

THE NORTHWEST SEAPORT ALLIANCE
MEMORANDUM

MANAGING MEMBERS

ACTION ITEM

Item No.

5B

Date of Meeting

November 5, 2019

DATE: October 23, 2019

TO: Managing Members

FROM: John Wolfe, CEO

Sponsor: Tom Bellerud, Director, Business Development

Project Manager: Graham VanderSchelden, Environmental Project Manager II

SUBJECT: Shore Power Program Overview and Authorization to Accept DERA Grant for Husky Shore Power

A. ACTION REQUESTED

Requesting Managing Members of The Northwest Seaport Alliance (NWSA) authorization to accept grant funds in the amount of \$1 million from the EPA Diesel Emission Reduction Act (DERA) program, which can fund up to 25% of a shore power project, to support installation of shore power at Husky Terminal, project number 2020-19.

B. SYNOPSIS

In working towards the NWSA's Greenhouse Gas (GHG) Resolution goals and the new draft vision of the Northwest Ports Clean Air Strategy, and to be prepared to take advantage of external funding opportunities, NWSA staff have begun developing a program to facilitate the installation of shore power (cold ironing) infrastructure and implementation of shore power. Shore power planning efforts to date include cost estimates for shore power infrastructure installations at NWSA's major international container terminals, assessment of the vessel fleet's capabilities to use shore power, the operational costs for the vessel operators using shore power, collaboration with Tacoma Power to develop a special rate for shore power, and a draft timeline of proposed installations and emission reduction benefits.

Based on our assessment of the container vessel fleet calling NWSA's major international container terminals, roughly half are equipped with onboard infrastructure for accepting shore side power (we call these vessels "shore power capable"). Given the significant fraction of shore power capable vessels, that shore power technology has been robustly demonstrated globally, and that zero emission drayage trucks and cargo handling equipment are not yet competitive with traditional options, shore power is the best opportunity to make substantial progress towards NWSA's aggressive air quality and climate goals today.

In addition to the environmental benefits, shore power also has some commercial benefits which include supporting low carbon shipping services desired by some BCOs, progressing NWSA's brand as a green gateway, and potentially reducing vessel operating costs while at berth. The potential reduction in operating costs would be dependent on future fuel prices, labor agreements, utility rates, and any carbon pricing policy that allows shore power users to generate carbon credits (and thereby

additional revenue). Cost savings are expected based on current fuel and electricity prices and many projections expect fuel costs to increase as a result of the IMO's 2020 fuel sulfur regulation.

Presently, the following opportunities are emerging for NWSA to move forward with shore power installations by leveraging external funding.

- 1) A \$1 million grant offer from the EPA through the Diesel Emission Reduction Act (DERA) grant program for shore power infrastructure at Husky Terminal. This is the maximum amount EPA Region 10 was authorized to award under the 2019 DERA program.
 - EPA unofficially selected NWSA's application in June and provided an official grant agreement in September for consideration by NWSA Managing Members.
- 2) TransAlta Centralia Coal Transition grant.
 - Staff submitted an application requesting funding for shore power infrastructure at Husky Terminal in September 2019 and received a preliminary grant offer of \$1 million in late October.
- 3) Re-appropriate remaining funds from the \$1.2 million Washington State Department of Ecology (Ecology) grant (\$1.1 million remaining), originally provided to back loans as part of the Clean Truck Fund.
 - The bill appropriating these funds to NWSA rigidly requires funds to be used for a loan program run by a CDFI, meaning that a change in bill language would be necessary. Ecology would also need to agree to the new use of funds.
- 4) Department of Ecology managed grants, including the Federal VW settlement.
 - Ecology sent out a Request for Information (RFI), soliciting interest in grants for shore power installations from ports in Washington State.
 - Ecology can make available up to \$50.4 million for marine vessel projects through the VW settlement.

The first step of the shore power program is to build shore power infrastructure at one of NWSA's strategic terminals in each harbor, providing air quality benefits for the citizens of King and Pierce County. Installation is currently moving forward at Terminal 5 in Seattle as part of the ongoing redevelopment project. Funds have been allocated in the draft budgets for 2020 to 2022 to build shore power infrastructure at Husky Terminal in Tacoma, pending Managing Member approval. The total cost of the Husky project is estimated at \$5.4 million (~\$4.7 million for design and construction and ~\$700 thousand for staff).

This request is to accept the DERA grant in the amount of \$1 million to support the Husky project, offsetting the total project costs of \$5.4 million. The DERA grant can cover up to 25% of a shore power project, where the remaining costs must be covered through local match, which can include non-federal grant funding. Staff is working to align further external support for the Husky project through the TransAlta Coal Transition grant and/or reallocation of the Department of Ecology Clean Truck grant.

C. BACKGROUND

The NWSA has set significant goals to reduce air pollutant and GHG emissions including the Northwest Ports Clean Air Strategy and the Managing Members' 2017 Greenhouse Gas Resolution, which sets targets of 50% and 80% reductions in GHG emissions by 2030 and 2050 respectively. Shore power is one of the many measures necessary to meet these targets and demonstrate our commitment to sustainable development.

Ocean going vessels are an important source of diesel pollution that have historically been extremely difficult for ports to influence, since ports themselves do not own or operate the vessels. Due to existing regulations in California that require 80% of container vessels to use shore power and shore side infrastructure installations in Asian ports and Vancouver B.C., shippers serving the Pacific Rim have begun to install equipment onboard vessels that allows them to use power from the local grid while at berth. The NWSA seeks to leverage this existing vessel side infrastructure to reduce emissions at berth. With the right electrical rates and labor agreements, shore power may also provide cost savings to our customers.

The International Maritime Organization (IMO) has taken significant regulatory actions over the last 10 years that have greatly reduced emissions from ships. These actions include the North American Emissions Control Area (ECA), implemented in 2015, which requires vessels to use fuel with 0.1% sulfur content or less within 200 miles of shore and the upcoming global regulation requiring vessel to use 0.5% everywhere not governed by a stricter emissions control area, beginning January 1, 2020. Within the Puget Sound Airshed, the 2020 regulation will not have an effect on emissions since it is less restrictive than the existing ECA (only requiring 0.5% sulfur fuels, compared with the 0.1% requirement within the ECA).

ECA, has resulted in monumental emission reductions within the Puget Sound. As of the 2016 Puget Sound Maritime Emissions Inventory, diesel particulate matter (DPM) emissions from vessels calling NWSA's terminals were down 87% when compared with 2005 levels and accounted for less than 4% of the regional total when all sources (port and non-port) are considered. In 2016, vessels calling NWSA's terminals emitted 13.4 tons of diesel particulate matter (DPM) and 66,385 tons of GHGs while hoteling. Shore power seeks to minimize these impacts.

Shore Power Description:

Shore power is the provision of power from the local electrical grid to a vessel to satisfy auxiliary power demands while at berth, allowing the vessel to shut off its auxiliary engines. This eliminates emissions from auxiliary engines on the terminal, with the only associated emissions being remote, from power generation. Hydropower dominates Seattle City Light and Tacoma Power's grid mixes, meaning net emissions from auxiliary power generation are nearly zero when using shore power, when compared with burning on board fuel. Shore Power installations include the power distribution elements required to bring electricity from the existing supply point to the dock and the connection points on the dock for ships to plug in to, as well as upgrades to local distribution outside the fence as necessary.

Commercial Benefits of Shore Power:

In addition to the environmental benefits associated with air pollutant and GHG emission reductions, installing shore power infrastructure could also present commercial benefits as detailed below.

- *Energy cost certainty and savings while at berth for shipping lines.*

- Based on the analysis shown below, shore power would likely be cheaper than burning marine gasoil, providing financial incentive for vessels to use shore power.
- With the implementation of 2020 international fuel sulfur regulations, many are projecting an increase in distillate fuel prices, which would affect prices of compliant vessel fuels. Providing shore power would help mitigate an increase in fuel cost and would provide cost certainty while at berth since electricity rates do not fluctuate like fuel prices.
- *Continue to build NWSA's brand and reputation as a modern, green gateway.*
 - NWSA's competitors in Vancouver B.C. and California have implemented or are in the process of implementing shore power.
 - Maersk is piloting a carbon neutral shipping option with some of its customers. If more beneficial cargo owners ask for this service and other lines were to follow suit, shore power facilities would help NWSA support these services.
 - The IMO has set substantial greenhouse gas emission reduction targets for international shipping to be achieved by 2050. Shore power is one tool shippers can use to reduce emissions.
- *Opportunity to generate credits (revenue) if a low carbon fuel standard or other similar carbon pricing rule is enacted regionally or at the state level.*
 - In California, maritime is an opt-in participant to the low carbon fuel standard, meaning that shore power use generates "carbon credits" that can be sold to higher emitters, allowing them to demonstrate compliance with the standard. If a similar rule were enacted in Washington shore power use could produce revenue in a similar manner for the Port, MTO, and/or shipping line.

Shore Power Operational Costs:

A key driver for whether vessel operators will be motivated to use shore power is the operational cost. More specifically, whether the cost of grid electricity and labor to execute the ship to shore power connection are less than the cost of fuel the ship would burn if not using shore power.

Recognizing the importance of providing a financial incentive for vessel operators to use shore power through rates, NWSA staff have closely examined the costs of using shore power in both Seattle and Tacoma. A notable difference between the two is that in Tacoma, the rate schedule includes a much larger peak demand fee (\$8.35 per kW in Tacoma vs. \$3.39 per kW in Seattle) complicating billing procedures for the individual vessels and making the economics less favorable. In order to ensure that shore power does indeed provide cost savings for the shipping lines, staff have been working with Tacoma Power since 2018 to create a special electricity rate for shore power that would eliminate the demand charge, instead opting for a higher usage fee. In February 2019, the Tacoma Utility Board passed a resolution directing staff to work with the Port of Tacoma and NWSA to develop this new rate and pursue grant funding for shore power projects. Staff have had preliminary conversations with Seattle City Light staff about pursuing a similar arrangement and expect the conversations to continue as part of the Port of Seattle's "Clean Energy Strategic Plan" project.

The following analysis examines the operational costs of using shore vs. burning fuel at NWSA's terminals in both harbors. The Tacoma analysis considers the Tacoma Power's preliminary shore power rate and the Seattle analysis considers the existing "Large General Service" rate schedule.

