

Volkswagen Environmental Mitigation Trust

APPENDIX D-4 Revision
Beneficiary Eligible Mitigation Action Certification

State of Alaska Project 001 – FY17/18 DERA Genset Replacement

Prepared by



ALASKA ENERGY AUTHORITY

BENEFICIARY ELIGIBLE MITIGATION ACTION CERTIFICATION

Beneficiary Alaska

Lead Agency Authorized to Act on Behalf of the Beneficiary Alaska Energy Authority
(Any authorized person with delegation of such authority to direct the Trustee delivered to the Trustee pursuant to a Delegation of Authority and Certificate of Incumbency)

Action Title:	FY17/18 DERA Genset Replacement
Beneficiary's Project ID:	33090
Funding Request No:	001
Request Type:	<input type="checkbox"/> Advance
Payment to be made to:	<input type="checkbox"/> Beneficiary
Funding Request & Direction:	<input type="checkbox"/> Attached to this Certification (Attachment A)

SUMMARY

Eligible Mitigation Action Type	<input type="checkbox"/> Appendix D-2 item (specify): _____ <input checked="" type="checkbox"/> Item 10 - DERA Option (5.2.12): <u>nonroad engine for power production</u>
Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2):	
<p>AEA will use EPA DERA, VW Trust, and other federal and state funds to replace up to ten diesel gensets used to generate prime power in the communities of Circle, Takotna, Tuluksak, and Chignik Lake. The project will replace antiquated mechanically governed and lower tier prime power diesel genset engines with newer, more fuel efficient Tier 2 and Tier 3 marine engines. Tier 2 and Tier 3 marine engines are equipped with electronically controlled governors and high-pressure common rail fuel systems, which improve performance and reduce emissions. A complete, detailed work plan is attached.</p>	
Estimate of Anticipated NOx Reductions (5.2.3):	
<p>The estimated reduction in NOx emissions is 3.11 tons annually for the estimated 10 year life of the engines. Once the replacement engines are chosen, the anticipated reduction in NOx will be calculated again and provided in the semi-annual report.</p>	
Identification of Governmental Entity Responsible for Reviewing and Auditing Expenditures of Eligible Mitigation Action Funds to Ensure Compliance with Applicable Law (5.2.7.1):	
Alaska Energy Authority	
Describe how the Beneficiary will make documentation publicly available (5.2.7.2).	
<p>AEA will follow the guidance set forth in Appendix D-3. AEA will make records related to the VW Trust publicly available on AEA's website (http://www.akenergyauthority.org/programs/vwsettlement). Any VW Trust records not posted on AEA's website will be made available to the public under the Alaska Public Records Act (AS 40.25) and the Act's implementing regulations (2 AAC 96), unless one of the following applies: (1) the records are not "public records," as defined in AS 40.25.220(3); (2) the records are protected under state or federal law or otherwise exempt from disclosure under AS 40.25.120(a); (3) the records are excluded from the</p>	

Act under another state statute; or (4) the records are readily available for public inspection—e.g., available on the Internet or “during state business hours in an agency’s office or in a public library,” 2 AAC 96.100(b). (The Alaska Public Records Act does not require AEA “to compile or summarize” records or “to manipulate its data to create new records.” 2 AAC 96.210.)

Describe any cost share requirement to be placed on each NOx source proposed to be mitigated (5.2.8).

Each engine replacement will be funded by a portion of EPA State DERA (47%), State of Alaska capital funds (18%), Denali Commission (3%), and Volkswagen State Trust (32%). A detailed budget is included in Attachment D and the EPA DERA work plan (Attachment E).

Describe how the Beneficiary complied with subparagraph 4.2.8, related to notice to U.S. Government Agencies (5.2.9).

Pursuant to subparagraph 4.2.8, within 30 days of the filed Notice of Beneficiary Designation listing Alaska as a Beneficiary of the State Trust, the Alaska Energy Authority provided a copy of the State Trust agreement to all federal agencies that have custody, control, or management of land within or adjacent to Alaska (National Park Service, US Forest Service, US Fish and Wildlife Service, Bureau of Land Management) via certified mail.

If applicable, describe how the mitigation action will mitigate the impacts of NOx emissions on communities that have historically borne a disproportionate share of the adverse impacts of such emissions (5.2.10).

Research shows there is no safe level of exposure to diesel particulate matter. Power generation in rural Alaska depends on diesel engines, often operating in the center of a village, close to homes, workplaces, the school, and health clinic. These engines run 24 hours a day seven days a week. The proximity of power plants to residents in their everyday life poses a health risk. Rural Alaska communities are majority Alaska Native and have some of the lowest median incomes in the state and the highest cost of living. Replacing the engines in these facilities with ones that meet more stringent emission requirements will reduce emissions production and exposure of the residents to harmful pollutants. In addition, the improved engine efficiency will require less fuel, further reducing harmful emissions, and with the added benefit of lowering the cost of energy for the residents.

