

APPENDIX D-4
Beneficiary Eligible Mitigation Action Certification

BENEFICIARY ELIGIBLE MITIGATION ACTION CERTIFICATION

Beneficiary Washington State

Lead Agency Authorized to Act on Behalf of the Beneficiary Washington Department of Ecology
(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:	Repower Jumbo Mark II Diesel Ferry with Battery Electric Power (diesel-electric hybrid)
Beneficiary's Project ID:	EMA4-Ferries-C1
Funding Request No.	<i>(sequential)</i> 2
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 checked="" type="checkbox"/> Beneficiary <input type="checkbox"/> Other (specify): _____
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>4. Ferries/Tugs</u> <input type="checkbox"/> Item 10 - DERA Option (5.2.12) (specify and attach DERA Proposal): _____
Action Type	
Explanation of how funding request fits into Beneficiary's Mitigation Plan (5.2.1):	
See summary attached.	
Detailed Description of Mitigation Action Item Including Community and Air Quality Benefits (5.2.2):	
See summary attached.	
Estimate of Anticipated NOx Reductions (5.2.3):	
See summary 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 summary attached.	
Describe how the Beneficiary will make documentation publicly available (5.2.7.2).	
See summary attached.	
Describe any cost share requirement to be placed on each NOx source proposed to be mitigated (5.2.8).	
See summary attached.	
Describe how the Beneficiary complied with subparagraph 4.2.8, related to notice to U.S. Government Agencies (5.2.9).	
See summary 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 summary 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 State of Washington, 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: 8/1/19


Polly Zehm, Deputy Director

[NAME]

[TITLE]

Department of Ecology

[LEAD AGENCY]

for

State of Washington

[BENEFICIARY]

[SAMPLE ATTACHMENT B - USE OF THIS FORMAT IS NOT MANDATORY]

PROJECT MANAGEMENT PLAN
PROJECT SCHEDULE AND MILESTONES

Milestone	Date
Ecology develops one-time grant application forms in Ecology's Administration of Grants and Loans (EAGL) online application database	8/2019
WSF completes online application	9/2019
Ecology notifies WSF of award, subject to Trustee approval	9/2019
Ecology and WSF finalize contract	9-10/2019
Funding is available for system design and vessel hybrid equipment manufacturing	11/2019
WSF awards contract for hybrid system design	11/2019
WSF reports quarterly on progress re: design of hybrid propulsion and equipment manufacturing	12/2019-6/2021
Ecology reviews reimbursement requests from WSF and reimburses WSF for design of hybrid propulsion system and equipment design and manufacturing	3/2020-12/2021
Ecology submits Attachment A reimbursement requests to Trustee for design of hybrid propulsion system and equipment design and manufacturing expenditures	3/2020 - 3/2021
WSF awards change order for procurement of hybrid equipment	8/2020
Ecology reports on project progress to Trustee	9/2020; 1&7, 2020-2024
WSF awards contract for MV Wenatchee construction	9/2021
WSF notifies Ecology when vessel construction begins	9/2021
WSF reports quarterly on vessel construction	9/2021-6/2022
MV Wenatchee construction and testing	10/2021-3/2022
Ecology reviews reimbursement requests from WSF and provides reimbursement to WSF for vessel construction	12/2021-8/2022
Ecology submits Attachment A reimbursement requests to Trustee for vessel construction expenditures	12/2021-8/2022
MV Wenatchee in Service	4/2022
Ecology completes mitigation action	1/2023
Ecology submits final project report to the Trustee	1/2023

PROJECT BUDGET

Period of Performance: 2019-2023				
Budget Category	Total Approved Budget	Share of Total Budget to be Funded by the Trust	Cost-Share, if applicable (Entity #1)	Cost-Share, if applicable (Entity #2)
1. Equipment Expenditure	\$ 58,000,000	\$ 35,000,000	\$ 23,000,000	\$
2. Contractor Support <i>(Provide List of Approved Contractors as Attachment with approved funding ceilings)</i>	\$	\$	\$	\$
3. Subrecipient Support <i>(Provide List of Approved Subrecipients or Grant Awardees as Attachment with approved funding ceilings)</i>	\$	\$	\$	\$
4. Administrative ¹	\$ 0	\$ 0	\$ 0	\$
Project Totals	\$ 58,000,000	\$ 35,000,000	\$ 23,000,000	\$
Percentage	100 %	60 %	40 %	%

¹ Subject to Appendix D-2 15% administrative cap.