The fuel costs were determined using a recent marine gasoil (MGO) spot prices as well as price ranges from the past year and the past three years.

Labor Costs:

An estimate of labor costs to execute the shore power connection is also included though it should be noted that a standard manning requirement has yet to be established. Currently, labor costs are highly dependent on the type of cold ironing being done and the contractual obligations of each MTO. Based on conversations with operators currently using shore power, the operations team provided an assumption of 2 man hours at \$100 per hour for connection and disconnection, totaling \$400 per vessel call. For added contingency and to account for admin costs, this analysis adds an additional man hour at either end of each shore power call, for a total of \$600 in labor costs per call.

South Harbor Shore Power Operational Cost Analyses:

For the South Harbor Terminals, shore power use at Husky and WUT were considered, taking into account the range of at-berth durations. For a typical vessel call the costs of burning fuel and using shore power are shown below.

Husky (at-berth duration: 72.9 hours per call)

Cost of **fuel** for auxiliary engines per vessel call assuming 7/29/2019 MGO price: **\$12,344**

- Fuel cost range given 2019 MGO prices: **\$11,187 - \$13,237**
- Fuel cost range given MGO prices from past 3 years: **\$8,476 - \$14,904**

Cost of **shore power** per vessel (electricity + labor): **\$9,870**

WUT (at-berth duration: 39.6 hours per call)

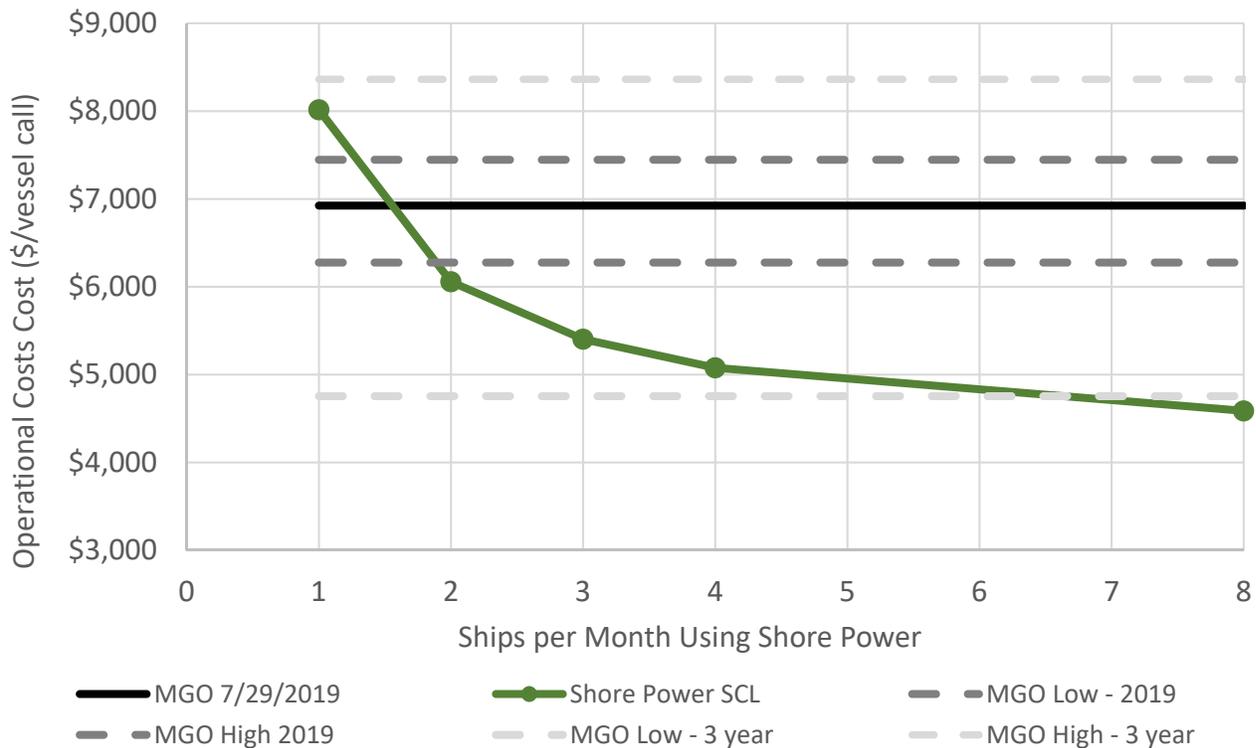
Cost of **fuel** for auxiliary engines per vessel call assuming 7/29/2019 MGO price: **\$6,705**

- Fuel cost range given 2019 MGO prices: **\$6,077 - \$7,210**
- Fuel cost range given MGO prices from past 3 years: **\$4,604 - \$8,096**

Cost of **shore power** per vessel (electricity+ labor): **\$5,636**

North Harbor Shore Power Operational Cost Analysis:

In Seattle, the shore power costs for each vessel are sensitive to the number of vessels plugging in each month because the existing rate includes a demand charge (\$3.39/kW at monthly max demand, or for this example $\$3.39 / \text{kW} \times 1156 \text{ kW} = \$3,919/\text{month}$) which could be split between all vessels calling during each month. Therefore, when more vessels use shore power the cost per vessel decreases. T-18 was used as the case study for the North Harbor, since T-5 is not yet operational. The graph below shows the cost each vessel would pay per visit using shore power (green) and the cost they would pay burning fuel (black) based on the MGO price from 7/29/2019. The dashed lines reflect the range of MGO prices in 2019 (darker) and over the past 3 years (lighter). In 2018, there were 9.6 calls per month by shore power capable vessels at T-18.



Analysis of Fleet Shore Power Readiness:

Due to regulations in California requiring shore power use and shore side installations in Asia and Vancouver B.C., a significant fraction of the international container ships in service on Pacific routes are equipped with onboard infrastructure to use shore side power. This number is expected to increase over time as Californian requirements become increasingly strict. Indeed, an assessment of the international vessel fleet calling NWSA’s major international terminals in 2018 showed that roughly half of the container vessel calls at these terminals were by shore power capable vessels. These results indicate that, if shore power is installed, there would be plenty of vessels capable of using it.

	Pct. Calls SP Capable	Total Calls/Month	SP Capable Calls/Month	Avg SP Capable Call Length (hours)	Avg SP Capable Hours/Month
T-18	39%	24.6	9.58	40.9	392
Int. T-46 & T30 *	63%	12.6	7.83	40.6	318
<i>NH Total</i>	<i>47%</i>	<i>37.2</i>	<i>17.1</i>	<i>40.8</i>	<i>710</i>
Husky	54%	8.3	4.5	72.9	328
PCT	69%	8.6	5.92	33.4	197
WUT	47%	10.2	4.92	39.6	194
<i>SH Total</i>	<i>57%</i>	<i>27.1</i>	<i>15.3</i>	<i>46.9</i>	<i>720</i>
Gateway Total	51%	64.3	32.7	43.7	1,430
<i>T-5 EIS**</i>	<i>30%</i>	<i>8.7</i>	<i>2.6</i>	<i>53</i>	<i>138</i>

* International vessels calling T-30 and T-46 in 2018.

** Assumptions from the T5 EIS, not included in the 2018 gateway total as T5 was not operational

Energy Planning Efforts in Support of NWSA's Sustainability Goals:

Supporting the NWSA's GHG Resolution and the new NWCAS, energy planning studies are scheduled in the North and South Harbor to understand the infrastructure investments required to support zero emission operations. Port of Seattle will be leading the North Harbor effort, called the Seattle Waterfront Clean Energy Strategic Plan (SWCESP), which will include NWSA's North Harbor marine terminal facilities and NWSA will be leading a similar effort in the South Harbor called the NWSA South Harbor Electrification Roadmap.

In addition to the environmental drivers, there is also a business case for this work. Since we know that operational costs (energy + maintenance) are lower for electric equipment than diesel, the total cost of ownership for electric equipment could be lower if purchase prices decrease substantially or policy changes the economics. Planning prepares us to respond to either of these drivers. In addition, making these investments proactively could net more external funding.

These planning efforts will first assess energy usage at our facilities given current operations and project future usage associated with use of shore power, electric (or other alternatively fueled) cargo handling equipment, and alternatively fueled drayage trucks where applicable. Given these projected energy demands, on facility infrastructure needs can be identified. Working closely with the utilities, another important component of this work will be to understand the capabilities of the existing grid to deliver the energy we will need. Building from there, further opportunity exists for joint planning to ensure that our needs are incorporated in the utilities' long-term plans, which has the potential to reduce overall development costs.

Port of Seattle has budgeted \$250,000 for the SWCESP and NWSA plans to provide \$50,000 of support. NWSA has budgeted \$165,000 in the draft budgets (pending Managing Member approval) for 2020 and 2021 (including \$125,000 for consultant fees and \$40,000 for staff time each year) with Port of Tacoma contributing \$25,000 of support in each year. Port of Seattle staff are currently procuring a consultant for the SWCESP and the NWSA South Harbor Electrification roadmap is scheduled to kick off in 2020.

Planning Efforts Towards a Gateway-wide Shore Power Program:

In working towards the new vision of the Northwest Ports Clean Air Strategy and the NWSA's Greenhouse Gas (GHG) Resolution, and to be prepared to take advantage of external funding opportunities, staff has been working on a gateway wide installation plan for shore power including an estimate of year by year costs. The gateway-wide plan will be a critical communication tool for gaining the support of legislative and agency funding partners.

Shore Power Cost Estimates by Terminal:

In 2018, NWSA staff worked with the engineering teams of the Ports of Seattle and Tacoma to develop cost estimates for shore power infrastructure at NWSA's major international container terminals. The focus was on the major international container terminals since their vessel fleets are most likely to be equipped with ship side shore power infrastructure and provide the largest emission benefits when plugged. These terminals are T-5, T-18, Husky, WUT, and PCT. NWSA's other terminals were not deemed priorities for shore power installations at this time because their vessel fleets contained fewer, or in many cases no shore power capable vessels and/or their future uses are uncertain.