**ATTACHMENTS
(CHECK BOX IF ATTACHED)**

<input checked="" type="checkbox"/>	Attachment A	Funding Request and Direction
<input type="checkbox"/>	Attachment B	Eligible Mitigation Action Management Plan Including Detailed Budget and Implementation and Expenditures Timeline (5.2.4).
<input type="checkbox"/>	Attachment C	Detailed Plan for Reporting on Eligible Mitigation Action Implementation (5.2.11).
<input checked="" type="checkbox"/>	Attachment D	Detailed cost estimates from selected or potential vendors for each proposed expenditure exceeding \$25,000 (5.2.6). [Attach only if project involves vendor expenditures exceeding \$25,000.]
<input type="checkbox"/>	Attachment E	DERA Option (5.2.12). [Attach only if using DERA option.]
<input type="checkbox"/>	Attachment F	Attachment specifying amount of requested funding to be debited against each beneficiary’s allocation (5.2.13). [Attach only if this is a joint application involving multiple beneficiaries.]

CERTIFICATIONS

By submitting this application, the Lead Agency makes the following certifications:

1. This application is submitted on behalf of Beneficiary Alaska, and the person executing this certification has authority to make this certification on behalf of the Lead Agency and Beneficiary, pursuant to the Certification for Beneficiary Status filed with the Court.
2. Beneficiary requests and directs that the Trustee make the payments described in this application and Attachment A to this Form.
3. This application contains all information and certifications required by Paragraph 5.2 of the Trust Agreement, and the Trustee may rely on this application, Attachment A, and related certifications in making disbursements of trust funds for the aforementioned Project ID.
4. Any vendors were or will be selected in accordance with a jurisdiction's public contracting law as applicable. (5.2.5)
5. Beneficiary will maintain and make publicly available all documentation submitted in support of this funding request and all records supporting all expenditures of eligible mitigation action funds subject to applicable laws governing the publication of confidential business information and personally identifiable information. (5.2.7.2)

DATED:

1/30/2022



Audrey Alstrom
Director, Alternative Energy and Energy Efficiency

Alaska Energy Authority

[LEAD AGENCY]

for

Alaska

[BENEFICIARY]

Volkswagen Environmental Mitigation Trust

**APPENDIX D-4 Revision
Beneficiary Eligible Mitigation Action Certification**

State of Alaska Project 001 – FY17/18 DERA Genset Replacement

Revisions have been made to the following sections:

- **Attachment A – Payments Requested and Payment Amount**
- **Attachment D – Detailed Cost Estimate, Summary of Project Costs showing current project expenditures, and returned fund amounts for unused project funds, unused administrative costs, and Interest Earnings.**

ATTACHMENT D

Detailed Cost Estimate - Revised

Summary of Project 001 Costs							
	Total Funds Obligated	Total Funds Expended	VW Mitigation Funds		AEA Match Funds (DC, EPA, & SOA appropriation)		Notes
			Obligated	Expended	Obligated	Expended	
Circle Electric	\$324,000.00	\$313,281.66	\$104,948.13	\$101,353.15	\$219,051.87	\$211,928.51	
Takotna Community Association	\$420,000.00	\$394,546.60	\$135,925.50	\$128,227.66	\$284,074.50	\$266,318.94	
Tuhksak Native Community	\$253,425.00	\$253,425.00	\$82,059.80	\$82,059.80	\$171,365.20	\$171,365.20	
Chignik Lake Village Council	\$342,000.00	\$342,000.12	\$110,776.57	\$110,776.57	\$231,223.43	\$231,223.55	
Administrative Costs	\$234,075.00	\$168,098.50	\$63,739.00	\$42,880.30	\$170,336.00	\$125,218.20	Total to Return
							To VW Admin
Unused project funds							\$11,292.82
Unused administrative costs							\$16,247.27
Interest Earnings							\$3,654.85
TOTALS	\$1,573,500.00	\$1,471,351.88	\$497,449.00	\$465,297.48	\$1,076,051.00	\$1,006,054.40	\$31,194.94

ATTACHMENT E
FY17/18 DERA Workplan

FISCAL YEAR 2018

STATE CLEAN DIESEL GRANT PROGRAM

NOTICE OF INTENT TO CONTINUE – SUPPLEMENTAL AMENDMENT

WORK PLAN AND BUDGET NARRATIVE TEMPLATE

REVISED March 6, 2019

INSTRUCTIONS: States and territories applying for FY 2018 DERA State Clean Diesel Grant Program funding must use this template to prepare their Work Plan and Budget Narrative.

Please refer to the FY 2017-2018 STATE CLEAN DIESEL PROGRAM INFORMATION GUIDE for full Program details, eligibility criteria and funding restrictions, and application instructions.

SUMMARY PAGE

Project Title: Alaska Clean Diesel Project

Project Manager and Contact Information

Organization Name: Alaska Energy Authority

Project Manager: Rebecca Garrett

Mailing Address: 813 W. Northern Lights Blvd Anchorage, AK 99503

Phone: 907-771-3042

Fax: 907-771-3044

Email: rgarrett@akenergyauthority.org

REVISED March 6, 2019

Project Budget Overview:

	FY 2017*	FY 2018
EPA Base Allocation	\$ 223,349	\$ 274,100
State or Territory Matching Funds (if applicable)	\$ 223,349	\$ 274,100
EPA Match Incentive (if applicable)	\$ 111,675	\$ 137,050
Mandatory Cost-Share	\$ 139,593	\$ 137,050
TOTAL Project	\$ 751,200	\$ 822,300
Additional Leveraged Resources	\$53,234	

*FY 2017 budget is only for states and territories with open FY 2017 State DERA grants

Project Period

October 1, 2018 – March 31, 2020

Summary Statement

Alaska Energy Authority (AEA) will issue up to six sub award grants to replace a total of up to ten prime power diesel engines in the rural Alaska communities. A prioritized list of potential communities is available upon request.

