

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

**BENEFICIARY ELIGIBLE MITIGATION ACTION CERTIFICATION**

Beneficiary Village of Chefornak

Lead Agency Authorized to Act on Behalf of the Beneficiary Naterkaq Light Plant  
*(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)*

<b>Action Title:</b>	Naterkaq GenSet Replacment
<b>Beneficiary's Project ID:</b>	VW-001
<b>Funding Request No.</b>	1
<b>Request Type: (select one or more)</b>	<input type="checkbox"/> Reimbursement <input checked="" type="checkbox"/> Advance <input type="checkbox"/> Other (specify): _____
<b>Payment to be made to: (select one or more)</b>	<input type="checkbox"/> Beneficiary <input checked="" type="checkbox"/> Other (specify): <u>Naterkaq Light Plant</u>
<b>Funding Request &amp; Direction (Attachment A)</b>	<input checked="" type="checkbox"/> Attached to this Certification <input type="checkbox"/> To be Provided Separately

**SUMMARY**

<b>Eligible Mitigation Action</b> <input type="checkbox"/> Appendix D-2 item (specify): _____ <b>Action Type</b> <input checked="" type="checkbox"/> Item 10 - DERA Option (5.2.12) (specify and attach DERA Proposal): _____
<b>Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2):</b> The Naterkaq Light Plant proposes to replace two John Deere 613AFM75 serial numbers RG6125H057873 and RG6125H057886 Marine Tier 2 engines with 370 kW gensets and associated equipment for efficient power generation (switchgear, control wiring and controllers, conductor and electric panel, fuel and air intake system, exhaust down pipes, charge air coolers, mounting skids). The new gensets will be marine jacketed to provide waste heat recovery to the adjacent washeteria, reducing fuel oil burned for heat. A complete, detailed work plan is attached.
<b>Estimate of Anticipated NOx Reductions (5.2.3):</b> See Addendum
<b>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):</b> Clara Flynn (Tribal Administrator), Hazel Flynn (Tribal Coordinator), Theresa Panruk (Tribal Bookkeeper)

**Describe how the Beneficiary will make documentation publicly available (5.2.7.2).**

The Native Village of Chefnak will publicly post in prominent locations around the community all information related to the project and funding received from the VW Settlement Trust, which will include a phone number for members of the public to request additional information and documents related to the funding request and expenditure of funds. These notices will be posted by the Native Village of Chefnak. The Native Village of Chefnak endeavor to respond to such requests within ten (10) business days and, when documents are requested, will advise the individual within that timeframe of the procedure for reviewing such documents.

The Tribe does not have ordinances or policies for matters governing the publication of confidential business information and personally identifiable information. To the extent that Tribal law does not address an Issue, the Tribe may look to Alaskan law as a non-binding source of guidance.

**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 Tribal DERA (57%), Mandatory Cost Share (18%), and Volkswagen Trust (25%). 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).**

The Village of Chefnak is adjacent to the Yukon Delta National Wildlife Refuge. The Tribe was not notified by the US Fish and Wildlife Service or any other federal government agencies of their interest.

**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).**

Chefnak is concentrated along a small L-shaped road system with the powerhouse centrally located (see attached aerial map.) The powerhouse, which runs around the clock, is in close proximity to the washeteria, Amaqigciq/Chaputnguaq School, United Utilities Inc., Chefnarmute Inc., the post office, Chefnak Traditional Council, and City of Chefnak Community Building. The washeteria receives waste recovery heat from the power plant. The police station, fire station, and Chefnak Health Clinic lie to the south of the power plant. The church, Avugiak's Store, PHS pumphouse, VSW ATCO Camp, AVCP Headstart, and Coast Villages Region Fund Building are east of the plant. The surrounding area provides hunting and gathering grounds for subsistence resources. In FY2018, the powerhouse burned through 113,917 gallons of diesel fuel. Improved fuel efficiency will have a net positive effect on emissions, fuel consumption and fuel cost, improving the air quality for which residences are constantly exposed in their everyday lives. The proposed genset replacement project will increase the fuel efficiency to 13.6 kW/gal, reducing the amount of annual fuel consumption by 4,483 gallons.

If applicable, describe how the mitigation action will mitigate the impacts of NO<sub>x</sub> emissions on communities that have historically borne a disproportionate share of the adverse impacts of such emissions (5.2.10). *See above*

**ATTACHMENTS**  
**(CHECK BOX IF ATTACHED)**

- |                                     |                     |   |
|-------------------------------------|---------------------|---|
| <input checked="" type="checkbox"/> | <b>Attachment A</b> | <b>Funding Request and Direction.</b>   |
| <input checked="" type="checkbox"/> | <b>Attachment B</b> | <b>Eligible Mitigation Action Management Plan Including Detailed Budget and Implementation and Expenditures Timeline (5.2.4).</b>   |
| <input checked="" type="checkbox"/> | <b>Attachment C</b> | <b>Detailed Plan for Reporting on Eligible Mitigation Action Implementation (5.2.11).</b>   |
| <input checked="" type="checkbox"/> | <b>Attachment D</b> | <b>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.]</b> |
| <input checked="" type="checkbox"/> | <b>Attachment E</b> | <b>DERA Option (5.2.12). [Attach only if using DERA option.]</b>  |
| <input type="checkbox"/>            | <b>Attachment F</b> | <b>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.]</b> |

**CERTIFICATIONS**

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

1. This application is submitted on behalf of Beneficiary Village of Chefnak, 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: 08/23/2019

  
\_\_\_\_\_  
Anna Abraham  
Utility Manager

Naterkaq Light Plant  
[LEAD AGENCY]

for

Village of Chefornak  
[BENEFICIARY]

**ATTACHMENT B**  
**PROJECT MANAGEMENT PLAN**  
**PROJECT SCHEDULE AND MILESTONES**

Task #	Task Description	Completion Date
Task 1	Complete DERA grant negotiations with EPA; sign cooperative agreement	May - June 2019
Task 2	Solicit for Engineering Contractor for final design	June 2019
Task 3	Village of Chefnak submits VW Appendix D-6	6/17/2019
Task 4	Select Engineering Contractor	July 2019
Task 5	Create Bid Documents, and procurement put out to bid	July 2019
Task 6	Village of Chefnak submits VW Appendix D-4	8/30/2019
Task 7	City of Chefnak secures PPF Loan	Aug – Sept 2019
Task 8	Selection of Contractor and signature of final bid documents	September 2019
Task 9	Village of Chefnak receives VW funds	11/13/2019
Task 10	Shipment of Generators to Chefnak	December 2019
Task 11	Installation and Commissioning	Jan-Apr 2020
Task 12	Preliminary Data collection, possible modifications, pay final invoices	Sept 2020
Task 13	Complete all reporting and verify fuel reduction through PCE records	March 2021

**PROJECT BUDGET**

Budget Category	Total Approved Budget	Share of Total Budget to be Funded by the Trust	Cost-Share, if applicable (EPA TRIBAL DERA)	Cost-Share, if applicable (Naterkaq Light Plant)
1. Equipment Expenditure	\$480,950	\$122,000	\$272,360	\$86,590
2. Contractor Support <i>(Provide List of Approved Contractors as Attachment with approved funding ceilings)</i>	\$197,775	\$34,720	\$124,220	\$38,835
3. Subrecipient Support <i>(Provide List of Approved Subrecipients or Grant Awardees as Attachment with approved funding ceilings)</i>	\$	\$	\$	\$
4. Administrative <sup>1</sup>	\$12,950	\$12,950	\$0	\$
<b>Project Totals</b>	\$691,675	\$169,670	\$396,580	\$125,425
<b>Percentage</b>	100%	25%	57%	18%

<sup>1</sup> Subject to Appendix D-2 15% administrative cap.