PROJECTED TRUST ALLOCATIONS											
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1. Anticipated annual project funding request to be paid through the Trust	\$0	\$11,000,000	\$14,000,000	\$10,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2. Anticipated annual cost share*	\$0	\$13,000,000	\$8,000,000	\$2,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3. Anticipated total project funding by year (line 1 plus line 2)	\$0	\$24,000,000	\$22,000,000	\$12,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4. Cumulative Trustee payments made in previous years against cumulative approved beneficiary allocation	\$600,000	\$347,000	\$7,707,000	\$6,121,000	\$225,000	\$0	\$0	\$0	\$0	\$0	\$0
5. Current beneficiary project funding to be paid through the trust (line 1)	\$0	\$11,000,000	\$14,000,000	\$10,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6. Total funding allocated to beneficiary, inclusive of current action by year (line 4 + line 5)	\$600,000	\$11,347,000	\$21,707,000	\$16,121,000	\$225,000	\$0	\$0	\$0	\$0	\$0	\$0
7. Beneficiary share of estimated funds remaining in trust	\$112,700,000	\$112,100,000	\$100,753,000	\$79,046,000	\$62,925,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000
8. Net beneficiary funds remaining in Trust, net of cumulative beneficiary funding actions (line 7 minus line 6)	\$112,100,000	\$100,753,000	\$79,046,000	\$62,925,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000	\$62,700,000

ATTACHMENT C – DETAILED PLAN FOR REPORTING ON ELIGIBLE MITIGATION ACTION IMPLEMENTATION (5.2.11).

The Washington Department of Ecology, as the lead agency for the state of Washington implementing the Environmental Mitigation plan, will provide detailed reporting on this funding request in two ways: (1) timely updates to the Department of Ecology’s Volkswagen Federal Enforcement Action website; and (2) semi-annual reports to the Trustee as required by subparagraph 5.3 of the Environmental Mitigation Trust Agreement for State Beneficiaries.

The Department has established a public VW website that will host detailed implementation reporting information. The public website, <https://ecology.wa.gov/Air-Climate/Air-quality/Vehicle-emissions/VW-federal-enforcement-action>, was created to provide information related to the Trust, the VW partial Consent Trust Decrees, Washington’s plans, and implementation information. In order to provide transparency and accountability, the Department of Ecology will make publically available all the required documentation under Paragraph 7 of the Appendix D-3 Certification for Beneficiary Status form.

The Department will comply with the reporting obligations listed in the Environmental Mitigation Trust Agreement for State Beneficiaries in subparagraph 5.3, reporting to Trustee on the status of and expenditures associated with the Mitigation Actions completed and underway within six months of the first disbursement and then January 30th and July 30th thereafter.

The Department of Ecology will periodically evaluate implementation of the Beneficiary Mitigation Plan and implementation of the Eligible Mitigation Actions after the initial round of funding and will determine whether any revisions to the Beneficiary Mitigation Plan and funding levels are appropriate or necessary.

**ATTACHMENT D – DETAILED COST ESTIMATES FROM SELECTED OR
POTENTIAL VENDORS FOR EACH PROPOSED EXPENDITURE EXCEEDING
\$25,000 (5.2.3).**

Pre-Design Work

In 2018, Washington State Ferries (WSF) commissioned the Elliot Bay Design Group (EBDG) to study the feasibility of hybridizing the Jumbo Mark II Vessel Class, which included hybridizing the M/V Wenatchee (see links, Attachment 1). Appendix G of the study includes pre-design conversion cost estimates.

While pre-design and therefore preliminary, the cost estimates were developed using detailed life cycle cost analysis, WSF systems integration cost information, EBDG’s in-depth experience with numerous diesel-electric refurbishment projects and in consultation with various vendors. WSF has paid EBDG for the pre-design work and preliminary cost estimates. (VW mitigation funds are not requested to pay for this pre-design work.)

The pre-design cost estimates are preliminary and subject to final design modifications.

