

APPENDIX D-4
Beneficiary Eligible Mitigation Action Certification

BENEFICIARY ELIGIBLE MITIGATION ACTION CERTIFICATION

Beneficiary State of Delaware

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

Action Title:	CNG Deployment Project - Waste Management
Beneficiary's Project ID:	Phase 2-A
Funding Request No.	<i>(sequential)</i> 2
Request Type: (select one or more)	<input type="checkbox"/> Reimbursement <input checked="" type="checkbox"/> Advance <input type="checkbox"/> Other (specify): _____
Payment to be made to: (select one or more)	<input checked="" type="checkbox"/> Beneficiary <input type="checkbox"/> Other (specify): _____
Funding Request & Direction (Attachment A)	<input checked="" type="checkbox"/> Attached to this Certification <input type="checkbox"/> To be Provided Separately

SUMMARY

Eligible Mitigation Action <input checked="" type="checkbox"/> Appendix D-2 item (specify): <u>Class 8 Local Freight Truck and Port Drayage Trucks (Eligible Large Trucks)</u>
Action Type <input checked="" type="checkbox"/> Item 10 - DERA Option (5.2.12) (specify and attach DERA Proposal):
Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2): Please see Summary Attachment
Estimate of Anticipated NOx Reductions (5.2.3): It is estimated that the State of Delaware will reduce 16.5352 short tons of NOx for the CNG Deployment Project.
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): The Delaware Department of Natural Resources and Environmental Control
Describe how the Beneficiary will make documentation publicly available (5.2.7.2). Please see Summary Attachment
Describe any cost share requirement to be placed on each NOx source proposed to be mitigated (5.2.8). Federal DERA Funds - \$316,019.00 (12%) Waste Management of Delaware, Inc. - \$2,095,729.33 (81%) Total Budget Funded by the Trust - \$183,981.00 (7%)
Describe how the Beneficiary complied with subparagraph 4.2.8, related to notice to U.S. Government Agencies (5.2.9). Please see Summary Attachment

SUMMARY ATTACHMENT

Explanation of how funding request fits into Beneficiary's Mitigation Plan (5.2.1):

The primary goal of the State of Delaware's Volkswagen Environmental Mitigation plan is to improve and protect ambient air quality by implementing eligible mitigation projects that will achieve significant and sustained reductions in NOx emission exposures in areas with poor air quality; areas with historical air quality issues; and areas that receive a disproportionate quantity of air pollution from diesel. The Delaware Department of Natural Resources and Environmental Control (DNREC) is partnering with the Waste Management of Delaware, Inc. (WM) to scrap and replace 10 older diesel solid waste trucks as compressed natural gas units (CNG). A total of 6 solid waste trucks will be replaced through the FY2019 Clean Diesel Program and an additional 4 solid waste trucks will be replaced as an Appendix-D-2 item under the Volkswagen Environmental Mitigation Plan.

The Delaware CNG Vehicle Deployment Project will serve as an important model for additional heavy-duty trucking companies not only to evaluate cost-effective and clean-burning natural gas vehicles in WM's fleet, but also to serve as an example for how to successfully implement advanced technology alternative fuel programs in large commercial and residential waste collection programs.

WM is pursuing an aggressive program to deploy CNG vehicles in Delaware, similar to the approach it has taken throughout the country in states including Pennsylvania, Colorado, and California. The project will serve as a method for WM to reduce vehicle emissions and improve air quality in New Castle and Sussex Counties, perfectly in alignment with the mission of WM and of the goals of DNREC's VW Beneficiary Mitigation Plan.

The FY2019 DERA workplan and the Delaware's Volkswagen Environmental Mitigation Plan are attached to further support this funding request.

Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2):

The Delaware Department of Natural Resources and Environmental Control (DNREC) is partnering with the Waste Management of Delaware, Inc. (WM) to scrap and replace 10 older diesel solid waste trucks. A total of 6 solid waste trucks will be replaced through the FY2019 Clean Diesel Emission Reduction Act grant (DERA) Program with Volkswagen Mitigation Funds as the cost share and an additional 4 large trucks will be replaced as an Appendix-D-2 item under the Volkswagen Environmental Mitigation Plan (Phase 2). The solid waste trucks will operate in both non-attainment areas of the state. The replacement trucks will be fueled by compressed natural gas under the following replacement schedule:

Program	Compressed Natural Gas
FY2019 DERA Grant	6
Appendix D-2 Eligible Mitigation Action Replacement (Phase 2)	4
Total	10

Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2): (continued)

This project will have a tremendous positive impact on air quality for nonattainment areas in Delaware. Waste Management's (WM) vehicles will primarily operate in New Castle and Sussex Counties, which were both designated as 8-Hour Ozone nonattainment areas. The CNG technology proposed by WM represents a viable opportunity to significantly improve air quality, particularly with fleet vehicles that often run on diesel. The deployment of these CNG vehicles will replace the operation of diesel vehicles in WM's fleet, resulting in improved air quality in communities disproportionately affected by air pollution and more susceptible to health risks associated with diesel emissions.

The lifetime emission reductions are (in short tons) for the 10 replacements under the FY2019 Diesel Emission Reduction grant and the Appendix D-2 Volkswagen Environmental Mitigation Plan:

NO_x – 16.5352

PM_{2.5} - 0.8259

HC – 0.7675

CO – 3.8254

Describe How the Beneficiary will Make Documentation Publicly Available (5.2.7.2)

Subparagraph 5.2.7.2 of the Environmental Mitigation Trust Agreement for State Beneficiaries requires that Beneficiaries include in their funding requests:

A commitment by the Beneficiary to maintain and make publicly available all documentation submitted in support of the 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, together with an explanation of the procedures by which the Beneficiary shall make such documentation publicly available;

The Department of Natural Resources and Environmental Control (DNREC) in the State of Delaware is committed to maintaining and making publicly available all documentation submitted support of the funding requests and all records supporting all expenditures of Eligible Mitigation Action funds. .

The public will be able to view funding requests on the DNREC website. DNREC will maintain these records on the Volkswagen (VW) Environmental Mitigation Trust Fund specific webpage. The webpage is designed to support public access and limit burden for the general public. The webpage can currently be found at <https://dnrec.alpha.delaware.gov/air/mobile-sources/vw-mitigation-plan/>.

DNREC has also created an electronic listserv. The Listserv is open to the public, used to communicate news, events, and information related the Environmental Mitigation Trust Fund. The listserv is advertised through the website and at public events related to the Volkswagen Environmental Mitigation Fund.

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

The Delaware Department of Natural Resources and Environmental Control sent emails to the representatives from the U.S. Department of the Interior and the U.S. Department of Agriculture listed in subparagraph 4.2.8 of the State Trust Agreement on February 19, 2018.

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).

The State of Delaware has been designated by the U.S. Environmental Protection Agency (EPA) as non-attainment for ozone (2008 and 2015 standards) in New Castle County and Sussex (2008 standards). Delaware's New Castle County has also been re-designated as attaining the fine particulate matter standard for both 1997 and 2006. New Castle County has a 10-yr maintenance plan in place.

The Department has recommended that FY2019 Diesel Emission Reduction Act (DERA) funds and Volkswagen Environmental Mitigation Funds under Phase 2 be used to replace large local trucks with cleaner vehicles. DNREC's 2014 Emissions Inventory has concluded that up to 72% of in-state NOx emissions can be attributed to the transportation sector. Delaware's emissions from heavy and medium duty vehicles (which include solid waste trucks) are becoming an increasingly larger source of overall mobile source emissions for nitrogen oxides (NOx).

Natural gas is a clean-burning alternative that reduces substantial smog-forming and cancer-causing emissions. On an annual basis, each vehicle purchased as a part of this project is expected to use a total of 8,500 Diesel Gallon Equivalents (DGE) of CNG. Annually, all ten vehicles combined are expected to displace 85,000 DGE of CNG total annually.

Lastly, replacing refuse trucks with trucks that operate on cleaner burning fuel (compressed natural gas) will assist the Department in reducing emissions in Delaware's environmental justice areas. Environmental Justice is the act of equity among all races, ethnicities, income, and social classes of people and includes any census tract with a poverty level of 20% or higher and where 30% or more are considered minorities.

The Department's mission relative to environmental justice ensures that no particular area receives disproportionate environmental impacts due to air pollution.

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).
Please see Summary Attachment

ATTACHMENTS
(CHECK BOX IF ATTACHED)

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

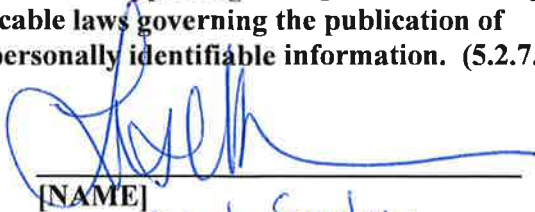
CERTIFICATIONS

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

1. This application is submitted on behalf of Beneficiary Delaware, 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: Sept 2, 2020



[NAME]

[TITLE] Deputy Secretary

Department of Natural Resources and Environmental Control

[LEAD AGENCY]

for

State of Delaware

[BENEFICIARY]

ATTACHMENT B

**Eligible Mitigation Action Management Plan Including Detailed Budget and
Implementation and Expenditures Timeline**

Project Management Plan/ Project Schedule and Milestones

Milestone	Date
Solicitation of Phase 2 DERA Option Project Partner – Waste Management of Delaware, Inc.	Q1 2019
Waste Management of Delaware, Inc. identifies 10 solid waste trucks for replacement 6 solid waste trucks are identified for the DERA option 4 solid waste trucks identified for DERA/VW Phase 2	Q3 2019
EPA Granted Award	Q3 2019
DNREC/Waste Management of Delaware Inc. contract signed for DERA Option & VW Phase 2.	Q4 2019
Waste Management of Delaware orders/replaces solid waste trucks	Q1/Q2 2020
DNREC/Waste Management of Delaware destroys older solid waste trucks.	Q3 2020
Trustee Receives Funding Request - Funding Approved and Issued to DNREC	Q3 2020
DNREC reimburses Waste Management for DERA Option & VW Phase 2	Q4 2020

Project Budget

Budget Category	Federal DERA Grant Funds	Share of Total Budget Funded by the Trust	Cost Share (Paid by Project Partner)	Sub-Total
Solid Waste Truck Replacements – FY 2019 DERA	\$300,000.00	\$ 0	\$1,641,173.33	\$1,941,173.33
Solid Waste Truck Replacements – VW Phase 2 (4 replacements)	\$ 16,019.00	\$ 183,981.00	\$ 454,556.00	\$654,556.00
Project Totals	\$ 316,019.00	\$ 183,981.00	\$ 2,095,729.33	\$2,595,729.33
Percentage	12%	7%	81%	100%

PROJECTED TRUST ALLOCATIONS

	2020
1. Anticipated Annual Project Funding Request to be paid through the Trust	\$183,981.00
2. Anticipated Annual Cost Share	\$2,095,729.33
3. Anticipated Total Project Funding by Year (line 1 plus line 2)	\$2,279,710.33
4. Cumulative Trustee Payments Requested/Made to Date Against Cumulative Approved Beneficiary Allocation	\$0
5. Current Beneficiary Project Funding to be paid through the Trust (line 1)	\$183,981.00
6. Total Funding Allocated to for Beneficiary, inclusive of Current Action by Year (line 4 plus line 5)	\$183,981.00
7. Beneficiary Share of Estimated Funds Remaining in Trust	\$8,681,455.77
8. Net Beneficiary Funds Remaining in Trust, net of cumulative Beneficiary Funding Actions (line 7 minus line 6)	\$8,497,474.77

ATTACHMENT C

Detailed Plan for Reporting On Eligible Mitigation Action Implementation

The Delaware Department of Natural Resources and Environmental Control (DNREC) will provide detailed reporting on Volkswagen Phase 2 CNG Deployment Project and the Category 10 – FY2018 DERA grant option for large truck replacements in the following ways:

- Timely updates to DNREC Volkswagen (VW) Environmental Mitigation Plan webpage;
- Delaware’s semiannual reporting obligations to Wilmington Trust (the “Trustee”); and
- Quarterly reports submitted to the Environmental Protection Agency (EPA).

DNREC maintains a Volkswagen (VW) Environmental Mitigation specific webpage that has been designed to support public access and limit burden for the general public. DNREC’s VW specific webpage can be found at <https://dnrec.alpha.delaware.gov/air/mobile-sources/vw-mitigation-plan/>. Timely updates to the webpage will inform the general public on the each project’s status.

DNREC shall, in the next semiannual report following the Trustee’s approval of this project, describe the progress implementing this Eligible Mitigation Action that will include a summary of all costs expended on the Eligible Mitigation Action through the reporting date per 5.3 of the Environmental Mitigation Trust Agreement for State Beneficiaries. The report will also include a complete description of the status, development, implementation (including project schedule and milestone updates), and any modification to this Eligible Mitigation Action.

Finally, one of the requirements of the FY 2019 Diesel Emission Reduction Act (DERA) State Clean Diesel Grant Program is the timely submission of quarterly reports to the EPA. DNREC will submit timely reports to the EPA. They will also be included in the semiannual reports that DNREC provides to the Trustee.

ATTACHMENT D

Detailed Cost Estimates From Selected or Potential Vendors For Each Proposed Expenditure Exceeding \$25,000.

The Delaware Department of Natural Resources and Environmental Control (DNREC) has provided a detailed cost estimate from the application received in response to NAT190001-VWEMTFP for Waste Management of Delaware, Inc. – CNG Deployment Project. The budget and application are both included.

Waste Management of Delaware, Inc. (WM) retired some of their vehicles originally listed in the application with DNREC. On November 27, 2019, Waste Management of Delaware of Delaware supplied a list of alternative equipment for replacement. The Department accepted this list of equipment as the model year and emissions did not change. The replacement letter is also attached.

CNG Deployment Project

Project Partner: Waste Management of Delaware, Inc							
Vehicle Identification Number	Unit Number	Model Year	EPA	EPA Bonus	VW	Project Partner	Total
1M2K195C75M026085	309440	2005	\$50,000.00			\$190,844.19	\$240,844.19
1M2K195C76M033586	208431	2006	\$50,000.00			\$190,844.19	\$240,844.19
1M2K195C67M034357	208631	2007	\$50,000.00			\$190,844.19	\$240,844.19
1M2K195CX2M021152	308056	2002	\$9,543.00		\$40,457.00	\$190,844.19	\$240,844.19
3BPZL0EX99F719105	209702	2009		\$50,000.00		\$190,844.19	\$240,844.19
1M2AC07C66M011478	264524	2006		\$50,000.00		\$232,617.19	\$282,617.19
1M2AG11C96M034868	411541	2006		\$50,000.00		\$232,617.19	\$282,617.19
1M2AG11C16M035514	411642	2006		\$6,476.00	\$43,524.00	\$221,718.00	\$271,718.00
1M2AG11CX6M035513	412641	2007			\$50,000.00	\$221,718.00	\$271,718.00
1FVHC7C47HX47878	412431	2007			\$50,000.00	\$232,838.00	\$282,838.00
TOTAL			\$159,543.00	\$156,476.00	\$183,981.00	\$2,095,729.33	\$2,595,729.33



November 27, 2019

Deanna M. Cuccinello
Department of Natural Resources and Environmental Control
Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

RE: Request to Provide Replacement Units for Seven (7) of the Units Included in WM's 2019 VW Application

Dear Ms. Cuccinello:

Waste Management of Delaware, Inc. (WM) appreciates the Delaware Department of Natural Resources and Environmental Control (DNREC) for allowing WM to replace seven (7) of the units originally included in its VW application to RFP Contract No. NAT19001-VWEMTFP for the Volkswagen Environmental Mitigation Trust Fund Project Solicitation. The replacements are the same type, fuel type, and year of the original units, and there will be no impact on the estimated emission reductions or amount of diesel fuel displaced. Please see the table below for more information, and the registrations for the replacements are also included with this submission.

Original Unit	Year	Status	Replacement Unit	Year	Status
208230	2005	Sold	309444	2005	Active
208456	2006	Sold	208431	2006	Active
209245	2007	Sold	411811	2007	Active
209617	2009	Sold	209702	2009	Active
411528	2006	Moved	264524	2006	Active
411636	2006	Sold	411642	2006	Active
412285	2007	Sold	411641	2007	Active

WM is strongly committed to improving the air quality and quality of life for all communities in which we work and live, and as such we look forward to partnering with the State of Delaware on this exciting project. Should you have any questions or concerns regarding our company, sustainability policies, or commitment toward this project, please do not hesitate to contact me using the information below.

Sincerely,

Jim Pryor
Fleet Manager, Greater Mid Atlantic
107 Silvia St.
Ewing, NJ 08628
609-434-5609

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

**Waste Management Delaware CNG Vehicle
Deployment Project**

March 28, 2019



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804



March 28, 2019

Deanna M. Cuccinello
Department of Natural Resources and Environmental Control
Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

RE: Response to the Delaware Department of Natural Resources and Environmental Control Volkswagen Environmental Mitigation Trust Fund Project Solicitation

Dear Ms. Cuccinello:

Waste Management of Delaware, Inc. (WM) is pleased to submit the enclosed application in response to RFP Contract No. NAT19001-VWEMTFP for the Delaware Department of Natural Resources and Environmental Control (DNREC) Volkswagen Environmental Mitigation Trust Fund Project Solicitation.