**PROJECTED TRUST ALLOCATIONS:**

	2019	2020	2021	2022	2023
1. Anticipated Annual Project Funding Request to be paid through the Trust	\$169,670				
2. Anticipated Annual Cost Share	\$522,005				
3. Anticipated Total Project Funding by Year (line 1 plus line 2)	\$691,675				
4. Cumulative Trustee Payments Made to Date Against Cumulative Approved Beneficiary Allocation					
5. Current Beneficiary Project Funding to be paid through the Trust (line 1)					
6. Total Funding Allocated to for Beneficiary, inclusive of Current Action by Year (line 4 plus line 5)					
7. Beneficiary Share of Estimated Funds Remaining in Trust					
8. Net Beneficiary Funds Remaining in Trust, net of cumulative Beneficiary Funding Actions (line 7 minus line 6)					

Naterkaq Light Plant  
P.O. Box 11  
Cheofrnak, Alaska 99561  
Ph: 907-867-8213 Fax: 907-867-8724

**ADDENDUM TO CHEFORNAK D4**

**Estimate of Anticipated NOx Reductions (5.2.3)**

Table 4. EPA Diesel Emission Quantifier Results

COMBINED ANNUAL OUTCOME						
Engine	Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
JD 6125HF070, 2.08L/cyl, Industrial Non-Certified, MY2006 370kW, 617HP	Baseline Engine	17.49	3.02	1.62	11.25	1281.58
JD 6135AFM75, 2.25L/cyl, certified Marine Tier 2, MY2012 370kW/580HP	Replacement Engine	9.48	0.17	0.30	1.69	1231.13
Annual Short Ton Reduction		8.00	2.85	1.33	9.56	50.45
Percent Reduction		46%	94%	82%	85%	4%
COMBINED LIFETIME OUTCOME						
Lifetime Short Ton Reduction		100.05	35.61	16.57	119.51	630.56
Cost Effectiveness (\$/Short Ton)		\$6,985	\$19,623	\$42,165	\$5,848	\$1,108



ATTACHEMENT C  
REPORTING REQUIREMENTS

The Naterkaq Light Plant will for each Eligible Mitigation Action (EMA) no later than 6 months after receipt of the first disbursement of Trust Assets and thereafter no later than January 30 (for the preceding six month period of July 1 to December 31) and July 30 (for the preceding six month period of January 1 to June 30) of each year will submit to the Trustee a semi-annual report describing the progress implementing each EMA during the six month period leading up to the reporting date. Such reports shall include a complete description of the status including actual or projected termination date, development, implementation and any modifications of each approved EMA. The reports will be signed by an official with authority to submit the report and will contain an attestation that the information is true and correct and that the submission is made under penalty of perjury.



# Current River Electric



*A General Contractor specializing in all aspects of:  
Overhead and Underground Power Line Construction and Maintenance  
Power Generation Installation, Upgrade & New Build*

## Chefnak Power House Rebuild Project

March 21, 2019

This Project Plan and Assessment has been put together by Current River Electric and is based on CRE prices and our plan to update and rebuild the infrastructure that is currently in operation at the Village of Chefnak's Power Plant. This assessment is for the purpose of grant funding only and will outline project plan and costs incurred as noted below.

### Chefnak Power House Project Description:

- Removal of two (2) existing John Deere 12.5, hfo model, 350 kw units and all associated electrical and mechanical infrastructure pertaining to both of these units
- Removal of all control wiring and existing Woodward gcp controllers
- Removal of all existing conductor and electrical control panels
- Removal of existing fuel and air intake system
- Removal of exhaust down pipes
- Removal of remote mount charge air coolers
- Removal of mounting skids and vibration dampening components

These existing units were at one time top of the line units, but have been rebuilt multiple times and are no longer fuel efficient.

Chefnak sees 325kw loads in the winter time and 250/275kw loads in the summer. CRE plans, with the agreement and permission of the Native Village of Chefnak, to install two (2) - 370kw series, 60 Detroit diesels, Tier 2 in model or 2 new John Deere Tier III Marine, 6135HFM85, 417kw generators. These units are to be complete packages on skids and have marine packages installed on them - so as for more efficiency on the waste heat system that feeds multiple existing buildings in Chefnak. This will also provide huge fuel savings for the community and the install of all new infrastructure that supplies and services these 2 units.

The existing infrastructure was poorly designed and poorly installed. We at CRE plan on installing 3 new Eazygen XT controllers. These controllers are top of the line load sharing and multiple unit(s) compatible and allows for 100 percent unit control and monitoring; they are also user friendly and will provide years of trouble-free service for the community.

CRE plans on installing new conductor to feed switch gear, as existing is worn. We will also be installing new control panels with remote mounting to avoid the vibration and wire chafing that occurs to unit mounted control boxes. The CAC (charge air coolers) will need to be replaced as well as all CAC plumbing. CRE chose(s) the Series 60 Detroit or 2 new John Deere Tier III Marine, 6135HFM85 generators because they are the most fuel efficient and correctly sized unit for Chefnak and it is serviced in Alaska. The price to overhaul is about 50% of the cost of the existing John Deere units. CRE plans to procure and build both generator sets as well as all associated components.

CRE will also be doing the install work and is planning on using local labor for this project as well as using GSE Engineering for the design.

#### **Chefnak Power House Procurement plan:**

Once funding has been secured, we will be purchasing the following material:

- 2 Detroit series 60 - 12.7 liter Bobtail units or JD 6135HFM85
- 2 Marathon mariner gen ends
- 2 full marine kits
- 2 new exhaust systems with high temp rap complete
- 2 Parker Racor fuel systems complete
- 2 Donaldson air intake systems complete
- 2 Basler voltage regulators
- 2 new galvanized CAC and all associated plumbing
- new coolant valves and plumbing complete for 2 units
- CRE will build 2 new skids and build both units in CRE shop and ship complete
- 3 new Eazygen XT(s) with all associated schematics and install designs s needed
- All new tray cable wiring for new controls
- All new conductor wire and ends needed
- New control boxes and associated material

#### **Chefnak Power House Shipping Plan:**

Once both units are built and all material has been inventoried and packaged, CRE will deliver all material, tools and gear to Northern Air Cargo in Anchorage for shipping as follows:

- Northern Air Cargo - Anchorage to Bethel
- Ryan Air Cargo - Bethel to Chefnak

#### **Option #2**

(Season dependent)

- Northland Transport - Anchorage to Bethel
- Alaska Logistics - Bethel to Chefnak

**Scope of Project:**

- Spec and procure all parts and materials needed
- Arrange shipping and transport of all parts and material to CRE shop in Wasilla, AK
- Build both units, complete inventory and package all material for shipping
- Deliver to previously outlined shipping provider(s)
- Once all materials are landed onsite, inventoried and inspected
- CRE will schedule with community to arrive and start project
- Once onsite CRE plans to have this project completed in no more than 45 days
- Final project walk-through
- Training plant operators on new controllers a maintenance practices
- All commissioning and functional check out is to be done by CRE and the plant operators in Chefnak

**Services being Supplied by Chefnak:**

- The Village of Chefnak will supply all housing and related costs
- All in town transport, associated fuel and any related costs
- Any and all heavy equipment, fuel and related cost(s) that is needed on this project
- Any and all airfare and airfreight associated with this project
- CRE will need 1 to 2 local worker(s); we prefer the power plant operators due to their existing knowledge and understanding of power generation and their power plant

**Services being Supplied by CRE:**

- Current River Electric will be supplying all tooling, standard and specialty, needed, i.e. software programming
- 2 Power Generation Technicians
- We will also be supplying all designs and structural planning
- Procurement of all parts and material
- Skilled labor to build both units in CRE shop
- CRE will be providing all training and support to the plant operators

