mitigating those risks.**

DBSD does not anticipate any negative impacts of this project. Increased awareness of GHG emissions may result in increased awareness of gaps or school challenges, and the corresponding need for resources, which may not be readily available. DBSD will engage with the local utility to ensure that appropriate load-adjustment considerations are taken into account.

**List CEJST Census tract IDs or EPAs EJScreen Census block group IDs for areas that may be affected by GHG reduction measures.**

Community	Census Tract	CEJST Disadvantaged
Healy	2068000100	Yes
Anderson	2068000100	Yes
Cantwell	2068000100	Yes

**Describe plan and process for continuing to assess, quantify and report a more thorough quantitative analysis of associated community benefits, including co-pollutant (CAP and HAP) emission reductions.**

DBSD will work closely with Alaska DEC as part of its comprehensive planning process for CPRG, and participate in data acquisition and sharing throughout the four year timespan that includes DEC's monitoring and reporting. DEC is committed to sustaining these efforts, which means that its GHG Emissions Inventory will continue to serve as a base for data management and visualization. DBSD will contribute to this process for downscaled data that is consistent with DEC's methodology for collection and sharing.

**High-quality workforce development activities tied to a proposed measure that benefit individuals in low-income and disadvantaged communities. Workforce development can be a community benefit through its creation of equitable career pathways and training opportunities.**

DBSD will participate in the statewide workforce development activities organized by AML for applicants to CPRG implementation grants. This program provides a pathway for DEED – and school districts – to leverage existing but coordinated recruitment and retention resources, as well as skills development. Funding will be available to school districts 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 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 school districts identify workforce needs, 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 child care, housing, and housing stipends for staff and contractors, especially in conjunction with infrastructure investments across Alaska.

Alaska’s utilities are experienced operators of power systems that experience challenging conditions. The local and regional workforce is skilled, and regularly provides training opportunities. In partnership with the Alaska Vocational and Technical school (AVTEC), AEA offers the Power Plant Operator training program that includes engine maintenance, troubleshooting and theory, electrical systems and generators, introduction to electrical distribution systems, diesel electric set operation, control panels, paralleling generator sets, load management, fuel management, waste heat recovery, plant management, and power plant safety.

At the same time, AEA’s Circuit Rider Program provides eligible utilities with technical assistance to improve the efficiency, safety, and reliability of their energy infrastructure. Circuit Riders provide skilled labor to address, diagnose, and repair rural powerhouses, including to provide training for local communities to create skilled power plant labor. This program helps to reduce the risk and severity of emergency conditions. The Circuit Rider program develops strong ties with the remote Alaskan communities. The power system operator ecosystem in Alaska is interdependent, with strong collaboration between the state and utilities in ensuring system operability and community health and safety. As part of its Solar for All program, AEA will ensure that the Circuit Riders have the tools and training to increase support for community and residential solar and continues to support and train local communities in the use of improved power systems.



## Community Engagement

### **Explain how input from low-income and disadvantaged communities was incorporated into the application.**

The development of the projects related to the Borough's Energy Action Plan initially included substantial engagement with state agencies, local governments, and Tribes. Stakeholder meetings were held separately with state agencies and municipal governments to discuss ways in which to maximize the potential benefits to Alaska through large-scale, broad mitigation measures. These facilitated discussions were then followed up with individual communication directly with the communities and entities impacted by the projects to further develop proposed measures, including to contemplate implementation of grant applications. Grant applications are being managed by the individual communities to address priorities for community members and impacts of projects for the benefit of the overall community.

### **Describe how meaningful engagement with low-income and disadvantaged communities will be continuously included in the implementation of the GHG reduction measures.**

DBSD believes that meaningful engagement with low-income and disadvantaged communities is essential for ensuring equity and inclusivity in the implementation of greenhouse gas (GHG) reduction measures by school districts. A good approach involves establishing transparent and participatory processes that prioritize community input, collaboration, and empowerment. This can include holding regular meetings, workshops, or focus groups to solicit feedback, concerns, and ideas from community members. Additionally, school districts should actively seek out representatives from diverse socioeconomic backgrounds to serve on advisory boards or task forces dedicated to sustainability initiatives, ensuring that the voices of marginalized communities are heard and respected. Furthermore, efforts should be made to provide accessible information and resources in multiple languages and formats, making it easier for all residents to engage in the decision-making process. Schools can also partner with local community organizations, faith-based groups, and grassroots initiatives to leverage existing networks and expertise, fostering trust and building capacity within underserved communities.

DBSD will participate in DEC's development of Alaska's Comprehensive Climate Action Plan (CCAP), including currently planned activities.