Waste Management of Delaware, Inc.'s parent company, Waste Management, Inc., is the largest provider of environmental services in North America. Since 1968, WM has supplied residential, commercial, industrial, and municipal customers with solid waste collection and disposal services. WM currently operates over 130 compressed natural gas (CNG) stations and maintains a fleet of more than 7,250 CNG vehicles. In addition to WM's unparalleled success in the alternative fuels space, it also has extensive experience implementing federal, state, and local grant contracts. WM will leverage its history of successful CNG deployments to complete the proposed project.

WM's proposed projects seeks to scrap and replace ten engine MY 1992-2009 diesel onroad solid waste collection vehicles (SWCV) with ten near-zero-emission CNG SWCVs. The funding request per unit is reasonable and well below 25% of the total vehicle cost at \$50,000. The total funding request for all ten vehicles is \$500,000. WM is committed to providing the remaining funds to cover the balance of the CNG vehicles. Within one year of contract execution, WM will deploy the new vehicles in Wilmington and Laurel and operate them in its local refuse collection and recycling routes throughout each location. Once complete, the project will directly support the DNREC's goals to improve air quality by voluntarily displacing diesel consumption and to reduce emissions using a domestically produced fuel.

This project is a critical step for WM to provide alternative fueled solutions to its customer base throughout Delaware. The replacements will serve as an example for how to successfully implement advanced technology alternative fuel programs and provide a validated model for other fleets considering the transition from highly-emitting diesel to clean-burning alternative fuels.



WM is strongly committed to improving the air quality and quality of life for all communities in which we work and live, and as such we look forward to partnering with the State of Delaware on this exciting project. Should you have any questions or concerns regarding our company, sustainability policies, or commitment toward this project, please do not hesitate to contact me using the information below.

Sincerely,

A handwritten signature in black ink that reads "Jim Pryor".

Jim Pryor
Fleet Manager, Greater Mid Atlantic
107 Silvia St.
Ewing, NJ 08628
Phone: 609-434-5609
Fax: 609-882-8690
Email: jpryor1@wm.com

Table of Contents

Table of Contents	i
Attachment 1: No Proposal Reply Form – Not Included	1
Attachment 2: Non-Collusion Statement	2
Attachment 3: Exceptions	5
Attachment 4: Company Profile and Capabilities	7
Attachment 5: Confidentiality Form	11
Attachment 6: Business References	13
Attachments 7-11: Not Applicable / Not Included	16
• Attachment 7: Subcontractor Information Form	
• Attachment 8: Monthly Usage Report	
• Attachment 9: Subcontracting Quarterly Report	
• Attachment 10: Officer of Supplier Diversity Application	
• Attachment 11: Performance Bond	
Appendix A: Statement of Work and Technical Specifications – Not Included	17
Appendix B: Scope of Work Application	18
Appendix C: Certificate of Destruction – Not Included	69
Appendix D: Quarterly Report Form – Not Included	70
Appendix E: Copy of Business License	71
Appendix F: Copy of Insurance Certificates	73
Appendix G: Vehicle Titles	85

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Attachment 1

No Proposal Reply Form

NOT APPLICABLE



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

STATE OF DELAWARE
Department of Natural Resources and Environmental Control

Attachment 2

CONTRACT NO.: NAT19001-VWEMTFP **TITLE:** Volkswagen Environmental Mitigation Trust Fund project
DEADLINE TO RESPOND: March 28, 2019 at 4:00 PM (local time)

NON-COLLUSION STATEMENT

This is to certify that the undersigned Vendor has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal, and further certifies that it is not a sub-contractor to another Vendor who also submitted a proposal as a primary Vendor in response to this solicitation submitted this date to the State of Delaware, Department of Natural Resources and Environmental Control.

It is agreed by the undersigned Vendor that the signed delivery of this bid represents, subject to any express exceptions set forth at Attachment 3, the Vendor's acceptance of the terms and conditions of this solicitation including all specifications and special provisions.

NOTE: Signature of the authorized representative **MUST** be of an individual who legally may enter his/her organization into a formal contract with the State of Delaware, Department of Natural Resources and Environmental Control.

COMPANY NAME Waste Management of Delaware, Inc. (Check one)

<input checked="" type="checkbox"/>	Corporation
<input type="checkbox"/>	Partnership
<input type="checkbox"/>	Individual

NAME OF AUTHORIZED REPRESENTATIVE James Pryor

SIGNATURE *Jim Pryor* TITLE AREA FLEET MANAGER

COMPANY ADDRESS 300 Harvey Drive, Wilmington DE, 19804

PHONE NUMBER 609-434-5609 FAX NUMBER _____

EMAIL ADDRESS jpryor1@wm.com

FEDERAL E.I. NUMBER 51-0094505 STATE OF DELAWARE LICENSE NUMBER 163791503

COMPANY CLASSIFICATIONS: CERT. NO.: <u>NA</u>	Certification type(s)	Circle all that apply
		Minority Business Enterprise (MBE)
	Woman Business Enterprise (WBE)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Disadvantaged Business Enterprise (DBE)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Veteran Owned Business Enterprise (VOBE)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Service Disabled Veteran Owned Business Enterprise (SDVOBE)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

[The above table is for informational and statistical use only.]

PURCHASE ORDERS SHOULD BE SENT TO: (COMPANY NAME) Waste Management of Delaware, Inc.

ADDRESS 300 Harvey Drive, Wilmington DE, 19804

CONTACT James Pryor

PHONE NUMBER 609-434-5609 FAX NUMBER _____

EMAIL ADDRESS jpryor1@wm.com

AFFIRMATION: Within the past five years, has your firm, any affiliate, any predecessor company or entity, owner, Director, officer, partner or proprietor been the subject of a Federal, State, Local government suspension or debarment?
YES _____ NO if yes, please explain _____

THIS PAGE SHALL BE SIGNED, NOTARIZED AND RETURNED FOR YOUR BID TO BE CONSIDERED

SWORN TO AND SUBSCRIBED BEFORE ME this 20th day of March, 20 19

Notary Public Adell M. Sulia

My commission expires 9/18/2022

STATE OF DELAWARE
Department of Natural Resources and Environmental Control

City of Toms River

County of Ocean

State of NJ

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Attachment 3

Exceptions



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Attachment 4

Company Profile and Capabilities



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

STATE OF DELAWARE
Department of Natural Resources and Environmental Control

Attachment 4

Contract No.: **NAT19001-VWEMTFP**
Contract Title: **Volkswagen Environmental Mitigation Trust Fund Project**

COMPANY PROFILE & CAPABILITIES FORM

Suppliers are required to provide a reply to each question listed below. Your replies will aid the evaluation committee as part of the overall qualitative evaluation criteria of this Request for Proposal. Your responses should contain sufficient information about your company so evaluators have a clear understanding of your company's background and capabilities. Failure to respond to any of these questions may result in your proposal to be rejected as non-responsive.

1.	Briefly describe how your Volkswagen Environmental Mitigation Trust Fund Project benefits the State of Delaware
	<p>Waste Management of Delaware, Inc.'s (WM) Compressed Natural Gas (CNG) Vehicle Deployment Project is precisely the low-emission strategy that will provide the state of Delaware with a technologically simple approach for near-term, cost-effective benefits. WM has the experience and resources to complete the project within the expected timeframe of one year and looks forward to the possibility of replicating the project to grow its fleet of CNG solid waste collection vehicles in Delaware. To summarize, WM's project will benefit the State in the following ways:</p> <ul style="list-style-type: none"> • Criteria Pollutant and GHG Emission Reduction - WM will operate ten heavy-duty near-zero-emission CNG vehicles as a result of this project. Based on 8,500 DGE of fuel used per vehicle per year, WM anticipates the project to displace 85,000 DGE of CNG per year for all ten vehicles, which will provide annual emission reductions of 2.5 short tons of NOx, 0.14 short tons of PM, and 946.8 short tons of GHGs. • Environmental Justice Areas – WM's project will provide benefits to two areas, Wilmington and Laurel. The project site in Wilmington falls within the 99%ile on the Demographic Index; it is in the 76%ile for Ozone levels. The Laurel site is not as adversely impacted by Ozone, but it lies in the 58%ile for residents with less than a high school education and in the 46%ile for low income. Further, the geographic location of the project sites in the North and South promotes equitable distribution of the project's benefits. • NAAQS Compliance – WM's new CNG vehicles will replace EMY 1992-2009 diesel trucks, resulting in improved air quality in New Castle (Wilmington) and Sussex Counties (Laurel), which are currently in nonattainment with the 8-hour ozone standard. The project complements efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions. This project is being developed specifically in response to agency demands for improved air quality and a reduction in the transportation industry's dependence on diesel imports. • Collaboration and Replicability – The project team is top notch and has several years of experience working together to complete similar projects. Further, WM is a great advocate for the alternative fuels industry and enjoys sharing lessons learned with other fleets to encourage replicability. • Project Timeline and Budget – The budget has been fully vetted and is cost-effective, and WM's experience will ensure the vendors comply with the proposed schedule.

1.	Briefly describe how your Volkswagen Environmental Mitigation Trust Fund Project benefits the State of Delaware
	<ul style="list-style-type: none"> • Economic Development - As the natural gas market in Delaware continues to expand, there are a number of Delaware-based companies that will have to increase their own capacities to serve these growing demands. <p>The use of natural gas reduces the formation of smog, and is especially important in those areas where ground level air quality is poor, such as the communities in which WM's vehicles operate. CNG is the cleanest and most versatile fossil fuel in existence today, offering extremely low emissions of NOx, CO2, and PM. It is also among the most reliable and affordable energy sources available today, due in large part to the huge influx of new natural gas supply that is the result of shale gas formations nearby. CNG offers substantial emission reduction benefits that can help improve air quality and bring the state of Delaware one step closer to meeting emission targets. When combusted, CNG produces up to 90% fewer NOx emissions compared to diesel vehicles and virtually no PM.</p>

2.	Briefly describe your company's organization, structure, and philosophy.
	<p>Waste Management, Inc. (WM) is the largest provider of environmental services in North America. Since 1968, WM has supplied residential, commercial, industrial, and municipal customers with solid waste collection and disposal services. In addition to its core service offerings, WM is also a leading developer, operator and owner of landfill gas-to-energy facilities. WM was incorporated as a publicly held holding company in 1995, and its shares are traded on the New York Stock Exchange under the symbol "WM." Major shareholders include The Vanguard Group (8.1%), BlackRock, Inc. (7.4%) and William H. Gates III (7.4%). 2018 data is not yet available, but in 2017, WM had revenues of \$14,485 million, and for this project, WM will provide more than the required minimum cost share of 75% from private capital.</p> <p>As a holding company, WM has over 400 locally-based subsidiaries throughout North America. Many subsidiaries are located along the U.S. Department of Transportation Federal Highway Administration's Alternative Fuel Corridors. Examples of these subsidiaries include Waste Management Atlanta East Hauling in Georgia and Waste Management of Charlotte in North Carolina. Each of WM's subsidiaries focus on distinct geographic areas, where they provide collection, transfer, disposal and recycling and resource recovery services. Across all locations, WM has approximately 42,300 employees, and the vast majority are employed in the United States.</p> <p>WM is committed to developing sustainable transportation solutions, products, and services in its fleet of solid waste collection vehicles. WM runs the largest fleet of natural gas refuse trucks in North America, supported by more than 130 natural gas fueling stations across 43 states. WM's long-term vision is to use natural gas across all of its operations, and preferably renewable natural gas from its own landfills.</p> <p>Looking ahead, 90% of WM's entire corporate-wide truck purchases will be natural gas vehicles; an investment surpassing \$1 billion. In 2011, WM deployed its 1000th NGV, making it the largest owner and operator of natural gas solid waste collection trucks in North America, and today WM operates more than 7,250 natural gas vehicles. The deployment of 7,250 clean burning natural gas vehicles is significant not only in magnitude, but, more importantly, it is proof of a deliberate and comprehensive effort to incorporate a cleaner burning vehicle fuel technology into an essential service for the communities and businesses in the Delaware region. By switching to natural gas, WM is reducing dependence on imported petroleum and significantly improving the air quality in areas in which it operates.</p>

3. Briefly describe your ability to perform your Volkswagen Environmental Mitigation Trust Fund Project in the allotted time.

WM's Delaware CNG Vehicle Deployment Project is backed by a detailed schedule of tasks, milestones, decision points, and quality control processes, all of which will be overseen by the WM team under the guidance from DNREC. WM will own, operate, and maintain the vehicles throughout and beyond the period of performance.

Based upon the contract dates provided in the solicitation, WM has prepared a schedule of milestones with a project start date in August 2019. WM is fully prepared to move forward upon final execution of the contract documents, and a summary of project milestones, including the expected end dates, is detailed in the chart below.

Milestone	Responsible Party	Estimated Completion Date
Complete Contract Documents	Waste Management and DNREC	August 1, 2019
Order New Vehicles	Waste Management	August 30, 2019
Pay for/Receive New Vehicles	Waste Management	June 30, 2020
Scrap Old Vehicles	Waste Management	August 30, 2020
Submit Monthly Reports	Waste Management	Within 15 days of the end of the previous month
Submit Quarterly Report	Waste Management	Within 15 days of September 30, 2019; December 30, 2019; March 31, 2020; June 30, 2020; and September 30, 2020
Project Period End Date	Waste Management	August 30, 2020
Submit Annual Follow Up Report	Waste Management	Within 15 days of August 30, 2021

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Attachment 5

**Confidentiality and Proprietary
Information**



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Attachment 6

Business References



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

STATE OF DELAWARE
Department of Natural Resources and Environmental Control

Attachment 6

Contract No.: **NAT19001-VWEMTFP**
Contract Title: **Volkswagen Environmental Mitigation Trust Fund Project**

BUSINESS REFERENCES FORM

List a minimum of three business references, including the following information:

- Business Name and Mailing address
- Contact Name and phone number
- Number of years doing business with
- Type of work performed

Please do not list any State Employee as a business reference. If you have held a State contract within the last 5 years, please list the contract(s).

1.	Contact Name & Title:	Tony Bandiero, Executive Director
	Business Name:	Eastern Pennsylvania Alliance for Clean Transportation
	Address:	1818 Market Street, 13 th Floor Philadelphia, PA 19103
	Email:	Info@ep-act.org
	Phone # / Fax #:	215-990-8200
	Current Vendor (YES or NO):	No
	Years Associated & Type of Work Performed:	Tony has been tracking WM's CNG conversion for more than six years. He has visited and is familiar with many of the Greater Mid-Atlantic Area's CNG sites. He also has invited WM to participate in several of his organization's forums and community roundtable discussions about cleaner modes of transportation.
2.	Contact Name & Title:	Joseph Bauman, Relationship Manager
	Business Name:	UGI Utilities Inc.
	Address:	511 E. Northampton St. Wilkes-Barre, PA 18711
	Email:	Jbauman@ugi.com
	Phone # / Fax #:	570-829-8901
	Current Vendor (YES or NO):	Yes
	Years Associated & Type of Work Performed:	UGI and WM have worked on CNG conversion projects for the past 5 years. UGI provides CNG to WM's PA/DE fleets.
3.	Contact Name & Title:	Jesse Fullilove, National Account Manager
	Business Name:	Rush Refuse Systems
	Address:	PO Box 200105 San Antonio, TX 78220
	Email:	fullilovej@rushenterprises.com
	Phone # / Fax #:	210-901-7212
	Current Vendor (YES or NO):	Yes
	Years Associated & Type of Work Performed:	Jesse is one of WM's main point of contacts at Rush Refuse Systems for placing orders for Peterbilt chassis. WM has been placing orders from Rush for more than nine years.

STATE OF DELAWARE PERSONNEL MAY NOT BE USED AS REFERENCES.

4.

Contact Name & Title:
Business Name:
Address:
Email:
Phone # / Fax #:
Current Vendor (YES or NO):
Years Associated & Type of Work Performed:

Thomas Condon, Natural Gas Vehicle Consultant
New Jersey Natural Gas
1415 Wyckoff Road, PO Box 1464
tcondon@njng.com
732-919-8000
Yes
WM's relationship with NJNG goes back seven years to the first planning for WM's CNG fleet and public fueling station in Toms River. Thomas has been involved in our project as a marketing liaison dating back four years.

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Attachments 7 – 11

#	Attachment	Reason Not Included
7	Subcontractor Information Form	Not applicable
8	Monthly Usage Report	Was provided for illustration purposes only
9	Subcontracting Quarterly Report	Not applicable
10	Officer of Supplier Diversity Application	Not applicable
11	Performance Bond	Waived



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Appendix A

**Statement of Work and Technical
Specifications**

**NOT INCLUDED – Attachment Not Required for
Application**



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

State of Delaware
Department of Natural Resources and Environmental Control
Volkswagen Environmental Mitigation Trust Fund Project

Response to RFP Contract No. NAT19001-VWEMTFP

Appendix B

Scope of Work Application



Waste Management of Delaware, Inc.
300 Harvey Drive.
Wilmington, DE 19804

APPENDIX B

The Volkswagen Environmental Mitigation Trust Program

APPLICATION FORM

Project Title:

Waste Management Delaware CNG Vehicle Deployment Project

General Information:

Applicant: Waste Management of Delaware, Inc.			
Mailing Address: 300 Harvey Drive			
City: Wilmington	State: DE	Zip: 19804	County: New Castle
Daytime Phone: 609-434-5609		Alternate Phone: 609-352-8117	
Email: jpryor1@wm.com			
Equipment Owner (if different from Applicant): N/A			
Mailing Address: N/A			
City: N/A	State: N/A	Zip: N/A	County: N/A
Daytime Phone: N/A		Alternate Phone: N/A	
Email: N/A			

The following table lists **eligible mitigation actions** pursuant to the Environmental Mitigation Trust. Please select the eligible mitigation action(s) for which you are applying (Check all that apply).