Scope 1 - Final Design Work

WSF has contracted with Siemens to provide the final vessel conversion design (Attachment 2). The Siemens final design will include an updated hybrid propulsion equipment list with pricing estimates. Ecology will provide the updated equipment cost estimates to the Trustee in semi-annual reports.

Ecology will submit a funding request for up to \$3,000,000 to pay Siemens for the final vessel conversion design.

Scope 2 - Purchase of Equipment

WSF will use the updated Siemens equipment list and pricing estimates to competitively procure and purchase equipment whose ordering and delivery require significant lead time. WSF will incorporate the purchase of readily available equipment into a competitively bid contract and award for vessel conversion. (VW funds are not requested to pay for the labor associated with installing the hybrid propulsion equipment.)

Ecology will submit funding requests for up to \$7,000,000 to purchase the hybrid propulsion equipment.

Scope – 3 Vessel Conversion

WSF will use the Siemens final vessel conversion design to competitively bid and award the vessel conversion work, after the design is completed and regulatory approval is obtained. Prior to requesting Trust funds for vessel conversion, Ecology will provide the bid contract and award to the Trustee in semi-annual reports.

Ecology will submit funding requests for up to \$25,000,000 for vessel conversion.

Attachment 1:

Jumbo Mark II Class *Hybrid System Integration Study*, prepared for Washington State Ferries, Seattle WA, Elliott Bay Design Group, Ref: 17102-070-0, February 8, 2018

<http://www.wsdot.wa.gov/NR/rdonlyres/6C78A08B-19A1-4919-B6E6-E9EF83E6376D/123052/HybridSystemIntegrationStudy.pdf>

<http://www.wsdot.wa.gov/NR/rdonlyres/6C78A08B-19A1-4919-B6E6-E9EF83E6376D/123053/HybridSystemIntegrationStudyAppendixes.pdf>

Attachment 2:

Siemens Cost Estimates for Design of Hybrid Propulsion System Upgrade

- Part A: Design for Propulsion Control System Upgrade
 - Mitigation funds will not be used to pay the \$3,574,252.67 cost estimate for Part A¹.
- Part B: Design for Hybrid Propulsion System Upgrade
 - Part B itemizes the \$3,175,849.81 cost estimates for the July 2019 expenditure for “*Design of Hybrid Propulsion System Upgrade*”. See page two of the attached Siemens proposal for hybrid design. Ecology will submit a funding request up to \$3,000,000 to pay for these costs.

¹ Part A of the Siemens contract is for the design of the propulsion controls update necessary for the hybrid conversion. It is included in the state’s cost share as part of the \$23M for propulsion controls update.

Attachment 2

JUMBO MARK II CLASS FERRIES PROPULSION CONTROL
SYSTEM AND HYBRID UPGRADE DESIGN

SIEMENS

1.0 FINANCIAL PROPOSAL

TOTAL PROPOSAL PRICE

Part A

Design for a Jumbo Mark II Class Ferries Propulsion Control System Upgrade (itemized on the following page)

TOTAL PROPOSAL PRICE: \$ 3,574,252.67

Part B

Design for a Jumbo Mark II Class Ferries Hybrid Propulsion System Upgrade (itemized on the following page)

TOTAL PROPOSAL PRICE: \$ 3,175,849.81

TOTAL PROPOSAL PRICE FOR EVALUATION: \$ 6,750,102.48
(PART A + PART B)

TOTAL PROPOSAL PRICE (ITEMIZED)

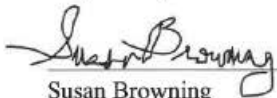
PART A Price: Design for a Jumbo Mark II Class Ferries Propulsion Control System Upgrade

1. Ship Checks \$ 165,846.17
2. Manufacturing Drawings, Plans and Bills of Materials \$ 1,790,834.54
3. Review of Detailed Drawings \$ 1,121,004.25
4. Contractor Bid Support Package \$ 496,567.71

PART B Price: Design for a Jumbo Mark II Class Ferries Hybrid Propulsion System Upgrade

1. Ship Checks \$ 292,346.61
 2. Manufacturing Drawings, Plans and Bills of Materials \$ 1,456,300.79
 3. Review of Detailed Drawings \$ 1,103,665.75
- Note: This proposal also includes ABS review of drawings and documentation to the Regulatory Design Basis, including ABS review letters and ABS stamped drawings.
4. Contractor Bid Support Package \$ 323,536.66