**Scope of Work Budget Breakdown:**

• Series 60 Detroit 340 kw units	\$ 260,995.00
• CAC Cooler Drive & Controllers	\$ 66,950.00
• CAC Install & Labor	\$ 25,000.00
• Shop Labor	\$ 40,000.00
• Power House Retrofit	\$ 79,404.00
• On Site Labor & Per Diem	\$ 88,800.00
• Freight to on Site	\$ 45,600.00
• Switch Gear Modification Cost	\$ 37,000.00
• Engineering & Design	\$ 60,000.00
• <b>Total</b>	<b>\$ 703,749.00</b>

*The project cost was decreased during budget negotiations between the utility and EPA DERA staff to equal a lesser amount.*

Licensed ~ Bonded ~ Insured



# Current River Electric



*A General Contractor specializing in all aspects of:  
Overhead and Underground Power Line Construction and Maintenance  
Power Generation Installation, Upgrade & New Build*

March 29, 2019

Naterkaq Light Plant  
Anna Abrams, Utility Manager  
PO Box 11  
Chefornak, AK 99561

Anna,

The following information that Current River Electric (CRE) is supplying the Village of Chefornak with is in regards to the removal and replacement of the 2 existing John Deere industrial engines/generator packages and the installation of new marine TEIR 2-3 marine engines/ generator packages - utilizing both Tribal DERA / Volkswagon funding for this project. In this letter I will point out the available engines, there ranking and what under the current EPA rules and following DERA guidelines could be installed utilizing the above grant funding as well as, what is available in the current market place at this time.

Current engines in operation in Chefornak are as follows:

- Engine #1 John Deere 6125HF070 380kw industrial G-spec serial# RG6125H057873
- Engine #2 John Deere 6125HF070 380KW industrial G-spec serial# RG6125H057886

Both of these engines, while they should be TIER 2 industrial and have TEIR 2 industrial CBAs or cylinder block assemblies are actually labeled (stationary export). Which means they are a none TEIR engines and not regulated by the EPA, which makes them excellent candidates for removal and replacement.

The current EPA and DERA rules and rule constraints or guidelines that must be adhered to are as follows:

- We cannot install or put into service under DERA any TEIR 1 industrial or marine engines.
- When installing new engines, we cannot replace existing engines with like and kind or of the same TIER i.e., we cannot replace TEIR 2 with TEIR 2 or TEIR 3 with TEIR 3.
- Any TEIR 2 or TEIR 3 engines that are installed with build dates on or after January 1, 2014, require exhaust after treatment system or DPF or SCR.

Now there are many other rules used for vetting the eligibility of engines for replacement, but I will not delve into that as Chefornak's engines have already met those requirements.

Physical Address: 4210 S. Eider Circle ~ Wasilla, AK 99623 Mailing Address: 9505 Lewis Loop Wasilla, AK 99623  
Office: 907-357-4790 ~ Fax: 907-357-4795 ~ Cell: 907-354-0950 ~ Email: [currentriver@live.com](mailto:currentriver@live.com)

After taking the above information into consideration, the next factors that must be considered & their answers are as follows:

**Factors to consider:**

- #1 Marine or industrial and what is the difference
- #2 How to adequately size engines for the community or load
- #3 Life span of this unit, total available block /operational life span of this unit
- #4 Hours between overhauls
- #5 Cost of overhauls
- #6 Fuel efficiency

**Answers**

**#1 - Marine or industrial and what is the difference?**

- So industrial TEIR3-4interm -4 final; All can be installed, but require an exhaust aftertreatment system if built on or after January 1, 2014 which immediately rules out TEIR 4i – 4F.
- Any TEIR 3 industrial that was built prior to January 1, 2014 can be installed without exhaust after treatment. These engines are still available, but these engines all have - when I say all - that is CAT, Cummins, Volvo, Scania, John Deere etc., all have EGR systems, coolers, actuators & also VGT turbo systems. All of these systems come on industrial engines and are extremely problematic and prone to failure.  
The cost of maintaining these systems in rural Alaska is extremely high and do to the failure rate of these components and the associated cost to repair, replace and maintain these systems in rural Alaska - we do not consider these engines a viable option for remote prime power applications.
- Marine engines that are TEIR 2-3 are available and can be installed, but currently the rules as previously noted above need to be followed if the engine is built before January 1, 2014.
- It can be installed if built on or after January 1, 2014, it would then require an exhaust after treatment system.  
Currently this rule is in the prosses of being changed. Hopefully by July or December of this year at the latest it should be changed by the EPA to allow for brand new year and model date engines that are marine TEIR 3 to be installed without exhaust after treatment systems.  
Additionally, marine engines are simpler - they utilize standard water-cooled Turbo and water-cooled marine propulsion technology; therefore, they do not have any of the systems EGR or VGT on them that industrial engines have.  
They are off road engines and are not subject to the same requirements as industrial engines and they produce much better waste heat temperatures that are needed in many of the villages throughout Alaska as well as being much more fuel efficient than old non TEIR engines.
- So, to summarize question #1 - marine engines are the most cost-effective choice

**#2 - How to adequately size your engines/ generators for your community or load?**

- So, there are many fancy spread sheets and matrixes available for this, but simply put, look at the communities existing load, look at the winter time load (which will be the highest load time of the year) then look into the next five years.  
A community must consider, are we growing in size, are you building more houses, updating water and sewer systems, new airports, new washeterias, schools etc.  
With this data, ask yourselves are we growing, shrinking or staying the same size?  
If growing, plan on upsizing your generators by 5%-10% above your existing generators. Then size your generator accordingly optimal engine/generator operational performance is 50% to 75% loaded. Inside this window the engine will get its best fuel efficiency, see the longest overall life span and reach the most hour between overhauls, barring any catastrophic mechanical failures.

**#3 - Life span of this unit, total available block /operational life span of this unit**

- Modern marine inline six-cylinder marine engine, depending on size, HP/KW and configuration typically will reach between 25,000-35,000 hours.  
If maintained properly between in-frame overhauls, typically in the industry 3-4 complete major overhauls are what we consider block life span.  
This could range from 100,000 hours to upwards of 150,000 hours of engine block useful life when properly operated, sized correctly and meticulous maintenance occurs.

**Both Question #5 and #6 - Cannot be answered until the engine is chosen**

- So, with all of the above being said and taken into consideration, there are a lot of engines available that would suit Chefnak's needs, but we have to choose an engine that meets all the above requirements.

**Below is a list of engines that we have been comparing for the Chefnak Power House:**

- #1 Cat 3456 455kw  
This engine is fuel efficient and a decent option, but it is a Non TEIR engine so it is not eligible.
- #2 CAT C 15 marine TEIR 2 350KW  
This engine is very proven and well suited and a viable option, except it has a worst fuel curve then the engines already operating in Chefnak - so this isn't a viable option.
- #3 Detroit Diesel series 60 TK35 6063 TEIR 1 350KW  
This engine is an industrial engine converted to marine and an excellent choice, but it is a TEIR 1 engine, so it is not eligible to be installed under the above grant.
- #4 Detroit Diesel series 60 MK35 6063 TEIR 2 310KW  
This engine could be installed under this grant, but it is too small and not considered a viable option for Chefnak.
- #5 John Deere 6135HFM85 TEIR 3 marine 417KW  
This engine is simply the best choice, but it is built after January 1, 2014 and cannot be installed under this grant till the EPA year model date rule gets changed, currently this is in the process of getting changed.
- #6 John Deere 6135AFM75 TEIR 2 marine 370KW  
This is currently the best option to submit for the grant purposes. It can be installed without exhaust after treatment and it was also built before January 1, 2014.

Lastly, I am proposing Chefnak submits engine #6 for there DERA application because it is the only engine that checks the required boxes and can legally, under EPA and DERA rules be installed.  
I am further proposing that once Chefnak is awarded the grant, they wait to start the project till the EPA has changed the year date and model rule governing the install of new TEIR 3 marine engines.  
Once this rule has been changed Chefnak then re-submits their engine choice for engine #5, which is the best choice based on size, load, fuel economy, and longevity and would also be best suited for the needs of Chefnak.