Installing shore power at two berths was considered for each terminal. Only installing shore power at 2 berths at T-18, where there are 4 total berths, may create some scenarios where a shore power capable vessel must berth at a non-shore power equipped berth for operational reasons. While this is not optimal, the significant cost of installing infrastructure at two additional berths was deemed to outweigh the ability to plug in ships at every berth. Even in California, not all container ship berths are equipped with shore power infrastructure. This prioritization can be revisited in the future if desired. The cost estimates, shown below, were used for the development of the gateway-wide plan. The total cost to install shore power at the major international container terminals is \$33.3 million in present dollars for on terminal and off terminal upgrades. As shown below, the total costs are \$38.6 million given an escalation rate of 3% per year.

Terminal	Number of Berths	On-Terminal Infrastructure Costs	Utility Distribution Network Upgrade Costs
T-18	2	\$5.51 million ^a	\$100,000 ^c
T-5	2	\$4.36 million ^a	\$592,250
Husky	2	\$5.31 million ^b	\$7.5 million ^d
PCT	2	\$4.05 million ^b	
WUT	2	\$5.83 million ^b	
Total	10	\$25.06 million	\$8.2 million
		<i>Total:</i>	<i>\$33.3 million</i>

^aNorth Harbor on-terminal costs estimates were performed by Port of Seattle Engineering.

^bSouth Harbor on-terminal cost estimates were performed by Cross Engineering in June 2018.

^cSCL System impact study for providing power to 2 berths. If more than two berths are desired the distribution network upgrade costs increase significantly.

^d Assumes that a new substation is necessary to simultaneously provide power at 2 berths at all 3 South Harbor terminals, as suggested by Tacoma Power. This will be studied further as part of the NWSA South Harbor Electrification Roadmap. Shore power can be provided to at least 1 berth (likely 2 during all but the heaviest load days) at Husky with minimal upgrades to distribution outside the fence.

Proposed Timeline of Shore Power Installations:

To understand the costs over time of installing shore power at NWSA’s major international container terminals, a draft timeline was developed detailing when infrastructure installations could take place. The timeline, along with all other aspects of this planning effort are of course subject to Managing Member review/approval and the level of external funding will be carefully considered before moving forward with any aspect. In addition, internal funding of these projects will need to be carefully balanced against other competing priorities. The timeline was developed to begin all shore power projects by the Federal VW Settlement’s 2028 deadline to obligate funds, but also spread project costs out as much as possible during that timeframe to minimize year to year budgetary impacts. Project order was determined by considering possible emission reductions, a key indicator of a project’s competitiveness for external funding. It was assumed that each project would take 2.5 years for design and construction.

	T-5	Husky	T-18	WUT	Evergreen	South Harbor Substation
2020	Construction	Design				
2021		Construction				
2022						
2023	Operational	Operational	Design			
2024			Construction			
2025						
2026						
2027			Construction			
2028			Design			
2029			Construction			
2030						
2031+			Operational			

* Assumes \$7.5 million in 2020 dollars needed for a new substation. This investment will be informed by the South Harbor Electrification Roadmap.

***NOTE: Terminals 30, 46, and West Sitcum are not included in this timeline because their future use is still uncertain and/or the environmental benefits of installing shore power are likely to be less than the terminals shown above. Shore power installations at these terminals will be re-evaluated as new information arises.

Budgetary Impacts of Shore Power Installations:

Along with the proposed timeline for shore power projects, staff have estimated the year by year impacts on the capital budget associated with the gateway-wide shore power program. The table below summarizes the costs to NWSA (impact on CIP) to construct shore power infrastructure at the NWSA’s major international container terminals. Cost estimates for the individual projects, detailed above, were used to project year by year costs, escalated by 3% per year with 2020 as the baseline year. If these projects are 50% grant funded, the cost to NWSA for on terminal infrastructure would be roughly between \$1 million and \$2 million per year. Per guidance from TPU, new substation on the utility side of the meter may be necessary to support a full build out of shore power in Tacoma, reflected in the costs for 2027 and 2028. As part of the NWSA South Harbor Electrification Roadmap study, staff plan to further study the most effective way to meet all of our needs.

	Total Cost	Impact on CIP	
		w/ 25% grant funding	w/ 50% grant funding
2020	\$3.4*	\$1.90	\$1.00
2021	\$3.6*	\$1.60	\$1.10
2022	\$3.1*	\$1.10	\$0.90
2023	\$2.40	\$1.80	\$1.20
2024	\$2.50	\$1.90	\$1.30
2025	\$2.70	\$2.00	\$1.30
2026	\$2.90	\$2.20	\$1.50
2027	\$7.6**	\$5.7**	\$3.8**
2028	\$6.8**	\$5.1**	\$3.4**
2029	\$2.20	\$1.70	\$1.10
2030	\$1.20	\$0.90	\$0.60
Total	\$38.60	\$26.00	\$17.10

* T-5 is included in the total cost through 2022, but is fully grant funded

** Assumes a new TPU substation is required to support shore power. The substation accounts for \$4.6 million and \$4.8 million of the total costs in 2027 and 2028 respectively.

Environmental Benefits:

Plugging vessels in to shore power would result in significant emission reductions, moving the NWSA towards meeting the GHG Resolution targets, and ensuring substantive progress towards reducing air quality and climate impacts under the Northwest Ports Clean Air Strategy. The table below details the annual emission reductions (tons per year) that would have resulted from all shore power capable vessels that called in 2018 using shore power.

	NO _x	VOC	PM _{2.5}	CO _{2e}
T-18	75	2.2	1.3	3,778
Int. T-30 & T-46	61	1.8	1	3,065
Husky	63	1.8	1.1	3,163
PCT	38	1.1	0.63	1,906
WUT	37	1.1	0.62	1,878
Total	274	8	4.65	13,790
T-5*	33	1	0.55	1,666

* T-5 emission estimates based on T-5 EIS assumptions for vessel activity

Shore Power Implementation Plan:

The implementation of shore power at Husky Terminal will follow the NWSA's Shore Power Program, provided as an attachment. As a landlord port, the NWSA has stevedoring tenants (terminal operators) who will be responsible for implementing shore power as it is installed. Shore power requires additional labor, vessel commissioning, and administration that all add cost and complexity for the stevedore. In order to apply a common policy for all terminals and avoid putting any stevedore at a competitive disadvantage, the NWSA's shore power policy allows for voluntary, but encouraged and supported, adoption until all terminals have the capability. At that time, all vessels would be required to connect.

Roles and responsibilities when implementing shore power

Because the NWSA's marine terminal operator tenants are not required by lease or law to provide shore power infrastructure at their facilities, it is assumed that NWSA will be responsible for coordinating funding for the necessary infrastructure investments and managing construction. NWSA will also be responsible for working with the utilities to develop electricity rates for shore power that will incentivize use. Additionally, because NWSA will own the shore side infrastructure, it follows that NWSA would coordinate the commissioning procedure for new vessels, which ensures that there are no compatibility issues between the vessel side and shore side infrastructure that could damage either. Though the roles and responsibilities are still subject to negotiation, based on precedent at other facilities in Tacoma and Seattle currently using shore power, it can be assumed that the terminal operator would manage the operation of the shore power system after it is built. A draft list of roles and responsibilities for each party can be found below.

For each ship call, the terminal operator will:

1. Coordinate with incoming vessels to determine if shore power is desired.
2. Contact the utility to schedule the power use, communicating estimated time of arrival and departure, if shore power is desired.
3. Follow best management practices to ensure the vessel is positioned properly in relation to the shore power connection.
4. Contact NWSA to commission the vessel if it is a vessel's first time using shore power at a terminal.
5. Coordinate all labor required to connect and disconnect the vessel to shore side power.
6. Bill the vessel for the power used.
7. Report to NWSA the number of hours connected to shore power for each vessel call on a monthly basis.

For each ship call, the NWSA will:

1. Commission vessels.
2. Facilitate information sharing to develop and continually update vessel berthing best management practices, ship to shore connection procedures, and vessel commissioning procedures.

D. HUSKY SHORE POWER PROJECT DESCRIPTION

This project will retrofit shore power infrastructure at Husky Terminal, including installation of connection points on the wharfs and distribution infrastructure to supply power to these connection points.

Scope of work:

The scope of this project is to design and build electrical power supply elements including wiring, ship connection boxes, vaults, 6.6 kV transformers, switchgear, and any necessary trenching and wharf modifications, to provide ship to shore power for vessels at Husky Terminal. The shore side system will be built to safely supply power to the existing fleet of international container vessels serving NWSA terminals, and vessels anticipated to be put into service in the coming years. Onboard ship-side systems must comply with the international codes and standards (i.e. ISO/IEEE/IEC) per plug-in requirements in California. The NWSA will build the shore side equipment in compliance with the IEC standard, using Cavotec connection boxes as used in California.

Schedule:

Date	Task/Milestone
January 2020	Begin procurement of design contractor
March 2020	Begin design
July 2020	Complete design
August 2020	Begin procurement of construction contractor
October 2020	Begin construction of Husky Berth 1.
September 2021	Complete construction of Husky Berth 1, begin implementing shore power at Husky Berth 1.
October 2021	Begin construction of Husky Berth 2.
September 2022	Complete construction of Husky Berth 2, begin implementation of shore power at Berths 1 and 2.

Environmental Outcomes/Benefits:

Use of shore power by vessels at Husky Terminal would significantly reduce use of fossil fuels for a sector that has historically been very difficult to influence, greatly reducing air pollution impacts on neighboring communities as well as impacts on climate change. If all 54 shore power capable calls from 2018 had used shore power, combustion of 1,025 metric tons of fuel oil could have been averted. This translates to the following emission reductions, calculated using the EPA Shore Power Calculator, assuming an average 1156 kW hoteling load.

Emission Reductions (tons/year)			
DPM	NO_x	CO₂	VOC
1.1	63	3,163	1.8

E. PROJECT BUDGET/COSTS

The total budget for the Husky Shore Power project is \$5,431,119, to be spent over three years (2020 – 2022). The physical elements to be constructed include shore power connection boxes, transformers, conduit and wiring for bringing power to the wharf, and the vessel connection boxes. The costs for these items include materials and labor. Port of Tacoma Engineering project management will oversee the design and construction tasks for the project. Air Quality staff will administer associated grants. Itemized costs are shown in the Table below.

