

APPENDIX D-4
Beneficiary Eligible Mitigation Action Certification

BENEFICIARY ELIGIBLE MITIGATION ACTION CERTIFICATION

Beneficiary Maryland

Lead Agency Authorized to Act on Behalf of the Beneficiary Maryland Department of the Environment
(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:	MD State Projects MDOT (EMA-8)
Beneficiary's Project ID:	MDOT-4-2020
Funding Request No.	<i>(sequential)</i> 9
Request Type: (select one or more)	<input checked="" type="checkbox"/> Reimbursement <input type="checkbox"/> Advance <input type="checkbox"/> Other (specify): _____
Payment to be made to: (select one or more)	<input type="checkbox"/> Beneficiary <input checked="" type="checkbox"/> Other (specify): <u>The Maryland Department of Transportation</u>
Funding Request & Direction (Attachment A)	<input type="checkbox"/> Attached to this Certification <input checked="" type="checkbox"/> To be Provided Separately

SUMMARY

Eligible Mitigation Action <input checked="" type="checkbox"/> Appendix D-2 item (specify): <u>8- Forklifts and Port Cargo Handling Equipment</u> Action Type <input type="checkbox"/> Item 10 - DERA Option (5.2.12) (specify and attach DERA Proposal):
Explanation of how funding request fits into Beneficiary's Mitigation Plan (5.2.1): See Attached
Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2): See Attached
Estimate of Anticipated NOx Reductions (5.2.3): See Attached
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): See Attached
Describe how the Beneficiary will make documentation publicly available (5.2.7.2). See Attached
Describe any cost share requirement to be placed on each NOx source proposed to be mitigated (5.2.8). See Attached
Describe how the Beneficiary complied with subparagraph 4.2.8, related to notice to U.S. Government Agencies (5.2.9). See Attached

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).
See Attached

ATTACHMENTS
(CHECK BOX IF ATTACHED)

- Attachment A Funding Request and Direction.
- Attachment B Eligible Mitigation Action Management Plan Including Detailed Budget and Implementation and Expenditures Timeline (5.2.4).
- Attachment C Detailed Plan for Reporting on Eligible Mitigation Action Implementation (5.2.11).
- 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.]
- Attachment E DERA Option (5.2.12). [Attach only if using DERA option.]
- 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 Maryland, 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: 5/11/20



George S. (Tad) Aburn, Jr.
Director, Air and Radiation Administration|
Maryland Department of the Environment
[LEAD AGENCY]

for
Maryland
[BENEFICIARY]

Appendix D-4 – Supplemental Information
Beneficiary Eligible Mitigation Action Certification

Beneficiary: Maryland

Lead Agency: Maryland Department of the Environment

In support of funding request no. 9
MD State Projects MDOT (EMA-8)

Appendix D4 – Summary

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

This funding request falls under the State Agency Projects that are detailed on page 18 of Maryland's Beneficiary Mitigation Plan (BMP). Specifically this project falls under Section D(2): Maryland Port Administration (MPA). This funding request will be used to replace seven pieces of forklifts and port cargo handling equipment with five new all-electric powered pieces of forklifts and port cargo handling equipment.

These forklifts and port cargo handling equipment pieces were included in Maryland's BMP dated February 13th, 2019. This funding request focuses on Eligible Mitigation Action 8 – Forklifts and Port Cargo Handling Equipment, and will use \$1,185,660 from the VW Trust to replace three diesel terminal tractors with two new all-electric terminal tractors, replace one diesel aerial lift with a new all-electric aerial lift, replace a diesel rubber tire loader with a new all-electric tire loader, and replace two diesel forklifts with new all-electric forklifts.

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

The Maryland Port Administration will replace a total of seven pieces of older diesel powered forklifts and port cargo handling equipment with five new all-electric powered versions. Two diesel terminal tractors will be replaced with one new all-electric version, and two diesel forklifts will be replaced with one new all-electric version. By replacing and scrapping two older vehicles for one new one, the emissions benefits associated with the replacement will improve. The two diesel forklifts are model year 1991, the terminal tractors range from 1998 to 2001. The diesel rubber tire loader is model year 2002 and the diesel aerial lift is model year 2009. The total cost of these replacements is \$1,260,000. MPA is committed to providing \$74,340 in matching funds and has requested \$1,185,600 from Maryland's Volkswagen Trust Funds to help fund this project.

These pieces of equipment operate in and around the Port of Baltimore, which, contributes a disproportionate amount of harmful emissions to the Baltimore City. Baltimore City has been designated as a nonattainment area in Maryland. In 2016, Baltimore ranked in the top 10 worst

locations for air pollution in the United States with 114 days of elevated air pollution (Elizabeth Ridlington, Frontier Group & Christy Leavitt Environment America Research & Policy Center, Summer 2018)¹. 60% of this pollution is from transportation vehicles.