Regards,  
Dillon Willis  
Project Manager  
Phone: (907) 707-8985

Cc: Steve Stassel,  
B.McGregor, AEA

APPENDIX E  
EPA DERA GRANT

APPENDIX E  
REVISED EPA DERA GRANT

Revised 8/12/2019

**ENVIRONMENTAL PROTECTION AGENCY (EPA)**  
**Clean Diesel Funding Assistance Program FY 2018**  
**Request for Proposals (RFP)**  
**EPA-OAR-OTAQ-18-04**

**Project Title:** Chefnak Powerhouse Rebuild Project – Chefnak, Alaska

**Applicant Information:**

- Applicant (Organization) Name: Village of Chefnak
- Address (Street, City, State, Zip): P.O. Box 110, Chefnak, AK 99561
- Office Phone and Fax Numbers: T: 907-867-8500 F: 907-867-8711
- Contact Name, Email address: Peter Panuk Sr., tyf\_tcoffice@yahoo.com
- DUNS number: 791285872

**Eligible Entity:** The Village of Chefnak is eligible to apply under this RFP as a federally recognized Tribe. The Chefnak Traditional Council wishes to protect its environment, including air quality in the region, so that we can protect our way of life. According to the 2010 Census, the population of the community of Chefnak was 418 people with 97% being Alaskan Native. The population of Chefnak has been steadily increasing; the 2017 population was estimated at 432 people. As the demand for energy increases with our expanding population, it will be of more importance to reduce emissions and protect air quality. The only source of power to the Village of Chefnak is from two non-certified diesel gensets, owned and operated by the City of Chefnak dba Naterkaq Light Plant. The Chefnak Traditional Council has entered into a partnership with the City of Chefnak (City) and Naterkaq Light Plant (Naterkaq) to replace the diesel gensets and switchgear in the community's diesel power plant to increase fuel efficiency, reduce the cost of power to residents and improve air quality for the Native Village of Chefnak. The City of Chefnak dba Naterkaq Light Plant will be the subrecipient of the grant managing the project.

**Total Project Cost:**

	<u>\$691,675</u>	<b>% Total Project Cost</b>
<b>Total Project Cost:</b>		
<b>EPA Funds Requested:</b>	\$396,580	57%
<b>Mandatory Match: Naterkaq Light Plant</b>	<u>\$125,425</u>	<u>18%</u>
<b>Voluntary Cost Share: Village of Chefnak VW Tribal Trust</b>	<u>\$169,670</u>	<u>25%</u>

- Deleted: \$698,875
- Deleted: (funds and in-kind match)
- Deleted: \$152,295
- Deleted: 22
- Deleted: \$150,000
- Deleted: 21

**Target fleet:** Stationary Generators for Power Production

**Type of Upgrade:** Certified Vehicle/Engine Replacement: Stationary Generators for Power Production



**Short Project Description:** The applicant proposes to replace two John Deere 6125HF070 non-road non-certified diesel engines and 370 kW gensets with two cleaner more efficient John Deere 6135AFM75 Marine Tier 2 engines with 370 kW gensets and associated equipment for efficient power generation (switchgear, control wiring and controllers, conductor and electric panels, fuel and air intake system, exhaust down pipes, charge air coolers, mounting skids). The new gensets will be marine jacketed to provide waste heat recovery to the adjacent washeteria, reducing fuel oil burned for heat.

**Section 1. Project Summary and Overall Approach**

**A. VEHICLES AND TECHNOLOGIES**

The Village of Chefnak proposes to replace 2 non-road non-certified engines, 370 kW gensets and associated power generation equipment with two newer more efficient certified Marine Tier 2 engines, 370 kW gensets and associated power generation equipment as outlined below in Table 1.

**Table 1. Proposed Chefnak Powerhouse Rebuild**

Gen-Set #	kW Rating	Tier Rating	Engine Model	Engine Manufacture Date	Cumulative Runtime Hours	Remaining Life	Fuel Efficiency (kWh/gal)
<b>Existing Engines</b>							
1	370kW	Nonroad Tier 0	JD 6125HF070	12/5/2006	47,743	52,257 hrs; 11.9 yrs	13.1
2	370kW	Nonroad Tier 0	JD 6125HF070	12/6/2006	39,918	60,082 hrs; 13.7 yrs	13.1
<b>Proposed Replacement Engines</b>							
1	370kW	Marine Tier 2	JD 6135AFM75	2012	NA	NA	13.6
2	370kW	Marine Tier 2	JD 6135AFM75	2012	NA	NA	13.6

The Naterkaq provides prime electric power to the community of Chefnak. The power plant consists of three diesel gensets, Genset #3 is rated 180kW and Gensets # 1 & 2 are each rated 370kW. The 180kW genset is a marine Tier 2 certified engine. The two 370kW gensets are nonroad, Tier 0 (non-certified) engines. Based on FY18 Power Cost Equalization (PCE) data for Chefnak, the average electric load in FY18 was 170kW, and the peak load was 374kW. Genset #3 is too small to carry the electric load, except during periods of low load during the summer and some night time loads. Winter peak loads require paralleling two gensets to meet the load and to prevent a power outage. To meet the community's peak loads, without paralleling another genset, a prime power rated genset of about 410kW is required.

There are a variety of engine manufacturers that produce an engine capable of producing 370kW to 410kW prime power. However, the market share of prime power diesel gensets currently in operation in remote areas of Alaska is extremely limited; approximately 93% are manufactured by John Deere, Caterpillar, Cummins and Detroit Diesel. These manufacturers have an established network of vendors with qualified mechanics and technicians to support these engines throughout rural Alaska, as well as trained powerhouse operators. Reliability is the first priority in selecting a generator to protect the health and welfare of the residents. The available Tier 2 and Tier 3 engines produced by these manufacturers, capable of providing 350kW to 450kW prime power was evaluated through a Best Achievable Technology analysis (attached to application). Based on the load requirements, fuel efficiency, reliability, and lack of Diesel Particulate Filter (DPF) requirement, the John Deere 6135AFM75 marine Tier 2 rated 370kW was the preferred replacement engine. Currently, the generators in Chefnak recover heat that is then used by the washeteria. The installation of the marine generators

proposed will increase that available heat and further reduce diesel consumption and emissions in the community.

Industrial Tier 4 engines and marine Tier 3 engines manufactured on or after 1/1/2014 were excluded because they are not viable options for prime power generation in remote areas of Alaska due to the lack of diesel exhaust fluid (urea), the requirement for a Diesel Particulate Filter (DPF), and lack of ULSD fuel. Urea has a freezing point of 15 °F, requiring additional heating in cold temperatures, and is considered hazmat, making it challenging freight for isolated communities such as Chefnak that are only accessible by air during most of the year.

The Village of Chefnak has a stand-alone electric grid where 100% of the electric power needs are produced by the Naterqak with diesel generators. The City of Chefnak dba Naterqak Light Plant will assume ownership of the new equipment purchased and installed under this funding proposal and will operate and properly maintain the generators.

Stationary engines used for prime power production in rural powerhouses are operated until it is no longer cost-effective to overhaul the engines. Engines of this size are typically overhauled every 25,000 to 35,000 hours. If the engines are maintained properly between in-frame overhauls, the industry typically considers the block lifespan to include 3-4 complete major overhauls. This could range from 100,000 hours to upwards of 150,000 hours of engine block useful life when properly operated, sized correctly and meticulous maintenance occurs. Gensets # 1 and # 2 have cumulative runtime hours of 47,743 hours and 39,918 hours, respectively, as of December 2018. Assuming a useful block life of 100,000 hours, these engines have 52,257 hours and 60,082 hours remaining life, respectively. Based on an average run time of 50% of the year for each engine, the remaining life of the existing gensets are 11.9 years and 13.7 years, respectively. Based on these assumptions and the better fuel efficiency of the replacement engines (13.6 kWh/gallon), the annual fuel consumption would decrease by 4,483 gallons per year and the NOx and PM2.5 emissions would decrease by 46% and 94%, respectively.