- CCAP Strategic Planning Meetings - At the Infrastructure Development Symposium in April 2024, a half or full-day discussion will review the PSEAP and discuss the comprehensive planning process to get stakeholder buy-in and help inform the process going forward. The audience will at a minimum include representative state, municipal, and tribal government leaders. Following this and as early as late 2024, there will be regular stakeholder check-in meetings to review progress on the CSEAP with these leaders.
- CCAP Emissions Sector Workshops - From August 2024 to May 2025, AML, DEC, and relevant partners will organize charette style workshops that bring together interested stakeholders to produce workshop reports that will form the basis of the CSEAP. Informed by map tool resources produced as a continuation of GHG Inventory work with Constellation, and with technical expertise from partners, these workshops will look more deeply at potential for emissions reduction in each sector.

Current plans call for sector workshops addressing emissions reduction and co-benefits in the following emissions sectors: residential, non-residential, agriculture/land management, solid waste,

wastewater, rural energy, Railbelt energy, industrial, land & air transportation, maritime, and carbon capture, use, and sequestration. As an outcome of the workshops, the planning team will identify interested participants for sector-level working groups that include relevant stakeholders and will help inform further development of the CCAP. Throughout sector workshops, there will be complimentary work with workforce contractors to support the workforce planning analysis.

**Applicants should specify how they plan to ensure early and consistent inclusion of various linguistic, cultural, institutional, geographic, and other perspectives throughout project development and implementation.**

DEC anticipates an increased amount of public outreach and community engagement as part of the development of a comprehensive sustainable energy action plan. During the Action Plan development, AML coordinated bi-weekly meetings. It is expected that similar meetings will continue. In addition, as was the case with the development of The Community Health Needs Assessment (CHNA), community-wide surveys and focus groups will continue to address the Action Plan projects since many of the health disparity issues identified in the CHNA have the potential to be addressed through the Action Plan project development and implementation. It is also expected by the Denali Borough Community members that local hires will be a priority as well as local management of the projects.

## Section 5: Job Quality

**Describe concrete, specific strategies to ensure CPRG implementation grant funds and the implementation of the GHG reduction measures generate high-quality jobs with a diverse, highly skilled workforce and support “high road” labor practices.**

It is expected that the Denali Borough School District will take an approach to quality jobs that means that project staff will have (1) fair, transparent, and equitable pay that exceeds the local average wage for an industry, while delivering; (2) basic benefits (e.g., paid leave, health insurance, retirement/savings plan); (3) providing workers with an environment in which to have a collective voice; and (4) helps the employee develop the skills and experiences necessary to advance along a career path. In addition, the partners will offer good jobs that provide (5) predictable schedules and a safe, healthy, and accessible workplace devoid of hostility and harassment. With good jobs, (6) employees are properly classified with the limited use of independent contractors and temporary workers. Workers have a (7) statutorily protected right to a free and fair choice to join a union under the National Labor Relations Act (NLRA).

It is also expected that the Denali School District will encourage project staff to participate in training programs and encourage contractors to offer paid time for employees to participate in skills training. This will include the provision of personalized, modularized, and flexible skill development opportunities, such as on-demand and self-directed virtual training. This will be included as part of the cohort support system established through the project. These programs will identify and provide continuing education programs for employees to earn credentials and degrees relevant to their career pathways.

As a resource, the Denali School District will refer to the overall PSEAP related to Workforce, which includes the State’s strategy to strengthen and cultivate a workforce capable of implementing the array of GHG reduction measures outlined within the plan to include the following:

1. Establish and cultivate increased coordinative capacity within and between the workforce and relevant sectors. This implementation strategy will support career pathways through a diverse network of training providers.

2. Expand outreach efforts to underserved and disadvantaged areas with high unemployment and underemployment. This implementation strategy will provide funding for statewide and targeted outreach efforts.
3. Increase capacity of existing place-based training programs for upskilling and reskilling Alaskans for employment in high-demand industries, implemented by prioritized region. Alaska has numerous existing training programs and facilities that have the potential to meet the training needs of Alaskans but lack the capacity to meet the demand.
4. Identify and deliver new or improved rural place-based training to underserved areas for upskilling and reskilling Alaskans for employment in high-demand industries, implemented by prioritized region and sector. This implementation strategy will focus on adding new place-based training and support systems to prioritized regions, including delivering remote training as necessary.
5. Provide wraparound support services. Implementation efforts should provide support for workers entering into training programs, including housing and childcare, travel, and supplies that alleviate the challenges identified by worker voices.
6. Strengthen economic development and the contractor ecosystem. This implementation strategy will include maintaining and cultivating partnerships with Alaska SBDC and regional development organizations (ARDORs).

