



**Federal Fiscal Year 2015
 (State Fiscal Year 2016)
 STATE CLEAN DIESEL GRANT PROGRAM
 WORK PLAN NARRATIVE AND BUDGET NARRATIVE TEMPLATE FOR ALL
 STATES AND TERRITORIES**

Project Title:	Alaska DERA Project
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Project Manager and Contact Information

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Project Budget

	FFY 2014	FFY 2015	Total
EPA Base Allocation	\$76,467	\$114,119	\$190,586
State or Territory Matching Funds (if applicable)	\$0	\$114,119	\$114,119
EPA Match Incentive (if applicable)	\$0	\$57,626	\$57,626
Cost Share	\$25,489	\$96,044	\$121,533
Additional Leveraged Resources	\$0	\$0	\$0
TOTAL Project	\$101,956	\$381,908	\$483,864

Project Period

This work plan includes all work funded with FFY 2014 and FFY 2015 funding. The grant project period is July 1, 2015 through September 30, 2016.

Summary Statement

The Alaska Department of Environmental Conservation (DEC) Division of Air Quality is partnering with the Alaska Energy Authority to replace diesel engines in the power plants of four rural communities.

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. Many of the power plants in these communities rely on older technology, high emitting engines.

This grant will partially fund replacement of five Tier 0 engines each with Tier 2 engines. Tier 2 engines will be installed because of their proven reliability and ability to function in the harsh environment of rural Alaska. Tier 4 engines require ULSD, which is not reliably available in rural communities. Tier 3 engines have proven unreliable in the harsh Alaskan climate. Because communities rely on these engines for base power, reliability is the first priority in selecting an engine.

Past DERA State Clean Diesel Program projects can be found at:
<http://dec.alaska.gov/air/anpms/Projects&Reports/Diesel&Misc1.htm>

SCOPE OF WORK

Project Description

The Alaska Department of Environmental Conservation (DEC) is partnering with the Alaska Energy Authority (AEA) to support the replacement of power generating engines in four rural communities. AEA is matching the 2015 grant amount with state funding.

In rural Alaska, communities are not connect to the electric grid and must generate power in their local community. Small diesel power plants are used across the state for this purpose. 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 DEC 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's Rural Power System Upgrade Program (RPSU) works with small 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's upgrade program helps fill these gaps.

AEA has identified four potential communities to use DERA grant funds to assist with engine replacements: Clark's Point, Golvin, Hughes, and Perryville. These communities were selected because they are currently seeking to replace Tier 0 engines. State match funds will come from state allocations through the RPSU program. With support of this DERA grant, these Tier 0 mechanically regulated engines will be upgraded to certified Tier 2 configurations of electronically regulated engines, improving efficiency and lowering emissions.

DEC is seeking a waiver to install Tier 2 engines instead of higher tiered engines. The Tier 2 engines will be an upgrade over the existing Tier 0 engines. AEA uses Tier 2 engines because of their proven reliability in the harsh environment in rural Alaska. Tier 4 engines require ULSD, which is not reliably available in rural communities, and Tier 3 engines have proven unreliable in the harsh Alaskan climate. Because communities rely on these engines for base load power, reliability is the first priority in selecting an engine.

Most rural communities in Alaska are federally recognized Alaskan Native Tribes, as are the four communities selected for this grant. For this reason, DEC is seeking the authorization to use the 25/75 cost share split, as allowed for tribal DERA grants.

Typically, the generators attached to the engines are still functional and thus not replaced when the engines are replaced. Retaining the existing generators also reduces the funds needed to complete the project.

This project will take place in four steps:

- Task 1: Design and identify specifications – AEA will procure contractual assistance to for mechanical design of the engines and development of specifications specific to each engine.

Because the DERA funding is insufficient to complete all the engines needed for these four communities, once specifications for each engine are established, the engines will be ranked by emission reduction potential. Funds will be allocated to engines starting at the top of the list and working down until funds are exhausted. DEC and AEA anticipate that project budget will cover the cost of five engines, however this could change based on actual costs.

- Task 2: Engine procurement – AEA will purchase engines and associated equipment, including any required assembly.
- Task 3: Transport – AEA will ship engines to communities.
- Task 4: Installation and commissioning – AEA will obtain contractual assistance to install and commission the engines.

