

## Potential Port Projects – VW Mitigation Fund – The Northwest Seaport Alliance & Port of Seattle

Potential Project (consent decree reference)	Organization (& potential partners)	Project Description	Number of units	Total Project Cost <sup>i</sup>	VW Settlement Share <sup>ii</sup>	Required Match <sup>iii</sup>	Time Frame	Project Drivers	Reduce Community Impacts?
<b>OGV Shorepower Infrastructure</b> (App. D-2, Sec. 5)	NWSA  (Marine terminal operators)	The NWSA has a priority to upgrade one major terminal in the North Harbor (T5) and one in South Harbor (General Central Peninsula or GCP). Estimated cost \$7-8M/terminal (some terminals may electrify more than 1 berth). All electrical infrastructure placed on Port property is the property of the Port and considered Government Owned.  Additional shorepower installations may include up to 5 other terminals.	2-7 terminals	<b>\$16 Million</b> (T5 +GCP)  <b>\$8 - 32 Million</b> (1 -5 add'l terminals)	<b>\$16 Million</b> (T5 +GCP)  <b>\$8 - 32 Million</b> (1 -5 add'l terminals)	<b>\$0</b>  <b>\$0</b>	2018-2027	NWPCAS; NWSA Strategic Planning Goals 1(A)(1) & (2) and 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
<b>OGV Reefer Shorepower Infrastructure</b> (App. D-2, Sec. 5)	NWSA  (TOTE)	Replace diesel generators used to provide refrigerated containers (reefers) with electric power (Reefer Plugs) while on-terminal. All infrastructure placed on Port property is the property of the Port and considered Government Owned.  At TOTE terminal, when all existing reefer plugs on terminal are utilized, the balance of reefers run their diesel gen sets, which burn 1 gallon of diesel per hour each, to maintain reefers at temp, which is essential for food safety. Also during peak season, TOTE typically rents two gen sets, capable of powering 25 reefers each, for 3 months per year. Each gen set may burn up to 15 gallons of diesel per hour.	125-200 Reefer Plugs + infrastructure	<b>\$1 Million</b>	<b>\$1 Million</b>	<b>\$0</b>	2018-2019	NWPCAS: NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
<b>Cleaner Switcher Locomotives</b> (App. D-2, Sec. 3)	NWSA  (Tacoma Rail)	Upgrade Tacoma Rail (Government Owned) pre-Tier 4 switching locomotives.	10 locomotives	<b>\$19 Million</b>	<b>\$19 Million</b>	<b>\$0</b>	2018-2027	NWPCAS; NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
<b>Cleaner Drayage Trucks</b> (App. D-2, Sec. 1)	NWSA  (Truck companies)	<b>VW Eligible Mitigation:</b> Replace or repower 100 privately owned Class 8 drayage trucks. This is a scalable project. Assumed 20 trucks replaced with all-electric and 2 charging stations; and 80 trucks replaced with new diesel. Replacement trucks must be no more than 1 year old at time of purchase.  <b>OR</b>	100 trucks (20 all-electric, 2 charging stations; 80 new diesel)	<b>\$4.6 Million</b> (electric trucks)  <b>\$11.2 Million</b> (diesel trucks)	<b>\$3.5 Million</b> (electric trucks)  <b>\$5.6 Million</b> (diesel trucks)	<b>\$1.1 Million</b> (electric trucks)  <b>\$5.6 Million</b> (diesel trucks)	2018-2020	NWPCAS: NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
		<b>DERA Option<sup>iv</sup>:</b> Replace 300 privately owned Class 8 drayage trucks. This is a scalable project. Assumed average sales price of \$75,000 for used truck (MY 2011 or newer). Assume DERA option pays 50% (however, dollars could go even further by reducing maximum incentive level to \$27,000 per Port's current ScRAPs project.	300 used trucks (diesel)	<b>\$22.5 Million</b>	<b>\$11.3 Million<sup>v</sup></b>	<b>\$11.3 Million</b>			