AEA will consult with the Alaska Department of Environmental Conservation (ADEC) Division of Air Quality and will comply with all applicable emissions regulations.

Rural communities in Alaska are not connected to the electrical grid and must generate their own electricity. Small diesel power plants are used for this purpose. These plants have at least one diesel engine running continuously. Rural Alaska communities rely on these engines for their prime power; however, many of these power plants use older technology, high emitting engines.

This grant will partially fund replacement of up to ten non-certified and lower tier diesel engines with Tier 2 and 3 marine engines. Tier 2 and 3 marine engines will be installed because of their proven reliability, fuel economy, and because they are as clean or cleaner than non-road Tier 3 engines.

Past DERA State Clean Diesel Program projects can be found at:

<http://www.akenergyauthority.org/Programs/DERA>

This work plan includes EPA's concurrence with AEA's State of Alaska DERA Implementation Plan, Waiver Request approved June 5, 2018. This waiver is summarized below:

1. Reduced mandatory cost-share using 2017 Tribal DERA cost-share requirements for projects benefiting rural Alaska Tribes
2. Replace stationary prime power Nonroad Engines and Equipment with certified Tier 2 & Tier 3 marine engines and low-emission Nonroad engines
3. Provide DERA Program flexibility to reflect unique circumstances for rural Alaska prime power applications
4. Horsepower increases greater than 25% with prior approval from EPA
5. Exceed administrative cost cap due to Alaska's unique logistic and technical support requirements

SCOPE OF WORK

Project Description

AEA will use DERA funds to complete up to ten diesel engine repower and/or replacements. The repowers/replacements will replace antiquated mechanically governed and lower tier prime power diesel genset engines with newer, more fuel efficient Tier 2 and Tier 3 marine engines. Tier 2 and Tier 3 marine engines are equipped with electronically controlled governors and high-pressure common rail fuel systems, which improves performance and reduces emissions. In accordance with EPA's approved waivers, DERA funds will be used to purchase engine/generators and associated equipment. Equipment includes freight, labor engineering and materials needed to install the cleaner engines and implement required upgrades to interface the engines with the existing power plants cooling, fuel, switchgear and exhaust systems. Where remanufactured or rebuilt engines are used they will be "certified Tier compliant" by conformance with 40 CFR 1068.120 as explained in the EPA-420-F-12-052 document.

The repowered and replacement gensets will continue to perform the same function as the existing non-certified engine. Due to technological improvements such as electronically controlled governors, high-pressure fuel system, variable valve timing, higher compression ratios, and multiple valves per cylinder, Tier 2 and Tier 3 marine engines have more horsepower than non-certified and lower tier engines of the same displacement. Engines for generator repower and replacement have been selected to provide the optimum reliability and fuel economy for the available engine horsepower.

The Alaska Energy Authority (AEA) has worked through a priority list and determined a list of engines for replacement (starting on page 9). Should one of these communities drop out, or the engine not meet DERA requirements or an appropriate replacement can not be procured, AEA will work through the priority list to determine where DERA eligible engines are located in rural Alaskan powerhouses. If a new community is identified, community emission table and budget will be submitted to the EPA Project Officer for approval. AEA is matching the 2018 EPA grant with state, local, and other funding as available¹.

The non-certified and lower tier engines that will be removed from service with DERA funds vary in age and all operate 500 hours per year and are not scheduled for replacement. The replaced engine blocks will be rendered permanently disabled and disposed of in the local landfill.

In rural Alaska, communities are not connected to an electric grid and must generate power in their local community. Small diesel power plants are used across the state for this purpose. These plants have at least one diesel engine running continuously. The engines and generators must be absolutely reliable to provide consistent power to the residents to ensure health and welfare.

Although the air quality in rural Alaska is typically quite good, power plants are often located in the center of these communities, exposing residents to the pollution from them. This grant will assist AEA in taking action to meet the goal of reducing exposure to criteria pollutants, hazardous air pollutants, as well as reducing greenhouse gas emissions, while maintaining the economic vitality of the state.

AEA will consult with the Alaska Department of Environmental Conservation (ADEC) Division of Air Quality to ensure compliance with all applicable emissions regulations. ADEC requested AEA take over as the lead granting authority to administer Alaska's State Clean Diesel Program per the letter from State Commissioner Larry Hartig to Gina McCarthy dated April 15, 2016. EPA approved this request by letter dated May 11, 2016.

AEA's Circuit Rider/Technical Assistance group work with local organizations that operate their own electrical company. These organizations are very small, often serving just a few hundred customers, sometimes fewer. Being so small, the organizations often experience technical and administrative challenges due to the lack of economies of scale or specialized skills.

AEA maintains a database of the electric utilities it supports through its Rural Power System Upgrade (RPSU) program. The database was created in 2001 and updated in 2012. The 2012

¹ Other contributions may come from the Denali Commission and the Volkswagen settlement funds.

RPSU power plant database contains detailed information on 171 communities throughout rural Alaska. This database is used to identify communities eligible for “Electric Generator Repowers” using DERA funds. There are over 500 diesel gensets in the RPSU database.

Most rural communities in Alaska are federally recognized Alaskan Native Tribes. This work plan is based on EPA’s approval of AEA’s requests for program waivers including the use of an 80% EPA / 20% State cost share split, as allowed for in the Tribal Clean Diesel program.