Throughout the project, AEA will provide project management to ensure the timely completion of each task. DEC will provide grant management, working with both EPA and AEA to ensure all grant requirements are met. In addition, AEA staff will travel to oversee the installation and commissioning of the equipment and, at the conclusion of the project, DEC staff will travel to one community to inspect the final installation.

Timeline

The project timeline is shown below using a July 1, 2015 start date. Project work cannot begin until the grant is finalized with EPA. Should that be completed after July 1, the project timeline will need to be adjusted accordingly. The construction season in Alaska is during the summer. Therefore, shipment and installation may need to occur later than shown in the table below. The timeline as identified allows three extra months before the end of the grant period, September 30, 2016, to complete project activities and submit final reports.

			2015				2016											
Days	Start	Finish	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	
365	7/1/15	6/30/16																
Task 1	61	7/1/15	8/31/15															
Task 2	91	8/31/15	11/30/15															
Task 3	31	11/30/15	12/31/15															
Task 4	182	12/31/15	6/30/16															

Fund disbursement methods

DEC will transfer funds received from EPA to AEA via a reimbursable services agreement (RSA). RSAs are frequently used to transfer funds between state agencies. Once AEA transfers the funds to AEA, they will directly spend the grant funding and state match to purchase and install the equipment. These expenses will be reported to EPA through the contractual line of the award.

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. Once exact specifications for each engine replacement have been identified, engines will be ranked by emissions reduction with the top engines receiving funding.

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 30% of the 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 power plant to residences and other community buildings mean that residents may be more exposed to exhaust from the power plant than they would be in a more typical city.

The AEA program targets communities needing power system upgrades and replacements. In addition to removing failing equipment, upgrading the systems provides emission benefits.

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 and to help contain costs, engines in the power plants must use technology that will last. All engines targeted 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

A number of communities in rural Alaska are in urgent need of new engines in their power plants. To maximize the number of engines that can be replaced, where feasible, only the engines will be replaced and the existing generators will be retained. Cost savings from reusing generators will allow the funding to focus replacing the engines, which are the source of emissions.

7. Conserve diesel fuel

Installing new, more efficient engines will both reduce the emissions per quantity of fuel combusted, as well as be more efficient, 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 some. Occasionally, a community may experience a fuel shortage if fuel transport is delayed. Again, increased fuel efficiency can make 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 reducing criteria pollutants, diesel particulate matter, volatile organic compounds, and air toxics. The project will improve tribal air quality because the project will replace engines in four 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. Replacement of five Tier 0 engines with Tier 2 engines.
 - ii. Reduction of air pollutants as estimated in the table below

Emission reductions for one engine are shown in the table below. This estimate is based on the assumption that one engine uses 21,024 gallons of diesel fuel annually and is 175 hp. Initial calculations were based on an engine using 5,000 gallons of fuel per year and then scaled. The replacement engine is assumed to meet 2006 Tier 2 standards.

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline for	9.24	0.48	0.56	1.45	233
Amount Reduced	2.59	0.17	0.00	0.04	0.00
Percent Reduced	28%	36%	1%	3%	0%

Five engines over a 20-year lifespan would have the following savings.

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline for	923.79	47.93	55.92	145.49	23336

Amount Reduced	258.60	16.82	0.42	3.78	0.00
Percent Reduced	28%	36%	1%	3%	0%

And over a potential 40-year lifespan, the savings across the five engines would double.

Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
Baseline for	1847.59	95.87	111.85	290.97	46673
Amount Reduced	517.19	33.64	0.84	7.57	0.00
Percent Reduced	28%	36%	1%	3%	0%

These emission reduction figures assume that the new engines are running at the same efficiency as the current engines. However, new engines are more efficient, thus saving fuel and further reducing emissions.

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** – engine replacements will lead to immediate reductions in diesel fuel use and decreased emissions.
- **Medium-term outcomes** – Alaska has the highest fuel costs in the country and, despite the recent fall in fuel prices, fuel costs will undoubtedly rise again. While new and innovative sources of renewable energy are being developed, the need for diesel fuel continues because of its ability to provide steady and reliable power.
- **Long-term outcomes** – DEC anticipates that the diesel engines used for power in rural communities will continue to be in use for many years. Replacing older technology engines with cleaner and more efficient ones now will provide emission reductions and fuel savings for many years to come. This project will also provide a health benefits for the residents in the communities.