	T3	T4	Total
Ship Connection Boxes	\$101,750	\$101,750	\$203,500
6.6 kV transformers	\$85,000	\$85,000	\$170,000
Switchgear, circuit breakers, and wiring	\$165,000	\$165,000	\$330,000
SS Switch Houses	\$300,000	\$300,000	\$600,000
Wharf Modifications	\$35,000	\$0	\$35,000
Conduit and trenching work	\$105,000	\$105,000	\$210,000
Inspection, Testing, Permitting	\$14,000	\$14,000	\$28,000
TPU Metering Upgrades	\$50,000	\$50,000	\$100,000
Materials/Labor Sub-Total	\$855,750	\$820,750	\$1,676,500
Contractor OH and P (25%)	\$213,938	\$205,188	\$419,126
Sub-Total	\$1,069,688	\$1,025,938	\$2,095,626
Construction Contingency (75%)	\$802,266	\$769,453	\$1,571,719
Construction Sub-Total	\$1,871,954	\$1,795,391	\$3,667,345
General Conditions (7.25%)	\$135,717	\$130,166	\$265,883
Sales Tax (10.2%)	\$190,939	\$183,130	\$374,069
Construction Total	\$2,198,610	\$2,108,687	\$4,307,297
Design (10%)	\$219,861	\$210,869	\$430,730
Engineering Staff (design [5%] and construction [10%], 15%)	\$329,791	\$316,303	\$646,094
Air Quality Staff	-	-	\$47,000
Total Fully Burdened	\$2,748,262	\$2,635,859	\$5,431,121

Source of Funds:

The Capital Investment Plan (CIP) Budget, for financial year 2020 and beyond, to be considered by Managing Members, allocates \$5,431,000 for this project. This includes \$1,242,000 in 2020, \$2,393,000 in 2021, and \$1,796,000 in 2022. Grant funds would offset these costs.

DERA Grant:

In spring of 2019, staff applied for a \$1 million grant, the maximum award that EPA Region 10 can grant, to help fund installation of shore power at Husky Terminal. Husky was prioritized because shore power was already funded at Terminal 5 through the state budget and staff recognized the importance of parity between the environmental investments in both harbors. In summer 2019, preliminary approval was granted by the EPA for NWSA’s application and the final award offer was presented to NWSA in September for consideration by Managing Members. Further details of the award and its terms and conditions can be found in the attached grant agreement.

Additional Grant Funding Opportunities:

TransAlta Centralia Coal Transition Grant:

To further support the installation of shore power at Husky Terminal, staff submitted an application for funding in late September to the TransAlta Centralia Coal Transition Energy Technology grant program¹. TransAlta is a Canadian electricity generation company that owns and operates the coal generation facility in Centralia, WA. The TransAlta grant fund was created as part of TransAlta’s agreement with the State of Washington to phase out coal power generation at their facility in

¹ Trans Alta Centralia Coal Transition Grants: Energy Technology. <https://cctgrants.com/grants/energy-technology/>

Centralia, WA. The Energy Technology grant fund is one of three separate funds created by TransAlta and supports projects in Washington State that support clean air and clean energy, such as alternative fuels, green energy technologies, or other products or processes that increase conservation or minimize pollution. As, the TransAlta grant fund does not have a maximum award (award amounts are determined by TransAlta's Energy Technology Board), staff requested \$4.2 million to further support the Husky project. Staff received a preliminary award offer for \$1 million on 10/28 and plan to bring this forward for commission approval in Q1 2020.

Department of Ecology \$1.2 million Clean Truck Fund Grant (remaining funds, \$1.1 million):

After completing implementation of the January 1, 2019 deadline for the Clean Truck Program, NWSA was left with funds remaining in four separate grants; the \$1.2 million grant from Ecology for backing truck loans (this grant, from the state Volkswagen settlement fund), the state Clean Diesel grant from the Department of Ecology of which \$134,000 remains, \$189,000 in remaining grant funds from the Puget Sound Clean Air Agency (PSCAA), and \$138,000 in remaining grant funds from the City of Seattle.

Recognizing the importance of continuing to offer support to truckers, especially drivers serving the domestic terminals who have not had access to previous funding opportunities, staff are working with the respective agencies to continue using grant funds from the Ecology Clean Diesel, PSCAA, and City of Seattle to incentivize truck replacements and for other trucker support.

Continuing to use the funds in the \$1.2 million Department of Ecology grant on trucks would be more complicated than the other grants because the language in the bill appropriating the funds to NWSA in the state budget specifically states that the funds must be used for a loan program backed by a CDFI. Further, the ILA with Ecology states that continued use of the funds past spring 2019 is contingent on Ecology approval of the new application of funds. Ultimately, the NWSA must work with legislators and the department of Ecology to change the Bill language to maintain access to the funds for a meaningful program. Considering the small size of the domestic truck population not meeting the 2007 model year standard, staff recommends that the Clean Diesel, PSCAA, and City of Seattle funds be used for continued truck replacements and other trucker support (approximately \$461,000 in total) and that the remaining funds in the \$1.2 million grant (\$1.1 million) would be better used on a shore power project.

After receiving initial award notification on the DERA grant from the regional EPA office, staff began discussions with Ecology about appropriating the \$1.1 million for shore power (a decision that would be subject to Managing Member approval). The government affairs team is prepared to work with local lawmakers to gain support and a legislative sponsor to reallocate the funds for shore power. Demonstrating a plan for shore power deployment across the gateway will likely factor significantly in NWSA's bid for support in this effort.

Federal VW settlement and other state grant programs.

From 2008 to 2015, the automaker Volkswagen sold vehicles designed to cheat emission tests and those vehicles emitted up to 40 times the allowable amount of nitrogen oxides as a result. Through the resulting lawsuit, a fund was established to mitigate these emissions through replacement of diesel engines and the construction of infrastructure that circumvents the use of diesel fuel, with a priority to facilitate electrification. Washington State is eligible for \$112.7 million and the Washington State department of Ecology will administer the funds, which must be obligated by 2028. A parallel lawsuit with Washington State yielded a \$28.4 million fund from which the \$1.2 million grant for the

Clean Truck Fund originated. From the \$112.7 million federal settlement, up to 45% can be allocated to marine vessels, including shore power for ocean-going vessels, though a substantial proportion of this money is expected to be allocated to the electrification of Washington State Ferries. The Department of Ecology is also able to fund projects through state Clean Diesel grants and may be able to help facilitate funding opportunities through programs managed by other agencies, such as the Department of Commerce's Clean Energy Fund.

To better understand the readiness and interest of ports in Washington State to install shore power infrastructure, the Department of Ecology issued a Request for Information (RFI) titled "Potential grants for ship to shore power for ocean going vessels" in late August. NWSA staff responded to the RFI in September 2019. Within the RFI, Ecology asked ports to identify terminals that are candidates for shore power installations, information on the vessel fleets calling these terminals and their shore power readiness, the cost of installing shore power infrastructure at each of the terminals identified, and the state of planning efforts related to shore power. The responses to this RFI will likely influence the amount of money Ecology will make available for shore power projects from the VW settlement and other funding sources.

It is important to note that the \$4.4 million appropriation in the state budget for shore power at T-5 is contingent on NWSA applying for Federal VW funding (administered by Department of Ecology) and being rejected. If NWSA's T-5 application for VW funding is not rejected, it would reduce the overall amount of VW funds available for other shore power projects. If it is rejected, T-5 shore power would still be funded by the state through the appropriation. Because Ecology must evaluate projects on an objective basis (i.e. considering factors like possible emission reductions, shovel readiness, other funding sources, etc.), willingness to move forward with other more competitive projects within the VW funding time horizon (i.e., before 2028) increase opportunities for funding.

F. ATTACHMENTS TO THIS REQUEST

- DERA Grant Agreement
- NWSA Shore Power Program Document

	U.S. ENVIRONMENTAL PROTECTION AGENCY Cooperative Agreement	GRANT NUMBER (FAIN): 01J65101 MODIFICATION NUMBER: 0 PROGRAM CODE: DE	DATE OF AWARD 08/29/2019
		TYPE OF ACTION New	MAILING DATE 09/05/2019
		PAYMENT METHOD:	ACH# PEND
		RECIPIENT TYPE: Special District	
RECIPIENT: The Northwest Seaport Alliance 1 Sitcum Plaza Tacoma, WA 98421-3000 EIN: 47-4921178		PAYEE: The Northwest Seaport Alliance 1 Sitcum Plaza Tacoma, WA 98421-3000	
PROJECT MANAGER Graham VanderSchelden 1 Sitcum Plaza Tacoma, WA 98421-3000 E-Mail: gvanderschelden@nwseaportalliance.com Phone: 253-592-6791		EPA PROJECT OFFICER Sarah Frederick 1200 Sixth Avenue, Suite 155, 15-D13 Seattle, WA 98101-3188 E-Mail: frederick.sarah@epa.gov Phone: 206-553-1601	
EPA GRANT SPECIALIST Lucas DuSablon 1200 Sixth Avenue, Suite 155, 17-CO4 Seattle, WA 98101-3188 E-Mail: dusablon.lucas@epa.gov Phone: 206-553-2987			
PROJECT TITLE AND DESCRIPTION NWSA Husky Terminal Shore Power Project This agreement will provide assistance to the Northwest Seaport Alliance (NWSA) in its efforts to reduce diesel emissions and exposure in Tacoma, WA. By installing infrastructure at two ship births to supply ocean-going vessels with high voltage shore power at the Husky Terminal in Tacoma, WA, the NWSA will reduce emissions of diesel particulate matter and other pollutants such as nitrogen oxides and sulfur oxides.			
BUDGET PERIOD 10/01/2019 - 09/30/2022	PROJECT PERIOD 10/01/2019 - 09/30/2022	TOTAL BUDGET PERIOD COST \$5,312,215.00	TOTAL PROJECT PERIOD COST \$5,312,215.00
NOTICE OF AWARD			
Based on your Application dated 03/26/2019 including all modifications and amendments, the United States acting by and through the US Environmental Protection Agency (EPA) hereby awards \$1,000,000. EPA agrees to cost-share 18.82% of all approved budget period costs incurred, up to and not exceeding total federal funding of \$1,000,000. Recipient's signature is not required on this agreement. The recipient demonstrates its commitment to carry out this award by either: 1) drawing down funds within 21 days after the EPA award or amendment mailing date; or 2) not filing a notice of disagreement with the award terms and conditions within 21 days after the EPA award or amendment mailing date. If the recipient disagrees with the terms and conditions specified in this award, the authorized representative of the recipient must furnish a notice of disagreement to the EPA Award Official within 21 days after the EPA award or amendment mailing date. In case of disagreement, and until the disagreement is resolved, the recipient should not draw down on the funds provided by this award/amendment, and any costs incurred by the recipient are at its own risk. This agreement is subject to applicable EPA regulatory and statutory provisions, all terms and conditions of this agreement and any attachments.			
ISSUING OFFICE (GRANTS MANAGEMENT OFFICE)		AWARD APPROVAL OFFICE	
ORGANIZATION / ADDRESS EPA Region 10 1200 Sixth Avenue, Suite 155 (17-C04) Seattle, WA 98101		ORGANIZATION / ADDRESS U.S. EPA, Region 10 Air and Radiation Division 1200 Sixth Avenue, Suite 155 Seattle, WA 98101-3188	
THE UNITED STATES OF AMERICA BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY			
Digital signature applied by EPA Award Official PeggyD Johnson - Chief - Grants Section			DATE 08/29/2019