AEA will issue sub award grants to the communities using the DERA, voluntary match, State funds, and other contributions needed to implement the project. Using these grant funds, AEA on behalf of the community, or the community will hire an engineering firm with expertise in remote Alaska power generation and experience with DERA programmatic requirements to prepare specifications, assist with materials and engine/generator procurement, and integrate the electronically controlled engines into the existing power plant switchgear. Rebecca Garrett (AEA Project Manager) will oversee the grant to ensure the communities comply with all Clean Diesel Program requirements.

This project will take place in five steps:

- Task 1: Confirm each rural community has a DERA eligible engine and submit emission tables and updated budget to Project Officer.
- Task 2: Design and identify specifications – Procure contractual assistance for design of the engine/generator installations and development of specifications specific to each installation.
- Task 3: Engine/generator procurement – Purchase engines, generators and associated equipment, including any required assembly and testing.
- Task 4: Transport – Ship engines/generators and materials to the communities.
- Task 5: Installation and commissioning – Install generator repowers / replacements, and obtain assistance to integrate the electronically controlled engines with the existing switchgear, fuel, exhaust and cooling systems. If requested, AEA staff will offer technical assistance during startup and commissioning of the engines.

Throughout the project, AEA will provide administrative project management and in the case of a managed sub award grant, AEA procurement staff will prepare the request for proposals or invitation to bid. AEA will also manage the EPA Clean Diesel grant to ensure all grant requirements are met.

Timeline

The project timeline is shown below based on an EPA Clean Diesel grant execution date of October 1, 2018 to March 31, 2020.

	Days	Start	Finish	2018			2019			2020					
				O	N	D	J	M	J	S	D	J	F	M	
Task 1	456	10/1/2018	3/31/2020	[Gantt bar spanning from Oct 2018 to Mar 2020]											
Task 2	180	10/1/2018	3/31/2019	[Gantt bar spanning from Oct 2018 to Mar 2019]											
Task 3	165	1/15/2019	6/30/2019	[Gantt bar spanning from Jan 2019 to Jun 2019]											
Task 4	60	7/1/2019	8/31/2019	[Gantt bar spanning from Jul 2019 to Aug 2019]											
Task 5	60	9/1/2019	10/30/2019	[Gantt bar spanning from Sep 2019 to Oct 2019]											
Task 5	150	11/1/2019	3/31/2020	[Gantt bar spanning from Nov 2019 to Mar 2020]											

Time is allowed after Task 5 for the closeout and project schedule float.

Fund disbursement methods

AEA will sub award the EPA DERA, State RPSU, and other funds if applicable to the communities. AEA will ensure each grantee secures the services of an engineering firm licensed in the state of Alaska with specific knowledge of remote Alaska power generation and is experienced with DERA program and procurement requirements. AEA will work hand in hand with the communities to expend the grant funding and State or local match to purchase and install qualifying equipment. AEA will report activities and expenditures to EPA.

EPA DERA Program Priorities

1. Maximize public health benefits

Research shows there is no safe level of exposure to diesel particulate matter. Power generation in rural Alaska depends on diesel engines, often operating in the center of a village, close to homes, workplaces, and the school. The proximity of power plants to these buildings may pose a health risk. Replacing the engines in these facilities with ones that meet more stringent emission requirements will reduce emissions production. In addition, improved efficiency will require less fuel, again reducing emissions, and with the added benefit of lowered costs. In rural communities, diesel fuel can run up to \$10 a gallon. Any savings on fuel is a significant cost savings.

2. Most Cost Effective

It is in the best interest for Alaska to support projects that are cost effective and meet the most urgent need. The engines selected for replacement are non-certified, mechanically governed and lower tier diesel engines that are dirty and inefficient compared to the newer certified replacement engines.

3. Population density

Setting priorities based on overall population in Alaska is difficult. Seventy percent of the population lives in larger populated areas facing air quality challenges similar to other areas in the country. The other thirty percent of the Alaska population lives in small communities and remote, rural villages, some with serious air quality problems. These smaller areas are often at a disadvantage due to technological and funding shortfalls, despite having air quality concerns.

As mentioned above, although the communities benefiting from this grant are not densely populated areas by typical urban standards, the proximity of the diesel power plant to residences, schools and other community buildings mean that residents may be more exposed to exhaust from the power plant than they would be in an urban city.

The AEA program targets communities with engines that fit within the DERA criteria and where they fall on the project ranking list. In addition to replacing equipment, upgrading the systems provides emission improvements.

4. Disproportionate quantity of air pollution from diesel

Alaska is unique in its diesel use. Power in rural villages is typically generated from diesel in small systems, thus using a disproportionately large quantity of diesel.

5. Include certified engine configuration or verified technology that has a long expected useful life

Power generation in rural communities is expensive compared to more urban areas. To help contain costs, engines in the power plants must use technology that will last. All engines used under the DERA grant will be configurations that have been proven to be reliable and long-lived.

6. Maximize the useful life of any certified engine configuration or verified technology used or funded by the eligible entity

Record drawings will be prepared for each grantee documenting the completed work. Operations and Maintenance (O&M) manuals will be updated and incorporate manufacturer's recommended maintenance and service intervals for all generation equipment. AEA will continue to provide technical support (as requested) through its Circuit Rider Maintenance program to assist communities to maximize the useful life of the installed generation equipment.