Project Partners

The Alaska Energy Authority (AEA) manages and administers funds for several programs to assist local communities in maintaining their electrical infrastructure. They provide economic and technical assistance to communities across the state.

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.

DEC maintains a website that includes information on diesel reduction projects funded through DERA grants. DEC will update this website 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.

BUDGET NARRATIVE

Project Budget

	FFY 2014			FFY 2015			
Budget Category	EPA Allocation	State or Territory Match	State Cost Share	EPA Allocation	State or Territory Match	State cost Share	Total
1. Personnel	\$11,413	\$0	\$0	\$0	\$0	\$0	\$11,413
2. Fringe Benefits	\$6,346	\$0	\$0	\$0	\$0	\$0	\$6,346
3. Travel	\$3,713	\$0	\$0	\$0	\$0	\$0	\$3,713
4. Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5. Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6. Contractual	\$49,983	\$0	\$25,489	\$171,745	\$114,119	\$96,044	\$457,380

7. Program Income	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8. Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9. Total Direct Charges	\$71,455	\$0	\$25,489	\$171,745	\$114,119	\$96,044	\$478,852
10. Indirect Charges	\$5,012	\$0	\$0	\$0	\$0	\$0	\$5,012
Grand Total	\$76,467	\$0	\$25,489	\$171,745	\$114,119	\$96,044	\$483,864

Explanation of Budget Framework

1. Personnel

DEC personnel costs cover the staff time needed to manage the grant, including 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 up to two site visits to document project completion.

An Environmental Program Specialist II will prepare reports and complete routine project management tasks. An Environmental Program Manager I will provide overall project management and oversight. An Administrative Operations Manager I will manage the financial and contractual aspects of the grant.

	FFY 2014		FFY 2015		
Category	EPA	State or Territory Match & Cost Share	EPA	State or Territory Match & Cost Share	Total
Environmental Program Specialist II (0.12 FTE)	\$7,932	\$0	\$0	\$0	\$7,932
Environmental Program manager I (0.05 FTE)	\$2,553	\$0	\$0	\$0	\$2,553
Administrative Operations Manager I (0.01 FTE)	\$928	\$0	\$0	\$0	\$928
Total	\$11,413	\$0	\$0	\$0	\$11,413

2. Fringe Benefits

Benefits include: Leave cash-in, risk management, unemployment insurance, terminal leave, retirement benefit, health insurance, life insurance, legal trust fund, SBS (Supplemental Benefit System), Medicare. These rates vary by position type. Below is an estimation of those rates.

Category	FFY 2014		FFY 2015		Total
	EPA	State or Territory Match & Cost Share	EPA	State or Territory Match & Cost Share	
Health, Life, Legal Trust, Other @ 21.41 %	\$2,444	\$0	\$0	\$0	\$2,444
Supplemental Benefits @6.13%	\$700	\$0	\$0	\$0	\$700
Medicare @ 1.45%	\$165	\$0	\$0	\$0	\$165
Unemployment @.40%	\$46	\$0	\$0	\$0	\$46
Workman's Compensation @ 0.80%	\$91	\$0	\$0	\$0	\$91
Public Employees Retirement @ 22%	\$2,511	\$0	\$0	\$0	\$2,511
Leave Cash-In charge @ 2.26%	\$258	\$0	\$0	\$0	\$258
Terminal Leave @ 1.15%	\$131	\$0	\$0	\$0	\$131
Total (55.6%)	\$6,346	\$0	\$0	\$0	\$6,346

3. Travel

This budget includes funds to cover two trips to each community by AEA staff to oversee the installation of the engines; each trip is budgeted for three nights. Two shorter DEC trips are included to perform site visits. The destination of the DEC site visits will be determined towards the end of the project.

Travel costs associated with installation are included in contractual services.

Category	FFY 2014		FFY 2015		Total
	EPA	State or Territory Match & Cost Share	EPA	State or Territory Match & Cost Share	
Airfare from Anchorage	\$2,350	\$0	\$0	\$0	\$2,350
Lodging – two nights	\$720	\$0	\$0	\$0	\$720
Per diem – 3 days @ \$60 per day	\$360	\$0	\$0	\$0	\$360
Surface transportation & Other Travel Exp	\$283	\$0	\$0	\$0	\$283
Total	\$3,713	\$0	\$0	\$0	\$3,713

4. Supplies

There are no supply costs associated with this project.