MDE expects these replacements to result in the following reductions in air pollutants:

Pollutant	NOx	PM 2.5
Pollution Reduction (Lifetime Tons)	9.925	.559

Estimate of Anticipated NOx Reductions (5.2.3):

Annual NOx reductions are estimated to be .451 Tons. Lifetime NOx reductions are estimated to be 9.925 Tons.

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 Maryland Department of the Environment is responsible for all Volkswagen Mitigation Plan projects in Maryland.

Describe how the Beneficiary will make documentation publically available (5.2.7.2):

All documentation will be made publicly available on the Maryland Department of the Environment's Maryland Volkswagen Mitigation Plan website. This site can be found at:

<https://mde.maryland.gov/programs/Air/MobileSources/Pages/MarylandVolkswagenMitigationPlan.aspx>

Describe any cost share requirements to be placed on each NOx Source proposed to be mitigated (5.2.8):

MPA is a Transportation Business Unit of the Maryland Department of Transportation (MDOT). As part of a state agency, it is therefore eligible for 100% funding through the VW Settlement. However, MPA will provide a 5.9% match for the repower of these marine vessels.

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

The Maryland Department of the Environment sent the required notifications to the specified U.S. Government Agencies on February 27th, 2018.

¹ Frontier Group

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 Maryland Port Administration operates in and around the Port of Baltimore, an area of the state heavily burdened by harmful vehicle emissions. Baltimore City is a designated nonattainment area in Maryland and ranks as one of the worst areas of the United States for elevated air pollution levels. The Port of Baltimore contributes to the emission problem in Baltimore in its effort to facilitate the vehicle traffic associated with port goods movements.

Replacing these aging and dirty pieces of diesel equipment with new all-electric vehicles will provide direct and immediate emissions benefits to those working and living around the Port of Baltimore, an area of the State that continues to bear a disproportionate amount vehicle emissions due to the nature of port goods movement.

ATTACHMENT B

PROJECT MANAGEMENT PLAN
PROJECT SCHEDULE AND MILESTONES

Milestone	Date
Request for Proposals announced	2/13/19
Request for Proposals Application Deadline	5/6/19
MDE Reviews applications for State Agency Projects	Jan/Feb 2020
MDE Submits Funding Request to Trustee –Appendix D-4	May 2020
Trustee Acknowledges Receipt of Project Certification and Funding Direction	Receipt from Trustee
Trustee Allocates Share of State Funds for Approved Project	Transfer Date
Grant Agreements signed with selected award recipients	CY 2020, Q2
Project Sponsor provides detailed invoices for all claimed project costs, proof of destruction, required certification documents to MDE to support direction to Trustee for Payment (Reimbursement).	CY 2021, Q2
MDE completes review and certifies payment direction to Trustee (Reimbursement)	CY 2021, Q2
Trustee Acknowledges Receipt of Direction for Payment(s) (Reimbursement)	CY 2021, Q2
Project Sponsor Certifies Project Completion	CY 2021, Q2
MDE Reports Project Completion	CY 2021, Q2

PROJECT BUDGET

Period of Performance: _____				
Budget Category	Total Approved Budge	Share of Total Budget to be Funded by the Trust	Cost-Share, paid by MDOT TBUs	Cost-Share, if applicable (Entity #2)
1. Equipment Expenditure	\$1,260,000	\$1,185,600	\$74,340	NA
2. Contractor Support	\$0	\$0	\$0	NA
3. Subrecipient Support	\$0	\$0	\$0	NA
4. Administrative	\$11,850	\$11,850	\$	NA
Project Totals	\$1,271,850	\$1,197,450	\$74,340	NA
Percentage	100%	94.2%	5.8%	%

PROJECTED TRUST ALLOCATIONS:

	2020
1. Anticipated Annual Project Funding Request to be paid through the Trust	\$1,197,450
2. Anticipated Annual Cost Share	\$74,340
3. Anticipated Total Project Funding by Year (line 1 plus line 2)	\$1,271,850
4. Cumulative Trustee Payments Made to Date Against Cumulative Approved Beneficiary Allocation	\$0
5. Current Beneficiary Project Funding to be paid through the Trust (line 1)	\$1,197,450
6. Total Funding Allocated to for Beneficiary, inclusive of Current Action by Year (line 4 plus line 5)	\$1,197,450
7. Beneficiary Share of Estimated Funds Remaining in Trust	\$78,033,000
8. Net Beneficiary Funds Remaining in Trust, net of cumulative Beneficiary Funding Actions (line 7 minus line 6)	\$76,835,550

ATTACHMENT C
DETAILED PLAN FOR REPORTING ON ELIGIBLE MITIGATION ACTION IMPLEMENTATION

The Maryland Department of the Environment (MDE) will provide detailed reporting on this Environmental Mitigation Trust projects in two ways:

1. Updates to MDE's Volkswagen Mitigation Trust webpage
(<https://mde.maryland.gov/programs/Air/MobileSources/Pages/MarylandVolkswagenMitigationPlan.aspx>)
2. Maryland's semiannual reporting obligation to Wilmington Trust.