#### **Restrictions for Mandated Measures:**

Use of marine Tier 2 diesel gensets to repower industrial non-certified diesel generators does not conflict with DERA requirements, and is allowable for stationary use for prime power in Alaska as long as a Best Achievable Technology analysis is performed. Use of marine generators for stationary power production is not subject to the Restriction for Mandated Measures of the RFP and are exempt from the requirements of EPA's marine rule.

Chefnak is on an isolated grid powered by older non-certified diesel gensets, similar to many rural Alaska villages, that run 24 hours a day seven days a week. The gensets that provide power must be reliable. The newest Tier gensets have DPF equipment and require urea and ULSD, all of which impact the feasibility and reliability of the engines for use in isolated rural Alaska powerhouses. The installation of newer, more efficient and cleaner gensets will decrease fuel consumption, reduce emissions and lower the cost of power. In addition, the marine engines allow for waste heat recovery, which is delivered to the community washeteria, further reducing the amount of fuel consumed for heat. Chefnak currently pays \$0.55/kWhr for power. Fuel used to generate electricity is delivered when the community is accessible by barge. In FY18, the average annual cost of fuel consumed for power generation was \$3.00 per gallon. Recently, the community had consumed more fuel than was delivered when the community was accessible by barge. Until fuel could be delivered, about 15,000 gallons had to be purchased at a cost of \$6.50 per gallon. Increased fuel efficiency can make supplies last longer, reducing the chance of shortages.

#### **Funding Restrictions:**

No awarded DERA funds will be used for: costs of emissions reductions that are mandated under federal law; matching funds for other federal grants; expenses incurred prior to the project period; emissions testing; air monitoring activities; or fueling infrastructure. The non-certified diesel generators proposed for replacement have more than three years of useful life and are operated well over 500 hours per year.

## 2. ROLES AND RESPONSIBILITIES:

Once the project is funded, the City of Chefnak will procure contractual assistance for final design of the engine/generator installation with the assistance of project partner Naterkaq. Bid documents will be created and an RFP will be solicited for the replacement engines, generators and associated equipment, including any required assembly and testing and installation services. The City of Chefnak will work with the Village of Chefnak to timely file the necessary VW Tribal Trust documents to secure voluntary matching funds for the project. The City of Chefnak will hire contractors to administer the installation of the generators, with additional technical support from partners as needed. The City will secure a loan for the mandatory cost-share through the State's Power Project Fund (PPF) administered by the Alaska Energy Authority (AEA). The City is in good standing with AEA and will not have any issue securing a PPF loan for the project. Throughout the project, Naterkaq Utility Manager Anna Abraham will act as the Project Manager (PM) to ensure the timely completion of each task, and will be assisted by the Generator Operators and other staff members as needed. Naterkaq will manage the grant and work with the Village of Chefnak and the EPA to ensure all grant requirements are met. The City of Chefnak will post RFPs for engineering and installation contractors and will select the contractor in accordance with applicable procurement rules. Naterkaq will work with the contractor to oversee the installation and commissioning of the equipment and, at the conclusion of the project, Naterkaq and the engineering contractor will inspect the final installation with representatives from the community. If requested, AEA staff will offer technical assistance during startup and commissioning of the engines. Naterkaq will maintain monthly PCE reporting to determine the realized fuel efficiency and fuel consumption of the replacement gensets.

## 3. TIMELINE AND MILESTONES

The applicant proposes to complete the project within two years of the DERA grant award, beginning October 1, 2019. The timeline below allows for solicitation for services and lead time for obtaining and shipping engines. Installation of the engines is scheduled to occur late winter-early spring 2020. Following installation, fuel consumption and fuel efficiency will be documented. A two-year timeframe will accommodate unforeseen delays that can occur with construction projects in remote areas of Alaska.

Table 2. Timeline and Milestones

Task #	Task Description	Completion Date
Task 1	Solicit for Engineering Contractor for final design	Oct 2019
Task 2	Select Engineering Contractor	Nov 2019
Task 3	Create Bid Documents, and procurement put out to bid	Nov 2019
Task 4	Selection of Contractor and signature of final bid documents	Dec 2019
Task 5	Shipment of Generators to Chefnak	Jan 2019
Task 6	Installation and Commissioning	Jan - June 2020

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Deleted: Task 1
Deleted: Complete DERA grant negotiations with EPA; sign cooperative agreement
Deleted: May - June 2019
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Deleted: June
Deleted: Task 3
Deleted: Village of Chefnak submits VW Appendix D-6
Deleted: 6/17/2019
Deleted: 4
Deleted: July
Deleted: 5
Deleted: July
Deleted: Task 6
Deleted: Village of Chefnak submits VW Appendix D-4
Deleted: 8/30/2019
Deleted: Task 7
Deleted: City of Chefnak secures PPF Loan
Deleted: Aug - Sept 2019
Deleted: 8
Deleted: Sept
Deleted: Task 9
Deleted: Village of Chefnak receives VW funds
Deleted: 11/13/2019
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Deleted: Apr

Task 7	Preliminary Data collection, possible modifications, pay final invoices	Sept 2020
Task 8	Complete all reporting and verify fuel reduction through PCE records	March 31, 2021

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## **Section 2. Project Location**

### **A. PROJECT LOCATION:**

The Village of Chefnak lies within the Yukon National Wildlife Refuge, about 98 air miles southwest of Bethel and 490 miles northwest of Anchorage. It is located on the south bank of the Kinia River, 16 miles upriver from its mouth in Etolin Strait, an arm of the Bering Sea. The total area is 6.4 square miles, of which 5.7 square miles is land and 0.66 square miles is water. The marine coastal climate has summer temperatures ranging from 41°F to 57°F and winter temperatures ranging from 6°F to 24°F with occasional lows down to -10°F. Annual precipitation averages 22 inches, and annual snowfall averages 43 inches. The region is characterized by tidal wetlands, sub-arctic wet tundra, consisting of marshes, swamps, and water ponds, with soils that provide poor drainage. Subsistence hunting and gathering is an important source of food.

The village was founded in the early 1950s by Alexie Amagiqchik. As of 2017, the population of the Village of Chefnak was 432, with 97% of the population Alaska Native, nearly all Yup'ik Eskimos. There are approximately 99 housing units, with 92 occupied, at an average density of 14.3 per square mile and a population density of about 75 people per square mile. Several community buildings and businesses are dispersed throughout the community.

### **B. AREAS OF POOR AIR QUALITY**

The Village of Chefnak is not in a poor air quality priority area for DERA. It is considered an economically distressed community by Alaska Department of Labor and Workforce Development (DOL&WD). It is also classified as a climate change high priority community by the Denali Commission.

### **C. AREAS THAT RECEIVE A DISPROPORTIONATE QUANTITY OF AIR POLLUTION FROM DIESEL FLEETS**

While the air quality in rural Alaska is generally good, the residential households and community buildings of Chefnak are concentrated along a small L - shaped road system with the powerhouse centrally located (see attached aerial map). The powerhouse, which runs around the clock, is in close proximity to the washeteria, Amaqicq/Chaputnguaq School, United Utilities Inc., Chefammute Inc., the post office, Chefnak Traditional Council, and City of Chefnak Community Building. The washeteria receives waste recovery heat from the power plant. The police station, fire station, and Chefnak Health Clinic lie to the south of the power plant. The church, Avugiak's Store, PHS pumphouse, old armory building, VSW ATCO Camp, AVCP Headstart, and Coastal Villages Region Fund Building are east of the plant. The surrounding area provides hunting and gathering grounds for subsistence resources.

