



# Volkswagen Trust

## Be Part of the Solution

### **Fiscal Year 2020 Implementation Guidelines: Locomotives and Marine**

Switch locomotive, tugboat, and ferry engine replacements (repowers) and switch locomotive vehicle replacements (replacements), and marine shore power projects will help achieve several goals of the Missouri Beneficiary Mitigation Plan (BMP). These projects will provide significant nitrogen oxide (NO<sub>x</sub>) emission reductions and are some of the most cost effective emissions reduction solutions of all projects under the Volkswagen (VW) Trust. Owners of eligible vehicles may submit an application to request funds for repower and replacement projects. The air program will identify projects with the lowest price per pound of NO<sub>x</sub> reduction and award funds to those projects. The purpose of these guidelines is to provide information for applicants in developing a competitive project.

#### **Eligible Projects:**

In order to be eligible for this award category, each type of project must have a price per pound lower than \$5 per pound and meet all of the following criteria:

- Switch Locomotive Repower or Replacement:
  - Locomotive is a Pre-Tier 4 locomotive
  - Locomotive is used to move rail cars around a rail yard (Line-haul locomotives used for hauling freight will not be considered)
  - Locomotive operates minimum of 1,000 hours per year
  - Locomotive operates minimum of 50% of total time within Missouri
- Tugboat and Ferry Repowers:
  - Marine vehicle is unregulated, Tier 1, or Tier 2 marine engine
  - Marine vehicle is used for pushing or pulling other marine vessels (tugboats); or for the transport of people, cargo, and vehicles (ferries)
  - Marine vehicle's main port is within Missouri and minimum of 25% of operation time is within or along the border of Missouri; **or** 50% of operation time is within or along the border of Missouri
  - Marine vessel projects may only request an engine repower (Vessel replacement projects will not be considered)

- Marine Shore Power Projects:
  - Project is a system which allows a vessel's main and auxiliary engines to remain off while docked
  - Project is limited to power cables, cable management systems, shore power couplers, distribution control systems, and power distribution
  - Project must be installed within or along the border of Missouri

Projects are ineligible for funding if:

- Project receives funding from other states' shares of the VW Trust, a state or federal Diesel Emissions Reduction Act (DERA) grant, or Congestion Mitigation and Air Quality (CMAQ) grant, without prior approval from the air program
- Project application is missing any information required by the Diesel Emissions Quantifier tool

The new replacement vehicle or engine may have any the following fuel types:

- Diesel
- Biodiesel
- Compressed Natural Gas (CNG)
- Liquid Natural Gas (LNG)
- Propane
- Diesel-Electric Hybrid
- All Electric (Powered by Battery, Fuel Cell, or the grid)
- Other alternative fuels may also be considered

Additionally, the new engine must meet the following requirements based on the type of project:

- New locomotive engines must be certified for the applicable EPA emissions standards as published in the Code of Federal Regulations for the engine model year in which the project occurs<sup>1</sup>
- Eligible Tugboats, Tow Boats, and Ferry Engines may be repowered with any new Tier 3, Tier 4, or electric engine; or may be upgraded with an EPA certified remanufacture<sup>2</sup>
- Marine Shore Power systems must comply with international shore power design standards and should be supplied with power from the local utility grid

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<sup>1</sup>40 CFR Part 1033.101 Table 2 defines emissions standards of switch locomotive engines.

<sup>2</sup> Further definitions of acceptable marine engine upgrades are found in the State Beneficiary Trust Agreement Appendix D-2

For the purposes of this award category, the air program will consider the "main port" to be the port at which the vessel docked most frequently in the previous year. Additionally, for the purposes of this award category, government means the State of Missouri, a local government agency within the State of Missouri, or a tribal government or native village.

Applicants may request funding for several projects, and may request up to \$1,000,000 in total across their applied-for projects. Individual projects may request at maximum a certain percentage of the total cost of the project as detailed below. For all-electric projects, the costs may include charging infrastructure associated with the project.