Project Title: Waste Management Delaware CNG Vehicle Deployment Project	
Type of Mitigation Action: Vehicle Replacement: <input checked="" type="checkbox"/> Engine Repower: <input type="checkbox"/>	
Type of Entity: Government: <input type="checkbox"/> Non-government: <input checked="" type="checkbox"/>	
Quantity	Vehicle Replacement: 10 Engine Repower: N/A
Check all that apply	Eligible Mitigation Actions
<input checked="" type="checkbox"/>	Class 8 Local Freight Trucks and Port Drayage Trucks (engine model year 2009-1992) repowered with any new diesel or alternate fueled engine or all-electric engine, or replaced with any new diesel or alternate fueled or all-electric vehicle, with the engine model year in which the eligible large trucks mitigation action occurs or newer.
<input type="checkbox"/>	Class 4-8 school buses, shuttle buses, or transit buses (engine model year 2009 to 1992) repowered with any new diesel or alternate fueled or all-electric engine, or replaced with any new diesel or all-electric vehicle, with the engine model year in which the eligible bus mitigation action occurs or newer.
<input type="checkbox"/>	Freight switchers that operate 1000 or more hours per year repowered with any new diesel or alternate fueled or all-electric freight switcher certified to meet the applicable EPA emissions.
<input type="checkbox"/>	Ferries/Tugs - Unregulated, Tier 1 or Tier 2 marine engines repowered with Tier 3, Tier 4, alternate fueled, or all-electric engine, or upgraded with an EPA certified remanufacture system or an EPA verified engine upgrade.
<input type="checkbox"/>	Ocean Going Vessels - Marine shore power systems or components of such systems that enable a compatible vessel's main and auxiliary engines to remain off while the vessel is at berth.
<input type="checkbox"/>	Class 4-7 local freight trucks (engine model year 1992-2009) repowered with a new diesel, alternate fueled or all-electric engine, or replaced with any new diesel, alternate fueled or all-electric vehicle, with the engine model year in which the eligible medium trucks mitigation action occurs.
<input type="checkbox"/>	Airport Ground Support Equipment - (Tier 0, Tier 1, or Tier 2 diesel powered) uncertified or certified to 3 g/bhp-hr. or higher emissions spark ignition engine powered airport ground support equipment repowered with an all-electric engine, or replaced with the same airport ground support equipment or newer in an all-electric form.
<input type="checkbox"/>	Forklifts and Port Cargo Handling Equipment - Forklifts with greater than 8000 pounds (lbs.) of lift capacity and port cargo handling equipment repowered with an all-electric engine, or replaced with the same equipment or newer in an all-electric form.

Mitigation Action Description

Please provide a brief narrative describing how the project relates to Delaware's VW Environmental Mitigation Plan by reducing NOx emissions and how this project will benefit the State of Delaware. If additional space is needed please label (no more than one page) in your application "Title of Project, Mitigation Action Description."

Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Mitigation Action Description."

Estimated NOx Reductions

Please describe and calculate the NOx reductions achieved for this project using the Diesel Emission Quantifier (DEQ) on the EPA website. Estimate the NOx emission reductions from the project in terms of dollar per ton of NOx using the DEQ found at <https://www.epa.gov/cleandiesel/diesel-emissions-quantifier-deq>. Attach a separate summary calculation worksheet generated by the DEQ for each vehicle or piece of equipment and label pages in your application "Title of Project, Estimated NOx Reductions."

Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Estimated NOx Reductions"

Please identify the Inputs entered into the DEQ for Vehicles and/or Equipment proposed for replacement or repower under this application. Copy this form if more space is needed.

Diesel Emission Quantifier Inputs	Vehicles & equipment proposed for replacement or repower (Leave fields blank that do not apply)			
	208230	208456	208631	209245
Vehicle or Engine Group				
VIN	1M2K195C55M02 6974	1M2K195C36M02 9633	1M2K195C67M034 357	1M2K195C47M0392 34
Engine Serial Number	4O1504	732G8	6G0797	6X2057
Propulsion Engine (marine)	NA	NA	NA	NA
Total Auxiliary Engines (Marine)	NA	NA	NA	NA
Vehicle Make	Mack	Mack	Mack	Mack
Vehicle Model	MR 688S	MR 688S	MR 688S	MR 688S
Vehicle Model Year	2005	2006	2007	2007
Engine Make	Mack	Mack	Mack	Mack
Engine Model	AI 300	AI 300	AI 300	AI 300
Engine Model Year	2005	2006	2007	2007
Engine Cylinder Displacement	5.0<= size <15.0	5.0<= size <15.0	5.0<= size <15.0	5.0<= size <15.0
Number of Engine Cylinders	6	6	6	6
Retrofit Year	2020	2020	2020	2020
Engine Tier	2020	2020	NA	NA
Engine Horsepower	300	300	300	300
Annual Fuel Used (gal/yr)	10185	10014	7142	10269
Annual Usage Rate (hrs)	NA	NA	NA	NA
Annual Miles	34956	33392	22243	30636
Annual Idling Hours	113	143	58	112
Fuel Type	ULSD	ULSD	ULSD	ULSD
Remaining Life	5	6	7	7
Normal Attrition Year	2025	2026	2027	2027
Proposed Fuel Type	CNG	CNG	CNG	CNG
Technology Cost	\$271,718.00	\$282,838.00	\$282,617.19	\$282,617.19

Diesel Emission Quantifier Inputs	Vehicles & equipment proposed for replacement or repower (Leave fields blank that do not apply)			
	209617	411528	411541	411636
Vehicle or Engine Group				
VIN	3BPZL00X49F718905	1M2AG11C06M039456	1M2AG11C96M034868	1M2AG11C66M035508
Engine Serial Number	35220616	5P2479	5L0214	5T1824
Propulsion Engine (marine)	NA	NA	NA	NA
Total Auxiliary Engines (Marine)	NA	NA	NA	NA
Vehicle Make	Peterbilt	Mack	Mack	Mack
Vehicle Model	320	CV 713	CV 713	CV 713
Vehicle Model Year	2009	2006	2006	2006
Engine Make	Cummins	Mack	Mack	Mack
Engine Model	ISM	AI 350	AI 350	AI 350
Engine Model Year	2009	2006	2006	2006
Engine Cylinder Displacement	5.0<= size <15.0	5.0<= size <15.0	5.0<= size <15.0	5.0<= size <15.0
Number of Engine Cylinders	6	6	6	6
Retrofit Year	2020	2020	2020	2020
Engine Tier	NA	NA	NA	NA
Engine Horsepower	350	350	350	350
Annual Fuel Used (gal/yr)	7981	8047	7523	8988
Annual Usage Rate (hrs)	NA	NA	NA	NA
Annual Miles	30606	34655	33563	39869
Annual Idling Hours	174	139	356	168
Fuel Type	ULSD	ULSD	ULSD	ULSD
Remaining Life	9	6	6	6
Normal Attrition Year	2029	2026	2026	2026
Proposed Fuel Type	CNG	CNG	CNG	CNG
Technology Cost	\$271,718.00	\$240,844.19	\$240,844.19	\$240,844.19

Diesel Emission Quantifier Inputs	Vehicles & equipment proposed for replacement or repower			
	(Leave fields blank that do not apply)			
Vehicle or Engine Group	412285	412431		
VIN	1FVHC7CV47HX47871	1FVHC7CV77HX47878		
Engine Serial Number	460872512	460873795		
Propulsion Engine (marine)	NA	NA		
Total Auxiliary Engines (Marine)	NA	NA		
Vehicle Make	Freightliner	Freightliner		
Vehicle Model	M2112	M2106		
Vehicle Model Year	2007	2007		
Engine Make	Mercedes Benz	Mercedes Benz		
Engine Model	4000350	MBE400		
Engine Model Year	2007	2007		
Engine Cylinder Displacement	5.0<= size <15.0	5.0<= size <15.0		
Number of Engine Cylinders	6	6		
Retrofit Year	2020	2020		
Engine Tier	NA	NA		
Engine Horsepower	350	400		
Annual Fuel Used (gal/yr)	6600	7412		
Annual Usage Rate (hrs)	NA	NA		
Annual Miles	34070	33676		
Annual Idling Hours	175	127		
Fuel Type	ULSD	ULSD		
Remaining Life	7	7		
Normal Attrition Year	2027	2027		
Proposed Fuel Type	CNG	CNG		
Technology Cost	\$240,844.19	\$240,844.19		

Project Budget

All projects require a cost share. Please be as detailed as possible when completing your budget. The applicant is responsible for detailing the proposed budget associated with the project. This includes "eligible mitigation actions" which includes the equipment necessary for the project while the "ineligible mitigation action expenditures" includes all administrative expenses related to the project.

Eligible Mitigation Actions are those projects that qualify for funding under this RFP. See Section 6 "Eligible Mitigation Actions" in the RFP for additional information. Copy this form if more space is needed.

Eligible Mitigation Actions					
Eligible Item	Make and Model	VIN or Serial	# of Each Item	Cost per Item	Estimated Costs
Class 8 LFT	Peterbilt 567 (Roll-off)	TBD	5	\$240,844.19	\$1,204,220.95
Class 8 LFT	Peterbilt 520 (Residential Front Loader)	TBD	2	\$282,617.19	\$565,234.38
Class 8 LFT	Autocar ACX64 (Commercial Front Loader)	TBD	2	\$271,718.00	\$543,436.00
Class 8 LFT	Autocar ACX64 (Residential Front Loader)	TBD	1	\$282,838.00	\$282,838.00
Total Eligible Mitigation Action Costs					\$2,595,729.33

Ineligible Mitigation Action Expenditures are those administrative expenses that do not qualify for funding under this announcement. See Section 8 "Ineligible Mitigation Action Expenditures" under this RFP for additional information. If additional space is needed please label pages in your application "Title of Project, Proposed Budget"

Ineligible Mitigation Action Expenditures				
Ineligible Item	Description	Number of Each Item	Cost per Item	Estimated Costs
Total Ineligible Mitigation Action Expenditures (no match requirement)				\$

Total Budget Summary	
Total Eligible Mitigation Actions (from above)	\$2595,729.33
Total Ineligible Projects Mitigation Action Expenditures (from above)	\$
Total Costs	\$2595,729.33
Cost Share Percentage (See Section 7 "Cost Share" of the RFP)	80.7% actual (75% required)
Total Cost share required from VW Mitigation Funds (matching funds)	\$2,095,729.33 actual (\$1,946,797 required)
Are you willing to accept funds from the DERA grant? If no, please explain below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Proposed Budget."	

Proposed Project Location

Define the project area. Please note the following:

1. if the project is sited near a major highway or transportation corridor, shipping route, or near a shipping logistics center,
2. is the project in an environmental justice (EJ) area or related location that receives a disparate

- proportion of environmental impacts,
3. if the project avoids environmentally sensitive areas or areas containing critical habitats.

Indicate if the proposed project is located in a non-attainment and air quality maintenance areas. If additional space is needed please label page (no more than one) in your application "Title of Project, Proposed Project Location."

Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Proposed Project Location."

Project Timeline

All projects must be completed within one (1) year of signing a final contract or MOU. The milestones included in this template are provided as guidance. Applicants may substitute other milestones that suit their purpose, please be as detailed as possible.

Project Timeline		
Milestone	Responsible Party	Estimated Completion Date
Complete Contract Documents	Waste Management and DNREC	August 1, 2019
Order New Vehicles	Waste Management	August 30, 2019
Pay for/Receive New Vehicles	Waste Management	June 30, 2020
Scrap Old Vehicles	Waste Management	August 30, 2020
Submit Monthly Reports	Waste Management	Within 15 days of the end of the previous month
Submit Quarterly Report	Waste Management	Within 15 days of September 30, 2019; December 30, 2019; March 31, 2020; June 30, 2020; and September 30, 2020
Project Period End Date	Waste Management	August 30, 2020
Submit Annual Follow Up Report	Waste Management	Within 15 days of August 30, 2021

Ability to be Replicated throughout the State

Provide a brief narrative to explain how the proposed project has the ability to be replicated throughout the state with other fleets or for public access. If additional space is needed please label (no more than one page) in your application "Title of Project, Replication."

Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Replication."

Collaboration with Other Entities in the State

Provide a brief narrative to demonstrate that the project includes collaborative efforts between the applicant and project team. If additional space is needed please label the narrative (no more than one page) in your application "Title of Project, Collaboration."

Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Collaboration."

Economic Development

Provide a brief narrative to explain how the project creates and/or retains local jobs for Delawareans and serves as an economic development engine for local Delaware based companies. If additional space is needed label the narrative (no more than one page) in your application "Title of Project, Economic Development."

Please see attached narrative under "Waste Management Delaware CNG Vehicle Deployment Project, Economic Development."

Attachments Checklist

Check if attached	Score (DNREC use)	Attachment Description
<input checked="" type="checkbox"/>	N/A	Mitigation Action Description: Attach a brief narrative (no more than two-pages) describing the project and how it relates to Delaware’s Environmental Mitigation Plan and label as “ Project Title, Mitigation Action Description. ”
<input checked="" type="checkbox"/>		NOx Emission Reduction: Estimate the NOx emission reductions from the project in terms of dollar per ton of NOx using EPA’s Diesel Emission Quantifier found at https://www.epa.gov/cleandiesel/diesel-emissions-quantifier-deg . Attach a <u>separate</u> summary calculation worksheet generated by the DEQ for <u>each</u> vehicle or piece of equipment and label as “ Project Title, NOx Emission Reduction. ”
<input checked="" type="checkbox"/>		Project Budget: The proposed budget must be thorough, robust, realistic, and cost effective. The applicant must show a detailed budget with all cost shares explained and label as “ Project Title, Proposed Budget. ”
<input checked="" type="checkbox"/>		Proposed Project Location: Define the project area with a description. Please note (1) if the project is sited near a major highway or transportation corridor, shipping route, or near a shipping logistics center, (2) is the project in an environmental justice (EJ) area or related location that receives a disparate proportion of environmental impacts, (3) if the project avoids environmentally sensitive areas or areas containing critical habitats. Please note if the proposed project is located in a non-attainment and air quality maintenance areas. Label as “ Project Title, Proposed Project Location. ”
<input type="checkbox"/>		Project Timeline: Provide a summary table that defines when the proposed project will commence, major milestones that will be accomplished, and when the project end. Label the timeline “ Project Title, Project Timeline. ”
<input checked="" type="checkbox"/>		Ability to be Replicated Throughout the State: Provide a brief narrative (no more than one page) to explain how the proposed project has the ability to be replicated throughout the state with other fleets or for public access. Label the narrative as “ Project Title, Replication. ”
<input checked="" type="checkbox"/>		Collaboration with Other Entities in the State: Provide a brief narrative (no more than one page) to demonstrate that the project includes collaborative efforts between the applicant and project team. Label this narrative as “ Project Title, Collaboration. ”
<input checked="" type="checkbox"/>		Economic Development: Provide a brief narrative (no more than two pages) to explain how the project creates and/or retains local jobs for Delawareans and serves as an economic development engine for local Delaware based companies. Label this narrative as “ Project Title, Economic Development. ”

Check if attached	Score (DNREC use)	Attachment Description
■	N/A	Applicants must also submit copies of required insurance for repowers and replacements and a valid State of Delaware Title (noting VIN) for each vehicle replacement.

Application Scoring Matrix

Project Award Criteria	Score	Score Possible
<p>Measurable, verifiable reduction in NOx emissions</p> <ul style="list-style-type: none"> - The project will produce a net reduction in NOx emissions in the State and result in a measurable, verifiable reduction in NOx per ton of emissions using the Diesel Emission Quantifier. - Projects must meet eligibility requirements of the VW Mitigation Plan 		Up to 30 points
<p>Project Budget</p> <ul style="list-style-type: none"> -The proposed budget is thorough, robust, realistic, and cost effective. - The applicant must show a detailed budget with all cost shares explained. 		Up to 15 points
<p>Proposed Project Location</p> <ul style="list-style-type: none"> - The project is sited near a major highway or transportation corridor, shipping route, or near a shipping logistics center. - This project will address an environmental justice (EJ) area or related location that receives a disparate proportion of environmental impacts. - The project avoids environmentally sensitive areas or areas containing critical habitats. -Priority will be given to projects in non-attainment and air quality maintenance areas. 		Up to 15 points
<p>Project Timeline</p> <p>The proposed project must define when the project will commence and will end.</p>		Up to 15 points
<p>Ability to be Replicated throughout the State</p> <ul style="list-style-type: none"> - The proposed project has the ability to be replicated throughout the state. 		Up to 15 points
<p>Collaboration with other Entities in the State</p> <ul style="list-style-type: none"> - The project includes collaborative efforts between the applicant and project team (an anchor fleet or fleets, utility/fuel provider, vehicle dealer, or manufacturer). 		Up to 10 points
<p>Economic Development</p> <ul style="list-style-type: none"> - The project creates and/or retains local jobs for 		Up to 5 points

Delawareans. - The project serves as an economic development engine for local Delaware based companies.		
Total Points		100 Maximum

Certification

The Applicant certifies that they have been authorized by the Equipment Owner to submit this application. The Equipment Owner agrees to comply with all requirements of Delaware's Volkswagen Environmental Mitigation Plan and that the information provided is true, accurate, and complete.