EPA Funding Information

FUNDS	FORMER AWARD	THIS ACTION	AMENDED TOTAL
EPA Amount This Action	\$ 0	\$ 1,000,000	\$ 1,000,000
EPA In-Kind Amount	\$	\$	\$ 0
Unexpended Prior Year Balance	\$	\$	\$ 0
Other Federal Funds	\$	\$	\$ 0
Recipient Contribution	\$	\$ 4,312,215	\$ 4,312,215
State Contribution	\$	\$	\$ 0
Local Contribution	\$	\$	\$ 0
Other Contribution	\$	\$	\$ 0
Allowable Project Cost	\$ 0	\$ 5,312,215	\$ 5,312,215

Assistance Program (CFDA)	Statutory Authority	Regulatory Authority
66.039 - National Clean Diesel Funding Assistance Program (B)	Diesel Emissions Reduction Act of 2010 codified at 42 U.S.C. 16131 et seq Consolidated Appropriations Act of 2019 (PL 116-6)	2 CFR 200 2 CFR 1500 and 40 CFR 33

Fiscal									
Site Name	Req No	FY	Approp. Code	Budget Organization	PRC	Object Class	Site/Project	Cost Organization	Obligation / Deobligation
-	1910BDG163	19	E4	10B4	000AH4	4122			970,471
-	1910BDG163	18	E4D	10B4	000AH4	4122			29,529
									1,000,000

Budget Summary Page

Table A - Object Class Category (Non-construction)	Total Approved Allowable Budget Period Cost
1. Personnel	\$46,176
2. Fringe Benefits	\$24,024
3. Travel	\$0
4. Equipment	\$0
5. Supplies	\$0
6. Contractual	\$4,193,612
7. Construction	\$0
8. Other	\$1,048,403
9. Total Direct Charges	\$5,312,215
10. Indirect Costs: % Base	\$0
11. Total (Share: Recipient 81.18 % Federal 18.82 %.)	\$5,312,215
12. Total Approved Assistance Amount	\$1,000,000
13. Program Income	\$0
14. Total EPA Amount Awarded This Action	\$1,000,000
15. Total EPA Amount Awarded To Date	\$1,000,000

Administrative Conditions

1. General Terms and Conditions

The recipient agrees to comply with the current EPA general terms and conditions available at: <https://www.epa.gov/grants/epa-general-terms-and-conditions-effective-october-1-2018>

These terms and conditions are in addition to the assurances and certifications made as a part of the award and the terms, conditions, or restrictions cited throughout the award.

The EPA repository for the general terms and conditions by year can be found at <http://www.epa.gov/grants/grant-terms-and-conditions>.

A. Correspondence Condition

The terms and conditions of this agreement require the submittal of reports, specific requests for approval, or notifications to EPA. Unless otherwise noted, all such correspondence should be sent to the following email addresses:

- Federal Financial Reports (SF-425): LVFC-grants@epa.gov
- MBE/WBE reports (EPA Form 5700-52A): bennett.andrea@epa.gov
- All other forms/certifications/assurances, Indirect Cost Rate Agreements, updates to recipient information (including email addresses, changes in contact information or changes in authorized representatives) and other notifications: wasson.wendy@epa.gov
- Quality Assurance documents, workplan revisions, equipment lists, programmatic reports and deliverables: frederick.sarah@epa.gov
- Administrative questions: dusablon.lucas@epa.gov

B. Extension of Project/Budget Period Expiration Date

EPA has not exercised the waiver option to allow automatic one-time extensions for non-research grants under 2 CFR 200.308 (d)(2). Therefore, if a no-cost time extension is necessary to extend the period of availability of funds the recipient must submit a written request to the EPA prior to the budget/project period expiration dates. **The written request must include:** a justification describing the need for additional time, an estimated date of completion, and a revised schedule for project completion including updated milestone target dates for the approved workplan activities. In addition, if there are overdue reports required by the general, administrative, and/or programmatic terms and conditions of this assistance agreement, the recipient must ensure that they are submitted along with or prior to submitting the no-cost time extension request.

C. Disadvantages Business Enterprise (DBEs)

UTILIZATION OF SMALL, MINORITY AND WOMEN'S BUSINESS ENTERPRISES (MBE/WBE)

GENERAL COMPLIANCE, 40 CFR, Part 33

The recipient agrees to comply with the requirements of EPA's Disadvantaged Business Enterprise (DBE) Program for procurement activities under assistance agreements, contained in 40 CFR, Part 33.

MBE/WBE REPORTING, 40 CFR, Part 33, Subpart E

Reporting is required for assistance agreements where there are funds budgeted for procuring construction, equipment, services and supplies, including funds budgeted for direct procurement by the recipient or procurement under subawards or loans in the "Other" category that exceed the threshold amount of \$250,000., including amendments and/or modifications. The recipient agrees to complete and submit a "MBE/WBE Utilization Under Federal Grants and Cooperative Agreements" report (EPA Form 5700-52A) on an annual basis. The current EPA Form 5700-52A can be found here: https://www.epa.gov/sites/production/files/documents/5700-52a_updated.pdf or at the EPA Office of Small and Disadvantaged Business Utilization's Home Page at <https://www.epa.gov/resources-small-businesses>

Based on EPA's review of the planned budget, this award meets the conditions above and is subject to the Disadvantaged Business Enterprise (DBE) Program reporting requirements.

However, if recipient believes this award does not meet these conditions, the recipient must provide a justification and budget detail within 21 days of the award date clearly demonstrating that, based on the planned budget, this award is not subject to the DBE reporting requirements to the Region 10 DBE

Coordinator. All procurement actions are reportable, not just that portion which exceeds \$250,000. When completing the annual report, recipients are instructed to check the box titled "annual" in section 1B of the form. For the final report, recipients are instructed to check the box indicated for the "last report" of the project in section 1B of the form. Annual reports are due by October 30th of each year. Final reports are due by October 30th or 90 days after the end of the project period, whichever comes first. The reporting requirement is based on total procurements. Recipients with expended and/or budgeted funds for procurement are required to report annually whether the planned procurements take place during the reporting period or not. If no budgeted procurements take place during the reporting period, the recipient should check the box in section 5B when completing the form. This provision represents an approved deviation from the MBE/WBE reporting requirements as described in 40 CFR, Part 33, Section 33.502; however, the other requirements outlined in 40 CFR Part 33 remain in effect, including the Good Faith Effort requirements as described in 40 CFR Part 33 Subpart C, and Fair Share Objectives negotiation as described in 40 CFR Part 33 Subpart D. Visit this [link](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr33_main_02.tpl) for more information on 40 CFR Part 33: https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr33_main_02.tpl

SIX GOOD FAITH EFFORTS, 40 CFR, Part 33, Subpart C

Pursuant to 40 CFR, Section 33.301, the recipient agrees to make the following good faith efforts whenever procuring construction, equipment, services and supplies under an EPA financial assistance agreement, and to require that sub-recipients, loan recipients, and prime contractors also comply. Records documenting compliance with the six good faith efforts shall be retained:

- (a) Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- (b) Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- (c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- (d) Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- (e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- (f) If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (a) through (e) of this section.

NATIVE AMERICAN PROVISIONS, 40 CFR, Section 33.304

The recipient agrees to comply with the contract administration provisions of 40 CFR, Section 33.304. Any recipient, whether or not Native American, of an EPA financial assistance agreement for the benefit of Native Americans, is required to solicit and recruit Indian organizations and Indian-owned economic enterprises and give them preference in the award process prior to undertaking the six good faith efforts. If the efforts to solicit and recruit Indian organizations and Indian-owned economic enterprises is not successful, then the recipient must follow the six good faith efforts.

CONTRACT ADMINISTRATION PROVISIONS, 40 CFR, Section 33.302

The recipient agrees to comply with the contract administration provisions of 40 CFR, Section 33.302.

BIDDERS LIST, 40 CFR, Section 33.501(b) and (c)

Recipients of a Continuing Environmental Program Grant or other annual reporting grant, agree to create and maintain a bidders list. Recipients of an EPA financial assistance agreement to capitalize a revolving loan fund also agree to require entities receiving identified loans to create and maintain a bidders list if the recipient of the loan is subject to, or chooses to follow, competitive bidding requirements. Please see 40 CFR, Section 33.501 (b) and (c) for specific requirements and exemptions.

FAIR SHARE OBJECTIVES, 40 CFR, Part 33, Subpart D

1. For Grant Awards \$250,000 or Less

This assistance agreement is a Technical Assistance Grant (TAG); or the award amount is \$250,000 or less; or the total dollar amount of all of the recipient's financial assistance agreements from EPA in the

current Federal fiscal year is \$250,000 or less. Therefore, the recipient of this assistance agreement is exempt from the fair share objective requirements of 40 CFR, Part 33, Subpart D, and is not required to negotiate fair share objectives/goals for the utilization of MBE/WBEs in its procurements.