In FY2018, the powerhouse burned through 113,917 gallons of diesel fuel at an average fuel efficiency of 13.1 kWh/gal. The smell of diesel emissions can occur anywhere within the Village. Any improvements in efficiency will have a net positive effect on emissions, fuel consumption and fuel cost, improving the air quality for which residences are constantly exposed in their everyday lives. The proposed genset replacement project will increase the fuel efficiency to 13.6 kWh/gal, reducing the amount of annual fuel consumption by 4,483 gallons.

## **Section 3. Benefits to the Community**

Research shows there is no safe level of exposure to diesel particulate matter or NO<sub>x</sub>; they are carcinogenic pollutants and respiratory irritants and contribute to the formation of smog, acid rain and

eutrophication of waterbodies. The proximity of the diesel powerhouse to the entire community, including all of the residences, schools, health clinic, public buildings, and private businesses, poses a constant risk to all of the residents with little relief. Cultural norms and values of subsistence and living off the land place residents outdoors year round to both harvest and process food. An accumulation of factors place the living, working and recreation areas of residents in closer proximity to power plant emissions than those who live in larger centers.

As of 2017, the estimated population of Chefnak was 432 people with 97% Native Alaskan. **The median household income is approximately \$53,333**, which is 28% lower than the Alaska median and 4% lower than the national median. The unemployment rate in Chefnak is 11%, which is 126% higher than the national average. The poverty rate in Chefnak is 15% which is 2% higher than the national average. The cost per kilowatt-hour of electricity is \$0.55/kWh indicating that energy costs consume a relatively high percentage of household income. The 2018 annual update of the distressed community list prepared by the Alaska Department of Labor and Workforce Development (DOL&WD), Research and Analysis Section, classifies Chefnak as a distressed community; the average 2017 earnings were \$12,448, 78.3% of the population earns less than full-time minimum wage earnings (\$20,384/year), and only 36.3% of the population was employed all four quarters.

While the entire community is constantly exposed to harmful diesel emissions, some segments of Chefnak's population are more vulnerable to harm. Several residents suffer from respiratory ailments, due to a range of causes (genetic disposition, age, lack of health care and poor nutrition), and are more vulnerable to aggravating these conditions, developing lung cancer, and premature death. Young children are especially susceptible to exposure to diesel emissions because their lungs are not fully developed; about 10% of the population is 4 years or younger. Elderly people are also more susceptible to damage from diesel emissions; about 7% of the Chefnak population is 65 or older. The school is located in close proximity to the power plant and school age children are more likely to be outside; 28% of the Chefnak population is 5-17 years old.

Based on the DEQ tool, the proposed genset replacement would improve fuel to 13.6 kWh/gallon, reducing annual fuel consumption by 4,483 gallons per year and the NOx and PM2.5 emissions would decrease by 46% and 94%, respectively. Both the amount of diesel pollution and the cost of power would decrease.

#### **Section 4. Community Engagement & Partnerships**

As previously described, both the high cost of power and the constant proximity to diesel emissions from power generation negatively affects everyone in the community. The Chefnak Traditional Council, City of Chefnak, and Naterkaq issued a joint letter serving as a formal commitment to what each party will contribute to improve the efficiency of the engines, reduce fuel consumption and reduce emissions by replacing the current gensets with newer cleaner gensets to create a safer environment for the community (attached to this application). The Alaska Energy Authority (AEA) has previously loaned the City funds through the Project Power Fund and has indicated that the City is in good standing and would not have any issue securing a loan to complete this project. The City of Chefnak has frequently partnered with the Chefnak Traditional Council (Village of Chefnak), AEA, and Alaskan Native Tribal Health Consortium (ANTHC) on plans to increase energy efficiency, reduce the cost of power and reduce diesel emissions. Chefnak implemented a wind feasibility study for power generation through a State renewable energy grant. These partnerships have assisted in providing technical assistance, identification of potential funding sources, grant writing, and strategic energy planning and feasibility. (See attached: letter of commitment from the three project partners, Chefnak Traditional Council Resolution, and letters of support from Naterqak Light Plant, City of Chefnak, AEA and ANTHC.)

## **Section 5. Project Sustainability**

As detailed in Section 6, the proposed non-certified diesel genset replacement with certified marine tier 2 diesel gensets will result in a 46% reduction in NOx emissions and 94% reduction in PM2.5 emissions, and will reduce fuel consumption by 4,483 gallons annually. At the \$6.50 per gallon fuel cost recently incurred by the utility to cover fuel shortages, the cost of generating power would be reduced by more than \$29,000 annually or \$13,500 annually at average fuel costs. In addition, the upgraded switchgear will result in more optimal operation of the gensets further improving the fuel efficiency and the marine jacketed generators will increase available recovered heat, reducing space heating fuel consumption and associated emissions. The project provides immediate benefits to the community and the surrounding subsistence resources on which the residents rely, reducing cumulative effects as well.

Naterkaq partners frequently with the City of Chefnak, Intelligent Energy Systems and Chefnak Traditional Council on plans to reduce emissions and increase energy efficiency. The City of Chefnak along with the Naterkaq applied and obtained a Power Project Fund Loan through AEA to overhaul two engines in 2012, improving their longevity and fuel efficiency; Naterkaq successfully paid in full. Intelligent Energy Systems with the City of Chefnak did a wind feasibility study for the Naterkaq in the year of 2013-2014 and closed out the grant through the AEA in 2015. The Naterkaq, Chefnak Traditional Council partnered with Intelligent Energy Systems to compile and do an energy audit database for the whole community of Chefnak in which both entities pledged to reduce the community's energy usage by 20% through the RACEE Competition funded by Department of Energy by the year of 2020. Intelligent Energy Systems partnered and provided technical assistance with grant writing to apply for the USDA High Cost Energy Grant and was selected and received a \$2.9 million dollar grant to install 3 wind turbines which will start construction by Fall of 2019. Chefnak Traditional Council, City of Chefnak, Chefnarmute Inc. and Naterkaq partnered together in the year of 2016 and hired E3 who is a subsidiary to Calista Inc. to do a Strategic Planning for the community of Chefnak and one of the goals for all the entities was to obtain funding to replace the generators to more fuel efficient engines that will reduce diesel emissions.

AEA will continue to assist Chefnak in improving energy efficiency throughout the community; providing technical assistance in optimal powerhouse operations and maintenance and operator training; technical assistance and funding opportunities for renewable energy sources; and providing reasonably flexible PPF loan terms. ANTHC is committed to partnering with entities that seek to reduce harmful exposure of diesel emissions to Alaska Natives, as well as carrying out improvements to indoor air quality, domestic water quality and wastewater management, and energy efficient projects.

## **Section 6. Environmental Results—Outputs, Outcomes and Performance Measures**

### **A. OUTPUTS AND OUTCOMES:**

The fuel efficiency and emission reductions that result from this project will help meet EPA's Strategic Plan 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 in an Alaska Native village. Greenhouse gas emission reductions will result from improved fuel efficiency of the engines.

The activity and output of this project is the replacement of two non-road non-certified diesel gensets and associated equipment with two certified marine tier 2 diesel engines with marine jacketed gensets and updated switchgear, cooling and exhaust systems (Table 3). Based on the DEQ, the outcome of the project will be an annual 46% reduction in NOx emissions, 94% reduction in PM2.5 emissions, and 4,483-gallon reduction in fuel consumption. Over the 12.5-year lifetime, the project will result in a reduction of

100 tons of NOx and 35 tons of PM2.5 (Table 4). A printout of the DEQ results spreadsheet has not been included because the DEQ does not allow for an industrial engine to be replaced with a marine engine. Baseline conditions were ran for each engine and the output data was then processed in excel. The updated switchgear is expected to further improve fuel efficiency. The diesel fuel consumption and power generation outcome will be documented by Naterkaq through monthly PCE reporting.

The reduction in harmful diesel emissions will improve the health and wellness of the community members.