Respectfully Submitted



Susan Browning
Senior Manager, Contracts
Siemens Government Technologies

Browning
Susan

Digitally signed by Browning Susan
DN: serialNumber=2000340X,
givenName=Susan, sn=Browning,
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SUMMARY

Eligible Mitigation Action Appendix D-2 item (specify): Category 4: Ferries/Tugs
Action Type Item 10-DEIRA Option (5.2.12) (specify and attach DEIRA Proposal):

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

The State of Washington Volkswagen Beneficiary Mitigation Plan outlines principles and priorities to guide the state's selection and prioritization of projects to achieve Washington's goal to:

- reduce emissions from diesel engines in the state where the 2.0 and 3.0 liter VW vehicles were, are, or will operate; and
- fully mitigate the total, lifetime excess NOX emissions of the subject vehicles.

Washington's mitigation plan principles are to:

- Improve air quality for communities that have historically borne a disproportionate share of the air pollution burden in Washington.
- Maximize air quality co-benefits beyond nitrogen oxide reductions.
- Maximize public health benefits.

Washington's mitigation plan priorities include:

- Accelerating adoption of electric vehicles, equipment, and vessels;
- Promoting electrification technologies in public transportation fleets;
- Accelerating fleet turnover to the cleanest engines;
- Achieving substantial additional emissions reductions beyond what would occur absent trust funding;
- Ensuring cost-effectiveness; and
- Leveraging additional matching funds.

Washington's Beneficiary Mitigation Plan highlights the unprecedented opportunity to invest VW settlement funds to make transformative improvements across Washington's transportation sector. The mitigation plan identifies accelerating adoption of electric vessels and electrification of public transportation fleets as priorities. In the Puget Sound, Washington State Ferries account for more than half of the air pollution generated by harbor vessels. Washington's mitigation plan apportions up to 45 percent of Washington's allocation for Marine Vessels¹. The mitigation plan identifies electrification of public vessels, especially ferries, as a priority.

¹ The Marine Vessels category in Washington's plan includes Ferries/Tugs and Ocean Going Vessels (OGV) Shore Power.

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

As part of the Washington State Department of Transportation, Washington State Ferries (WSF) operates the largest ferry system in the United States. Twenty-three ferries travel Puget Sound's inland waterways, carrying nearly 25 million passengers annually. From Tacoma, Washington, to Sidney, British Columbia, WSF serves 20 different ports up and down the Sound, acting as a marine highway for commercial users, tourists and daily commuters.

As one of three Jumbo Mark II-class vessels, the largest ferry class in Puget Sound, the Marine Vessel (MV) Wenatchee primarily serves the Seattle to Bainbridge Island route. It has the capacity to transport 202 vehicles and 1800 passengers per crossing. It transports 6,430,000 passengers and 1,930,000 vehicles, annually.

This mitigation action will fund the repower and conversion of the MV Wenatchee to a hybrid-electric propulsion system. WSF is pursuing additional, non-VW settlement funds for future development of charging infrastructure. When the charging infrastructure is complete, it will power the hybrid-electric system in all-electric mode.

The MV Wenatchee is currently powered by four, tier zero, 3,000 kW propulsion diesel generators and four 4,475 kW electric propulsion motors. Converting the MV Wenatchee to a hybrid-electric ferry requires an update to the existing propulsion control system to address equipment obsolescence, adding lithium ion batteries and associated power conversion and auxiliary equipment and removing and scrapping two of the four diesel generators. Because this project converts a diesel propulsion system to a hybrid-electric propulsion system, VW settlement funds will not be used to pay for the electric charging infrastructure.

This complex propulsion system conversion will utilize multiple contractors over the four year project period. Consequently, Ecology will reimburse WSF directly in installments at various stages of project completion. Ecology will then periodically submit Attachment A funding requests to the Trustee for reimbursement of eligible expenditures. Due to the safety measures required to transport passengers across the waters of the Puget Sound, the project will require extensive periods of testing to guarantee all systems operate properly.