5. Equipment

This project will purchase five replacement engines for rural power generation. Because the equipment will be purchased by AEA, the funding will be provided to them via an RSA contract and therefor reported to EPA through DEC's contractual line. Please see the contractual section below for further breakout.

6. Contractual

The Department of Environmental Conservation's Division of Air Quality will issue a Reimbursable Services Agreement (RSA) contract to AEA to cover their travel, equipment purchase, installation, and parts costs associated with this grant. These expenses will be reported to EPA from the Department through the contractual line. Below is a breakout/description of the budget of these funds that will be provided from this grant to AEA.

Contract to AEA

	FFY 2014		FFY 2015		
Category	EPA	State or Territory Match & Cost Share	EPA	State or Territory Match & Cost Share	Total
Labor	\$0	\$0	\$12,000	\$0	\$12,000
Travel	\$0	\$0	\$13,920	\$0	\$13,920
Contractual	\$0	\$0	\$70,830	\$168,130	\$238,960
Equipment	\$49,983	\$25,489	\$74,995	\$42,033	
Total	\$49,983	\$25,489	\$171,745	\$210,163	\$457,380

AEA will make two trips to each of the four communities.

The Mandatory cost-share funds will be in the form of cash contributions to the Equipment Object Class.

The following table shows the proposed replacement engines for each community. The engines showing the greatest emission reduction will be installed with funds from this project. At this time, equipment and installation costs are approximate, if actual costs are higher or lower, more or fewer engine will be purchased and installed.

Community	Existing Engine	Replacement Engine
Clarks Point	Caterpillar 3304	John Deere 6081
	Caterpillar 3306	John Deere 6081
	Caterpillar 3304	
Hughes	John Deere PE4045T396994	John Deere 4045
	John Deere PE4045T396993	John Deere 4045
	John Deere PE3029T388454	
	John Deere PE3029T396765	
Golvin	John Deere 6068TF250	John Deere 6081
	John Deere 6068TF250	John Deere 6081
	John Deere 6081AFM75	John Deere

	John Deere 6081T	John Deere
Perryville	John Deere 6076	John Deere 4045
	John Deere 6081	John Deere 6090
	John Deere 6068	John Deere 4045

AEA will use contractual services for engine installation in the powerhouse. One contract will be required for each community. All costs associated with the contract are included in this budget category, e.g., travel costs for installation and any associated personnel costs.

Once the engines are purchased and assembled in Anchorage, they will be shipped to their respective communities. AEA anticipates shipping being done by air. Shipping each engine is anticipated to run about \$6,000.

7. Program Income

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

8. Direct Charges

Total direct charges for the project come to \$478,852. This includes funds from EPA, AEA match, and cost share. Of that total, AEA will spend \$458,514 to complete this project.

9. Indirect Charges

Indirect charges are calculated on DEC's total personnel and fringe costs at 28.22%. The total for this grant \$5,012.

Match Requirements

The State of Alaska has chosen to match the 2015 DERA grant amount in full, \$115,253. The matching funds will be used towards contractual costs. The matching funds will come from AEA's Rural Power Supply Upgrade program. These funds are state monies and allocated by the state legislature. The match funds will be available during the state fiscal years 2016 and 2017.

SIGNATURES

The following forms require signatures by a state's or territory's authorized parties:

- The work plan and detailed budget narrative must be signed and dated by a state's or territory's authorized representative that is also signing the SF-424 form.
- EPA is not using Grants.gov for the submission of work plans and applications. States and territories must submit application/work plans, Preaward Compliance Review (EPA Form 4700-4), Certification Regarding Lobbying, if over \$100,000 and, Assurances for Non Construction Program Certification to their Regional EPA office.

Additional Requirement Forms

The following forms do not require signature, but must also be submitted with the application package:

- "Indirect Cost Rate Agreement Rate from Cognizant Agency," if applying for Indirect Cost Rate
- Key Contact Form
- Letter of Match/cost share

APPENDIX

Resources

States and territories may consult the CFR and OMB circulars as referenced in the Federal Register Notice. Links to these references are:

40 CFR 31: www.gpoaccess.gov/cfr/index.html.

OMB Circular A-87: www.whitehouse.gov/omb/circulars/index.html.