2. For Recipients Accepting Goals

A recipient must negotiate with the appropriate EPA award official, or his/her designee, fair share objectives for MBE and WBE participation in procurement under the financial assistance agreements. In accordance with 40 CFR, Section 33.411 some recipients may be exempt from the fair share objectives requirements as described in 40 CFR, Part 33, Subpart D. Recipients should work with their DBE coordinator, if they think their organization may qualify for an exemption. Accepting the Fair Share Objectives/Goals of Another Recipient - The dollar amount of this assistance agreement, or the total dollar amount of all of the recipient's financial assistance agreements in the current federal fiscal year from EPA is \$250,000, or more. The recipient accepts the applicable MBE/WBE fair share objectives/goals negotiated with EPA. The Region 10 fair share objectives/goals can be found:

http://www.epa.gov/osbp/pdfs/r10_fair_share_goals.pdf

By signing this financial assistance agreement, the recipient is accepting the fair share objectives/goals and attests to the fact that it is purchasing the same or similar construction, supplies, services and equipment, in the same or similar relevant geographic buying market. Negotiating Fair Share Objectives/Goals, 40 CFR, Section 33.404 - The recipient has the option to negotiate its own MBE/WBE fair share objectives/goals. If the recipient wishes to negotiate its own MBE/WBE fair share objectives/goals, the recipient agrees to submit proposed MBE/WBE objectives/goals based on an availability analysis, or disparity study, of qualified MBEs and WBEs in their relevant geographic buying market for construction, services, supplies and equipment. The submission of proposed fair share goals with the supporting analysis or disparity study means that the recipient is not accepting the fair share objectives/goals of another recipient. The recipient agrees to submit proposed fair share objectives/goals, together with the supporting availability analysis or disparity study, to the Regional MBE/WBE Coordinator within 120 days of its acceptance of the financial assistance award. EPA will respond to the proposed fair share objective/goals within 30 days of receiving the submission. If proposed fair share objective/goals are not received within the 120 day time frame, the recipient may not expend its EPA funds for procurements until the proposed fair share objective/goals are submitted.

3. For Recipients with Established Goals

The recipient must negotiate with the appropriate EPA award official, or his/her designee, fair share objectives for MBE and WBE participation in procurement under the financial assistance agreements. In accordance with 40 CFR, Section 33.411 some recipients may be exempt from the fair share objectives requirements described in 40 CFR, Part 33, Subpart D. Recipients should work with their DBE coordinator, if they think their organization may qualify for an exemption. Current Fair Share Objective/Goal - The dollar amount of this assistance agreement or the total dollar amount of all of the recipient's financial assistance agreements in the current federal fiscal year from EPA is \$250,000, or more. The Region 10 fair share objectives/goals can be found:

http://www.epa.gov/osbp/pdfs/r10_fair_share_goals.pdf

Negotiating Fair Share Objectives/Goals - In accordance with 40 CFR, Part 33, Subpart D, established goals/objectives remain in effect for three fiscal years unless there are significant changes to the data supporting the fair share objectives. The recipient is required to follow requirements as outlined in 40 CFR Part 33, Subpart D when renegotiating the fair share objectives/goals.

D. INTERGOVERNMENTAL REVIEW PERIOD (IF APPLICABLE)

In accordance with 40 CFR Part 29, EPA must allow for an intergovernmental review comment period on this grant program. Accordingly, the Grantee may incur costs at its own risk but shall not draw down any funds associated with this award until the process is completed.

E. Interim Federal Financial Reports (FFRs) (also listed in General Terms and Conditions)

Pursuant to 2 CFR 200.327, EPA recipients shall submit an interim annual Federal Financial Report (SF-425) to EPA no later than 90 calendar days following the anniversary of the start date of the agreement. The FFR must be emailed to LVFC-grants@epa.gov. A courtesy copy of the interim FFR can be submitted to the local Grants Office via email to: dusablon.lucas@epa.gov. All email attachments must be sent in pdf format. Documents emailed to us in any other format will not be accepted. EPA may take enforcement actions in accordance with 2 CFR 200.338 if the recipient does not comply with this term and condition.

F. Closeout (also listed in General Terms and Conditions)

The Administrative Closeout Phase for this grant will be initiated with the submission of a "final" FFR, in accordance with 2 CFR 200.343. At that time, the recipient must submit the following forms/reports to EPA if applicable:

- Federally Owned Property Report
- An Inventory of all Property Acquired with federal funds
- Contractor's or Grantee's Invention Disclosure Report (EPA Form 3340-3)

Visit this link for submission requirements and frequently asked questions:

<https://www.epa.gov/grants/frequent-questions-about-closeouts>

G. Indirect Costs Not Included (All Organizations) (also listed in General Terms and Conditions)

In addition to the General Terms and Conditions "Indirect Cost Rate Agreements", the cost principles of 2 CFR 200 Subpart E are applicable to this award. Since there are no indirect costs included in the assistance budget, they are not allowable under this Assistance Agreement.

H. Consultant Cap (also listed in General Terms and Conditions)

EPA participation in the salary rate (excluding overhead) paid to individual consultants retained by recipients or by a recipient's contractors or subcontractors is limited to the maximum daily rate for a Level IV of the Executive Schedule, available at:

<https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/>

This limit applies to consultation services of designated individuals with specialized skills who are paid at a daily or hourly rate. This rate does not include transportation and subsistence costs for travel performed (the recipient will pay these in accordance with their normal travel reimbursement practices). The annual salary is divided by 2087 hours to determine the maximum hourly rate, which is then multiplied by 8 to determine the maximum daily rate.

Programmatic Conditions

Programmatic Terms & Conditions can be found as an attachment to the Award Document.

Cover Memo: NWSA Shore Power Program

Background

Use of shore power is a growing trend in the Pacific Rim. Policy has been enacted in California that requires 80% of qualifying container ship fleets (i.e. fleets that visit California ports greater than 25 times in a calendar year) to use shore power. Port of Vancouver B.C. has installed shore power at two of its container terminals and infrastructure and incentive programs have been put in place in many ports in China. About 51% of container vessels currently calling at NWSA's major international container terminals are shore power capable.

There may also be a competitive advantage to be gained by the NWSA and its customers during implementation of the IMO's low sulfur fuel regulations to be enacted in 2020. There is significant uncertainty surrounding distillate fuel prices, which is likely to affect the price of fuel burned by vessels when they are in Port. There is also growing momentum to regulate exhaust scrubbers that would allow compliance with the regulation without using cleaner fuels. Providing cheap energy and cost certainty through shore power could lower operational costs for vessels if fuel prices rise and scrubbers are not allowed or not widely implemented.

The NWSA has committed to reducing its scope 3 GHG Emissions by 50% by 2030 and by 80% by 2050 through the GHG Resolution enacted by the elected Commission in 2017. In addition, the Northwest Ports Clean Air Strategy will be updated by the end of 2019, setting new air pollutant and GHG emission reduction goals and programmatic direction for the NWSA, Port of Seattle, Port of Tacoma, and Port of Vancouver B.C. Shore power is an effective way to reduce emissions from ocean-going vessels, a sector that has been very difficult for ports to influence.

NWSA Shore Power Program



1. DEFINITIONS

Terms & Acronyms

Shore Power – Provision of electricity to a vessel at berth, allowing it to turn off its auxiliary engines.

Terminal Operator – Port tenant or other entity who hires labor to perform vessel docking and cargo handling activities.

Vessel Operator – Captain and/or crew on board each vessel

Shore power capable – Ships that have infrastructure and equipment on board that allows them to use auxiliary power from a shore side system.

Shore power ready – terminals that have conduit and vaults installed for shore power, but would need wiring, vessel connection boxes, and other infrastructure to be installed before being capable of providing electricity to ships

Major international container terminals - Terminal 5, Terminal 18, Terminal 30, Husky Terminal, Pierce County Terminal, and Washington United Terminal. This definition may change as facilities and lines of business shift.

NWSA – Northwest Seaport Alliance: Joint Marine Cargo Operating Partnership between Port of Seattle and Port of Tacoma

POT – Port of Tacoma

GHG – Greenhouse Gas

Homeport - Two Ports forming the NWSA, Port of Seattle and Port of Tacoma

Air Quality Team – Group of NWSA employees within the Environmental Department that manage air quality related projects

2. PURPOSE

Background

Through the Northwest Ports Clean Air Strategy and the NWSA and homeport GHG Resolutions, the NWSA has made substantial commitments to reduce air pollutant and GHG emissions. Shore power is a technology that has been robustly demonstrated, reduces emissions substantially, and is a key component of the NWSA meeting the commitments made under these policies.

Shore power is preferable to other methods of emission reductions, i.e. on-board scrubbers or external exhaust capture and treatment systems, because emissions from the auxiliary power generation on the ship are zero, including GHG emissions.

Goals

Emission Reductions: Reduce air quality impacts and Greenhouse gas emissions consistent with NWSA's environmental stewardship commitments to responsible, sustainable growth that protects public health and the environment as well as the Northwest Ports Clean Air Strategy and the NWSA GHG Resolution.

Efficiency: Reduce fuel use and operating costs for NWSA's commercial partners. Using Washington's green and inexpensive energy, it may cost less for vessels to use shore power than burn onboard fuel.

Consistency with Other Major West Coast Ports: Ensure that NWSA offers a modern suite of facilities for its customers, consistent with other regional competitors. Shore power is mandatory for container vessels in California and available on a voluntary basis at the Port of Vancouver B.C and the Port of Prince Rupert.

3. SCOPE

Audience This program applies to the NWSA, terminal operators and vessel operators who manage vessel docking and operation while at berth at NWSA’s major international container terminals.

Activities The Shore Power Program includes the installation of infrastructure and equipment at NWSA’s major container terminals to provide shore power to ships, collaboration with utilities to develop rates and billing structures, and implementation of shore power at the terminals.

4. PREREQUISITES/RESOURCES/FORMS/LINKS

- Required Processes and procedures**
- Vessel Commissioning Procedure [*to be developed with first installation*]
 - Shore Power Vessel Berthing Best Management Practices [*to be developed with first installation*]
 - Shore Power Ship to Shore Connection Procedure [*to be developed with first installation*]
-

5. RESPONSIBILITIES

Responsible Parties **Terminal operators** will be responsible for executing the ship to shore electrical connections for ships that choose to use shore power, billing vessels for electricity used while at berth, and reporting the number of hours that each vessel call uses shore power.

