



Department of Environmental Conservation

NEW YORK STATE

# Clean Transportation NY

Using the Volkswagen Settlement to Drive Clean Transportation in New York

BENEFICIARY MITIGATION PLAN | Revised August 1, 2019





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## A Message from the Commissioner

Clean air is essential to our health, productivity and economic prosperity. New York has made it a priority to reduce harmful air pollution, especially in light of global climate change.

Through the strong efforts of Governor Andrew Cuomo and our dedicated staff, New York State has made great progress in cutting air pollution, and our air has become much cleaner. We are a national and global leader in reducing emissions that impact people and our environment. Much of this progress comes from strict emissions standards placed on industry, including car makers, that have spurred innovation and the development and use of cleaner technologies.

Unfortunately, companies sometimes try to skirt these strong rules and regulations at the expense of public health and the environment. Volkswagen rigged equipment in specific models of diesel vehicles to make it appear those vehicles met emissions standards when, in fact, they far exceeded the limits set to protect air quality.

In response to this egregious act, New York joined the federal government in taking action against the company to mitigate the negative air impacts caused by their actions. Under the federal Volkswagen Settlement reached, New York received \$127.7 million which we will use to jumpstart transformation of our transportation system to clean energy by promoting greater use of electric vehicles (EVs) and other important steps to reduce emissions from the transportation sector and improve air quality. As outlined in the following plan, these investments, in total, will reduce NOx emissions – a component of smog – by an estimated 4,500 tons. In addition, carbon dioxide emissions associated with all-electric vehicle replacements will be reduced by an estimated 130,000 tons.

Governor Cuomo is leading the transition of our transportation system from petroleum to cleaner energy sources. Through his bold actions supporting the production of cleaner vehicles and building a statewide recharging infrastructure for EVs, the number of EVs sold in New York has increased 61 percent from 2016 to 2017, and is poised to keep growing.

DEC will continue to work with state, federal and local partners from Long Island to Buffalo to create a cleaner transportation system for all New Yorkers. We are grateful for the public feedback we received thus far, and look forward to more extensive public input on this important plan.

With this settlement funding, we will be poised to generate extensive environmental benefits from these investments in a clean transportation system that will lead to a healthier environment for all.

**Basil Seggos**  
**Commissioner, New York State Department of Environmental Conservation**

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I.

## Executive Summary

New York State’s Beneficiary Mitigation Plan (the “Plan”), describes the overall goals of improving air quality and accelerating the transition to zero emission transportation through funding made available under the Volkswagen (VW) Partial Consent Decrees. These air quality improvement goals include reducing nitrogen oxides (NOx), greenhouse gases, particulate matter, hydrocarbon, and mobile source air toxics emissions throughout the state. The projects described in this Plan will result in significant NOx reductions while accelerating the transformation to a zero tailpipe emission transportation system. Projects will be located throughout New York State, with particular focus on those communities and neighborhoods that are subjected to a disproportionate amount of air pollution from diesel-powered vehicles and equipment.

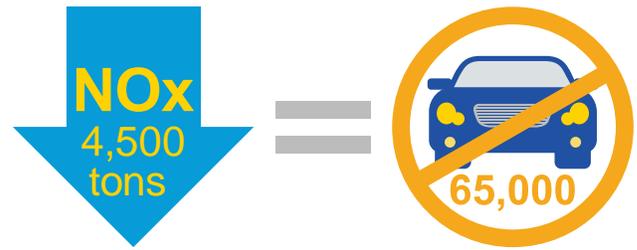
All air quality improvement and emission reduction projects identified by this Plan are listed as eligible mitigation actions by the VW Partial Consent Decrees and the Environmental Mitigation Trust Agreement for State Beneficiaries (Trust Agreement). The Trust Agreement between VW and the Environmental Mitigation Trustee, Wilmington Trust, includes requirements previously detailed in the partial consent decrees, including project eligibility. The proposed mitigation actions generally include replacing or repowering older, dirtier diesel-powered vehicles with new, cleaner vehicles including a strong preference for all-electric vehicles, where feasible. This Plan also provides funding for electric vehicle supply equipment (EVSE) projects to increase the number of charging locations for all-electric light-duty vehicles operating in New York State. The table below shows the estimated funding levels for each eligible mitigation action category.