7. Conserve diesel fuel

Installing newer certified, more efficient engines will both reduce the emissions per quantity of fuel combusted, as well as produce electricity more efficiently further reducing emissions, as well as saving money. In most rural communities, diesel is well over \$4 per gallon and can be significantly higher in many. Occasionally, a community may experience a fuel shortage if fuel transport is delayed. Again, increased fuel efficiency can make existing stored supplies last longer, reducing the chances of shortages.

EPA's Strategic Plan Linkage and Anticipated Outcomes/Outputs

EPA Order 5700.7, "Environmental Results under EPA Assistance Agreements," requires that all assistance agreements be aligned with the Agency's Strategic Plan. EPA requires that grant applicants and recipients adequately address environmental outputs and outcomes to be achieved under assistance agreements. Grantees will be expected to report progress toward the attainment of project outputs and outcomes during the performance period. Applicants will be evaluated on the effectiveness of their plan for tracking and measuring progress toward achieving anticipated outputs and outcomes.

EPA Order 5700.7, Environmental Results under Assistance Agreements, may be found at: www.epa.gov/ogd/epa_order_5700_7a1.pdf.

1. **Linkage to EPA Strategic Plan**

The fuel efficiency and emission reductions that result from this project will help meet EPA's objectives of improving air quality and achieve and maintain health and welfare based air pollution standards and reduce risk from toxic air pollutants by reducing criteria pollutants, diesel particulate matter, volatile organic compounds, and air toxics. The project will improve tribal air quality by replacing engines in native Alaska villages. Greenhouse gas emission reductions will result from improved fuel efficiency of the engines.

2. **Outputs**

The term "output" means an environmental activity, effort, and/or associated product related to an environmental goal and objective that will be produced or provided over a period of time or by a specified date. Outputs may be quantitative or qualitative, but must be measurable during an assistance agreement funding period. States and territories must include a description of how they will track and measure progress toward the environmental goal throughout the assistance agreement period in one to two paragraphs.

a. The expected outputs from this project will include

- i. Decommission up to ten non-certified and lower tier engines and replace with ten Tier 2 and Tier 3 marine engines.
- ii. Reduction of air pollutants
- iii. Improved fuel efficiency

The following table shows the proposed replacement engines for each community. Equipment and installation costs are approximate.

Community	Existing Engine	Replacement Engine
Circle	Caterpillar 3304 (Non-Certified) 90 kW Prime	John Deere 6068TFM75 (Tier 2 Marine) 65 kW Prime
Circle	John Deere 4045 (Tier 3 Nonroad) 90 kW Prime	John Deere 6068AFM85 (Tier 3 Marine) 150 kW Prime
Takotna	John Deere 4045 (Non-Certified) 48 kW Prime	John Deere 4045TFM75 (Tier 2 Marine) 65 kW Prime
Takotna	John Deere 4045 (Non-Certified) 48 kW Prime	John Deere 4045TFM75 (Tier 2 Marine) 65 kW Prime
Takotna	John Deere 4039 (Non-Certified) 30 kW Prime	John Deere 4045TFM75 (Tier 2 Marine) 65 kW Prime
Tuluksak	John Deere 6067 (non-certified) 150 kW Prime	John Deere 6068AFM85 (Tier 2 Marine) 100 kW Prime
Chignik Lake	John Deere (Nonroad Tier 1) 147 kW Prime	John Deere 6068TFM76 (Tier 2 Marine) 100 kW Prime
Chignik Lake	John Deere 4045 (Non-certified) 80 kW Prime	John Deere 4045TFM75 (Tier 2 Marine) 65 kW Prime

Emission reductions for replacing two mechanical non-certified engines with one Tier 2 and one Tier 3 marine engines in Circle is shown in the table below. Circle uses approximately 35,000 gallons of diesel fuel to generate about 365,000 kWh annually.

CIRCLE

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engines	3.69	0.81	0.34	2.62	393.2
Replacement Engines	2.47	0.07	0.11	0.44	351.4
Percent Reduced	33%	92%	67%	83%	11%

over a 10-year lifespan would have the following savings.

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engine	36.94	8.11	3.43	26.21	3931.9
Replacement Engine	24.71	0.67	1.13	4.36	3514.2
Percent Reduced	33%	92%	67%	83%	11%

Note: the above emissions assume the two new engines each run 50% of the time.

Emission reductions for replacing three mechanical non-certified engines with three Tier 2 marine engines in Takotna is shown in the table below. Takotna uses about 25,000 gallons of diesel fuel to generate about 242,000 kWh annually.

TAKOTNA

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engines	1.71	0.71	0.33	2.05	279.2
Replacement Engines	1.88	0.06	0.11	0.27	232.6
Percent Reduced	-10%	91%	66%	87%	17%

over a 10-year lifespan would have the following savings.

Lifetime Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engines	17.12	7.09	3.28	20.45	2791.7
Replacement Engines	18.82	0.62	1.10	2.71	2325.9
Percent Reduced	-10%	91%	66%	87%	17%

Emission reductions for replacing a non-certified engine with a Tier 2 marine engine in Tuluksak is shown in the table below. The community of Tuluksak uses about 46,400 gallons of diesel fuel to generate about 512,000 kWh annually.

TULUKSAK

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engine	2.65	0.10	0.16	0.40	261.1
Replacement Engine	1.99	0.04	0.07	0.40	240.2
Percent Reduced	25%	58%	58%	0%	8%

over a 10-year lifespan would have the following savings.