Vessel operators will likely be responsible for paying commissioning costs and following best management practices to ensure that the vessel is positioned properly to use shore power.

The NWSA will be responsible for coordinating the funding and construction of shore power infrastructure and working with the utilities to develop electricity rate structures for shore power.

6. PROCEDURE

Step by Step Actions

Planning

The NWSA's Air Quality Team will work with the engineering team of the home ports to assess the upgrades necessary for shore power at each major international container terminals, and the associated costs. The Air Quality Team will assess the vessel fleet to determine how many shore power capable vessel calls occur at each terminal and quantify the potential emission benefits possible if vessels were to use shore power. Shore power installations will be prioritized based on the business priorities of the port, emission reductions, cost, and operational considerations. The Air Quality Team will facilitate continuous update of these priorities over time in the form of recommendations to executive and elected leadership.

Coordinate with Utilities

NWSA will coordinate with utilities to set up rate structures for electricity that will provide cost savings for vessels when compared with burning fuel onboard for auxiliary power. Lower energy costs can help incentivize use. In addition, the NWSA will facilitate billing procedures between the utility, terminal operator, and ocean carriers.

Design

Port development, redevelopment, and/or property acquisitions may present the opportunity to add to the Port's electrical infrastructure and increase the Port's shore power capability. As terminals are redeveloped, i.e. significant repair or replacement of wharfs or backlands between the existing electrical switch gear and the vessel berth, the designs will include infrastructure required to make terminals "shore power ready" at a minimum and will consider installation of all shore power infrastructure. Making a terminal shore power ready means installing conduit, vaults, and transformer pads to support shore power equipment. Installing these elements while the terminal is already under construction will minimize costs of retrofitting these elements. Exceptions may be granted if installation of these elements is impracticable or if the use of the terminal is expected to change within the next 10 years.

Construct Infrastructure

NWSA coordinates infrastructure investments at its major container terminals that allow ships to use shore power. Grant funding is pursued to help pay for these investments. Terminals are prioritized for shore power installations based on the port's business strategy, expected shore power capable vessel traffic, willingness of

terminal operators to implement the program, and cost to install infrastructure. Terminals that have been made shore power ready in previous redevelopment projects or are planned for redevelopment may be the most cost-effective locations for shore power installations and should be prioritized accordingly. Shore power installations will meet ISO standard 8005-1:2012 to ensure compatibility with the international vessel fleet.

Operations

As a landlord port, the NWSA has many stevedoring tenants who will be responsible for implementing shore power. Shore power requires additional labor, vessel commissioning, and administration that all add cost and complexity for the stevedore. In order to apply a common policy for all terminals and avoid putting any stevedore at a competitive disadvantage, the Port's shore power policy allows for voluntary, but encouraged and supported, adoption until all terminals have the capability to supply shore power.

The program will be implemented in two phases.

Phase 1: Voluntary implementation

The first phase of the shore power program aims to facilitate the installation of shore power at NWSA's major container terminals and develop the knowledge and expertise for the terminal operators and NWSA to implement shore power progressively more effectively, efficiently, and comprehensively. Because using shore power adds operational and administrative complexity, implementation will be voluntary initially, to avoid putting any terminal operator at a competitive disadvantage. It is expected that voluntary implementation will end when all major container terminals have been outfitted with shore side infrastructure.

Phase 2: Mandatory Implementation

After all major international container terminals are equipped with shore power, NWSA will begin phasing in requirements for shore power capable vessels not deemed exempt (exemptions described below) to connect.

Implementation: Phase 1

At terminals equipped to provide shore power, terminal operators will make shore power available to vessels. Initially shore power use is voluntary but encouraged and supported by NWSA. Once all terminals are equipped with shore power capability, shore power capable ships will be required to utilize shore power (phase 2). For each vessel call, the Terminal Operator will:

- A. Coordinate with incoming vessels to determine if shore power is desired.
- B. Contact the utility to schedule the power use, communicating estimated time of arrival and departure, if shore power is desired.
- C. Follow best management practices to ensure the vessel is positioned properly in relation to the shore power connection.
- D. Contact NWSA to commission the vessel if it is a vessel’s first time using shore power at a terminal, in accordance with the Shore Power Commissioning Procedure.
- E. Coordinate all labor required to connect and disconnect the vessel to shore side power.
- F. Bill the vessel for the power used, if applicable.
- G. Report to NWSA the number of hours connected to shore power for each vessel call on a monthly basis.

For each ship call, the NWSA will:

- A. Facilitate vessel commissioning
- B. Facilitate information sharing to develop and continually update vessel berthing best management practices, ship to shore connection procedures, and vessel commissioning procedures.

Implementation: Phase 2

Once all major container terminals have shore power capability and/or as dictated by a lease, NWSA will begin phasing in requirements for vessels with shore power capability to utilize shore power infrastructure. After the 5th year of phase 2 all nonexempt vessel calls will be required to use shore power. The following table indicates the fraction of non-exempt shore power capable calls that must use shore power.

Program Year	Percentage of Capable Vessels that Must Use Shore Power
1-3	50%
4-5	70%
6+	100%

See above for roles and responsibilities of the Terminal Operator and NWSA.

Exemptions from Usage Requirements: If a vessel does not participate in regular service to NWSA terminals, the commissioning effort and cost may make shore power use impractical. In cases where an individual shore power capable vessel is expected to call less than once in a calendar year and hasn't been previously commissioned and/or is part of a fleet whose operator calls NWSA terminals in total less than 20 times in a calendar year, the vessel will be exempt from the usage requirement. NWSA reserves the right to grant additional exceptions for extenuating circumstances.

Evolution

The NWSA will continuously evaluate this program to ensure substantial progress towards environmental goals, compliance with regulations, best utilization of technology, and alignment with business priorities. NWSA reserves the right to modify this program as needed to meet its environmental and business goals.

7. REFERENCES

Policies, RCWs & Standards

- Northwest Ports Clean Air Strategy
- NWSA GHG resolution
- ISO/IEC/IEEE 80005-1:2012(E)



Shore Power Program Overview and Authorization to Accept DERA Grant for Husky Shore Power

Presenters:

Tom Bellerud, Director, Business Development

Graham VanderSchelden, Environmental Project Manager II

Shore Power: Commercial Perspective

Husky, ONE, and others support voluntary shore power use as a low impact way to reduce environmental impacts

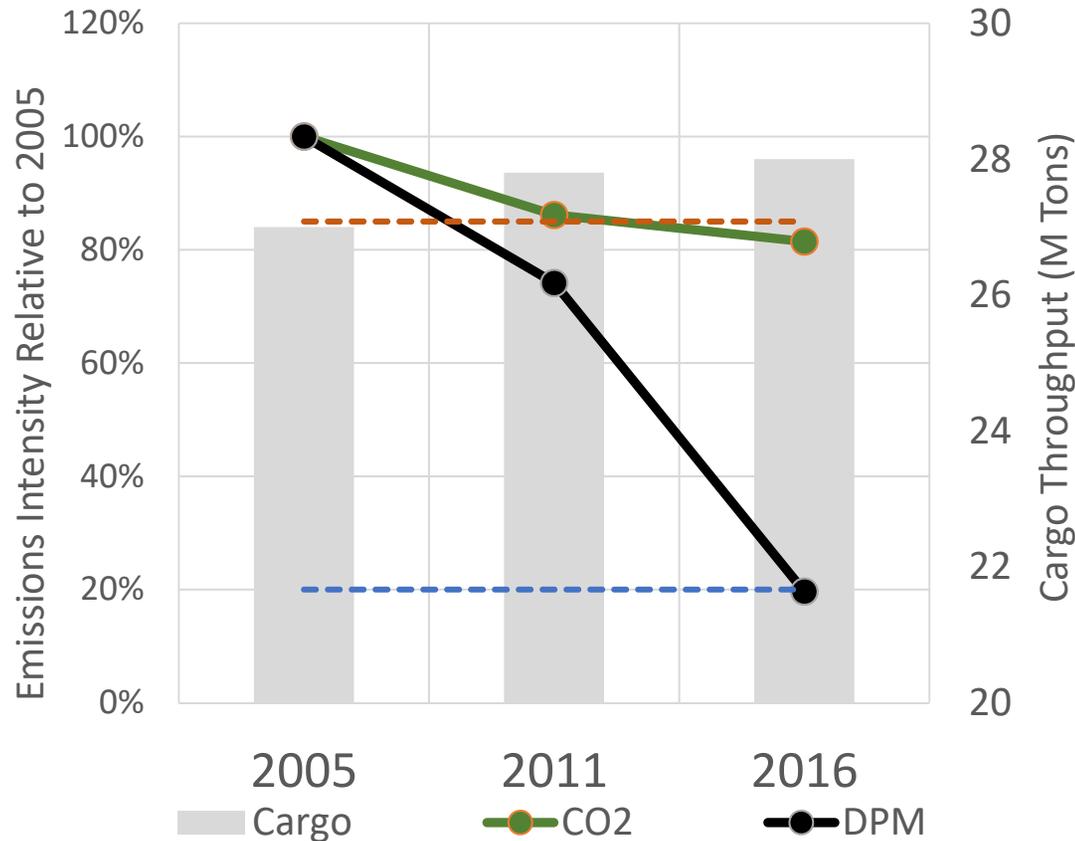
- Interest is growing in light of the 2020 fuel regulations

Green initiatives are beginning to carry weight with cargo owners on carrier selection



Air Quality and Climate Emissions

Progress Towards 2020 NWPCAS Targets



2017 GHG Resolution

By 2030:

- Reduce emissions by 50% relative to 2005 (scope 1, 2, and 3)

By 2050:

- Reduce scope 3 emissions by 80% relative to 2005
- Scope 1 and 2 carbon neutral

Northwest Ports Clean Air Strategy

In the existing NWPCAS, ports are to track and seek to increase shore power use.

New draft vision: “phase out emissions as early as possible this century.”

What are ports’ influence “levers” to drive emission reductions?