Implementing projects that contribute to reducing GHG emissions will take into account Good Jobs Principles. Alaska is committed to fostering safe, healthy, and inclusive workplaces with equal opportunity, free from harassment and discrimination. State agencies and local governments will provide multiple pathways for creating high-quality, middle-class jobs in the residential-serving distributed solar energy industry based on principles outlined below. In addition, eligible entities have considered ways to invest in training, education, and skill development and support the corresponding mobility of workers to advance in their careers. Agencies will assess collective bargaining agreements as identified throughout the life of the project.

## Section 6: Programmatic Capability and Past Performance

### Past Performance

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**Submit a list of up to five federally funded or non-federally funded assistance agreements that the applicant is performing or has performed within the last three years.**

- 1) Anderson School K-12 School Partial Roof Replacement
  - Project Funding: State Department of Education and Early Development # GR-23-005
  - Description: Replacement of leaking and damaged roof sections reframed increased R value to R 48 and replaced with new tin.
- 2) Tri-Valley School K-12 Roof Replacement
  - Project Funding: State Department of Education and Early Development # 25-29
  - Description: Replacement of leaking and damaged roof sections reframe damaged sections, increased R value to R 60 and replaced with new membrane.

## Reporting Requirements

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### **Whether and, if so, how the applicant was able to successfully complete and manage the listed agreements.**

DBSD successfully implemented the listed agreements, and has a strong track record of completing federal grant awards, including with effective monitoring and reporting.

## Staff Expertise

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### **The applicant should include information on their organization, including a description of the staff's knowledge, expertise, qualifications, and resources, and/or the ability to obtain them, to successfully achieve the proposed project's goals and GHG reduction measures.**

Denali Borough is located 250 miles north of Anchorage and 110 miles south of Fairbanks. Incorporated in 1990, Denali Borough contains four recognized communities: Anderson, Healy, McKinley Park, Cantwell, and a number of smaller settlements. These communities are all located in proximity to the George Parks Highway, which is the major north-south highway corridor within the state. The Alaska Railroad also bisects the borough and serves the communities of the borough. Temperatures in Denali Borough can range from -60 degrees in the winter to 85 degrees in the summer.

The Denali Borough School District consists of three schools: Tri-Valley, Anderson and Cantwell Schools. Considered a community hub for these remote communities the schools operate year-round, and also operate as the Borough's emergency evacuation centers for major events as well as the staging areas for Alaska Division of Forestry and the BLM for major fires in the summer.

Tri-Valley School, which currently serves 168 students, is the largest school facility in the Denali Borough School District (DBSD), and one of the last schools in the United States that is still partially powered by coal, largely due to its location near Alaska's only coal mine, Usibelli Coal Mine (UCM).

### **Superintendent**

Dan Polta has been the Superintendent of Denali Borough School District since 2015. He graduated from University of Alaska Anchorage in 2000 with a Master's degree in Educational Leadership and Administration and earned a Bachelor of Arts Degree in Biology from Dartmouth College in 1994.

The 2016 Facility Assessment was conducted under Mr. Polta's leadership, and he coordinated with the statewide and Denali Borough efforts during the proposed Action Plan, which clearly articulates a well thought out approach to accomplishing objectives & achieving project benefits. The Action Plan goals & objectives are clearly defined, tied to the need as defined in the plan, and are measurable in terms of outcomes anticipated and demonstrates knowledge of the projects and experience to provide guidance as needed.

### **Project Management**

Curtis Hamel has been the District Maintenance Director and CIP Project Manager for the Denali Borough School District since 2015. Examples of projects Mr. Hamel has successfully managed for the School District include:

- Anderson K-12 School waterline replacement DEED #GR-18-0IO  
Responsibility: Project close out Manager;  
Total project cost \$225,418.00
- Tri-Valley School Coal Heat Conversion project DEED# GR-19-019  
Responsibility: Project Developer, Project Manager;  
Total project cost \$259,083.00
- Cantwell K-12 School Sprinkler and Fire Alarm Upgrade DEED# GR-14-009  
Responsibility: Project Developer, Project Manager.  
Total project cost \$1,581,079.00
- Cantwell K-12 Roof Replacement DEED# GR-19-009  
Responsibility: Project Developer, Project Manager.  
Total project cost \$1,090,287.00.
- Anderson school K-12 Parcel Roof Replacement project DEED #GR- 23-005  
Responsibility: Project Developer, Project Manager;  
Total project cost \$1,272,543.00
- Tri-Valley Head bolt heater project;  
Responsibility: Project Developer, Project Manager  
Total project cost \$62,250 District LED lighting Project 2 Schools  
Responsibility: Project Developer, Project Manager 90% complete
- Tri-Valley Roof replacement Project GR-25-29  
Responsibility: Project Developer, Project Manager.  
Total project cost \$1,970,743.00
- Tri-Valley and Anderson Schools electronic door lock systems;  
Responsibility: Project Developer, Project Manager  
Total project cost \$201,133.00