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engine	26.50	0.95	1.59	3.97	2611.1
Replacement Engine	19.87	0.40	0.66	3.97	2401.8
Percent Reduced	25%	58%	58%	0%	8%

Note: the above emissions figures assume the new engine runs 50% of the time.

Emission reductions for replacing a Nonroad Tier 1 engine with a Marine Tier 2 engine and one mechanical non-certified engine with a Marine Tier 2 engine in Chignik Lake is shown in the table below. Chignik Lake uses approximately 33,800 gallons of diesel fuel to generate about 374,000 kWh annually.

CHIGNIK LAKE

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engines	2.59	0.32	0.19	0.93	189.97
Replacement Engines	1.19	0.03	0.05	0.21	177.50
Percent Reduced	54%	90%	72%	77%	7%

over a 10-year lifespan would have the following savings.

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline Engine	25.91	3.19	1.88	9.26	1899.7
Replacement Engine	11.87	0.32	0.54	2.11	1775.0
Percent Reduced	54%	90%	72%	77%	7%

Note: the above emissions assume the two new engines each run 25% of the time.

3. Outcomes

The term “outcome” means the result, effect, or consequence that will occur by carrying out an environmental program or activity that is related to an environmental or programmatic goal or objective. Outcomes may be environmental, behavioral, health-related, or programmatic in nature, but must be quantitative. They may not necessarily be achievable within an assistance agreement funding period. States and territories must include a description of project outcomes resulting from the project outputs, in two to three paragraphs.

Expected outcomes from the project include

- **Short-term outcomes** – Up to ten existing prime power, non-certified and lower tier diesel engines will be taken out of service, and replaced with ten, cleaner, more fuel efficient marine Tier 2 and Tier 3 engines. Engine replacements will lead to immediate reductions in diesel fuel use and decreased emissions.

- **Medium-term outcomes** – The new electronically controlled certified marine engines will save an estimated 15,000-gallons of diesel fuel/year with associated reductions in exhaust emissions.
- **Long-term outcomes** – AEA anticipates that diesel engines will continue to be used for many years in rural Alaska for prime power generation. The estimated useful life of the DERA engines in prime power application is 10-years (60,000-hours). Replacing older technology engines with cleaner and more efficient ones now will provide emission reductions and fuel savings for many years to come, as well as provide health benefits for the residents in the communities.

Project Partners

AEA will continue to consult with the Alaska Department of Environmental Conservation (ADEC) Division of Air Quality to ensure compliance with all applicable emissions regulations. AEA will partner with the Denali Commission to support and expand the reach of the DERA program statewide.

Sustainability of State Program

In Alaska, the cost of fuel and energy are the highest in the nation. Through on-going programs, AEA works with rural communities to assist them in maintaining reliable power supplies while reducing costs.

AEA maintains a website that includes information on diesel reduction projects funded through DERA grants. AEA will keep this website updated with details on this new DERA funding within 60 days of the receipt of the grant. The posting will include the amount of the grant and a description of the technology being funded.

Quality Assurance and Quality Control

This project does not involve data generation or other measures requiring quality assurance and quality control plans or procedures.

Use of Funds Restrictions

No EPA awarded funding will be used for:

- Costs of emission reductions that are mandated under federal law
- Matching funds for other Federal grants
- Expenses incurred before the project period
- Funding retrofit technologies on EPA's or CARB's "formerly verified technologies" lists
- Emissions testing and/or air monitoring activities

BUDGET NARRATIVE

Project Budget

This AEA work plan incorporates Alaska's 2018 DERA waiver request, which was approved in June 2018. AEA appreciates the EPA understands the uniqueness of prime diesel generated power in remote areas of Alaska, and has approved the use of certified marine Tier 2 and Tier 3 engines prior to 2017 for replacement of non-certified and lower tier engines, horsepower increases greater than 25%, reduced mandatory cost-share requirement for projects benefiting rural Alaska Tribal people, and increased administrative cost cap due to AEAs greater level of technical support. AEA is using the state DERA funds to assist with engine repowers and genset replacements in rural communities in Alaska that are mostly tribal. Following is the proposed project budget:

Itemized Project Budget

<u>Itemized Project Budget</u>								
FY 2017					FY 2018			
Budget Category	EPA Allocation	Voluntary Match (if applicable)	Mandatory Match (if applicable)	other contribution	EPA Allocation	Voluntary Match (if applicable)	Mandatory Cost Share (if applicable)	TOTAL
1. Personnel	\$ 20,678	\$ 14,387	\$ 8,992	\$ 3,429	\$ 28,041	\$ 18,693	\$ 9,348	\$ 103,568
2. Fringe Benefits	\$ 8,476	\$ 5,897	\$ 3,686	\$ 1,406	\$ 14,021	\$ 9,254	\$ 4,767	\$ 47,507
3. Travel	\$ 10,670	\$ 7,423	\$ 4,639	\$ 1,768	\$ 12,250	\$ 8,085	\$ 4,165	\$ 49,000
4. Supplies								\$ -
5. Equipment								\$ -
6. Contractual								\$ -
7. Program Income								\$ -
8. Other: Subaward Gra	\$ 281,200	\$ 195,642	\$ 122,276	\$ 46,631	\$ 336,838	\$ 238,068	\$ 118,770	\$ 1,339,425
9. Total Direct Charges	\$ 321,024	\$ 223,349	\$ 139,593	\$ 53,234	\$ 391,150	\$ 274,100	\$ 137,050	\$ 1,539,500
10. Indirect Charges	\$ 14,000				\$ 20,000			\$ 34,000
Total	\$ 335,024	\$ 223,349	\$ 139,593	\$ 53,234	\$ 411,150	\$ 274,100	\$ 137,050	\$ 1,573,500