- Landlord port -> infrastructure provider
- Business agreements (leases)
- Incentives, business relationships



**NORTHWEST PORTS
CLEAN AIR STRATEGY**



**THE NORTHWEST
SEAPORT ALLIANCE**

Energy Planning

Understand infrastructure required to substitute clean energy for fossil fuels at facilities

- Provides a strong basis for external funding and collaboration

Simultaneous planning efforts in North and South Harbors

- Seattle Waterfront Clean Energy Strategic Plan
- NWSA South Harbor Electrification Roadmap

Planning will:

- Work closely with utilities
- Estimate and project energy usage
- Identify on terminal infrastructure needs
- Understand existing grid capabilities
- Estimate costs
- Estimate timing
- Identify opportunities for external funding and cost sharing



Shore Power

The most significant measure we can take today to reduce air pollution and GHG emissions

- ZE trucks and CHE not ready yet or very high cost
- Significant Potential for Emission Reductions



Shore Power Capabilities of the 2018 Vessel Fleet Calling					Potential Emission Reductions from 2018 Fleet (tons/yr)			
	Pct. Calls SP Capable	Total Calls/ Month	SP Capable Calls/Month	Avg SP Capable Call Length (hours)	NO _x	VOC	PM _{2.5}	GHG
T-18	39%	24.6	9.58	40.9	75	2.2	1.3	3,778
Int.T-46+T30*	63%	12.6	7.83	40.6	61	1.8	1.0	3,065
<i>NH Total</i>	<i>47%</i>	<i>37.2</i>	<i>17.1</i>	<i>40.8</i>	<i>136</i>	<i>4.0</i>	<i>2.3</i>	<i>6,843</i>
Husky	54%	8.3	4.50	72.9	63	1.8	1.1	3,163
PCT	69%	8.6	5.92	33.4	38	1.1	0.63	1,906
WUT	47%	10.2	4.92	39.6	37	1.1	0.62	1,878
<i>SH Total</i>	<i>57%</i>	<i>27.1</i>	<i>15.3</i>	<i>46.9</i>	<i>138</i>	<i>4</i>	<i>2.35</i>	<i>6,947</i>
Gateway Total	51%	64.3	32.7	43.7	274	8.0	4.65	13,790
<i>T-5 EIS**</i>	<i>30%</i>	<i>8.7</i>	<i>2.6</i>	<i>53</i>	<i>33</i>	<i>1.0</i>	<i>0.55</i>	<i>1,666</i>

* International vessels calling T-30 and T-46 in 2018

** Assumptions from the T5 EIS, not included in the 2018 gateway total as T5 was not operational

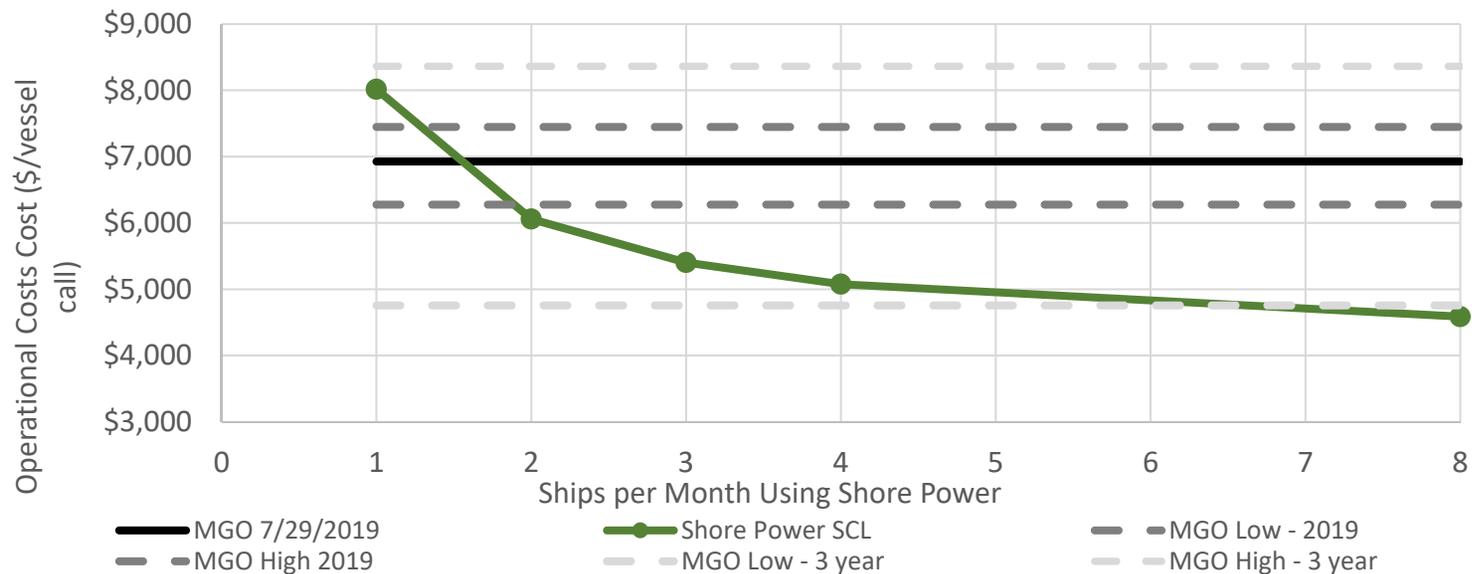
Shore Power Operational Costs/Benefits

South Harbor: Partnership with Tacoma Power to develop special rate

- Husky (Call length: 73 hours) – Fuel = \$12,344 [\$8,476 - \$14,904]
Shore Power = \$9,870
- WUT (Call length: 40 hours) – Fuel = \$6,705 [\$4,604 - \$8,096]
Shore Power = \$5,636

North Harbor:

- T-18 (includes demand charges)



Draft Shore Power Gateway-Wide Plan

	T-5	Husky	T-18	WUT	Evergreen	South Harbor Substation**	Total Cost	Cost with 50% Grant Funding
2020	Construction	Design					\$3.4 M*	\$1.0 M
		Construction						
2021							\$3.6 M*	\$1.1 M
2022		Operational					\$3.1 M*	\$0.9 M
2023	Operational		Design				\$2.4 M	\$1.2 M
			Construction					
2024							\$2.5 M	\$1.3 M
2025			Operational	Design			\$2.7 M	\$1.3 M
2026				Construction			\$2.9 M	\$1.5 M
2027						Design/ Construction	\$7.6 M**	\$3.8 M**
2028				Operational	Design		\$6.8 M**	\$3.4 M**
					Construction			
2029						Operational	\$2.2 M	\$1.1 M
2030						Operational	\$1.2 M	\$0.6 M
2031+								
Total:							\$38.6 M	\$17.1 M

* T-5 is included in the total cost through 2022, but is fully grant funded

** Assumes \$7.5 million in 2020 dollars needed for a new substation. Energy planning will inform this potential investment.

Sources of Funding

DERA Grant [This Request]

- \$1 million for the Husky Project (2019 funding year)
- Annual funding opportunities

TransAlta Energy Technology Grant

- Preliminary offer of \$1 million (subject to commission approval)

Department of Ecology Existing Clean Truck Fund Grant

- \$1.1 million remaining in grant from Ecology for Clean Truck Fund

VW Settlement Funding

- Up to ~ \$50 million for marine vessels to be distributed by 2028
- NWSA responded to an RFI from Ecology in September



DERA Grant Overview

Federal Grant Program

Maximum grant amount in region 10 = \$1 million in funding year 2019

Shore power projects can be funded at up to 25% (i.e. 75% local match)

- Other non Federal grants can be used as local match

NWSA was awarded a max., \$1 million DERA grant in 2019 to support the installation of shore power at Husky Terminal



Husky Shore Power – Project Summary

	T3	T4	Total
Ship Connection Boxes	\$101,750	\$101,750	\$203,500
6.6 kV transformers	\$85,000	\$85,000	\$170,000
Switchgear, circuit breakers, and wiring	\$165,000	\$165,000	\$330,000
SS Switch Houses	\$300,000	\$300,000	\$600,000
Wharf Modifications	\$35,000	\$0	\$35,000
Conduit and trenching work	\$105,000	\$105,000	\$210,000
Inspection, Testing, Permitting	\$14,000	\$14,000	\$28,000
TPU Metering Upgrades	\$50,000	\$50,000	\$100,000
Materials/Labor Sub-Total	\$855,750	\$820,750	\$1,676,500
Contractor OH and P (25%)	\$213,938	\$205,188	\$419,126
Sub-Total	\$1,069,688	\$1,025,938	\$2,095,626
Construction Contingency (75%)	\$802,266	\$769,453	\$1,571,719
Construction Sub-Total	\$1,871,954	\$1,795,391	\$3,667,345
General Conditions (7.25%)	\$135,717	\$130,166	\$265,883
Sales Tax (10.2%)	\$190,939	\$183,130	\$374,069
Construction Total	\$2,198,610	\$2,108,687	\$4,307,297
Design (10%)	\$219,861	\$210,869	\$430,730
Engineering Staff (design [5%] and construction [10%], 15%)	\$329,791	\$316,303	\$646,094
Air Quality Staff	-	-	\$47,000
Total Fully Burdened	\$2,748,262	\$2,635,859	\$5,431,121



Project Schedule

Date	Task/Milestone
January 2020	Begin procurement of design contractor
March 2020	Begin design
July 2020	Complete design
August 2020	Begin procurement of construction contractor
October 2020	Begin construction of Husky Berth 1.
September 2021	Complete construction of Husky Berth 1, begin implementing shore power at Husky Berth 1.
October 2021	Begin construction of Husky Berth 2.
September 2022	Complete construction of Husky Berth 2, begin implementation of shore power at Berths 1 and 2.



Action Requested

Husky Shore Power – DERA Grant Acceptance

As referenced in NWSA Resolution No. 2018-01, Exhibit A, Delegation of Authority Master Policy, Paragraph 9.d.iii., accepting grant funding requires authorization from Managing Members when matching funds are greater than \$300,000.

Request authorization to accept grant funds in the amount of \$1,000,000 from the US Environmental Protection Agency (EPA) Diesel Emission Reduction Act (DERA) program, which can fund up to 25% of a shore power project, to support the installation of shore power at Husky Terminal, project number 2020-19.