Estimated New York State Funding by VW Settlement Mitigation Action Item			
Eligible Mitigation Action Item	New York State Estimated Funding	Funding (%)	Anticipated # vehicles total/electric
Item 1: Class 8 Local Freight & Port Drayage Trucks	Up to \$11,500,000	Up to 9%	145/60
Item 2: Class 4-8 School Bus, Shuttle Bus, or Transit Bus	At least \$52,400,000	At least 40.5%	Up to 500/100+
Item 3: Freight Switchers	Up to \$8,000,000	Up to 6%	10/0
Item 4: Ferries/Tugs	Up to \$3,500,000	Up to 2.5%	12/0
Item 5: Ocean Going Vessels (OGV) Shorepower	\$0	0%	N/A
Item 6: Class 4-7 Local Freight Trucks	\$8,500,000	7%	265/65
Item 7: Airport Ground Support Equipment (Charging Equipment)	\$3,200,000	2.5%	77
Item 8: Forklifts and Port Handling Equipment	Up to \$1,000,000	Up to 1%	4/4
Item 9: Light Duty Zero Emission Vehicle Supply Equipment	\$19,200,000	15%	Tbd
Item 10: Federal Diesel Emission Reduction Act Option	Up to \$10,000,000	Up to 8%	300/0
Administrative Costs (excluding Item 9)	Up to \$10,900,000	Up to 8.5%	N/A
<b>Mitigation Trust Funding Totals</b>	<b>\$127,701,807</b>	<b>100%</b>	<b>Up to 1,313/229+</b>

New York obtained substantial public input to inform the development of the Plan. The New York State Department of Environmental Conservation (DEC), as New York State’s lead agency, received over 190 comments through its public website. In addition, New York held six public meetings, attended by over 150 people, and another 60 meetings to obtain input from various stakeholder groups.

The projects identified in this Plan will be implemented by various Project Sponsors, including state authorities, transit authorities, and other public agencies. To the extent practical, New York will leverage its VW funds through existing programs developed by these Project Sponsors. Specific details regarding each project identified in this Plan will follow as they are implemented by the Project Sponsors.

The implementation of this Plan will augment New York's efforts to improve air quality throughout the state while moving toward a low carbon and increasingly electrified transportation future. DEC estimates that implementation of the projects identified in this Plan will reduce lifetime NOx emissions by at least 4,500 tons, equivalent to removing 65,000 automobiles from the road each year over an estimated 10-year useful lifetime<sup>1</sup>. The replacement of buses, trucks, and other equipment with electrified vehicles will provide at least 130,000 tons in lifetime carbon dioxide (CO<sub>2</sub>) reductions.



<sup>1</sup> Based on the 2011 MOVES inventory estimates for annual NOx emissions per vehicle (passenger cars and trucks).

## II.

# Introduction

As directed by Governor Andrew M. Cuomo, the New York State Department of Environmental Conservation (DEC) has prepared this New York State Beneficiary Mitigation Plan (the “Plan”), which includes actions to offset the excess emissions resulting from Volkswagen’s (VW’s) violation of NOx emission standards and to stimulate the transformation to a lower-carbon transportation system. DEC worked with other state agencies – NYS Department of Transportation (DOT), NYS Energy Research and Energy Development Authority (NYSERDA), and New York Power Authority (NYPA) – to design the Plan, which will yield substantial NOx emission reductions, resulting in healthier ozone levels, particularly in the New York City metropolitan area. The Plan will provide substantial public health benefits by reducing emissions from hundreds of trucks, buses and other equipment that operate in proximity to low- and moderate-income communities that bear much of the burden of air pollution.

In addition, the Plan is intended to support the increased electrification of the State’s transportation system, reducing the greenhouse gas (GHG) emissions that contribute to climate change that threatens New York’s people and environment. Governor Cuomo has established nation-leading GHG emission reduction goals of 40% from 1990 levels by 2030 and 80% by 2050. Meeting these aggressive goals requires a sustained transformation of New York’s economy from fossil fuels to an economy powered by carbon emission-free renewable energy sources. Under Governor Cuomo’s direction, New York has begun the transformation of our existing transportation system by supporting electric transportation infrastructure with the Charge NY<sup>2</sup> program, as well as supporting consumer adoption of electric vehicles with the Drive Clean Rebate<sup>3</sup> and municipal rebate programs<sup>4</sup>. Implementation of this Plan will continue this transformation by promoting the replacement of diesel trucks and buses with electric-powered trucks and buses.

Although the specific projects to be funded will be identified throughout the implementation process to follow, DEC estimates that implementation will yield at least 4,500 tons of NOx reductions, the equivalent of removing at least 65,000 typical light-duty vehicles from the road each year and more than the total emissions attributable to VW’s violations. In addition, DEC expects that the Plan will produce upwards of 130,000 tons of lifetime carbon dioxide emission reductions attributed to the Plan’s electrification of buses, trucks and other equipment, and it will further position the State as a leader in moving towards a low-carbon transportation system that will provide lasting environmental and public health benefits.