Applicant's Signature: Jim Poyner Date: 3/20/19

Equipment Owner's Signature: _____ Date: _____
(If different from Applicant)

Waste Management Delaware CNG Vehicle Deployment Project, Mitigation Action Description

Waste Management of Delaware, Inc. (WM) requests grant support from the Delaware Department of Natural Resources and Environmental Council (DNREC) in the amount of \$500,000 to purchase and deploy ten (10) near-zero-emission heavy-duty compressed natural gas (CNG) vehicles in Wilmington, Delaware and Laurel, Delaware. This project is a critical step for WM to provide alternative fuel waste collection services to its customer base throughout the state. The vehicles will be deployed at WM's new CNG facility in Laurel, which is currently under construction, and at WM's existing CNG facility in Wilmington. WM will operate the vehicles in its local refuse collection and recycling routes from each respective location, and in return for a grant award, WM will commit matching funds in excess of 80% of the entire project cost. The Delaware CNG Vehicle Deployment Project will serve as an important model for additional heavy-duty trucking companies not only to evaluate cost-effective and clean-burning natural gas vehicles in WM's fleet, but also to serve as an example for how to successfully implement advanced technology alternative fuel programs in large commercial and residential waste collection programs.

WM is pursuing an aggressive program to deploy CNG vehicles in Delaware, similar to the approach it has taken throughout the country in states including Pennsylvania, Colorado, and California. The project will serve as a method for WM to reduce vehicle emissions and improve air quality in New Castle and Sussex Counties, perfectly in alignment with the mission of WM and of the goals of DNREC's VW Beneficiary Mitigation Plan. By design, the project will accomplish the following:

- *Measurable, Verifiable Reduction in NOx Emissions:* Natural gas is a clean-burning alternative that reduces substantial smog-forming and cancer-causing emissions. On an annual basis, each vehicle purchased as a part of this project is expected to use a total of 8,500 Diesel Gallon Equivalents (DGE) of CNG. Annually, all ten vehicles combined are expected to displace 85,000 DGE of CNG total annually. This annual displacement of diesel will be a tremendous success story for the DNREC. At this rate of displacement, DNREC will reduce through the WM project more than 2.58 short tons of NOx, 0.14 short tons of PM, and 946.81 short tons of GHG emissions from its fleet annually.
- *Project Budget:* As mentioned above, WM will provide cost-share in excess of the 75% required for an alternative fuel vehicle replacement project, and WM's project will provide all of the benefits outlined in this application at a competitive, lifetime cost-effectiveness of \$30,238.52 per short ton of NOx reduced.
- *Proposed Project Location:* This project will have a tremendous positive impact on air quality for nonattainment areas in Delaware. WM's vehicles will primarily operate in New Castle and Sussex Counties, and in the 2008 evaluation of air pollutants, New Castle and Sussex Counties were both designated as 8-Hour Ozone nonattainment areas. The CNG technology proposed by WM represents a viable opportunity to significantly improve air quality, particularly with fleet vehicles that often run on diesel. The deployment of these CNG vehicles will replace the operation of diesel vehicles in WM's fleet, resulting in improved air quality in communities disproportionately affected by air pollution and more susceptible to health risks associated with diesel emissions.
- *Project Timeline:* This project is a critical step for WM to retire its engine model year (EMY) 1992-2009 year diesel vehicles in order to expand its natural gas-fueled waste collection services to its customer base in the Wilmington and Laurel areas. WM is eager and prepared to move forward with ordering and purchasing the new vehicles, upon receiving authorization to do so from the DNREC. WM will

complete the project within a year, as required by the guidelines, with an estimated completion date in the third quarter of 2020.

- *Ability to be Replicated throughout the State:* WM has years of experience and a proven track record of implementing CNG vehicle deployment projects. WM understands the level of detail required to ensure that projects are completed within the defined timeline and budget. WM has previously executed CNG deployments and looks forward to executing more based off of this project's success. Further, upon vehicle deployment, WM will provide the data to the extent requested by the DNREC to allow DNREC to leverage WM's experience. Creating case studies and completing other forms of outreach can help other fleets adopt WM's practices for further replication of CNG projects.
- *Collaboration with Other Entities:* Completing a CNG deployment project requires exhaustive collaboration between WM's internal leadership ships and external stakeholders including but not limited to its dealership network, utility partners, residential and commercial customers, state and local agencies, and members of the local community. By successfully navigating communications with each entity, WM has been able to commission over 130 CNG stations and deploy over 7,250 CNG units. WM is confident in its ability to work with its project partners to successfully deploy the ten vehicles included in this project.
- *Economic Development:* This project will directly benefit local companies and workers with expertise in vehicle servicing and advanced technology sales. As the natural gas market in Delaware continues to expand, there are a number of Delaware-based companies that will have to increase their own capacities to serve these growing demands. In particular, as more users are exposed to natural gas operations, the market for construction labor will increase, specifically for skilled construction and design firms familiar with natural gas station needs and maintenance bay retrofits for natural gas vehicle repairs. Similarly, vehicle technicians skilled in natural gas repairs will be in high demand, as will be the firms that employ them. OEM and dealer networks will also benefit as business develops.

Waste Management Delaware CNG Vehicle Deployment Project, Estimated NOx Reductions

The Delaware CNG Vehicle Deployment Project will reduce 2.58 short tons of NOx, 0.14 short tons of PM, and 946.81 short tons of GHG emissions from annually. Over the project's lifetime, it will reduce 16.54 short tons of NOx, 0.8259 short tons of PM, and 6,189.15 short tons of GHG emission. The reduction of more than 16 short tons of NOx over the project life yields a cost-effectiveness of \$30,238 per short ton of NOx for WM's grant request of \$500,000 for ten new near-zero-emission CNG vehicles.

Unit 208230

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2005	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	10185	
Calculated Fuel Volume	10185	
Vehicle Miles Traveled/Year (VMT)	34956	
Idling Hours/Year	113	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	10185	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.359721119	
Lifetime Baseline of Vehicles (NOx, short tons)	1.798605597	
Percent Reduced (NOx, %)	88.70%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.3597	
Amount Reduced per Year (NOx, short tons)	0.3191	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	1.7986	
Lifetime Amount Reduced (NOx, short tons)	1.5954	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.2032	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	31,340.83	

Unit 208230

Annual Baseline of Vehicles (PM2.5, short tons)	0.027666221
Lifetime Baseline of Vehicles (PM2.5, short tons)	0.138331104
Percent Reduced (PM2.5, %)	97.00%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0277
Amount Reduced per Year (PM2.5, short tons)	0.0268
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.1383
Lifetime Amount Reduced (PM2.5, short tons)	0.1342
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0041
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	372,630.52
Annual Baseline of Vehicles (HC, short tons)	0.025554763
Lifetime Baseline of Vehicles (HC, short tons)	0.127773816
Percent Reduced (HC, %)	89.70%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0256
Amount Reduced per Year (HC, short tons)	0.0229
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.1278
Lifetime Amount Reduced (HC, short tons)	0.1146
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0132
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	436,250.26
Annual Baseline of Vehicles (CO, short tons)	0.107628753
Lifetime Baseline of Vehicles (CO, short tons)	0.538143764
Percent Reduced (CO, %)	89.40%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.1076

Unit 208230

Amount Reduced per Year(CO, short tons)	0.0962
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.5381
Lifetime Amount Reduced (CO, short tons)	0.4811
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.057
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	103,928.38
Annual Baseline of Vehicles (CO2, short tons)	114.58125
Lifetime Baseline of Vehicles (CO2, short tons)	572.90625
Percent Reduced (CO2, %)	100.00%
Baseline of Vehicles Retrofitted per year (CO2, short tons/year)	114.5813
Amount Reduced per Year(CO2, short tons)	114.5813
Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	572.9063
Lifetime Amount Reduced (CO2, short tons)	572.9063
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)	87.27

Unit 208456

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2006	
Retrofit Year	2020	
Technology Description	Vehicle Replacement CNG	
Fuel Type	ULSD	
Fuel Volume	10014	
Calculated Fuel Volume	10014	
Vehicle Miles Traveled/Year (VMT)	33392	
Idling Hours/Year	143	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	10014	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.345849319	
Lifetime Baseline of Vehicles (NOx, short tons)	2.075095916	
Percent Reduced (NOx, %)	88.70%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.3458	
Amount Reduced per Year (NOx, short tons)	0.3068	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	2.0751	
Lifetime Amount Reduced (NOx, short tons)	1.8406	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.2345	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	27,164.91	
Annual Baseline of Vehicles (PM2.5, short tons)	0.026785421	

Unit 208456

Lifetime Baseline of Vehicles (PM2.5, short tons)	0.160712526
Percent Reduced (PM2.5, %)	97.00%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0268
Amount Reduced per Year (PM2.5, short tons)	0.026
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.1607
Lifetime Amount Reduced (PM2.5, short tons)	0.1559
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0048
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	320,736.62
Annual Baseline of Vehicles (HC, short tons)	0.024815028
Lifetime Baseline of Vehicles (HC, short tons)	0.148890169
Percent Reduced (HC, %)	89.70%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0248
Amount Reduced per Year (HC, short tons)	0.0223
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.1489
Lifetime Amount Reduced (HC, short tons)	0.1336
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0153
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	374,379.05
Annual Baseline of Vehicles (CO, short tons)	0.104068304
Lifetime Baseline of Vehicles (CO, short tons)	0.624409824
Percent Reduced (CO, %)	89.40%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.1041
Amount Reduced per Year (CO, short tons)	0.093
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.6244
Lifetime Amount Reduced (CO, short tons)	0.5582
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0662

Unit 208456

Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO ₂)	89,570.04
Annual Baseline of Vehicles (CO ₂ , short tons)	112.6575
Lifetime Baseline of Vehicles (CO ₂ , short tons)	675.945
Percent Reduced (CO ₂ , %)	100.00%
Baseline of Vehicles Retrofitted per year (CO ₂ , short tons/year)	112.6575
Amount Reduced per Year(CO ₂ , short tons)	112.6575
Lifetime Baseline of Vehicles Retrofitted (CO ₂ , short tons)	675.945
Lifetime Amount Reduced (CO ₂ , short tons)	675.945
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO ₂ , short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO ₂)	73.97

Unit 208631

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2007	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	7142	
Calculated Fuel Volume	7142	
Vehicle Miles Traveled/Year (VMT)	22243	
Idling Hours/Year	58	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	7142	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.16431918	
Lifetime Baseline of Vehicles (NOx, short tons)	1.150234257	
Percent Reduced (NOx, %)	84.30%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.1643	
Amount Reduced per Year (NOx, short tons)	0.1385	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	1.1502	
Lifetime Amount Reduced (NOx, short tons)	0.9696	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.1806	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	51,565.13	
Annual Baseline of Vehicles (PM2.5, short tons)	0.00089733	
Lifetime Baseline of Vehicles (PM2.5, short tons)	0.006281308	

Unit 208631

Percent Reduced (PM2.5, %)	41.80%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0009
Amount Reduced per Year (PM2.5, short tons)	0.0004
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.0063
Lifetime Amount Reduced (PM2.5, short tons)	0.0026
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0037
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	19,043,361.39
Annual Baseline of Vehicles (HC, short tons)	0.003105262
Lifetime Baseline of Vehicles (HC, short tons)	0.021736831
Percent Reduced (HC, %)	46.40%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0031
Amount Reduced per Year (HC, short tons)	0.0014
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.0217
Lifetime Amount Reduced (HC, short tons)	0.0101
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0117
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	4,957,420.82
Annual Baseline of Vehicles (CO, short tons)	0.013423177
Lifetime Baseline of Vehicles (CO, short tons)	0.093962236
Percent Reduced (CO, %)	46.50%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.0134
Amount Reduced per Year (CO, short tons)	0.0062
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.094
Lifetime Amount Reduced (CO, short tons)	0.0437
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0503

Unit 208631

Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	1,144,362.74
Annual Baseline of Vehicles (CO2, short tons)	80.3475
Lifetime Baseline of Vehicles (CO2, short tons)	562.4325
Percent Reduced (CO2, %)	100.00%
Baseline of Vehicles Retrofitted per year (CO2, short tons/year)	80.3475
Amount Reduced per Year(CO2, short tons)	80.3475
Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	562.4325
Lifetime Amount Reduced (CO2, short tons)	562.4325
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)	88.9

Unit 209245

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2007	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	10269	
Calculated Fuel Volume	10269	
Vehicle Miles Traveled/Year (VMT)	30536	
Idling Hours/Year	112	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	10269	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.228233133	
Lifetime Baseline of Vehicles (NOx, short tons)	1.597631932	
Percent Reduced (NOx, %)	84.30%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.2282	
Amount Reduced per Year (NOx, short tons)	0.1924	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	1.5976	
Lifetime Amount Reduced (NOx, short tons)	1.3468	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.2508	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	37,124.93	
Annual Baseline of Vehicles (PM2.5, short tons)	0.001247931	

Unit 209245

Lifetime Baseline of Vehicles (PM2.5, short tons)	0.00873552
Percent Reduced (PM2.5, %)	41.80%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0012
Amount Reduced per Year (PM2.5, short tons)	0.0005
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.0087
Lifetime Amount Reduced (PM2.5, short tons)	0.0037
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0051
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	13,693,199.51
Annual Baseline of Vehicles (HC, short tons)	0.004348293
Lifetime Baseline of Vehicles (HC, short tons)	0.030438051
Percent Reduced (HC, %)	46.40%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0043
Amount Reduced per Year (HC, short tons)	0.002
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.0304
Lifetime Amount Reduced (HC, short tons)	0.0141
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0163
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	3,540,260.23
Annual Baseline of Vehicles (CO, short tons)	0.018715141
Lifetime Baseline of Vehicles (CO, short tons)	0.131005986
Percent Reduced (CO, %)	46.50%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.0187
Amount Reduced per Year (CO, short tons)	0.0087
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.131

Unit 209245

Lifetime Amount Reduced (CO, short tons)	0.0609
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0701
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	820,778.38
Annual Baseline of Vehicles (CO2, short tons)	115.52625
Lifetime Baseline of Vehicles (CO2, short tons)	808.68375
Percent Reduced (CO2, %)	100.00%
Baseline of Vehicles Retrofitted per year (CO2, short tons/year)	115.5263
Amount Reduced per Year (CO2, short tons)	115.5262
Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	808.6838
Lifetime Amount Reduced (CO2, short tons)	808.6837
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)	61.83

Unit 209617

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2009	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	7981	
Calculated Fuel Volume	7981	
Vehicle Miles Traveled/Year (VMT)	30606	
Idling Hours/Year	174	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	7981	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.231705563	
Lifetime Baseline of Vehicles (NOx, short tons)	2.085350071	
Percent Reduced (NOx, %)	84.40%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.2317	
Amount Reduced per Year (NOx, short tons)	0.1956	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	2.0854	
Lifetime Amount Reduced (NOx, short tons)	1.76	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.3253	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	28,408.52	
Annual Baseline of Vehicles (PM2.5, short tons)	0.001269941	

Unit 209617

Lifetime Baseline of Vehicles (PM2.5, short tons)	0.011429473
Percent Reduced (PM2.5, %)	41.80%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0013
Amount Reduced per Year (PM2.5, short tons)	0.0005
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.0114
Lifetime Amount Reduced (PM2.5, short tons)	0.0048
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0067
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	10,465,681.14
Annual Baseline of Vehicles (HC, short tons)	0.004481968
Lifetime Baseline of Vehicles (HC, short tons)	0.040337715
Percent Reduced (HC, %)	46.40%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0045
Amount Reduced per Year (HC, short tons)	0.0021
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.0403
Lifetime Amount Reduced (HC, short tons)	0.0187
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0216
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	2,571,411.11
Annual Baseline of Vehicles (CO, short tons)	0.019135749
Lifetime Baseline of Vehicles (CO, short tons)	0.172221743
Percent Reduced (CO, %)	46.50%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.0191
Amount Reduced per Year (CO, short tons)	0.0089
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.1722

Unit 209617

Lifetime Amount Reduced (CO, short tons)	0.0801
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0921
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	624,351.37
Annual Baseline of Vehicles (CO ₂ , short tons)	89.78625
Lifetime Baseline of Vehicles (CO ₂ , short tons)	808.07625
Percent Reduced (CO ₂ , %)	100.00%
Baseline of Vehicles Retrofitted per year (CO ₂ , short tons/year)	89.7863
Amount Reduced per Year (CO ₂ , short tons)	89.7863
Lifetime Baseline of Vehicles Retrofitted (CO ₂ , short tons)	808.0763
Lifetime Amount Reduced (CO ₂ , short tons)	808.0763
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO ₂ , short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO ₂)	61.88

Unit 411528

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2006	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	8047	
Calculated Fuel Volume	8047	
Vehicle Miles Traveled/Year (VMT)	34655	
Idling Hours/Year	139	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	8047	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.358333807	
Lifetime Baseline of Vehicles (NOx, short tons)	2.150002842	
Percent Reduced (NOx, %)	88.70%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.3583	
Amount Reduced per Year (NOx, short tons)	0.3178	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	2.15	
Lifetime Amount Reduced (NOx, short tons)	1.9071	