**Table: Maximum Funding Percentages**

	Government-Owned	Privately-Owned
Switch Locomotives	75% of the cost to repower or replace the locomotive	40% of the cost to repower the locomotive
		25% of the cost to replace the locomotive
		50% of the cost to repower or replace the locomotive with an all-electric engine
Tugboats and Ferries	75% of the cost to repower the marine vessel	40% of the cost to repower the marine vessel
		50% of the cost to repower the marine vessel with an all-electric engine
Marine Shore Power	75% of the cost to install the marine shore power system	25% of the cost to install the marine shore power system

**Ranking Process:**

This award category is competitive and projects will be ranked by their price per pound, as determined by the air program, from the lowest price per pound to the highest. Projects will be considered individually, and those with the lowest price per pound will be awarded funds. Price per pound is measured in VW dollars per pound lifetime NO<sub>x</sub> emissions reduction (\$/lb), and is calculated as follows:

$$Price\ Per\ Pound = \frac{Amount\ of\ Funding\ Requested}{Lifetime\ pounds\ of\ NO_x\ Reduced\ by\ Project}$$

Price per pound is the amount of money the VW Trust pays for each pound of NO<sub>x</sub> reduced by a project. In order to maximize the efficiency of the program, the air program is seeking projects with the lowest cost to reduce NO<sub>x</sub> emissions. Only projects with a price per pound below \$5 per pound will be considered, and these projects will be ranked by their price per pound to determine which are funded. The air program set \$5 per pound as the threshold based on stakeholder feedback and interest in achieving NO<sub>x</sub> reduction goals as set out in the BMP. This threshold achieves the specific goals for this award category with the allocated funding from Missouri's share of the VW Trust Fund.

In order to compare projects in a uniform way, the air program has set the useful lifetime of the projects eligible under this award category based on stakeholder feedback, as detailed below:

- New shore power systems have a total useful life of 30 years
- All existing and new locomotives have a total useful life of 60 years
- All existing and new marine vessels have a total useful life of 40 years
- All projects still in use for the year prior to application are assumed to have at minimum 5 years of useful life remaining

Based on stakeholder input, the air program will calculate the total lifetime NO<sub>x</sub> emission reductions for each individual locomotive or marine project on every application received using EPA's Diesel Emissions Quantifier (DEQ). Applicants are highly encouraged to use this tool as well to quantify their own projects before submission and to ensure completeness and competitiveness. Applicants can find EPA's DEQ at <https://cfpub.epa.gov/quantifier/>.

Quantification Method for Shore power Systems:

- For shore power systems, applicants will need to provide information regarding the projected amount of system use and the average vessel characteristics of vessels that will use the system. The air program will use this information and calculate the lifetime emission reductions the shore power system will achieve over its useful life using EPA's Diesel Emissions Quantifier tool.

Quantification Method for locomotive repower/replacements and marine repowers:

- The air program will first calculate the lifetime emission reductions of the project assuming a diesel-for-diesel replacement
- For alternate-fuel and electric replacement or repower projects, the emissions reduction of the new engine will then be compared to the calculated diesel replacement

**Area-specific Ranking of Projects:**

As outlined in the BMP, the air program plans to target specific areas of the state that bear a disproportionate amount of NO<sub>x</sub>-related environmental burden. The air program will modify a project's calculated price per pound based on a project's area of operation, lowering the price per pound of projects in the targeted areas and giving those projects a competitive advantage. For marine vehicles, operation along the border of, or at a port located in, one of the listed counties may be accounted for as being time spent within that county.

- For every 10% operating time spent in the boundaries of the City of St. Louis or St. Louis County, the program will reduce a project's price per pound by \$0.10
- For every 10% operating time spent in the boundaries of Jackson or St. Charles counties, the program will reduce a project's price per pound by \$0.08
- For every 10% operating time spent in the boundaries of Jefferson or Franklin counties, the program will reduce a project's price per pound by \$0.06
- For every 10% operating time spent in the boundaries of Clay or Platte counties, the program will reduce a project's price per pound by \$0.04
- For every 10% operating time spent in the boundaries of Boone or Greene counties, the program will reduce a project's price per pound by \$0.02

Additionally, every 10% operating time spent outside the State of Missouri will increase a project's price per pound by \$0.10 in order to give advantage to projects which spend the most time in the state.

**Award Category Funding Details:**

The BMP has dedicated a maximum of \$2 million to this award category, and the air program will open application periods for this category as long as funds and public interest remain. All application periods for this award category will be identical in terms of eligibility and cost share. In the event that funding remains after all eligible projects have been funded, funds from this category will be moved to another category of Missouri's VW Trust NO<sub>x</sub> emissions reduction program as outlined in the BMP.