Explanation of Budget Framework

1. Personnel

AEA personnel costs cover the staff time needed to manage the grant, including technical assistance, preparing and submitting regular reports to EPA, preparing and submitting a final report to EPA at the conclusion of the project, providing project and grant oversight, and completing site visits to document project completion. Also included in the calculations are an AEA project manager, rural electric utility worker and contract administrator staff time to help the sub award grantees, if requested, with start-up and commissioning and connection of the engines/generators.

Category	Federal Fiscal Year 2018				
	EPA Base	State Match	EPA Incentive	Mandatory Cost Share	Total
Rural Program Manager @100 hours \$79.32/hr wage, \$36.21/hr fring	\$ 2,644	\$ 2,644	\$ 1,322	\$ 1,322	\$ 7,932
Project Manager 500 hrs, \$64.46/hr wage, \$31.61/hr fringe	\$ 10,743	\$ 10,743	\$ 5,372	\$ 5,372	\$ 32,230
Rural Electric Utility Worker 250hrs, \$53.08 hr wage, \$27.77/hr fringe	\$ 4,423	\$ 4,423	\$ 2,212	\$ 2,212	\$ 13,270
Contract Administrator @ 75 hrs, \$35.34hr wage, \$22.29hr fringe	\$ 883	\$ 883	\$ 442	\$ 442	\$ 2,650
Total	\$ 18,693	\$ 18,693	\$ 9,348	\$ 9,348	\$ 56,082

Note: Only the hourly billable wage totals for each staff position are shown in this table. The totals in the table are without fringe benefits included. These billable hourly wage rates include holiday and leave. Reference the next table, “2. Fringe Benefits” for the projects fringe benefits details and totals.

2. Fringe Benefits

Benefits include: Health Insurance, Public Employees Retirement System, Supplemental Benefit System, Medicare, Workers Compensation, and Unemployment. The health insurance rate varies slightly by position type and averages 10%. Below is an estimation of the total project expenditures for fringe benefits for the positions and hours in the previous budget category “1. Personnel”.

Federal Fiscal Year 2018 Fringe Benefits					
Category	EPA Base	State Match	EPA Incentive	Mandatory Cost Share	Total
Health Insurance Premium 10% (avg)	\$ 2,221	\$ 2,221	\$ 1,144	\$ 1,144	\$ 6,730
Public Employees Retirement System 22%	\$ 4,997	\$ 4,997	\$ 2,574	\$ 2,574	\$ 15,142
Supplemental Benefits System 6.13%	\$ 1,409	\$ 1,409	\$ 726	\$ 726	\$ 4,270
Medicare 1.45%	\$ 330	\$ 330	\$ 170	\$ 170	\$ 1,000
Workers Compensation 1.01%	\$ 198	\$ 198	\$ 102	\$ 102	\$ 600
Unemployment 0.40%	\$ 99	\$ 99	\$ 51	\$ 51	\$ 300
Total	\$ 9,254	\$ 9,254	\$ 4,767	\$ 4,767	\$ 28,042

3. Travel

This budget includes two trips for a two person team to each of the up to four communities² to perform site visits and help the sub award grantees and their contractor with any technical assistance needed. Travel is budgeted based on experience within the region. With these presumptions, costs are broken down as follows. Round trip airfare \$1000, ground transportation per visit \$500, per diem \$60/day, lodging \$90/night. Presumed each trip is for two days with an overnight stay (two days of per diem) a total of 8 total trips by AEA staff to the communities will be needed.

² This is budgeted with flexibility should there be up to six sub awardees.

Category	Federal Fiscal Year 2018 Travel				Total
	EPA Base	State Match	EPA Incentive	Mandatory Cost Share	
Airfare for 2 persons, 2 trips per village, 4 villages from Anchorage, 16 roundtrip tickets	\$ 5,280	\$ 5,280	\$ 2,720	\$ 2,720	\$ 16,000
Lodging for 2 persons, 2 trips per village, 4 villages, 2 nights per trip, \$90 per night, 16 nights	\$ 891	\$ 891	\$ 459	\$ 459	\$ 2,700
Per diem for 2 persons, 2 trips per village, 4 villages, 2 days per trips, \$60 day, 30 days	\$ 594	\$ 594	\$ 306	\$ 306	\$ 1,800
Surface transportation, 2 trips per village, 4 villages, 8 rentals includes car/four wheeler, gas, parking, etc \$500 per rental	\$ 1,320	\$ 1,320	\$ 680	\$ 680	\$ 4,000
Total	\$ 8,085	\$ 8,085	\$ 4,165	\$ 4,165	\$ 24,500

4. Supplies

There are no Supply costs associated directly to AEA with this project. DERA funding will be provided to the sub award grantees via a grant agreement and therefore reported to EPA through the “Other” line. Please see line 8. “Other” section below for further breakout.