Unit 411528

Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.243
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	26,218.47
Annual Baseline of Vehicles (PM2.5, short tons)	0.027702706
Lifetime Baseline of Vehicles (PM2.5, short tons)	0.166216239
Percent Reduced (PM2.5, %)	97.00%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0277
Amount Reduced per Year (PM2.5, short tons)	0.0269
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.1662
Lifetime Amount Reduced (PM2.5, short tons)	0.1612
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.005
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	310,116.46
Annual Baseline of Vehicles (HC, short tons)	0.025645285
Lifetime Baseline of Vehicles (HC, short tons)	0.153871708
Percent Reduced (HC, %)	89.70%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0256
Amount Reduced per Year (HC, short tons)	0.023
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.1539
Lifetime Amount Reduced (HC, short tons)	0.138
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0158

Unit 411528

Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	362,258.67
Annual Baseline of Vehicles (CO, short tons)	0.107667727
Lifetime Baseline of Vehicles (CO, short tons)	0.646006362
Percent Reduced (CO, %)	89.40%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.1077
Amount Reduced per Year(CO, short tons)	0.0963
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.646
Lifetime Amount Reduced (CO, short tons)	0.5775
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0685
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	86,575.64
Annual Baseline of Vehicles (CO2, short tons)	90.52875
Lifetime Baseline of Vehicles (CO2, short tons)	543.1725
Percent Reduced (CO2, %)	100.00%
Baseline of Vehicles Retrofitted per year (CO2, short tons/year)	90.5287
Amount Reduced per Year(CO2, short tons)	90.5288
Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	543.1725
Lifetime Amount Reduced (CO2, short tons)	543.1725
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)	92.05

Unit 411541

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2006	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	7523	
Calculated Fuel Volume	7523	
Vehicle Miles Traveled/Year (VMT)	33563	
Idling Hours/Year	356	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	7523	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.361082814	
Lifetime Baseline of Vehicles (NOx, short tons)	2.166496882	
Percent Reduced (NOx, %)	88.70%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.3611	
Amount Reduced per Year (NOx, short tons)	0.3203	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	2.1665	
Lifetime Amount Reduced (NOx, short tons)	1.9217	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.2448	

Unit 411541

Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	26,018.86
Annual Baseline of Vehicles (PM2.5, short tons)	0.0290846
Lifetime Baseline of Vehicles (PM2.5, short tons)	0.174507597
Percent Reduced (PM2.5, %)	97.10%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0291
Amount Reduced per Year (PM2.5, short tons)	0.0282
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.1745
Lifetime Amount Reduced (PM2.5, short tons)	0.1694
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0051
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	295,077.73
Annual Baseline of Vehicles (HC, short tons)	0.02738617
Lifetime Baseline of Vehicles (HC, short tons)	0.164317019
Percent Reduced (HC, %)	89.70%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0274
Amount Reduced per Year (HC, short tons)	0.0246
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.1643
Lifetime Amount Reduced (HC, short tons)	0.1474
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0169
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	339,230.59
Annual Baseline of Vehicles (CO, short tons)	0.112199608

Unit 411541

Lifetime Baseline of Vehicles (CO, short tons)	0.673197649
Percent Reduced (CO, %)	89.40%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.1122
Amount Reduced per Year (CO, short tons)	0.1003
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.6732
Lifetime Amount Reduced (CO, short tons)	0.6018
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0714
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	83,078.74
Annual Baseline of Vehicles (CO2, short tons)	84.63375
Lifetime Baseline of Vehicles (CO2, short tons)	507.8025
Percent Reduced (CO2, %)	100.00%
Baseline of Vehicles Retrofitted per year (CO2, short tons/year)	84.6337
Amount Reduced per Year (CO2, short tons)	84.6337
Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	507.8025
Lifetime Amount Reduced (CO2, short tons)	507.8025
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)	98.46

Unit 411636

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2006	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	8988	
Calculated Fuel Volume	8988	
Vehicle Miles Traveled/Year (VMT)	39869	
Idling Hours/Year	168	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	8988	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.412759615	
Lifetime Baseline of Vehicles (NOx, short tons)	2.476557689	
Percent Reduced (NOx, %)	88.70%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.4128	
Amount Reduced per Year (NOx, short tons)	0.3661	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	2.4766	
Lifetime Amount Reduced (NOx, short tons)	2.1967	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.2799	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	22,761.35	

Unit 411636

Annual Baseline of Vehicles (PM2.5, short tons)	0.03195307
Lifetime Baseline of Vehicles (PM2.5, short tons)	0.191718417
Percent Reduced (PM2.5, %)	97.00%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.032
Amount Reduced per Year (PM2.5, short tons)	0.031
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.1917
Lifetime Amount Reduced (PM2.5, short tons)	0.186
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0058
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	268,865.10
Annual Baseline of Vehicles (HC, short tons)	0.029596845
Lifetime Baseline of Vehicles (HC, short tons)	0.177581069
Percent Reduced (HC, %)	89.70%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0296
Amount Reduced per Year (HC, short tons)	0.0265
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.1776
Lifetime Amount Reduced (HC, short tons)	0.1593
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0183
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	313,892.47
Annual Baseline of Vehicles (CO, short tons)	0.124156296
Lifetime Baseline of Vehicles (CO, short tons)	0.744937778
Percent Reduced (CO, %)	89.40%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.1242

Unit 411636

Amount Reduced per Year(CO, short tons)	0.111
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.7449
Lifetime Amount Reduced (CO, short tons)	0.666
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.079
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	75,077.96
Annual Baseline of Vehicles (CO ₂ , short tons)	101.115
Lifetime Baseline of Vehicles (CO ₂ , short tons)	606.69
Percent Reduced (CO ₂ , %)	100.00%
Baseline of Vehicles Retrofitted per year (CO ₂ , short tons/year)	101.115
Amount Reduced per Year(CO ₂ , short tons)	101.115
Lifetime Baseline of Vehicles Retrofitted (CO ₂ , short tons)	606.69
Lifetime Amount Reduced (CO ₂ , short tons)	606.69
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO ₂ , short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO ₂)	82.41

Unit 412285

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2007	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	6600	
Calculated Fuel Volume	6600	
Vehicle Miles Traveled/Year (VMT)	34070	
Idling Hours/Year	175	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	6600	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.256817726	
Lifetime Baseline of Vehicles (NOx, short tons)	1.797724079	
Percent Reduced (NOx, %)	84.30%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.2568	
Amount Reduced per Year (NOx, short tons)	0.2165	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	1.7977	
Lifetime Amount Reduced (NOx, short tons)	1.5155	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.2822	
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	32,992.82	
Annual Baseline of Vehicles (PM2.5, short tons)	0.001406678	

Unit 412285

Lifetime Baseline of Vehicles (PM2.5, short tons)	0.009846749
Percent Reduced (PM2.5, %)	41.80%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0014
Amount Reduced per Year (PM2.5, short tons)	0.0006
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.0098
Lifetime Amount Reduced (PM2.5, short tons)	0.0041
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0057
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	12,147,890.19
Annual Baseline of Vehicles (HC, short tons)	0.004947718
Lifetime Baseline of Vehicles (HC, short tons)	0.034634027
Percent Reduced (HC, %)	46.40%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0049
Amount Reduced per Year (HC, short tons)	0.0023
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.0346
Lifetime Amount Reduced (HC, short tons)	0.0161
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.0186
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	3,111,351.14
Annual Baseline of Vehicles (CO, short tons)	0.021169449
Lifetime Baseline of Vehicles (CO, short tons)	0.148186142
Percent Reduced (CO, %)	46.50%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.0212
Amount Reduced per Year (CO, short tons)	0.0098
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.1482

Unit 412285

Lifetime Amount Reduced (CO, short tons)	0.0689
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0793
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	725,620.36
Annual Baseline of Vehicles (CO ₂ , short tons)	74.25
Lifetime Baseline of Vehicles (CO ₂ , short tons)	519.75
Percent Reduced (CO ₂ , %)	100.00%
Baseline of Vehicles Retrofitted per year (CO ₂ , short tons/year)	74.25
Amount Reduced per Year (CO ₂ , short tons)	74.25
Lifetime Baseline of Vehicles Retrofitted (CO ₂ , short tons)	519.75
Lifetime Amount Reduced (CO ₂ , short tons)	519.75
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO ₂ , short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO ₂)	96.2

Unit 412431

000-000-0000	3/25/2019	Detailed Report from the Diesel Emissions Quantifier
Type	Onroad	
Target Fleet	Refuse Hauler	
Class/Equipment	Refuse Hauler	
Number of Vehicles	1	
Model Year	2007	
Retrofit Year	2020	
Technology Description	Vehicle Replacement - CNG	
Fuel Type	ULSD	
Fuel Volume	7412	
Calculated Fuel Volume	7412	
Vehicle Miles Traveled/Year (VMT)	33676	
Idling Hours/Year	127	
Horsepower		
Usage Rate/Year		
Number of Vehicles Retrofitted	1	
New Model Year	2019	
Diesel Fuel Reduced (gallons)	7412	
Reduced Idling (hours)	0	
Installation Cost	\$0	
Unit Cost	\$50,000	
Annual Baseline of Vehicles (NOx, short tons)	0.251111889	
Lifetime Baseline of Vehicles (NOx, short tons)	1.757783225	
Percent Reduced (NOx, %)	84.30%	
Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	0.2511	
Amount Reduced per Year (NOx, short tons)	0.2117	
Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	1.7578	
Lifetime Amount Reduced (NOx, short tons)	1.4818	
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	0.276	

Unit 412431

Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	33,742.49
Annual Baseline of Vehicles (PM2.5, short tons)	0.001373217
Lifetime Baseline of Vehicles (PM2.5, short tons)	0.009612517
Percent Reduced (PM2.5, %)	41.80%
Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	0.0014
Amount Reduced per Year (PM2.5, short tons)	0.0006
Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	0.0096
Lifetime Amount Reduced (PM2.5, short tons)	0.004
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)	0.0056
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	12,443,902.51
Annual Baseline of Vehicles (HC, short tons)	0.004788403
Lifetime Baseline of Vehicles (HC, short tons)	0.033518819
Percent Reduced (HC, %)	46.40%
Baseline of Vehicles Retrofitted per year (HC, short tons/year)	0.0048
Amount Reduced per Year (HC, short tons)	0.0022
Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	0.0335
Lifetime Amount Reduced (HC, short tons)	0.0156
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	0.018
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)	3,214,869.23
Annual Baseline of Vehicles (CO, short tons)	0.020599704

Unit 412431

Lifetime Baseline of Vehicles (CO, short tons)	0.144197928
Percent Reduced (CO, %)	46.50%
Baseline of Vehicles Retrofitted per year (CO, short tons/year)	0.0206
Amount Reduced per Year(CO, short tons)	0.0096
Lifetime Baseline of Vehicles Retrofitted (CO, short tons)	0.1442
Lifetime Amount Reduced (CO, short tons)	0.0671
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	0.0771
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	745,689.51
Annual Baseline of Vehicles (CO2, short tons)	83.385
Lifetime Baseline of Vehicles (CO2, short tons)	583.695
Percent Reduced (CO2, %)	100.00%
Baseline of Vehicles Retrofitted per year (CO2, short tons/year)	83.385
Amount Reduced per Year(CO2, short tons)	83.385
Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	583.695
Lifetime Amount Reduced (CO2, short tons)	583.695
Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	0
Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)	85.66

Waste Management Delaware CNG Vehicle Deployment Project, Proposed Budget

Project Costs

Natural gas solid waste collection vehicles have significant emission reduction benefits, but are more expensive than their diesel counterparts. WM seeks to purchase a total of ten CNG vehicles for its refuse collection and recycling operations in Wilmington and Laurel. In order to partially defray the incremental or added cost of transitioning part of its refuse fleet to natural gas vehicles, WM is requesting \$500,000 total or \$50,000 per vehicle in grant funding support from the DNREC. The tables below display a breakdown of the vehicle costs by component. The prices displayed do not include taxes or freight.

For the Wilmington location, WM proposes to purchase three (3) Peterbilt roll-off units and two (2) Peterbilt residential front loader units. For the Laurel location, WM proposes to purchase two (2) Peterbilt roll-off units with the same specifications as the Wilmington location as well as two (2) Autocar commercial front loaders and one (1) Autocar residential front loader.

Roll-Off Vehicle being ordered (three for Wilmington and two for Laurel)

2020 Peterbilt 567 w/ Galbreath Body & Agility Fuel System

Component	Make	Model	Cost (one unit)	Cost (five units)
Chassis	Peterbilt	567	\$ 162,075.00	\$ 810,375.00
Body	Galbreath	AFX-IO-174	\$ 44,492.00	\$ 222,460.00
Fuel System	Agility	90 DGE	\$ 34,277.19	\$ 171,385.95
TOTAL			\$ 240,844.19	\$ 1,204,220.95

	One Unit	Five Units
25% of the Total Cost	\$ 60,211.05	\$ 301,055.24
Grant Request	\$ 50,000.00	\$ 250,000.00

Residential Front Loader Vehicle being ordered (Wilmington)

2020 Peterbilt 520 w/ McNeilus Body & Agility Fuel System

Component	Make	Model	Cost (one unit)	Cost (two units)
Chassis	Peterbilt	520	\$ 171,025.00	\$ 342,050.00
Body	McNeilus	Meridian 37YD	\$ 77,315.00	\$ 154,630.00
Fuel System	Agility	90 DGE	\$ 34,277.19	\$ 68,554.38
TOTAL			\$ 282,617.19	\$ 565,234.38

	One Unit	Two Units
25% of the Total Cost	\$ 70,654.30	\$ 141,308.60
Grant Request	\$ 50,000.00	\$ 100,000.00

Commercial Front Loader Vehicle being ordered (Laurel)

2020 Autocar ACX64 w/ Heil Body & Fuel System

Component	Make	Model	Cost (one unit)	Cost (two units)
Chassis	Autocar	ACX64	\$ 153,241.00	\$ 306,482.00
Body	Heil	Half/Pack	\$ 86,477.00	\$ 172,954.00
Fuel System	Heil	90 DGE	\$ 32,000.00	\$ 64,000.00
TOTAL			\$ 271,718.00	\$ 543,436.00

	One Unit	Two Units
25% of the Total Cost	\$ 67,929.50	\$ 135,859.00
Grant Request	\$ 50,000.00	\$ 100,000.00

Residential Front Loader Vehicle being ordered (Laurel)

2020 Autocar ACX64 w/ Heil Body & Fuel System

Component	Make	Model	Cost (one unit)	Cost (one unit)
Chassis	Autocar	ACX64	\$ 158,611.00	\$ 158,611.00
Body	Heil	Sierra	\$ 97,477.00	\$ 97,477.00
Fuel System	Heil	75 DGE	\$ 26,750.00	\$ 26,750.00
TOTAL			\$ 282,838.00	\$ 282,838.00

	One Unit	One Unit
25% of the Total Cost	\$ 70,709.50	\$ 70,709.50
Grant Request	\$ 50,000.00	\$ 50,000.00

Total Project Costs

WM will provide the match for the remaining vehicle purchase costs through its private capital. The total project cost, minimum cost-share required, and actual cost-shared provided are demonstrated in the table below:

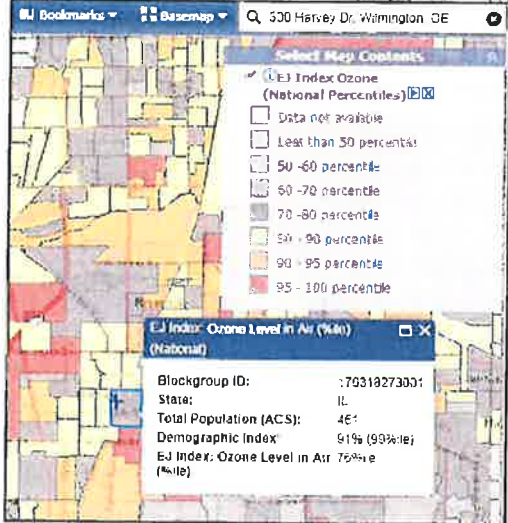
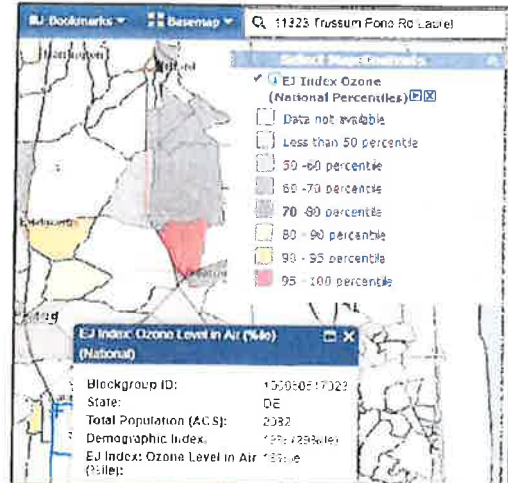
Total Project Cost	\$2,595,729.33
Required Cost-share	\$1,946,797.00
Actual Cost-Share	\$2,095,729.33
Actual Cost-Share (%)	80.7%

Waste Management Delaware CNG Vehicle Deployment Project, Proposed Project Location

WM's Delaware CNG Vehicle Deployment Project will occur at two of WM's sites within the state of Delaware in Wilmington and Laurel. The following tables include information about each site including its address, county, nearby corridors, EJ Screen demographic index and ozone percentiles, attainment status, and closest CNG fueling station(s). Both sites are near regional transportation corridors and are located in nonattainment areas. Given the nature of WM's operations in neighborhoods and commercial areas, the cleaner CNG vehicles will provide direct air quality benefits to the populations that live and work in WM's service areas, particularly for Wilmington, which is in the 99%ile on the EJ Demographic Index.