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Cleaner Cargo-Handling Equipment – Yard Trucks (App. D-2, Sec. 8)	NWSA  (Marine Terminal Operators)	<b>VW Eligible Mitigation:</b> Replace seaport cargo-handling equipment with All-Electric including charging infrastructure. Assumed \$300K each unit, which includes charging stations. Some CHE used at NWSA terminals is Government Owned and some is owned by marine terminal operators (Non-Government owned.) This is a scalable project.	2 electric yard trucks, Govmt Owned	<b>\$600,000</b> (2 yard trucks. Govmt owned)	<b>\$600,000</b> (2 yard trucks. Govmt owned)	<b>\$0</b> (2 yard trucks. Govmt owned)	2019-2027	NWPCAS; NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
		<b>OR</b>	100 yard trucks, Non-Govmt Owned	<b>\$30 Million</b> (100 yard trucks, Non-Govmt)	<b>\$22.5 Million</b> (100 yard trucks, Non-Govmt)	<b>\$7.5 Million</b> (100 yard trucks, Non-Govmt)			
		<b>DERA Option<sup>iv</sup>:</b> Replace seaport cargo-handling equipment with 2015 MY or newer engine (diesel or alternative fuel). Assumed \$175K each unit with Tier 4 engines. Some CHE used at NWSA terminals is Government Owners and some is owned by private marine terminal operators. This is a scalable project.	2 new yard trucks (diesel, Govmt owned)	<b>\$350,000</b>	<b>\$88,000<sup>vi</sup></b>	<b>\$262,000</b>			
			100 yard trucks (diesel, Non-Govmt owned)	<b>\$17.5 Million</b>	<b>\$4.4 Million<sup>vi</sup></b>	<b>\$13.2 Million</b>			
Cleaner Cargo-Handling Equipment – Straddle Carriers	NWSA  (Marine Terminal Operators)	<b>DERA Option only<sup>iv</sup>:</b> Replace 16 pre-Tier 4 (including DPF retrofitted Tier 4i equivalent) diesel NWSA Straddle Carriers with full Tier 4 compliant diesel-electric straddle carriers.  Replace or convert 50 TOTEM Ocean Trailer Express (TOTE) diesel (including tier 4 compliant engine) yard tractors to LNG/CNG. TOTE Yard trucks are custom designed to fit their ships. Currently available electric vehicles are incompatible.	16 Straddle Carriers, Government owned	<b>\$24 Million</b> (Straddle Carriers, Govmt Owned) diesel -electric	<b>TBD</b>	<b>TBD</b>	2018-2027	NWPCAS; NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
Cleaner Cargo-handling Equipment – Cranes (App. D-2, Sec. 8)	POS – Maritime	<b>DERA Option only<sup>iv</sup>:</b> Replace Tier 0-4i diesel CHE at cruise terminals with full Tier 4 compliant engines or alternative fuel powered equipment. Cranes would likely be owned by POS. We are not aware of any all-electric cranes that are suitable for this work. The newest 30 ton cranes with tier 4 engines cost \$400K each.	8 cranes	<b>\$3.2 million</b>	<b>TBD</b>	<b>TBD</b>	2018-2027	NWPCAS; POS Century Agenda	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
Airport Electric Ground Support Equipment (EGSE) (App. D-2, Sec. 7)	POS – Aviation Division  (Airlines)	Continue to incent airlines at Sea-Tac to replace legacy diesel equipment with battery electric zero-emission equipment. Conceptual equipment reimbursement: \$15,000/ bag tug or belt loader, \$35,000/ pushback tractor or cargo loader. Equipment is Non-Government owned.  Estimated annual NOx emission reduction: 488 tons  Replacing GSE is of special interest due to the emissions exposure associated with the existing ground support equipment. Baggage tugs are used to pull baggage carts into an indoor area to feed our baggage handling system. Despite efforts to ventilate the area there is increased ambient pollutant concentrations within our bag well, thus there is significant exposure-reduction potential via electrified ground support equipment.	300 units	<b>\$11.6 Million</b>	<b>\$8.7 Million</b>	<b>\$2.9 Million</b>	2018-2023	POS Century Agenda	Indoor air quality issue for workers  Benefits: NOx, DPM and GHG reductions