The marine sector includes some of the largest, oldest, and most polluting diesel engines in Washington. Marine vessels operating in the central Puget Sound generate emissions in our most densely populated metropolitan areas. Washington's VW mitigation plan identifies reducing emissions in the Puget Sound area as a top priority.

Converting the MV Wenatchee to hybrid-electric propulsion will:

- Accelerate the turnover of Washington's ferry fleet to the cleanest engines
- Reduce diesel and carbon emissions, improve fleet reliability, and reduce engine noise that can harm marine animals.
- Reduce fuel consumption by more than 400,000 gallons per year.
- Mitigate one-half of the NOx emissions generated by the violating VW vehicles.

- Generate cost savings that will lead to additional vessel conversions.
- Encourage further electrification of the nation’s largest ferries and the eventual conversion to a zero emission ferry fleet

When completed, Ecology estimates this mitigation action will reduce:

- 1,540 lifetime tons of NOx emissions.
- 376 lifetime tons of PM emission.
- 172,000 lifetime tons of CO2 emissions.

These figures are based on measured vessel emissions and fuel consumption, the vessel’s operational profile and a remaining service life of 40 years.

WSF is pursuing additional funds for development of charging infrastructure, which would ultimately allow the vessel to operate exclusively in battery mode. The final hybrid-electric configuration will allow for transmission of electrical power from the shore-based grid to the onboard batteries. Propulsion power will be drawn from the batteries, or a combination of battery and generator power if needed. The two remaining diesel generators will be used only as back-up, in the event that shore power is unavailable, and for periodic maintenance and testing.

Ecology estimates conversion of the MV Wenatchee combined with fully developed charging infrastructure will reduce:

- 6,000 lifetime tons of NOx emissions.
- 1486 lifetime tons of PM emission.
- 680,000 lifetime tons of CO2 emissions.

Estimate of Anticipated NOx Reductions (5.2.3):

This action will reduce 1,540 lifetime tons of NOx emissions over the 40 years of remaining vessel life. This project alone will achieve one half of Washington’s total mitigation target of reducing 3,000 lifetime tons of NOx.

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):

Washington Department of Ecology

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

As stated in response to paragraph #7 in Attachment A of Washington’s Appendix D-3 filing, Ecology will make documents and records submitted in support of funding requests and documents and records supporting expenditures of trust funds available to the public through an application, system, or library on the agency's website at ecology.wa.gov. Easy-to-use functionality, including online mapping capability, will be incorporated as much as possible to

ensure unburdened, public access to project documentation and other pertinent mitigation fund information.

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

WSF estimates it will cost \$58 million to convert the MV Wenatchee to a hybrid-electric propulsion system (\$23 million for propulsion systems updates and \$35 million for hybrid-related equipment and vessel conversion). Up to \$35 million in VW mitigation funds will be used to purchase the hybrid-related equipment and for vessel conversion. WSF will contribute the remaining project costs, estimated to be \$23 million or about 40% of the total project cost.

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

On February 27, 2018, Washington Department of Ecology contacted the U.S. Department of Interior, U.S. Department of Agriculture, U.S. Forest Service, U.S. Fish and Wildlife Service, and National Park Service, via email to notify them of the availability of Washington State Volkswagen Mitigation Action Funds. The notice included a link to the State Trust agreement and attachments; a link to Ecology's procedures for review, consideration, and written determination for each request of funds; and instructions to subscribe to the Washington Department of Ecology's listserv to receive up-to-date information, if desired.

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).

Ecology used Washington Tracking Network's (WTN) "Diesel and Disproportionately Impacted Communities" Index to identify 14 Washington counties with disproportionately impacted communities. The "Disproportionately Impacted Communities" include those census tracts in the top 20th percentile for exposure to NOx and other diesel emissions and five socioeconomic factors: limited English, income spent on housing, no high school diploma, population living in poverty, and unemployment.

The MV Wenatchee departs the Seattle terminal ten times per day on weekdays and nine times per day on weekends. The Seattle terminal is located in Washington's most densely populated city (Seattle) and county (King). King county contains about 51% of Washington's disproportionately impacted population.

This mitigation action will eliminate public exposure to 1,540 lifetime tons of NOx emissions for disproportionately impacted communities near the Seattle terminal and in the greater Seattle area and King County.