Location	11323 Trussum Pond Rd. Laurel, DE 19956 (Sussex County)
Proximal Corridors	US-13 / US-9
EJ Demographic Index	29%ile
EJ Ozone	18%ile
NAAQS Attainment Status	8-Hour Ozone (2008)
Nearest Fueling Station(s)	Chesapeake Utilities – Dover, DE (41.8mi)

Location	300 Harvey Dr. Wilmington, DE 19804 (New Castle County)
Proximal Corridors	I-95 / I-495 / I-295 / SR-141
EJ Demographic Index	99%ile
EJ Ozone	76%ile
NAAQS Attainment Status	8-Hour Ozone (2008 and 2015)
Nearest Fueling Station(s)	South Jersey Gas Wawa – Paulsboro, NJ (20.3mi) / Clean Energy – Philadelphia, PA (21mi)



Images: Laurel EJ Screen Map (top right); Wilmington EJ Screen Map (middle right); closest CNG stations to Wilmington (bottom right); closest CNG station to Laurel (bottom left)



Waste Management Delaware CNG Vehicle Deployment Project, Replication

WM's plans to deploy CNG vehicles in Delaware go beyond the scope of this project. WM is committed to developing sustainable waste and recycling solutions, products, and services in its fleet of solid waste collection vehicles. WM began using natural gas refuse haulers in 1992, and today WM runs the largest fleet of natural gas refuse trucks in North America. WM's long-term vision is to use natural gas across all of its operations, and preferably renewable natural gas from its own landfills. Looking ahead, 90% of WM's entire corporate-wide truck purchases will be natural gas vehicles; an investment surpassing \$1 billion. The deployment of more than 7,250 clean burning NGVs is significant not only in magnitude, but, more importantly, it is proof of a deliberate and comprehensive effort to incorporate a cleaner burning vehicle fuel technology into an essential service for the communities and businesses in the state of Delaware. By switching to natural gas, WM is reducing dependence on imported petroleum and significantly improving the air quality in its areas of operations.

WM's Delaware CNG Vehicle Deployment Project will play a key role in strategically expanding the market for natural gas vehicles as well as the network of natural gas fueling infrastructure. WM's requested vehicles in Wilmington will fuel at the company's existing station, located just south of the Pennsylvania border and the heavily-populated Philadelphia metropolitan area. To support this deployment and future CNG vehicle deployments in Delaware, WM is constructing a brand-new CNG station at its Laurel location. WM can make fueling available to select, pre-approved, third-party fleets who request access to the station. Building a station in Laurel will complement the state's aggressive plans to increase the adoption of alternative fuels and reduce harmful emissions. The station will provide additional CNG fueling capacity for the region, at the intersection of several important local and regional goods movement pathways.

In order to provide long-term access to the greatest number of heavy-duty vehicles, it is critical that natural gas fueling infrastructure be available in the vicinity of major transportation corridors. In order for the fueling network in Delaware to become robust enough to support large numbers of natural gas vehicles, more CNG stations will be required. This project will serve as a critical first step toward initiating demand and creating momentum for natural gas fueling infrastructure in Delaware, and provide a tangible example of successful CNG operations in the state. With increased rates of technology adoption, economies of scale and associated production costs improve, setting examples for and providing encouragement to even more technology adopters. This applies in both the vehicle and station markets; with increased adoption, design processes become streamlined, component prices fall, workers and permitting officials become better educated about alternative fuel operations and project development needs, there is increased market competition overall, and prices continue to drop. Therefore, this CNG deployment project will improve the regional knowledge base and is part of the overall incentive that Delaware truly requires to see similar projects replicated throughout the state.

Waste Management Delaware CNG Vehicle Deployment Project, Collaboration

WM has the expertise and experience to deploy, operate, and maintain the vehicles in this application, and it will do so through the collaborative support of several entities. WM's internal teams, vendors, and customers are key stakeholders in the project, and information about each is provided below.

Waste Management Key Personnel: The decision to apply for funding for Wilmington and Laurel's fleets was directed by Marty Tuft. Tuft is the corporate fleet director for WM, located in Phoenix, Arizona. Tuft has served for over 33 years in progressively responsible positions within the company and presently oversees the Natural Gas and Equipment Performance programs at the enterprise level. Tuft and his team have pioneered WM's use of CNG and LNG vehicles and fueling infrastructure, as well as use of renewable natural gas (RNG) in their CNG and LNG vehicles.

Outside of the corporate office, Jim Pryor and Richard St. John were central to the development of the application and will continue to play a critical role in the project's success. Pryor is the Area Fleet Director and St. John is the District Fleet Manager. They will be responsible for the timely deployment of the new vehicles and communications with drivers and technicians. Their roles involve the day to day functional management and providing collaborative assistance to local council and stakeholders.

Vendors: WM has a well-established network of dealerships and direct OEM support that enables it to keep up with the company's growth and ventures in the alternative fuel space. WM has already discussed the project with its vendors to secure documentation required for the grant's submittal. For this project, the preferred chassis providers are Peterbilt and Autocar; the preferred body providers are McNeilus, Galbreath, and Heil; and the preferred fuel system provider is Agility Fuel Solutions.

For years, Peterbilt has offered CNG and LNG options for its environmentally-conscious customers. As displayed in the references form (Attachment 6), WM's main point of contact for purchasing Peterbilt Trucks is Jesse Fullilove from Rush Truck Centers. Autocar remains both the oldest vehicle nameplate in America and the only truck manufacturer dedicated to severe-duty vocational applications. For Autocar, WM's main point of contact is Lisa Ringger, and she can be reached at lringger@autocarturck.com. McNeilus has been a leading producer of CNG powered trucks since 2006. McNeilus produces route-ready, fully tested CNG vehicle systems directly from its factory off its moving assembly line. WM's main point of contact at McNeilus is Michael Derr, and he can be reached at MDerr@mcneilusco.com. With an extensive line of quality mobile products for the waste industry, Galbreath offers products for the safe, reliable transport of waste and other products. WM's main point of contact at Galbreath is Steven Hartwick, and he can be reached at shartwick@wastequip.com. Lastly, Heil has been a leader in the refuse industry since 1901, offering durable and innovated body manufacturing services. For Heil, WM's point of contact is Jared Lauritsen, and he can be reached at jlauritsen@doversg.com.

Community: WM's customers are its first priority, and WM actively engages with the communities it operates in to educate them about natural gas and its benefits. WM has a long and consistent track record of conducting public outreach and educational campaigns to share the benefits of recycling throughout North America. In order to bring awareness to this project, WM can conduct outreach while simultaneously deploying the proposed units. WM would enjoy the opportunity to work directly with the DNREC around this effort, which could include advertising in local newspapers and radio, event sponsorships, and direct meetings with civic and business organizations.

Waste Management Delaware CNG Vehicle Deployment Project, Economic Development

Today, shale gas and renewable natural gas are revolutionizing the economy of Mid-Atlantic States, with many new and existing businesses growing thanks to lower fuel prices and jobs in alternative fuel supply chain. CNG is a reliable, low-cost, low-emission, and locally-sourced alternative to highly-emitting diesel. In addition to reducing diesel emissions and fuel run-off into local rivers and waterways, this project will further demonstrate the demand for locally-produced gas, and create many lucrative green-collar jobs necessary to support the new vehicles and accompanying station.

There will be many CNG companies that will benefit from the proliferation of CNG vehicles and infrastructure in the state. The proliferation of the natural gas market in Delaware's neighboring state, Pennsylvania, will directly relate to the success of Delaware-based companies that are fully entrenched in the industry. Large numbers of vehicle-related jobs will be created in Delaware due to the deployment of the CNG vehicles proposed under the scope of this project. The jobs will include positions related to workforce training, service, parts manufacturing, delivery, and truck operation. Local maintenance and service-support jobs will be created in order to service and support the CNG trucks; special on-the-job training will be provided to fleet-maintenance personnel and fleet drivers so they will have the skills to maintain and service the low-emission natural gas engines and tanks, as well as to operate the trucks. WM's fleet drivers and maintenance personnel will also be trained to understand the operation of the on-board natural gas fuel tank and methane detection system so that they are well-prepared in the event of an accident or emergency situation.

The Delaware CNG Deployment Project is the ultimate example of a project that provides an efficient, proven, and necessary step in transitioning Delaware's commercial and residential waste hauling away from petroleum-based fuels to clean-burning natural gas. Natural gas allows the heavy-duty operational requirements and high-fuel demands of Delaware fleets to be met using a supply that is plentiful, sourced domestically, low-carbon, and that provides exceptional long-term cost savings. Therefore, deploying these CNG vehicles would provide enormous benefits to WM and the surrounding residential and commercial communities. This project in particular will have significant immediate and long-term economic impacts that will benefit both the local economies and the State of Delaware. WM will invest in vehicle maintenance and will also continue to invest in the cost of equipment, construction, site improvements, and contract labor required to develop new CNG stations to support its growing fleet. These investments will inject immediate capital into the local economies at both locations in Delaware. Thus, this project will also create ongoing opportunities for highly skilled green jobs necessary to support the advanced technology vehicle and station operations and Delaware's transition into a market-leading clean technology economy.

ATTACHMENT E

DERA Option

The State of Delaware FY2019 Clean Diesel Work plan is attached. The State of Delaware is seeking Volkswagen Environmental Mitigation Funds as a DERA-Option 10 cost share for the deployment of CNG replacement vehicles under the FY2019 work plan. The State of Delaware lists 10 Class 8 Local Freight Trucks to be replaced as compressed natural gas – a total of 4 units are to receive Volkswagen Environmental Mitigation funds and 6 units are to receive Diesel Emission Reduction Act grant funding.

FISCAL YEAR 2019**STATE CLEAN DIESEL GRANT PROGRAM****WORK PLAN AND BUDGET NARRATIVE – State of Delaware**

SUMMARY PAGE**Project Title: Solid Waste Collection Vehicles & School Bus & Excavator Replacements****Project Manager and Contact Information****Organization Name: Department of Natural Resources and Environmental Control****Project Manager: Deanna M. Cuccinello****Mailing Address: 100 W. Water Street Dover, DE 19904****Phone: 302-739-9402****Fax: 302-739-3106****Email: Deanna.morozowich@delaware.gov****Project Budget Overview:**

	FY 2019
EPA Base Allocation	\$315,793.00
State or Territory Voluntary Matching Funds (if applicable)	\$361,675.00
EPA Match Incentive (Bonus) (if applicable)	\$157,897.00
Mandatory Cost-Share	\$2,782,381.00
TOTAL Project Cost	\$3,617,746.00
Other Leveraged Funds	-

Project Period

October 1, 2019 – September 30, 2021

Summary Statement

The FY2019 Diesel Emission Reduction Act grant funds will be used to replace:

- 10 older diesel solid waste collection vehicles around the state with Waste Management,
- 1 school bus with The Teen Warehouse as an electric school bus in Wilmington, and
- 1 excavator owned and operated by the Division of Fish and Wildlife for Department of Natural Resources and Environmental Control.

The equipment will be replaced with the mandatory project partner funds along with DERA or Volkswagen Environmental Mitigation Funds as the cost share.

Clean diesel project information can be found on the following page:

<http://www.dnrec.delaware.gov/Air/Pages/MobileSourcesLinks.aspx>

SCOPE OF WORK

The projects presented in the FY2019 work plan will be administered by the Delaware Department of Natural Resources and Environmental Control – Division of Air Quality staff and the following project partners: Waste Management, Inc., the Teens Warehouse, the Division of Fish & Wildlife. The purpose of these projects is to reduce diesel emissions in the State of Delaware through the replacement of 10 diesel solid waste collection vehicles as compressed natural gas (CNG), a diesel school bus as electric school bus, and a excavator replacement.

STATE/TERRITORY GOALS AND PRIORITIES:

The following narrative describes how the project:

1. Will maximize public health benefits;
2. Is the most cost-effective;
3. Is in areas with high population density, that are poor air quality areas (including nonattainment or maintenance of national ambient air quality standards for a criteria pollutant; Federal Class I areas; or areas with toxic air pollutant concerns);
4. Is in areas that receive a disproportionate quantity of air pollution from diesel fleets, including truck stops, ports, rail yards, terminals, and distribution centers or that use a community-based multi-stakeholder collaborative process to reduce toxic emissions;
5. Includes a certified engine configuration or verified technology that has a long expected useful life;
6. Maximizes the useful life of any certified engine configuration or verified technology used or funded by the eligible entity; and
7. Conserves diesel fuel.

Poor air quality is a critical issue in the region. For Delaware, New Castle and Sussex County are still in non-attainment for the ozone standard. However, the state has attained the standard for fine particulate pollution. The state's air quality monitors show clean data for the new annual fine particulate standard and the state is part of the PM Advance Program. New Castle County is an approved PM2.5 maintenance area. Diesel emission reduction projects are still important to support Delaware's efforts to maintain good air quality relative to particulate pollution.

Table 1 Statewide Emission Inventory (2014) below compares emissions (NOx, PM, SO2) of Non-Road Equipment with the entire Non-Road Sector (NR Equipment, Aircraft, Locomotives, and Commercial Marine Vessels).

STATEWIDE ANNUAL	VOC	NOx	PM2.5-PRI	SO2	NH3
NONROAD Equipment	4,303.32	3,677.64	342.10	8.97	6.14
Aircraft	375.41	756.87	53.61	72.38	NA
Commercial Marine Vessels	107.72	2,795.64	79.99	466.74	0.82
Locomotives	21.32	406.09	13.07	4.24	0.19
Total	4,807.77	7,636.24	488.77	552.33	7.15

VEHICLES AND TECHNOLOGIES:

Waste Management, Inc. proposes to replace ten diesel on-road solid waste collection vehicles with ten near-zero-emission vehicles that operate on compressed natural gas (CNG). The existing waste collection vehicles are equipped with engines between model years 1992-2009. Waste Management Inc. will deploy the new vehicles in Wilmington (New Castle County) and Laurel (Sussex County) and operate them on local refuse collection and recycling routes. The project will directly support the Department's goals to improve air quality and reduce diesel emissions. The solid waste collection vehicles are noted in Table 2.

Fuel	Model Year	Make	Model	VIN
D	2005	Mack	MR 688S	1M2K195C55M026974
D	2006	Mack	MR 688S	1M2K195C36M029633
D	2007	Mack	MR 688S	1M2K195C67M034357
D	2007	Mack	MR 688S	1M2K195C47M039234
D	2009	Peterbilt	ISM	3BPZL00X49F718905
D	2006	Mack	AI 350	1M2AG11C06M039456
D	2006	Mack	AI 350	1M2AG11C96M034868
D	2006	Mack	AI 350	1M2AG11C66M035508
D	2007	Freightliner	M2112	1FVHC7C47HX47871
D	2007	Freightliner	M2106	1FVHC7C47HX47878

Additionally, transportation providers in Delaware are seeking cleaner-burning alternatives to diesel and are motivated by saving fuel costs and reducing school children's exposure to cancer-

causing and smog forming pollution through the replacement of old school buses with new lower emission diesel and propane school buses. Transportation providers are committed to providing Delaware schools with reliable, innovative, and efficient green transportation solutions. The following is a list of the transportation providers and the buses that are being considered for replacement in FY2019:

- Teens Warehouse is a nonprofit activity center for children in the City of Wilmington. They are replacing 1 diesel bus with an electric school bus.

TABLE 3 – Teens Warehouse Equipment to be Replaced in 2019.				
Fuel	Model Year	Manufacturer	Chassis	VIN
D	2006	International	International	4DRBUAFP76B983310

Finally, the Division of Fish and Wildlife would like to replace an aging excavator. The information of the excavator is provided below.

TABLE 4 – Division of Fish and Wildlife to be Replaced in 2019.				
Fuel	Model Year	Manufacturer	Engine	Serial
D	2003	Kobelco SK160LC	4D34- TLUZA	YM03-U0626

ROLES AND RESPONSIBILITIES:

DERA and Volkswagen Environmental Mitigation funds will be used on a reimbursement basis. The Division of Air Quality will issue a contract to each project partner that requires each of them to administer the entire replacement project, purchase order, and invoice processing, as well as, overseeing the delivery of the new equipment and scrappage and destruction of the old. The contract will also provide a process by which the Department will release funds for the partial purchase of the replacement equipment. Any funds remaining from the FY2019 DERA grant will be returned to the EPA.

TIMELINE AND MILESTONES:

- October 2019 – DERA award Granted
- November 2019 – Contracts written between the Department of Natural Resources and Environmental Control and each project partner memorializing an agreement that requires each transportation provider to administer the purchase and replacement of each piece of equipment, as well as oversee the replacement and scrappage requirements. The contracts will provide a process by which the Department will release the funds to purchase and replace the equipment.
- February/August 2020– New equipment will be purchased.
- July/September 2020 – Existing equipment will be scrapped and destroyed.
- September 2021 – Each equipment owner/transportation provider will supply fuel usage data to the Department.

DERA PROGRAMMATIC PRIORITIES:

The solid waste collection vehicles, school bus replacement project, and excavator replacement project meets all the programmatic goals and priorities set forth under DERA. Diesel exhaust from solid waste collection vehicles, school buses, and excavators contain significant levels of fine particulate matter. Air pollution from diesel vehicles has health implications for everyone. A major reason for implementing these replacement projects is to reduce the impact that the diesel emitting sources have on air quality.

EPA'S STRATEGIC PLAN LINKAGE AND ANTICIPATED OUTCOMES/OUTPUTS:

The emission reductions for the projects were calculated using the Diesel Emission Quantifier on the EPA website. Table 4 Projected Emission Reductions provides the emissions reductions (in shorts tons) and cost effectiveness for the solid waste collection vehicles, school bus replacement, and the excavator replacement.