5. Equipment

There are no Equipment costs associated directly to AEA with this project. DERA funding will be provided to the sub award grantees via a grant agreement and therefore reported to EPA through the “Other” line. Please see line 8. “Other” section below for further breakout.

6. Contractual

There are no Contractual costs associated directly to AEA with this project. DERA funding will be provided to the sub award grantees via a grant agreement and therefore

reported to EPA through the “Other” line. Please see line 8. “Other” section below for further breakout.

7. Program Income

The project being conducted under this grant will not generate income.

8. Other

AEA will issue sub award grant agreements to up to six rural communities to cover the cost of labor, freight, contractual, material, engineering, and installation as part of the equipment costs associated with this grant³. These expenses will be reported to EPA through the “Other” line. Below is a breakout of the budget for these funds

Subaward Grant

³ The budget estimates are based on number of engines to be repower/replaced, the location of the community and what is known about the power system prior to design.

Federal Fiscal Year 2018 Subaward Circle						
Category	EPA	State Match (VW Settlement)	Mandatory Cost Share (RPSU)	DC	Total	
Labor		\$ -	\$ -		\$ -	
Freight	\$ 8,306	\$ 5,828	\$ 3,239	\$ 627	\$ 18,000	
Contractual	\$ 55,370	\$ 38,856	\$ 21,595	\$ 4,178	\$ 120,000	
Material and Engines	\$ 71,982	\$ 50,514	\$ 28,074	\$ 5,430	\$ 156,000	
Combined Totals	\$ 135,658	\$ 95,198	\$ 52,908	\$ 10,235	\$ 294,000	

Federal Fiscal Year 2018 Subaward Takotna						
Category	EPA	State Match (VW Settlement)	Mandatory Cost Share (RPSU)	DC	Total	
Labor		\$ -	\$ -		\$ -	
Freight	\$ 16,611	\$ 11,657	\$ 6,479	\$ 1,253	\$ 36,000	
Contractual	\$ 83,056	\$ 58,285	\$ 32,393	\$ 6,267	\$ 180,000	
Material and Engines	\$ 121,815	\$ 85,483	\$ 47,510	\$ 9,191	\$ 264,000	
Combined Totals	\$ 221,482	\$ 155,425	\$ 86,382	\$ 16,711	\$ 480,000	

Federal Fiscal Year 2018 Subaward Tuluksak						
Category	EPA	State Match (VW Settlement)	Mandatory Cost Share (RPSU)	DC	Total	
Labor		\$ -	\$ -		\$ -	
Freight	\$ 7,157	\$ 5,023	\$ 2,791	\$ 540	\$ 15,511	
Contractual	\$ 59,816	\$ 41,976	\$ 23,329	\$ 4,513	\$ 129,634	
Material and Engines	\$ 49,963	\$ 35,061	\$ 19,486	\$ 3,770	\$ 108,280	
Combined Totals	\$ 116,936	\$ 82,060	\$ 45,606	\$ 8,823	\$ 253,425	

Federal Fiscal Year 2018 Subaward Chignik Lake						
Category	EPA	State Match (VW Settlement)	Mandatory Cost Share (RPSU)	DC	Total	
Labor		\$ -	\$ -		\$ -	
Freight	\$ 16,611	\$ 11,657	\$ 6,479	\$ 1,253	\$ 36,000	
Contractual	\$ 55,370	\$ 38,856	\$ 21,595	\$ 4,178	\$ 120,000	
Material and Engines	\$ 71,982	\$ 50,514	\$ 28,074	\$ 5,431	\$ 156,000	
Combined Totals	\$ 143,963	\$ 101,027	\$ 56,148	\$ 10,862	\$ 312,000	

AEA will sub award grant funds to each eligible rural community per the named sites (starting on page 10 of this work plan) and list of potential sites. Cost efficiencies occur when multiple engines are purchased for one community or one utility.

The Mandatory Cost Share funds will be in the form of cash contributions.

Up to 80% of EPA grant funds and voluntary State match will go towards the engineering, freight, design modifications, purchase and installation of DERA qualified equipment.

9. Direct Charges

Total direct charges for the project come to \$802,300. This includes funds from EPA DERA, State Match, and Mandatory Cost Share. Estimated \$693,676 will be in sub award grants to rural Alaskan communities, and \$108,623 will be spent on AEA staff project management, AEA technical assistance, and travel costs.

10. Indirect Charges

AEA currently utilizes the 10% de Minimis rate afforded to us under 2CFR 200.414(f) and further detailed in Appendix VII for indirect costs. AEA met internally and with the Denali Commission, our cognizant agency and determined that this method best fits AEA's needs instead of developing and proposing a federally negotiated indirect cost rate.

Matching Funds and Cost-Share Funds

The State of Alaska has chosen to make the full voluntary match to the Federal FY 2018 Clean Diesel grant, totaling \$274,100. The matching funds will be used towards eligible Clean Diesel project costs. In addition, the state is providing \$137,050 of Mandatory Cost Share. AEA plans to use the Volkswagen settlement funds for the voluntary match (\$274,100), when available. State funds are available until the Volkswagen funds are received. The Mandatory Cost Share (\$137,050) will come from AEA's Rural Power System Upgrade program, or local community match. The RPSU funds are State monies and allocated by the state legislature. The match funds will be available during the state fiscal years 2018 and 2019. At least 80% of EPA funds and State Match will go towards the repower and replacement equipment, and includes engineering, labor, material, engines and freight.