The Plan complies with all requirements established in the federal consent decrees for the development of Beneficiary Mitigation Plans. New York aims to capture even greater environmental benefits by leveraging the funding provided as much as possible with required match payments and the potential for both public and private financing. DEC will work with Project Sponsors to identify and utilize financing and other complementary strategies to maximize the environmental and public health benefits of the Mitigation Plan in a cost-effective manner.

*“Innovation is what drives New York and we are proud to incentivize the development of improved technologies that will create a cleaner, greener and more sustainable future for all.”*

**Governor Andrew M. Cuomo,**  
November 30, 2017



<sup>2</sup> <https://www.nyserda.ny.gov/All-Programs/Programs/ChargeNY>

<sup>3</sup> <https://www.nyserda.ny.gov/All-Programs/Programs/Drive-Clean-Rebate>

<sup>4</sup> <https://www.dec.ny.gov/energy/109181.html>

### III.

## VW Settlement Background

This Plan summarizes how New York intends to utilize its allocation provided by the *Environmental Mitigation Trust Agreement for State Beneficiaries*. On October 25, 2016, the U.S. District Court in Northern California (the “Court”) approved a Partial Consent Decree<sup>5</sup> among the United States, State of California, and Volkswagen Corporation and its subsidiaries to address the installation and use of emission control defeat device software, or defeat devices, in approximately 500,000 Volkswagen and Audi branded vehicles (model years 2009 through 2015) equipped with 2.0-liter diesel engines. Independent testing found that the affected vehicles emitted excess NOx emissions during normal operation, at up to 40 times the certification standard. To offset the excess NOx emissions caused by the subject vehicles, the Partial Consent Decree (Appendix D) required VW to invest \$2.7 billion into a nationwide Environmental Mitigation Trust to fund emission reduction projects. The Court approved a second Partial Consent Decree<sup>6</sup> on May 17, 2017, regarding the installation and use of emission testing defeat devices in approximately 83,000 model year 2009 through 2016 Volkswagen, Audi, and Porsche vehicles equipped with 3.0-liter diesel engines.

The Partial Consent Decrees define the types of mitigation projects eligible for funding under the Environmental Mitigation Trust fund (Appendix D-2) and establish the processes for states to develop a Beneficiary Mitigation Plan and subsequent administration of mitigation funds. On October 2, 2017, the U.S. District Court in Northern California approved the *Environmental Mitigation Trust Agreement for State Beneficiaries* (Trust Agreement) between VW and the Environmental Mitigation Trustee, Wilmington Trust, N.A. The Trust Agreement included requirements previously detailed in the partial consent decrees, including project eligibility.

Under the Trust Agreement, New York is allocated a total of \$127,701,806.94 to invest in projects to mitigate the impacts of VW’s violations. Governor Cuomo filed the required *Certification for Beneficiary Status Under Environmental Trust Agreement* (Appendix D-3) with the Court on November 2, 2017. The Certification designates DEC as New York State’s Lead Agency. Wilmington Trust listed New York State as an approved beneficiary in its January 29, 2018, *Notice of Beneficiary Designation Under the Volkswagen Diesel Emissions Environmental Mitigation Trust for State Beneficiaries, Puerto Rico, and the District of Columbia*.<sup>7</sup>

This Plan also outlines the ongoing process for seeking and considering public comments as required by the Partial Consent Decrees and the Trust Agreement. DEC has maintained a webpage devoted to the VW Settlement at: <http://www.dec.ny.gov/chemical/109784.html>. DEC conducted six public meetings in July 2017, and has sought public comment and suggestions through the web mailbox: [VW.AppenD@dec.ny.gov](mailto:VW.AppenD@dec.ny.gov). As of the date of this document, diverse stakeholders, including members of the public, local governments, public transportation systems and businesses, submitted approximately 190 individual comments to the web mailbox (see Section XIV). New York’s Plan is informed by this robust public participation in the development of emission reduction strategies.