Table 3. Anticipated Outputs and Outcomes

Activities	Outputs	Outcomes (Annual)
Replace two JD 6125HF070, 2.08L/cyl, Industrial Non-Certified engines, MY 2006 and 370kW, 617HP generators, switchgear, cooling and exhaust systems	Installation of two JD 6135AFM75, 2.25L/cyl, Marine Tier 2, MY 2012 engines with 370kW, 580HP, marine jacketed generators and updated switchgear, cooling and exhaust systems	NOx emissions reduction = 46 % PM2.5 emissions reduction = 94% Fuel consumption reduction = 4,483 gal.

Table 4. EPA Diesel Emission Quantifier Results

COMBINED ANNUAL OUTCOME						
Engine	Annual Results (short tons)	NOx	PM2.5	HC	CO	CO2
JD 6125HF070, 2.08L/cyl, Industrial Non-Certified, MY2006 370kW, 617HP	Baseline Engine	17.49	3.02	1.62	11.25	1281.58
JD 6135AFM75, 2.25L/cyl, certified Marine Tier 2, MY2012 370kW/580HP	Replacement Engine	9.48	0.17	0.30	1.69	1231.13
Annual Short Ton Reduction		8.00	2.85	1.33	9.56	50.45
Percent Reduction		46%	94%	82%	85%	4%
COMBINED LIFETIME OUTCOME						
Lifetime Short Ton Reduction		100.05	35.61	16.57	119.51	630.56
Cost Effectiveness (\$/Short Ton)		\$6,985	\$19,623	\$42,165	\$5,848	\$1,108

**B. PERFORMANCE MEASURES:**

**Oversight of Project:** Anna Abraham, Naterkaq Utility Manager, will oversee the execution of this project with the help of Hazel Flynn, Nelson Island Coordinator for the EPA-funded Nelson Island Consortium (NIC), who is currently working for the Chefnak Traditional Council. Anna Abraham has managed or assisted with the USDA High Cost Energy Grant for the past 2 years and is also familiar with the rules and requirements of the EPA DERA program. Hazel Flynn has managed the NIC funding for the past 7 years and is familiar with the rules and requirements for EPA. Hazel Flynn manages funding from EPA, supplemental funding and oversees the grant for the NIC under the Chefnak Traditional Council.

**Project Management:**

- **Fiscal Tracking and Reporting:** Progress, expenditures, purchases and other expenses allowable in the grant will be tracked and reported by Anna Abraham and subsequently by the Chefnak Traditional Council accountant assigned to this project and overseen by Theresa Panruk.
- **Milestone Tracking and Reporting:** Reports will be generated quarterly for Tribal President and Council and for the EPA according to requirements set out in the award, and will show progress on achieving the proposed timeline (see Section 1) and project outcomes.
- **Emissions tracking:** The State of Alaska PCE Program requires all rural utilities to track diesel fuel consumption and power generation data. This data will be compared to the DEQ data below that projects the results expected with the generator replacements.

**C. PERFORMANCE PLAN:**

Expected outcomes include:

**Short-term:** Engine replacements will lead to immediate reductions in diesel fuel use and decreased emissions.

**Medium-term:** The new electronically controlled certified marine engines will save an estimated 4,483 gallons of diesel fuel/year with associated reductions in exhaust emissions. Community wellness will improve with reduced cost of living. Community will engage in energy projects.

**Long-term:** The community will continue to benefit from a lower cost of living. Health benefits from reduced NOx and PM2.5 emissions will continue to surface. Partnerships will continue to grow in finding ways to continually improve energy efficiency and pursue cleaner sources of energy production as opportunities arise.

**Section 7. Programmatic Capability and Past Performance**

City of Chefnak is the municipal corporation for Chefnak, Alaska. The municipality was incorporated in 1974 as a second-class city to help the residents of Chefnak with economic development. Today the City of Chefnak manages the Electric Utility D.B.A Naterkaq Light Plant to provide electricity to the residents of Chefnak. The City of Chefnak also provides Water and Sewer Utilities and is currently upgrading its buildings for Water and Sewer Improvements. City of Chefnak has a long history of providing successful project management for our community with the help of Village Safe Water in managing three opened projects that are currently under construction. The Electric Utility D.B.A. Naterkaq Light Plant has a USDA High Cost Energy Grant that is open and should start the construction this fall of 2019. Both our project management and financial book-keeping have sufficient experiences and have all levels completed on quickbooks. All reports are done on quickbooks and Microsoft excel.

**PAST PERFORMANCE:**

The Naterkaq Light Plant is a village owned power utility that has been providing power to the community of Chefnak, Alaska since the year 1981. The companies administrative staff has experience in closing out grants and is familiar with the requirements to administer and oversee the objectives expressed in the outline of the grant. We have been awarded a Wind Feasibility Grant in which we successfully closed out. The Naterkaq Light Plant just committed a grant with the USDA for Wind Turbines that is currently open and should be constructed this fall of 2019. Our company has been dedicated to reducing our energy usage and have compiled and successfully completed an energy audit database. The Naterkaq Light Plant received a Power Project Loan fund (PPF Loan) through the State of



Alaska in 2014 and successfully paid that in full. We are in good standing to apply for the PPF Loan to match the 20% cost for this project.

Title	Assistance Agreement #	Funding Agency and CFDA #
AEA Renewable Energy Fund	7040056	AEA
USDA High Energy Cost Grant	AK0065-A84	USDA, 10-859
Community Development Block Grant Program	18-CDBG-04	CDBG, 14.228

**REPORTING REQUIREMENTS:**

City of Chefnak has a solid reputation of completing our projects on time and under budget. All of our projects taken on over the past 6 years have been completed on time and on budget and are still actively in use or functioning to their desired purpose. Our reporting requirements are met on time and turned into the appropriate responsible parties and we make a notable attempt to set our goals.

**ORGANIZATIONAL EXPERIENCE:**

Over the past three years, the Naterkaq Light Plant, City of Chefnak, Chefnak Traditional Council and the Chefnak Inc. have been working together to achieve the goals for making improvements in the community of Chefnak. All the entities above mentioned have a strong network of staff that are helping each other with resources and are working closely together to meet the timelines and deadlines for grants that are for our community needs. The Chefnak Traditional Council has successfully achieved funding from the Army Corp of Engineers and HUD Program. Naterkaq Light Plant has an outstanding track record of completing projects on time and under budget. For projects of this nature the three entities will be coordinating with each other to ensure all tasks are met on time through collaborating with joint meetings.

**STAFF AND RESOURCES:**

Naterkaq Light Plant Project Manager Anna Abraham has been working with Naterkaq Light Plant for nearly 10 years. She has managed over two grants totaling to 3 million in federal funding. City of Chefnak/Naterkaq Light Plant staff works closely with the Alaska Energy Authority and they support the work proposed for Naterkaq Light Plant and have expressed their willingness to assist with engine selection and technical assistance. City of Chefnak plans to utilize contractors who have worked on DERA projects in the past such as Current River Electric and are familiar with DERA rules as well as the layout and conditions of power plants in rural Alaska. Naterkaq Light Plants financial accounting department is strong and each year manages a \$689,000 utility that receives revenue from both residential and commercial/community customers. The Chefnak Traditional Council Financial Accountant has been managing grants and reports for Federal Grants for the past 4 years. Financial audits have been clear with no findings in the recent past. City of Chefnak's staff is 100% confident of our ability to effectively manage these funds as we have while assisting other Federal Funding.

**Section 8. Budget Narrative and Detail**

**A. EXPENDITURE OF AWARDED GRANT FUNDS:**

The City will follow its procurement rules for solicitations and obtaining quotes to complete the work. The budget estimates herein were based on quotes received from contractors familiar with the power

plant to ensure sufficient funds are available. Chefnak has completed regular reporting on other projects to ensure project milestones are achieved on time and within the allotted budget.