TABLE 4 PROJECTED EMISSION REDUCTIONS			
Annual Emissions Reduced (tons/yr)	Solid Waste Collection Vehicles (qty. 10)	School Bus (qty. 1)	Excavator (qty. 1)
NOx	1.114	0.097	0.482
PM	0.145	0.008	0.035
HC	0.139	0.013	0.043
CO	0.679	0.048	0.174
Lifetime Emissions Reduced (short tons)			
NOx	17.527	0.484	0.462
PM	0.848	0.040	0.034
HC	0.823	0.065	0.034
CO	3.332	0.240	0.168
Lifetime Cost Effectiveness (\$/ton)			
NOx	\$317,337.31	\$816,699.00	\$1,353,045.00
PM	\$69,361,461.17	\$9,958,088.00	\$18,303,798.00
HC	\$19,321,323.57	\$6,070,360.00	\$18,418,487.00
CO	\$4,499,033.12	\$1,646,214.00	\$3,729,283.00

SUSTAINABILITY OF THE PROGRAM:

All equipment will be strictly maintained and serviced as needed. If the equipment fails to perform in accordance with the manufacturer's conditions, the equipment will be repaired or replaced under the warranty provisions.

The Division of Air Quality maintains a website for Mobile Sources which includes the status and progress of DERA projects. See

<http://www.dnrec.delaware.gov/Air/Pages/MobileSourcesLinks.aspx>.

BUDGET NARRATIVE

Itemized Project Budget

Budget Category	EPA Allocation	Mandatory Cost-Share	Voluntary Match (if applicable)		Line Total
			VW Mitigation Trust Funds	Other Funds	
1. Personnel	-	-	-	-	-
2. Fringe Benefits	-	-	-	-	-
3. Travel	-	-	-	-	-
4. Equipment	\$156,250.00	\$468,750.00	-	-	\$625,000.00
5. Supplies	-	-	-	-	-
6. Contractual	\$316,019.00	\$2,313,631.00	\$361,675.00		\$2,991,325.00
7. Other	\$1421.00	-	-	-	\$1421.00
8. Total Direct Charges (sum 1-7)	\$473,690.00	\$2,782,381.00	\$361,675.00		\$3,617,746.00
9. Indirect Charges	-	-	-	-	-
10. Total (Indirect + Direct)	\$473,690.00	\$2,782,381.00	\$361,675.00		\$3,617,746.00
11. Program Income	-	-	-	-	-
12. Other Leveraged Funds*	-	-	-	-	-

*Do not include Other Leveraged Funds on SF-424 or SF-424A

Explanation of Budget Framework

- **Personnel – No grant funds used.**
- **Fringe Benefits – No grant funds used.**
- **Travel – No grant funds used.**
- **Supplies – No grant funds used.**
- **Equipment – The following equipment will be purchased/replaced:**
The Division of Fish and Wildlife will be replacing a 2003 Kobelco SK-160 excavator. The total cost of replacement is \$625,000. The DERA grant will cover 25% replacement cost and the Department of Natural Resources will cover 75% as indicated in Table 5.

TABLE 5 - FY2019 EQUIPMENT COSTS

Project Partner	Identification	EPA	EPA Bonus	Volkswagen Mitigation Funds	Project Partner	Total
Fish & Wildlife	Kobelco SK-160	\$156,250.00	-	-	\$468,750.00	\$625,000.00

- **Contractual - Identify each proposed contract and specify its purpose and estimated cost.**

The Department will issue a contract to each project partner that requires each of them to administer the entire replacement project. The contract will also provide a process by which the Department will release funds for the replacement of equipment. The total cost of the solid waste collection units is \$2,595,729. DERA grant funds and Volkswagen Mitigation funds will be used to replace 19.26% (\$500,000.00) of the total costs of the replacement vehicles. The total cost of replacement for the electric school bus and the required infrastructure is \$394,875.00. The Teens Warehouse is to receive a 45% cost share using Volkswagen Mitigation Trust Funds (\$177,693.75) for their school bus replacement and infrastructure.

TABLE 6 - FY2019 CONTRACTUAL COSTS

Project Partner	Existing VIN	EPA	EPA Bonus	Volkswagen Mitigation Funds	Project Partner	Total
Waste Management Inc.	1M2K195C55M026974	\$50,000.00	-	-	\$190,988.19	\$240,988.19
	1M2K195C36M029633	\$50,000.00	-	-	\$190,988.19	\$240,988.19
	1M2K195C67M034357	\$50,000.00	-	-	\$190,988.19	\$240,988.19
	1M2K195C47M039234	9,543.00	-	\$40,457.00	\$190,988.19	\$240,988.19
	3BPZL00X49F718905	-	\$50,000.00	-	\$190,988.19	\$240,988.19
	1M2AG11C06M039456	-	\$50,000.00	-	\$232,617.19	\$282,617.19
	1M2AG11C96M034868	-	\$50,000.00	-	\$232,617.19	\$282,617.19
	1M2AG11C66M035508	-	\$6,476.00	\$43,524.00	\$221,718.00	\$271,718.00
	1FVHC7C47HX47871	-	-	\$50,000.00	\$221,718.00	\$271,718.00
	1FVHC7C47HX47878	-	-	\$50,000.00	\$232,838.00	\$282,838.00
Teens Warehouse	4DRBUAFP76B983310	-	-	\$168,693.75	\$206,181.25	\$374,875.00
	Infrastructure – Electric bus	-	-	\$9,000.00	\$11,000.00	\$20,000.00
Total		159,543.00	156,476.00	361,675.00	2,313,630.00	2,991,325.00

- **Other – Audit Fees**

TABLE 7 - FY2019 OTHER COSTS

Category	EPA Base	EPA Bonus	Volkswagen Mitigation Funds	Project Partner	Total
Total Other Charges	-	-	-	-	-
Audit of Grant (0.003% of EPA Funding) = \$1421	-	\$1,421.00	-	-	-
Total	-	\$1,421.00	-	-	\$1,421.00

- **Indirect Charges – No grant funds used.**

Administrative Costs Expense Cap

No grant funds will be used towards Administrative Expenses.

Matching Funds and Cost-Share Funds

The DERA program is a reimbursement program. The Department will also provide Volkswagen Environmental Mitigation Funds that exceed the EPA base funding (\$316,019) as the state cost-share. Once all costs for a particular project are expended and itemized receipts, pictures, and certificates of destruction are received, the Department will reimburse each project partner for the appropriate cost-share. These funds are shown in the Itemized Project Budget and Explanation of Budget Framework above.

Funding Partnerships

The DERA program is a reimbursement program. DERA grant funds are only to be used toward equipment replacement costs for each project partner. The Department would like to avoid extensive subaward monitoring and management requirements.

Other Leveraged Funds

No other leveraged funds are identified.

ENVIRONMENTAL MITIGATION PLAN ATTACHMENT

A Copy of Delaware's Environmental Mitigation Plan is attached.



State of Delaware

**Department of Natural Resources and
Environmental Control**

Volkswagen Environmental Mitigation Plan

February 2020

Table of Contents

I. BACKGROUND	1
II. OVERVIEW, OBJECTIVES AND FUNDING PRIORITIES	2
III. PHASED FUNDING APPROACH AND ELIGIBLE APPLICANTS	4
IV. DETAILED SUMMARY OF THREE-PHASED SPENDING APPROACH	7
Phase 1 - School Bus Replacement Program:	7
Phase 1 - Program Requirements:	8
Phase 2 - Competitive RFP Program:	10
Environmental Benefits:	11
Diesel Emission Reduction Act (DERA):	15
Phase 2 Program Requirements:	16
Volkswagen RFP Scoring Matrix:	17
Phase 3 - A Hybrid Program:	20

List of Figures

Figure 1 - Mobile NOx Sources for Delaware (Source 2014 NEI v1)	7
---	---

List of Tables

Table 1 - Tentative Timeline of Events	5
Table 2 - Percentage of Disparately Impacted Students by School District	9
Table 3 - Percentage of Disparately Impacted Students by Charter School	10
Table 4 - Cost Shares for Eligible Mitigation Actions	14
Table 5 - VW Settlement RFP Award Criteria	18

I. BACKGROUND

On October 18, 2016, an initial Partial Consent Decree was finalized between the U.S. Justice Department, the Volkswagen (VW) Corporation, and its subsidiaries regarding the installation and use of emissions testing defeat devices in approximately 590,000 2.0 and 3.0 liter engine vehicles sold and operated in the United States beginning with model 2009 through 2014. A second partial settlement was approved for the 3.0 liter engine class of vehicles on May 17, 2017. Use of these defeat devices has increased air emissions of nitrogen oxide (NOx), resulting in adverse impacts to air quality and violating the federal Clean Air Act. NOx emissions contribute to the formation of ground-level ozone, which impairs lung function and cardiovascular health.

The Environmental Mitigation Trust Agreement for State Beneficiaries (Trust) dated October 2, 2017 has been established as part of the Partial Consent Decrees. Funds are to be used for environmental mitigation projects that reduce emissions of nitrogen oxides ("NOx") where the Subject Vehicles were, are, or will be operated. The Trust Agreement is intended to fully mitigate the total, lifetime excess NOx emissions from the Subject Vehicles where the Subject Vehicles were, are, or will be operated.

The State of Delaware has been allocated approximately \$9.6 million from the Environmental Mitigation Trust based on the number of affected vehicles in Delaware. Delaware applied for Beneficiary status on November 27, 2017 and officially became eligible to receive funds on January 29, 2018. Wilmington Trust, as the court appointed Trustee, holds all funds and will disburse the funds upon receiving a state submitted work plan and budget. The Trust establishes a process to administer and receive the funds, including the development of a mitigation plan, and the types of mitigation projects eligible for funding¹.

¹ Appendix D of the Partial Consent Decree MDL No. 2672 CRB (JSC)

In addition to projects that reduce NO_x emissions, under the partial consent decree, states may allocate up to 15% of the funds towards zero emission vehicle fueling and charging infrastructure (i.e. Hydrogen fueling and electric vehicle charging stations).

II. OVERVIEW, OBJECTIVES AND FUNDING PRIORITIES

On behalf of the State of Delaware, the Department of Natural Resources & Environmental Control (DNREC) has developed this Proposed Environmental Mitigation Plan to provide the public with insight into the state's vision and overall approach to use the mitigation trust funds. The primary goal of the State of Delaware's mitigation plan is to improve and protect ambient air quality by implementing eligible mitigation projects that will achieve significant and sustained reductions in NO_x emission exposures in the following:

- Areas with poor air quality;
- Areas with historical air quality issues; and
- Areas that receive a disproportionate quantity of air pollution from diesel vehicles.

In accordance with Appendix D of the Partial Consent Decree,² this Proposed Environmental Mitigation Plan specifically describes:

- The funding priorities established to guide the planning, solicitation, and project selection processes,

² Section 4.1 Beneficiary Mitigation Plan, Appendix D of the Partial Consent Decree MDL No. 2672 CRB (JSC).

-
- The categories of eligible mitigation projects anticipated to be appropriate to achieve the stated goals and the assessment of the allocation of funds anticipated to be used for each type of eligible mitigation project,
 - How the state may consider the potential beneficial impact of the selected eligible mitigation projects on air quality in areas that historically bear a disproportionate share of the air pollution burden, and
 - The anticipated ranges of emission benefits that would be realized by implementation of the eligible mitigation projects identified in the Environmental Mitigation Plan.

In addition to the above listed Environmental Mitigation Plan components, DNREC will seek and consider public comments on the State of Delaware's Proposed Environmental Mitigation Plan, which will be included in the final plan as required by the Consent Decree³.

The State of Delaware has the discretion to adjust its objectives and specific spending plan when necessary to achieve the plan's goal; for that reason, this plan is a living document. The State of Delaware will provide updates of the mitigation plan to the Trustee and on DNREC's public webpage about Delaware's actions for meeting the requirements of the Partial Consent Decree and the Mitigation Trust, at:

<http://www.dnrec.delaware.gov/air/Pages/VWMitigationPlan.aspx>

This Proposed Environmental Mitigation Plan is not a solicitation for projects. As such, this plan does not include details on the competitive application.

³ <https://www.epa.gov/enforcement/third-partial-and-301-second-partial-and-201-partial-and-amended-consent-decree>

III. PHASED FUNDING APPROACH AND ELIGIBLE APPLICANTS

DNREC is proposing a three-phase plan for the State of Delaware's allocation of funding. A phased plan will allow the state to:

- Build transparency and involve the public in reviewing and revising the plan between phases;
- Learn which projects work best, and modify requests for proposals in subsequent phases to focus on the most effective projects;
- Allow the state to identify environmental justice areas; and
- Allow the state to adjust priorities and investments based on the newest and most up-to-date vehicle technology.

The first phase of funding will be the first step in achieving our goals for the program. The three phases of funding are:

- **Phase 1: \$3,225,560.99 (2018-2024)** – DNREC proposes to replace old diesel school buses with new cleaner school buses over a six year period.
- **Phase 2: \$361,374.75 (2019-2020)** – DNREC offered a competitive RFP for projects in all categories. Two projects were determined by eligibility criteria set forth in the plan. These projects are described in Phase 2.
- **Phase 3: Up to \$6.0 million (2020-2021)** – DNREC will allocate 15% of the funds for electric vehicle supply equipment. Projects will consist of the replacement of five (5) government-owned dump trucks and a competitive RFP where applications will be accepted for projects in all categories as well as school

bus replacements with private transportations providers. Projects will be determined by the eligibility criteria set forth in the plan.

Delaware's allocation of Trust funds is \$9,676,682.97 (0.33% of the total \$2.9 billion in Trust funds made available to states and Tribes). DNREC has proposed that Trust funds will be requested and made available for mitigation projects. A detailed project timeline can be found in **Table 1**.

Table 1 - Tentative Timeline of Events

Event	Time Frame
Court approves the partial settlement	October 25, 2016
Court Approves Trustee	March 15, 2017
Court Approves Trust	October 2, 2017
Delaware files Beneficiary Certification Application	November 27, 2017
Trustee Certifies Delaware as a Beneficiary	January 29, 2018
Public Comment on the draft Mitigation Plan	March 28, 2018
Delaware finalizes preliminary Mitigation Plan	December 2018
Delaware initiates Phase 1 – year 1 projects	Quarter 4 2018
Delaware releases RFP – Phase 2	January 28, 2019
Delaware selects Phase 2 projects	Quarter 3 2019
Delaware finalizes Phase 1 – year 1 projects	Quarter 4 2019
Public Comment opens on Draft Mitigation Plan – Phase 3	December 2019
Delaware initiates Phase 1 – year 2 projects	Quarter 1 2020
Delaware initiates Phase 2 projects	Quarter 1 2020
Delaware releases an RFP on Phase 3 projects.	Quarter 1 2020
Delaware selects Phase 3 projects	Quarter 3 2020
Delaware finalizes Phase 1 – year 2 projects	Quarter 4 2020
Delaware finalizes Phase 2 projects	Quarter 4 2020*
Delaware initiates Phase 1 – year 3 projects	Quarter 1 2020*
Delaware initiates Phase 3 projects	Quarter 1 2020*
Delaware finalizes Phase 1 – year 3 projects	Quarter 4 2021*
Delaware finalizes Phase 3 projects	Quarter 4 2021*
Delaware initiates Phase 1 – year 4 projects	Quarter 1 2022*
Delaware finalizes Phase 1 – year 4 projects	Quarter 4 2022*
Delaware initiates Phase 1 – year 5 projects	Quarter 1 2023*
Delaware finalizes Phase 1 – year 5 projects	Quarter 4 2023*
Delaware initiates Phase 1 – year 6 projects	Quarter 1 2024*
Delaware finalizes Phase 1 – year 6 projects	Quarter 4 2024*

*Dates are estimates and are subject to change.

DNREC will maintain and make publically available all documentation submitted in the support of each funding request on the VW Settlement project website⁴.

⁴DNREC Website: <http://www.dnrec.delaware.gov/air/Pages/VWMitigationPlan.aspx>

IV. SUMMARY OF THREE-PHASED SPENDING APPROACH

Phase 1 - School Bus Replacement Program:

The Department has recommended that Phase 1 funding be used to replace diesel school buses with cleaner school buses. DNREC's 2014 Emissions Inventory has concluded that up to 72% of in-state NO_x emissions can be attributed to the transportation sector. Delaware's emissions from heavy and medium duty vehicles (which include school buses) are becoming an increasingly larger source of overall mobile source emissions for nitrogen oxides (NO_x), as shown in Figure 1.

Research shows NO_x emissions will be reduced by 11 percent just by replacing a diesel school bus with a new propane school bus⁵.