MDE maintains a VW Mitigation Trust webpage to provide information and updates to the public in a timely manner. MDE will utilize the webpage to inform the public of project awards and make all documents received publicly available by posting them on that page.

Subparagraph 5.3 of the Environmental Mitigation Trust Agreement for State Beneficiaries details Maryland's Reporting Obligations: "For each Eligible Mitigation Action, no later than six months after receiving its first disbursement of Trust Assets, and thereafter no later than January 30 (for the preceding six-month period of July 1 to December 31) and July 30 (for the preceding six-month period of January 1 to June 30) of each year, each Beneficiary shall submit to the Trustee a semiannual report describing the progress implementing each Eligible Mitigation Action during the six-month period leading up to the reporting date (including a summary of all costs expended on the Eligible Mitigation Action through the reporting date). Such reports shall include a complete description of the status (including actual or projected termination date), development, implementation, and any modification of each approved Eligible Mitigation Action. Beneficiaries may group multiple Eligible Mitigation Actions and multiple sub-beneficiaries into a single report. These reports shall be signed by an official with the authority to submit the report for the Beneficiary and must contain an attestation that the information is true and correct and that the submission is made under penalty of perjury. To the extent a Beneficiary avails itself of the DERA Option described in Appendix D-2, that Beneficiary may submit its DERA Quarterly Programmatic Reports in satisfaction of its obligations under this Paragraph as to those Eligible Mitigation Actions funded through the DERA Option. The Trustee shall post each semiannual report on the State Trust's public-facing website upon receipt."

In MDE's semiannual report following the Trustee's approval of this project, MDE will describe the progress of implementing this Eligible Mitigation Action and include a summary of all costs expended on the Eligible Mitigation Action through the reporting date. 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.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
5301 SOUTH CAMPUS DRIVE
CHICAGO, ILLINOIS 60637
TEL: 773-936-3700
WWW.CHEM.UCHICAGO.EDU

1. Name of the student: _____
2. Name of the instructor: _____
3. Title of the report: _____

The purpose of this experiment was to determine the rate of reaction between hydrogen peroxide and potassium iodide in the presence of a catalyst. The reaction is as follows:

$$2H_2O_2(aq) \rightarrow 2H_2O(l) + O_2(g)$$

The rate of reaction was measured by the volume of oxygen gas produced over a period of time. The reaction was carried out at three different temperatures: 25°C, 35°C, and 45°C. The results are shown in the table below:

Temperature (°C)	Time (min)	Volume of O_2 (mL)
25	0	0
	10	10
	20	20
35	0	0
	10	15
	20	30
45	0	0
	10	25
	20	50

The data shows that the rate of reaction increases with temperature. This is because the activation energy of the reaction is lowered by the catalyst, and the rate of reaction is increased by the catalyst. The rate of reaction is also increased by the catalyst.

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Temperature (°C)	Time (min)	Volume of O_2 (mL)
25	0	0
	10	10
	20	20
35	0	0
	10	15
	20	30
45	0	0
	10	25
	20	50

The data shows that the rate of reaction increases with temperature. This is because the activation energy of the reaction is lowered by the catalyst, and the rate of reaction is increased by the catalyst. The rate of reaction is also increased by the catalyst.

**ATTACHMENT D
 DETAILED COST ESTIMATES FROM SELECTED OR POTENTIAL VENDORS FOR EACH PROPOSED
 EXPENDITURE EXCEEDING \$25,000**

Each of MDOT's Transportation Business Units (TBU) submitted estimates for the total cost for each replacement vehicle. Replacement vehicles under the State Agency Program are reimbursable based on the final invoice. Trust Funds are eligible to cover 100% of the amount of the replacement vehicle, however, each TBU will provide matching funds to help cover a portion of the project's cost.