### B. BUDGET NARRATIVE:

The applicant is not requesting any direct reimbursement for personnel, fringe benefits, travel, supplies, or indirect costs. All items listed below are part of the Subaward to the City of Chefnak dba Naterqak Light Plant and fall into the "Other" budget category. No other costs will be charged to this grant. Staff time towards grant reporting will be covered in-kind.

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#### SUBAWARD COSTS:

Personnel: Naterqak Light Plant staff costs (\$12,950) for Project Management will be covered by VW Tribal Trust funds.

Travel: Lodging will be provided by the City of Chefnak for the contractors and will be covered by VW Tribal Trust funds (\$3,600). Any additional lodging costs will be covered in-kind by the City of Chefnak.

**Equipment:** The total cost of the equipment was based on the 3/21/19 cost estimate (see attached) which was reduced to account for a change in the engine replacement to John Deere 6135AFM75 marine tier 2 engines from the quoted Series 60 Detroit Diesels. Of the total equipment cost, the Village of Chefnak is requesting \$246,360 from DERA; the City of Chefnak is providing \$86,590 as mandatory cost share; and the Village of Chefnak is providing an estimated \$100,000 as voluntary match with VW Tribal Trust funds. The replacement equipment for the generators, CAC, switchgear, and powerhouse retrofit includes the following: two sets of JD 6135AFM75 marine tier 2 engines and marine generator ends; full marine kits; new exhaust systems with high temp rap complete; Parker Racor fuel systems; Donaldson air intake systems; Basler voltage regulators; new galvanized CAC and all associated plumbing; new coolant valves and plumbing; skids; 3 new Eazygen XT(s) with all associated schematics and install designs; new tray cable wiring for new controls; new conductor wire and ends; and new control boxes and associated material.

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**Contractual:** The total contractual costs were based on the 3/21/19 cost estimate (see attached) and a reduction in the need for engineering services given the amount of design and specifications already determined for the project. Of the total contractual cost, the Village of Chefnak is requesting \$124,220 from DERA; the City of Chefnak is providing \$38,835 as mandatory cost share; and the Village of Chefnak is providing an estimated \$31,120 as voluntary match with VW Tribal Trust funds. The contractual services include engineering for design and specifications and oversight and inspection of installation; integrating the CAC cooler drives and controllers off-site; integrating engines and gensets onto new skids to be shipped as complete packages; on site installation, commissioning and training.

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**Other:** Total freight costs to ship all materials to Chefnak were based on the 3/21/19 cost estimate (see attached). Additionally, heavy equipment to transport the equipment to and from the powerhouse will be rented (\$3,000).

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- Deleted: Indirect: The applicant is not requesting reimbursement for any indirect charges .

#### BUDGET TABLE:

The itemized budget below is based on quotes received from a contractor (see attached 3/21/19 quote) familiar with the work that needs to be completed, which was subsequently modified to account for a change in the replacement engines to JD 6135AFM75 marine Tier 2 and a reduction in engineering services based on the design and specification work completed thus far.

Category	EPA Request	Mandatory Cost Share (City)	Voluntary Cost Share (VW)	Total	Notes
<i>Personnel</i>					
<i>Fringe</i>					
<i>Travel</i>					
<i>Equipment</i>					
<i>Supplies</i>					
<i>Contractual</i>					
<i>Indirect</i>					
<i>Other</i>					
<i>Subaward to City of Chefnak (dba Naterkaq Light Plant)</i>					
<i>Personnel</i>					
Subrecipient direct personnel (Project Manager, Operator 1, Operator 2)	-	-	12,950	12,950	200hrs at \$22/hr for PM; 225hrs at \$20/hr for Operator 1; 225hrs at \$18/hr for Operator 2
<i>Travel</i>					
Lodging	-	-	3,600	3,600	1 tech x 14 days x \$100/day; 1 engineer x 4 days x \$100/day; 1 mechanic x 18 days x \$100/day; provided by City to Contractor
<i>Equipment</i>					
2 - John Deere 6135AFM75, 370kW, 580HP, 2.25L/cyl, Marine Tier 2 engines and generators	150,000	50,000	50,000	250,000	Each generator is \$125,000
CAC cooler drive and electronic controllers	33,560	13,390	20,000	66,950	Includes radiators and exhaust plumbing
Switchgear modification	19,600	7,400	10,000	37,000	
Powerhouse retrofit materials	43,200	15,800	20,000	79,000	Includes conduit from generator to switchgear control wiring, loom, j-boxes, welding for new mounts and brackets
<i>Subtotal Equipment</i>	<i>246,360</i>	<i>86,590</i>	<i>100,000</i>	<i>432,950</i>	
<i>Contractual</i>					
Engineering	32,300	8,075	-	40,375	145hrs at \$175/hr for senior engineer; 12hrs \$125/hr for engineering technician; 2 site visits
CAC installation	10,000	5,000	10,000	25,000	
On-site labor and per diem	59,920	17,760	11,120	88,800	2 mechanics x 45 days x 10hrs/day; 1 tech x 14 days x 10hrs/day; 3 site visits
Shop labor	22,000	8,000	10,000	40,000	
<i>Subtotal Contractual</i>	<i>124,220</i>	<i>38,835</i>	<i>31,120</i>	<i>194,175</i>	
<i>Other</i>					
Shipping freight to Chefnak via air cargo	26,000	-	19,000	45,000	
Equipment rental	-	-	3,000	3,000	Takeuchi tr26 fork lift/mobile excavator; 1 week
<i>Subtotal Other</i>	<i>26,000</i>	<i>-</i>	<i>22,000</i>	<i>48,000</i>	
<b>TOTAL</b>	<b>396,580</b>	<b>125,425</b>	<b>169,670</b>	<b>691,675</b>	
	57%	18%	25%		

<file:///G:/Baker/AIR QUALITY/Tribal Air Team/Grants/Tribal DERA Grants PO Folders/DERA - Chefnak/8.12.19 Revisions/Budget revised 8.12.19 kk mockup2.xlsx>

**Section 9. Applicant Fleet Description**

Detailed information regarding the engine fleet is available on the associated Applicant Fleet Description worksheet that is attached to this application.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
Air and Radiation Division  
1200 Sixth Avenue, Suite 155  
Seattle, WA 98101-3140

June 18, 2019

Peter Panruk, President  
Village of Chefnak  
P.O. Box 11  
Chefnak, AK 99561

Re: FY 2018/2019 Tribal Clean Diesel Funding Assistance Program  
Announcement Number: EPA-OAR-OTAQ-18-04

Dear President Peter Panruk,

On June 5, 2018, the U.S. Environmental Protection Agency issued a Request for Applications (RFA) under the Tribal Clean Diesel Funding Assistance Program — FY 2018/2019. A national review panel, reviewed, scored, and assessed the proposals for projects that were submitted in response to the RFA. I am pleased to inform you that your proposal was selected for further consideration. Your proposal requested assistance for \$396,580 and we are recommending that it be fully funded at that amount.

Please keep in mind, this does not mean that you are being offered a grant, only an EPA award official can make a monetary offer. However, your proposal is being referred for further consideration and is an important step toward an offer.

I have been assigned as the Project Officer, in the Air and Radiation Division, to negotiate elements of your proposal, a budget, the proposed project start date, and other application requirements before completion and submittal of a final grant application. Upon completion of these negotiations through our discussions, you will be asked to submit your signed, official grant application package to me by email.

If you have any questions regarding this correspondence, please contact me at 206-553-2728 or by email at: [krauss.kayla@epa.gov](mailto:krauss.kayla@epa.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Kayla Krauss".

Kayla Krauss, Project Officer

cc:

Anna Abraham, Chefnak Utility Manager

Lucita Valiere, National Tribal DERA Lead

Karl Pepple, Region 10 DERA Lead

Kelly McFadden, Manager – Air Permits and Toxics Branch

Debra Suzuki, Manager – Air Planning and State/Tribal Coordination Branch