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<b>Zero Emission Employee Transit Buses</b> (App. D-2, Sec. 2)	POS – Aviation Division	Deploy 3-6 battery electric coaches and associated charging infrastructure to replace current fleet of compressed natural gas transit buses, used for offsite employee parking shuttle service. 40 foot compressed natural gas transit buses. Buses are owned by POS.  Estimated annual NOX reduction per year: 2.4 tons (6 coaches)	3-6 electric coaches	<b>\$5.1 Million</b>	<b>\$5.1 Million</b>	<b>\$5.1 million</b>	2018-2019	POS Century Agenda	No  Benefits: NOx, DPM and GHG reductions
<b>Light Duty Zero Emission Vehicle Supply Equipment</b> (App. D-2, Sec. 9)	NWSA POT POS	Acquisition, installation, operation and maintenance of Level 1, Level 2 or fast charging equipment (or analogous successor technologies) at NWSA, POT and POS facilities.	4 POT stations  4 stations at NWSA office  4 POS stations	<b>\$450,000</b>	<b>\$300,000</b>	<b>\$0</b>	2018-2022	NWPCAS; NWSA Strategic Planning Goal 4(B)(1); POS Century Agenda	Yes; near-port communities including highly impacted communities  Benefits: NOx, VOC, O3 and GHG reductions
<b>Potential Project</b>	<b>Organization (&amp; potential partners)</b>	<b>Project Description</b> <i>(THESE PROJECT TYPES ARE NOT IDENTIFIED IN THE CONSENT DECREE)</i>	<b>Number of units</b>	<b>Total Project Cost<sup>i</sup></b>	<b>VW Settlement Share<sup>vii</sup></b>	<b>Required Match<sup>viii</sup></b>	<b>Time Frame</b>	<b>Project Drivers</b>	<b>Reduce Community Impacts?</b>
<b>OGV Shorepower financial incentives</b>	NWSA  (Marine terminal operators)	Financial incentives for vessels who use shorepower at these installations, to encourage shipping lines to send shore power capable vessels to the Puget Sound. An incentive level of \$1-\$2K per call is on par with incentives offered by other ports such as POLB, PANYNJ, PoV for ships participating in third party certifications such as Environmental Ship Index, which include shore power capability among other factors. Assumed 30% of vessel calls will be eligible 2020.	180 calls (T5 & GCP)  180 calls (3 additional terminals)	<b>\$2.4 million</b> (T5 + GCP)  <b>\$2.7 million</b> (3 add'l terminals)	<b>TBD</b>	<b>TBD</b>	<b>2020-2027</b>	NWPCAS; NWSA Strategic Planning Goals 1(A)(2) and 4(B)(1); T5 Environmental Impact Statement	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
<b>OGV clean engine incentives</b>	NWSA	Financial incentives for vessels with Tier III engines to yield low NOX emissions. Other west coast ports (including POLA, POLB, PoV) offer incentives to shipping lines to send their cleanest ships. An incentive level of \$6K per call is on par with incentives offered by other ports for vessels with a Tier III engine.	30 – 149 annual calls	<b>\$1.8 - \$8.9 million</b>	<b>TBD</b>	<b>TBD</b>	2018-2027	NWPCAS; NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities including highly impacted communities  Benefits: NOx, DPM and GHG reductions
<b>CHE Idle-Reduction Retrofits</b>	NWSA	Install engine preheaters on Non-Government Owned cargo handling equipment to reduce cold-start emissions, reduce cold-start particulate loading on Diesel Particulate Filters, and reduce warmup idling.	100 units	<b>\$500,000</b>	<b>TBD</b>	<b>TBD</b>	2018-2027	NWPCAS; NWSA Strategic Planning Goal 4(B)(1)	Yes; near-port communities  Benefits: NOx, DPM and GHG reductions
<b>Port Community Systems</b>	NWSA	Implement an electronic platform that allows for the secure exchange of information between the NWSA and stakeholders to improve the efficiency of supply chain. This WSDOT/PSRC project is currently identified in the 2016 Prioritized Freight Project List eligible for Fast Act funding in the 2017-2019 biennium. If approved, \$3 million will be provided in funding assistance with the remaining as required match.	n/a	<b>\$10 Million</b>	<b>TBD</b>	<b>TBD</b>	2018-2019	NWSA Strategic Planning Goals 1(B)(4) and 4(B)(1); PSRC Prioritized Freight Project List	Yes; near-port communities  Benefits: NOx, DPM and GHG reductions

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<sup>i</sup> Total Project Cost figures do not include project administration. The VW fund allows up to 15% for administration.

<sup>ii, iii</sup> These figures assume the maximum allowable VW settlement share described in the consent decree. We recognize that the Washington State administrator may adjust the match requirements. The ports and private partners may be willing to contribute a higher share of project costs than shown on this table.

<sup>iv</sup> “DERA Option” allows States to use DERA funding formulas and DERA eligibility criteria in lieu of VW Settlement protocols; described in EPA guidance found at <https://www.epa.gov/cleandiesel/vw-settlement-dera-option-supporting-documents>

<sup>v</sup> This is the DERA funding limit of 50% for the DERA option.

<sup>vi</sup> This is the DERA funding limit of 25% for the DERA option.

<sup>vii, vii</sup> Because these projects are not explicitly identified as eligible under the consent decree, there is no maximum VW share or required match.