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<sup>5</sup> Volkswagen “Clean Diesel” Marketing, Sale Practices, and Product Liability Litigation, Partial Consent Decree, Case 3:15-MDL-02672-CRB Document 2103-1, filed 10/25/16

<sup>6</sup> Second Partial Consent Decree, Case 3:15-MDL-02672-CRB Document 2520-1, filed 12/20/16

<sup>7</sup> [http://www.dec.ny.gov/docs/air\\_pdf/vwbenenotice.pdf](http://www.dec.ny.gov/docs/air_pdf/vwbenenotice.pdf)

## IV.

# Mitigation Plan Requirements

Section 4.1 of the Trust Agreement requires each State Beneficiary to submit and make publicly available a Beneficiary Mitigation Plan that summarizes how that State Beneficiary will use the applicable mitigation funds allocated to it under the Trust. Such plans must address:

1. The Beneficiary's overall goal for use of the funds (Section V. of the Plan);
2. The categories of the Eligible Mitigation Actions that the Beneficiary anticipates will be appropriate to achieve the stated goals and the preliminary assessment of funds to be used for each type of Eligible Mitigation Action by percentage (Section X.);
3. A description of how the Beneficiary will consider potential beneficial impacts of the selected Eligible Mitigation Actions on the air quality in the areas that bear a disproportionate share of the air pollution burden (Sections V. and XI.); and
4. A general description of the expected ranges of the emission benefits the Beneficiary estimates would be realized by implementation of the Eligible Mitigation Actions identified in the Beneficiary Mitigation Plan (Section XII.).

The Partial Consent Decrees and Trust Agreement further elaborate that each Beneficiary's Mitigation Plan is intended to provide the public with insight into the Beneficiary's high-level vision for use of the mitigation funds and information regarding specific uses for which funding is expected. Beneficiary Mitigation Plans are not binding on any Beneficiary, nor do they create any rights for any person to claim an entitlement of any kind. Beneficiaries may adjust their goals and specific spending plans at their discretion.

This Plan describes New York State's overall goals, emission reduction project categories, beneficial impacts, and emissions benefits as required in the Partial Consent Decrees and Trust Agreement.



## V.

# Mitigation Plan Overall Goals

This Plan will benefit the public by improving the State's air quality, particularly in communities impacted by diesel vehicles, and accelerating the transition to clean, zero emission transportation technologies, which will provide lasting emission reduction benefits.

DEC considered all comments received from the public and developed the following objectives and funding priorities to effectively implement eligible projects:

- Achieve high levels of NO<sub>x</sub> reductions throughout New York State and reduce emissions of other pollutants, including GHGs, particulate matter, hydrocarbons, and mobile source air toxics;
- Accelerate the adoption of electrified mass transit and enhance the market competitiveness of electric transportation technologies by achieving increased economies of scale, expanded market awareness, improved supporting infrastructure, and better financing options;
- Maximize health benefits by significantly reducing diesel emissions in areas designated as being in nonattainment of the national ambient air quality standards (NAAQS) for ozone, while still providing for an equitable distribution of VW funds across New York State;
- Deploy projects in those communities and neighborhoods subjected to a disproportionate amount of air pollution from diesel-powered vehicles and equipment, including but not limited to areas near ports, railyards, bus terminals, distribution centers, and highways;
- Prioritize and accelerate the re-powering and replacement of older, dirtier diesel-powered vehicles and equipment with much cleaner all-electric or alternative fueled vehicles and equipment;
- Achieve desired environmental benefits as cost-effectively as possible by leveraging private and other financing; and
- Support the transition to electric passenger vehicles by funding the expansion of light-duty electric vehicle supply equipment infrastructure, including possible funding for hydrogen fueling stations for fuel cell electric vehicles (FCEVs).

With these goals in mind, DEC will work with Project Sponsors to ensure that many of the eligible NO<sub>x</sub> emission reduction projects will be completed within or near New York State Environmental Justice (EJ) areas.<sup>8</sup> Some mitigation actions, such as replacement of diesel trucks and school buses, may be targeted primarily to EJ areas. These areas represent minority and/or low income populations that are subject to potential environmental quality issues. EJ areas will be determined by the DEC Office of Environmental Justice and/or the federal EPA EJSCREEN tool.

DEC proposes that certain mitigation action categories, such as installation of electric vehicle infrastructure and school bus, transit bus, and freight switcher replacements, be completed statewide. Other projects, such as replacement of port drayage trucks and ferry/tug re-powers, will be targeted primarily within the downstate nine-county New York Metropolitan Area (NYMA) ozone nonattainment area, with a focus on benefitting EJ communities.