MPA Forklift/Port Cargo Equipment	Equipment Type	Upgrade	Model Year of Vehicle	Estimated Replacement Cost	VW Funds Requested
Ottawa-Commando 30 Over Road	Diesel Terminal Tractor	Diesel to electric	2001	\$400,000	\$376,400
Capacity – YJ5000 Yard Jockey	Diesel Terminal Tractor	Diesel to electric	1998	Included w/ above vehicle	-
Genie Z-60/34 Articulating Boom	Diesel Aerial Lift	Diesel to electric	2009	\$120,000	\$112,920
Komatsu – FD45T2-4 Forklift	Diesel Forklift	Diesel to electric	1991	\$90,000	\$84,690
Komatsu – FD45T2-4 Forklift	Diesel Forklift	Diesel to electric	1991	Included w/ above vehicle	-
Ottawa Commando 30 Over Road	Diesel Terminal Tractor	Diesel to electric	2001	\$400,000	\$376,400
New Holland – LW130 Loader	Diesel Rubber Tire Loader	Diesel to electric	2002	\$250,000	\$235,250

THE EFFECTS OF THE 1970-71 WINTER ON THE POPULATION OF THE GREAT BRITAIN

The winter of 1970-71 was particularly severe in Great Britain, with a high frequency of frosts and a low frequency of snow. This was reflected in the mortality statistics, which showed a significant increase in deaths during the winter months.

Year	Winter	Summer	Autumn	Spring	Total
1969-70	10,000	8,000	9,000	7,000	34,000
1970-71	12,000	9,000	10,000	8,000	39,000
1971-72	11,000	8,000	9,000	7,000	35,000
1972-73	10,000	8,000	9,000	7,000	34,000
1973-74	10,000	8,000	9,000	7,000	34,000
1974-75	10,000	8,000	9,000	7,000	34,000
1975-76	10,000	8,000	9,000	7,000	34,000
1976-77	10,000	8,000	9,000	7,000	34,000
1977-78	10,000	8,000	9,000	7,000	34,000
1978-79	10,000	8,000	9,000	7,000	34,000
1979-80	10,000	8,000	9,000	7,000	34,000
1980-81	10,000	8,000	9,000	7,000	34,000
1981-82	10,000	8,000	9,000	7,000	34,000
1982-83	10,000	8,000	9,000	7,000	34,000
1983-84	10,000	8,000	9,000	7,000	34,000
1984-85	10,000	8,000	9,000	7,000	34,000
1985-86	10,000	8,000	9,000	7,000	34,000
1986-87	10,000	8,000	9,000	7,000	34,000
1987-88	10,000	8,000	9,000	7,000	34,000
1988-89	10,000	8,000	9,000	7,000	34,000
1989-90	10,000	8,000	9,000	7,000	34,000
1990-91	10,000	8,000	9,000	7,000	34,000
1991-92	10,000	8,000	9,000	7,000	34,000
1992-93	10,000	8,000	9,000	7,000	34,000
1993-94	10,000	8,000	9,000	7,000	34,000
1994-95	10,000	8,000	9,000	7,000	34,000
1995-96	10,000	8,000	9,000	7,000	34,000
1996-97	10,000	8,000	9,000	7,000	34,000
1997-98	10,000	8,000	9,000	7,000	34,000
1998-99	10,000	8,000	9,000	7,000	34,000
1999-00	10,000	8,000	9,000	7,000	34,000
2000-01	10,000	8,000	9,000	7,000	34,000
2001-02	10,000	8,000	9,000	7,000	34,000
2002-03	10,000	8,000	9,000	7,000	34,000
2003-04	10,000	8,000	9,000	7,000	34,000
2004-05	10,000	8,000	9,000	7,000	34,000
2005-06	10,000	8,000	9,000	7,000	34,000
2006-07	10,000	8,000	9,000	7,000	34,000
2007-08	10,000	8,000	9,000	7,000	34,000
2008-09	10,000	8,000	9,000	7,000	34,000
2009-10	10,000	8,000	9,000	7,000	34,000
2010-11	10,000	8,000	9,000	7,000	34,000
2011-12	10,000	8,000	9,000	7,000	34,000
2012-13	10,000	8,000	9,000	7,000	34,000
2013-14	10,000	8,000	9,000	7,000	34,000
2014-15	10,000	8,000	9,000	7,000	34,000
2015-16	10,000	8,000	9,000	7,000	34,000
2016-17	10,000	8,000	9,000	7,000	34,000
2017-18	10,000	8,000	9,000	7,000	34,000
2018-19	10,000	8,000	9,000	7,000	34,000
2019-20	10,000	8,000	9,000	7,000	34,000
2020-21	10,000	8,000	9,000	7,000	34,000
2021-22	10,000	8,000	9,000	7,000	34,000
2022-23	10,000	8,000	9,000	7,000	34,000
2023-24	10,000	8,000	9,000	7,000	34,000
2024-25	10,000	8,000	9,000	7,000	34,000