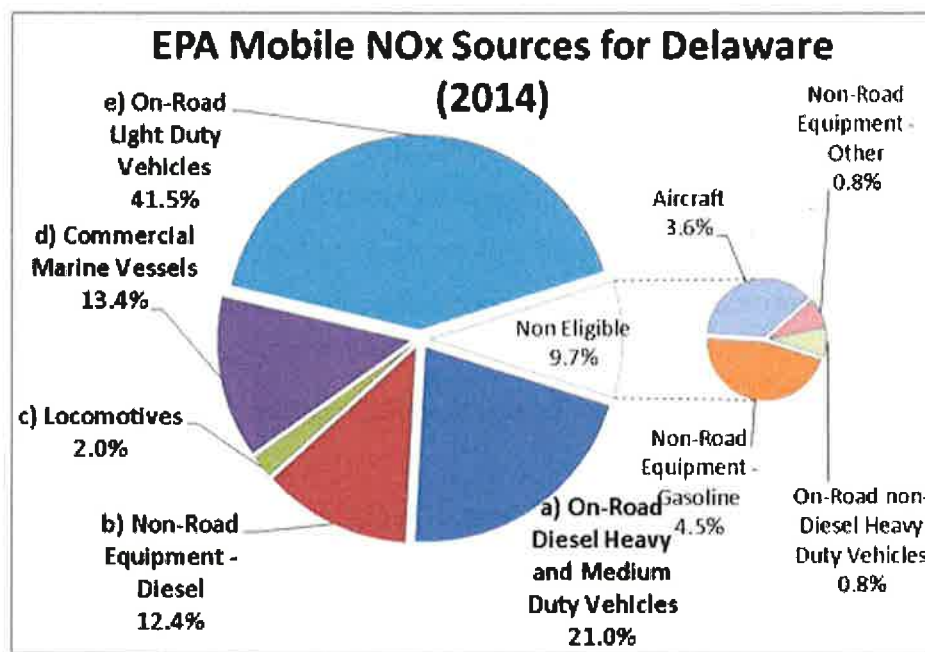


Figure 1 - Mobile NO_x Sources for Delaware (Source 2014 NEI v1)

⁵ Propane education and Research Council - <https://www.propanecouncil.org/>

Studies have demonstrated that older, more polluting diesel school buses present significant health risks for the students who typically ride the bus. This includes the exacerbation of pre-existing pulmonary disorders such as asthma. Asthma is the most common long-term childhood disease, making newer and cleaner buses an urgent priority. Additionally, children are more susceptible to air pollution because their respiratory systems are still developing and they have faster breathing rates than do adults⁶.

Lastly, replacing school buses with buses that operate on cleaner burning fuel will assist the Department in reducing emissions in Delaware's environmental justice (EJ) areas. Environmental Justice is the act of equity among all races, ethnicities, income, and social classes of people and includes any census tract with a poverty level of 20% or higher and where 30% or more are considered minorities. The Department's mission relative to environmental justice ensures that no particular area receives disproportionate environmental impacts due to air pollution.

Phase 1 - Program Requirements:

In Phase 1, the Department proposes and continues to use up to 1/3 of the allocated Trust funds or \$3,225,560.99 to provide funds to the Department of Education for the replacement of school buses with cleaner burning fuel. The Department is proposing a cost share of 30% for government-owned school bus replacements.

To be eligible, each school bus being replaced must be:

- 1) Scrapped and destroyed at the time of replacement;
- 2) Owned and operated in Delaware;
- 3) Equipped with a model year 1992 to 2009 engine;

⁶ American Lung Association – <http://www.ala.org>

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- 4) Serve a public school district or a charter school in Delaware where at least 40% of the students are disparately impacted as shown in **Table 2 and Table 3**;
 - 5) Each new bus purchased must be of equivalent size as the bus being replaced;
 - 6) The bus must be replaced with a current model year or newer; and
 - 7) The replaced school bus must be fueled by propane or clean diesel.

Table 2 - Percentage of Disparately Impacted Students by School District

County	School District	Disparately Impacted (%)
New Castle County	Appoquinimink	13.2
	Brandywine	29.8
	Christina	42.9
	Colonial	39.8
	New Castle Co. Vo-Tech	27.6
	Red Clay	34.1
	Smyrna	24.9
Kent County	Caesar Rodney	30.5
	Capital	48.9
	Lake Forest	39.4
	Milford	41.2
	Polytech Vo-Tech	17.0
Sussex County	Cape Henlopen	29.0
	Delmar	14.2
	Indian River	36.0
	Laurel	47.4
	Seaford	47.7
	Sussex Technical	16.6
	Woodbridge	41.9

Table 3 - Percentage of Disparately Impacted Students by Charter School

County	Charter School	Disparately Impacted (%)
New Castle County	Academia Antonia Alonso	57.3
	Charter School of New Castle	51.4
	Delaware Academy of Public Safety and Security	39.9
	Delaware Design-Lab High School	29.9
	East Side Charter School	79.3
	First State Montessori Academy	11.6
	Freire Charter School	48.9
	Gateway Lab School	42.3
	Great Oaks Charter School	55.8
	Kuumba Academy Charter School	62.2
	Las Americas Aspira Academy	25.4
	MOT Charter School	5.3
	Moyer (Maurice J.) Academy	20.0
	Newark Charter School	8.0
	Odyssey Charter School	14.4
Prestige Academy	73.4	
Kent County	Academy of Dover	67.8
	Campus Community Charter School	40.0
	Early College High School at Delaware State University	33.1
	First State Military Academy	24.9
	Positive Outcomes Charter School	30.2
	Providence Creek Academy Charter School	18.0
Sussex County	Sussex Academy	9.0

Phase 2 - Competitive RFP Program:

In phase 2 of the plan, the Department proposed to provide up to 1/3 of the allocated Trust funds or \$3,225,560.99 in 2019 for the replacement of eligible mitigation

actions⁷. The Department will issue a competitive request for proposals (RFP) for projects that reduce nitrogen oxide (NOx) emissions from the transportation sector.

The following mitigation project types will be eligible for use of the VW Settlement Funds per the Trust Agreement found in Appendix D-2:

- 1.) Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks)**
- 2.) Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Eligible Buses)**
- 3.) Freight Switchers**
- 4.) Ferries/Tugs**
- 5.) Ocean Going Vessels (OGV) Shorepower**
- 6.) Class 4-7 Local Freight Trucks (Medium Trucks)**
- 7.) Airport Ground Support Equipment**
- 8.) Forklifts and Port Cargo Handling Equipment**

Environmental Benefits:

The retrofit, repower, or replacement of eligible vehicles and equipment may provide a wide range of emission benefits based on many variables, including the type of vehicle or engine replaced, the initial age of the engine, and the engine power rating.

⁷ The Department anticipates spending \$361,674.75 in Volkswagen Environmental Mitigation Trust Funds for Phase 2. The remaining \$2.8M will rollover to Phase 3 which will provide approximately \$6.0M to spend.

Each of the 8 project categories outlined in the VW Settlement Environmental Mitigation Plan will result in the following combined environmental benefits:

- Tons of pollution reduced or avoided over the lifetime of the zero emissions vehicle supply equipment, specifically, NO_x, PM_{2.5}, GHGs such as CO₂ and black carbon,
- Net reduction in gallons of diesel fuel and/or other fossil fuels used,
- Improved ambient air quality and human health in communities located in nonattainment areas, areas with historical air quality issues, or in areas that bear a disproportionate share of the air pollution burden, as well as benefits to the local economy, and the welfare of residents in such communities, and
- Reduced public exposure to diesel particulate matter, which the U.S. EPA has classified as a likely human carcinogen.

Additionally, based on current EPA exhaust emission standards for NO_x:⁸

- Heavy duty highway vehicles may provide up to a 96% reduction in NO_x emissions per vehicle, based on replacing a model year 1992 engine with a model year 2007 engine,
- Non-road equipment replacements, depending on the type of equipment and engine power rating, may provide between a 20% and 95% reduction in NO_x emissions per engine,
- In locomotives, replacing the oldest (Tier 0) engine with the newest (Tier 4) engine may provide up to an 89% NO_x reduction per engine,

⁸ EPA exhaust emission standard data retrieved from: <https://www.epa.gov/emission-standards-reference-guide>.

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- In commercial marine vessels, an upgrade or repower of a ferry or tug engine may provide up to an 80% NOx reduction for each vessel, and
 - Shorepower projects may reduce all NOx exhaust emissions from many ocean-going vessels.

These anticipated ranges of emission benefits were used to inform the plan's funding priorities, categories of eligible mitigation projects, and funding allocation considerations for each category of eligible mitigation projects. It is important to note that the range of emission benefits mentioned above are for individual engines and actual NOx emissions reductions will vary based on the type of projects received for funding consideration and the eligible mitigation projects ultimately funded. However, in order to achieve the goal of the state mitigation plan, it is a priority to fund sizeable projects designed to achieve the greatest emission reduction for the dollar (i.e., capital cost effectiveness in dollars/ton).

The cost shares and requirements involved for each vehicle or equipment repower or replacement will be equivalent to the terms of the Diesel Emission Reduction (DERA)⁹ grant. Cost shares identified in **Table 4** are based on the FY2017 State Clean Diesel Program Guide¹⁰.

⁹ The DERA program is a Congressionally-authorized project that enables the U.S. EPA to offer assistance for actions reducing diesel emissions. Thirty percent of the annual DERA funds are allocated to the DERA Clean Diesel State Grant Program. States and territories that match the base amount dollar per dollar receive an additional amount of EPA DERA funding to add to the grant (50% of the base amount). Trust funds can be used for states or territories non-federal match on a 1:1 basis.

¹⁰ 2017 FY2017 State Clean Diesel Program Guide - <https://www.epa.gov/sites/production/files/2017-02/documents/fy17-state-program-guide-2017-02.pdf>

Table 4 - Cost Shares for Eligible Mitigation Actions

Eligible Mitigation Action	Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	VW Funding	Cost Share Required
Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks) & Class 4-7 Local Freight Trucks (Eligible Medium Trucks)	Engine replacement with new diesel or alternate fueled engine	1992-2009	40%	60%
	Engine replacement with new all-electric engine	1992-2009	60%	40%
	Vehicle replacement with new diesel or alternate fueled vehicle	1992-2009	25% (50% for Drayage)	75% (50% for Drayage)
	Vehicle Replacement with all-electric vehicle	1992-2009	45%	55%
Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Eligible Buses)	Engine replacement with new diesel or alternate fueled engine	2009 and older	40%	60%
	Engine replacement with new all-electric engine	2009 and older	60%	40%
	Vehicle replacement with new diesel or alternate fueled vehicle	2009 and older	25%	75%
	Vehicle Replacement with all-electric vehicle	2009 and older	45%	55%
Freight Switchers	Engine replacement with new diesel or alternate fueled engine or generator sets that are EPA certified	Pre-Tier 4	40%	60%
	Engine replacement with new all-electric engine	Pre-Tier 4	60%	40%
	Locomotive replacement with new diesel or alternate fueled freight switcher that is EPA certified	Pre-Tier 4	25%	75%
	Locomotive replacement with	Pre-Tier 4	45%	55%

Eligible Mitigation Action	Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	VW Funding	Cost Share Required
	new all-electric freight switcher			
Ferries/Tugs	Engine replacement with new Tier 3 or 4 diesel or alternate fueled engine	Pre-Tier 3	40%	60%
	Engine replacement with new all-electric engine	Pre-Tier 3	60%	40%
	Certified Remanufacture System or Verified Engine Upgrade	Pre-Tier 3	40%	60%
Ocean Going Vessels	Costs associated with shore-side system	n/a	25%	75%
Airport Ground Support Equipment	Engine replacement with new all-electric engine	Pre-Tier 3	60%	40%
Forklifts and Port Cargo Handling Equipment	Equipment replacement with new all-electric equipment	8000+ lbs lift capacity	45%	55%

Non-government and government entities are eligible to apply for funding to implement mitigation projects. Project funding will be awarded through a competitive process in accordance with Delaware's procurement laws¹¹. Any unspent funds remaining at the end of Phase 2 will be rolled into Phase 3.

Diesel Emission Reduction Act (DERA):

The Department may leverage the projects in all phases in order to received additional Diesel Emission Reduction Act (DERA) grant funding. Any source type applying for grant funding will be subject to the requirements of the DERA State Clean

¹¹ Delaware Procurement laws can be found at <http://mymarketplace.delaware.gov/>

Diesel Grant Program, including but not limited to general eligibility, project evaluation criteria, eligible project and administrative expenditures, cost-share, and funding restrictions.

The projects submitted via the RFP will be reviewed by a Department established Project Selection Committee. The committee will select and rank project applications based on a set "Project Scoring Criteria/Matrix" developed by the Department as shown in **Table 5** expressly for this purpose.

Phase 2 Program Requirements:

To be eligible, each vehicle or piece of equipment to be repowered or replaced must be:

- 1) Scrapped and destroyed at the time of replacement;
- 2) Owned and operated in Delaware;
- 3) Equipped with an eligible model year engine or Tier level;
- 4) Serve an environmental justice area;
- 5) Each new vehicle or engine purchased must be of appropriate /equivalent size as the vehicle or engine being replaced; and
- 6) The new vehicle must be replaced with a current model year or newer.

Volkswagen RFP Scoring Matrix:

The Department has developed a project RFP scoring criteria/matrix. Each application submitted will be scored based on the factors outlined in the matrix in **Table 5**. The number of projects that are selected for funding in phases 2 and 3 will depend on the applications received and interest by vehicle and equipment owners.

The following criteria will be used by the grant Review Committee to review and score applications received for the VW Mitigation Funds:

Table 5 - VW Settlement RFP Award Criteria

Project Award Criteria	Points Possible	Points Awarded	Comments
<p>Measurable, verifiable reduction in NOx emissions</p> <ul style="list-style-type: none"> - The project will produce a net reduction in NOx emissions in the State and result in a measurable, verifiable reduction in NOx per ton of emissions using the Diesel Emission Quantifier. - Projects must meet eligibility requirements of Appendix D-2 of the VW Mitigation Plan 	30		
<p>Project Budget</p> <ul style="list-style-type: none"> -The proposed budget is thorough, robust, realistic and cost effective. - The applicant must show a detailed budget with all cost shares explained. 	15		
<p>Proposed Project Location</p> <ul style="list-style-type: none"> - The project is sited near a major highway or transportation corridor, shipping route, or near a shipping logistics center. - This project will address an environmental justice (EJ) area or related location that receives a disparate proportion of environmental impacts. - The project avoids environmentally sensitive areas or areas containing critical habitats. -Priority will be given to projects in non-attainment and air quality maintenance areas. 	15		
<p>Project Timeline</p> <p>The proposed project must define when the project will commence and will end.</p>	15		

Project Award Criteria	Points Possible	Points Awarded	Comments
Ability to be Replicated throughout the State - The proposed project has the ability to be replicated throughout the state with other fleets or for public access.	10		
Collaboration with other Entities in the State - The project includes collaborative efforts between the applicant and project team (an anchor fleet or fleets, utility/fuel provider, vehicle dealer, or manufacturer).	10		
Economic Development - The project creates and/or retains local jobs for Delawareans. - The project serves as an economic development engine for local Delaware based companies.	5		
Total Points	100		

Status Update of Phase 2 Program:

The Department selected two projects for replacement in 2020 under the Request for Proposal NAT19001-VWEMTFP. The Department is partnering with Waste Management, Inc. of Delaware in the replacement of ten (10) solid waste collection units as compressed natural gas (CNG) for the first project. The waste collection units will serve in New Castle and Sussex County, which are both designated as non-attainment areas. This project will use combined Diesel Emission Reduction Act (DERA) grant funds (\$316,019.00) and Volkswagen Mitigation Trust Funds (\$183,981.00).

For the second project, the Department is partnering with The Teens Warehouse, Inc. to replace one diesel school bus with new, electric school bus with associated electric vehicle supply equipment. The electric bus will serve New Castle County. Funds shall cover up to 45% of the cost of an eligible replacement vehicle powered by an engine certified to the 2019 model year or newer standards and the charging infrastructure associated with the new all-electric vehicle. The project will cost

\$177,693.75. As previously described, any funds remaining from Phase 2 will rollover to Phase 3. The Department estimates that \$2.8M will remain in Phase 2 so Phase 3 will have approximately \$6.0M available.

Phase 3 - A Hybrid Program:

During Phase 3 of this funding, DNREC's Division of Climate, Coastal, and Energy will receive 15% (\$1.45M) of the Trust funds to administer a competitive grant program for the deployment of electric vehicle supply equipment (EVSE). Specifically, these funds will be utilized to incentivize the construction and operation of DC Fast Charging stations in the state to provide residents and travelers with convenient and consistent access to electric vehicle supply equipment. Grant funding will be provided for the material costs of publically available DC Fast Charging Stations installed within the state of Delaware. Eligible entities for grant funding will include Delaware-based businesses, not-for-profit organizations, government entities, and educational institutions. Project proposals will be submitted through competitive Request for Proposal process and will be evaluated based on criteria in the categories of:

- Estimated greenhouse gas reductions
- Proximity to Alternative Fuel Corridors and proximity to high traffic volume routes
- Accessibility regarding payment options
- Thoroughness of the Operations and Maintenance Plan
- Overall project budget and cost effectiveness

In addition to the funding for electric vehicle charging stations, the Department will allocate up to \$600,000 to replace five (5) Class 8 government-owned dump trucks with the Division of Fish and Wildlife. These vehicles will be used around the state. The Department will also release a competitive request for proposals (RFP) for projects that reduce nitrogen oxide (NOx) emissions from the transportation sector. In the Competitive RFP, the Department will pursue the following:

-
- School bus replacements with the privately-owned school bus contractors. In Delaware, private school bus contractors provide 2/3 of transportation services to Delaware schools. The Department will allocate up to \$2 million in the replacement of propane or clean diesel school buses. The contractors are eligible for a 25% cost share and school bus replacements must match the criteria established in Phase 1 - Program Requirements and Phase 2 – Competitive RFP Program.
 - All other eligible mitigation actions. The remaining Trust funds, up to \$2 million, will be used for the replacement of eligible mitigation actions listed in Phase 2 – Competitive RFP Program.