New York State will use the programs in this Plan to accelerate emerging technologies' entrance into the market. Replacing older diesel buses and trucks with new, all-electric transit buses and all-electric medium- and heavy duty trucks are desirable NO<sub>x</sub> emission reduction projects, but currently require financial incentives to gain a foothold in the market. New York will also fund charging infrastructure needed to support the transition to electrification, within the constraints of the Trust Agreement. Experience gained from the use of these newer technologies will inform the public of their environmental and economic benefits and help spread the acceptance of all-electric vehicles. Moreover, the economies of scale that can be achieved through increased volume facilitated by this Plan's programs can help bring down the cost of future electric transportation projects.

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<sup>8</sup> <https://www.dec.ny.gov/public/333.html>

## VI.

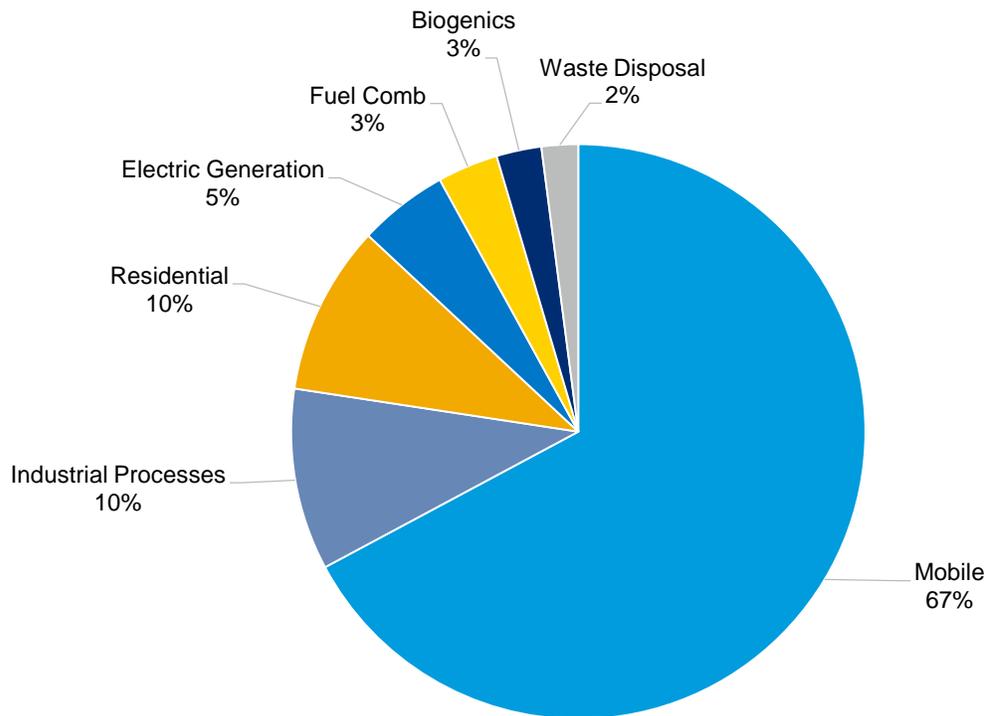
# Reducing NOx Emissions

A primary objective of the Partial Consent Decrees is to fund projects that will mitigate the excess NOx emissions caused by the subject VW vehicles, improving air quality in areas burdened by a disproportionate share of air pollution. NOx is the generic term for a group of highly reactive gases containing nitrogen and oxygen. It is produced during the combustion process when nitrogen and oxygen are present at elevated temperatures, including the use of coal, oil, gasoline, and diesel as fuel sources.

While NOx alone can cause respiratory problems, it is also a primary ingredient in ground-level ozone, particulate matter, and acid rain. Ozone has been linked to health effects including asthma, respiratory system irritation, allergen sensitivity, respiratory infections and premature death. Elevated levels of particulate matter, especially fine particulates that can deeply penetrate lungs, have also been linked to serious health risks including cardiovascular effects, respiratory illness, and mortality. Acid rain damages forests, crops, and waterways, and the deposition of excess nutrients to waterbodies contributes to algal blooms, damage to fish and shellfish, and other impacts associated with eutrophication (excess nutrients in a body of water).

New York has already made tremendous progress in reducing NOx emissions, particularly from the electricity sector. Since 2000, New York has reduced overall NOx emissions by 89% from fossil fuel-fired power plants. Although emissions from “mobile sources,” which include motor vehicles, airplanes, locomotives, and other engines and equipment, have declined, these sources still produce roughly 67% of all NOx emissions in New York State (see Figure 1 below). Reducing the use of petroleum-based fuels in transportation, particularly in heavy duty diesel-powered vehicles that disproportionately contribute to overall emissions, is an important mechanism to reduce NOx emissions.

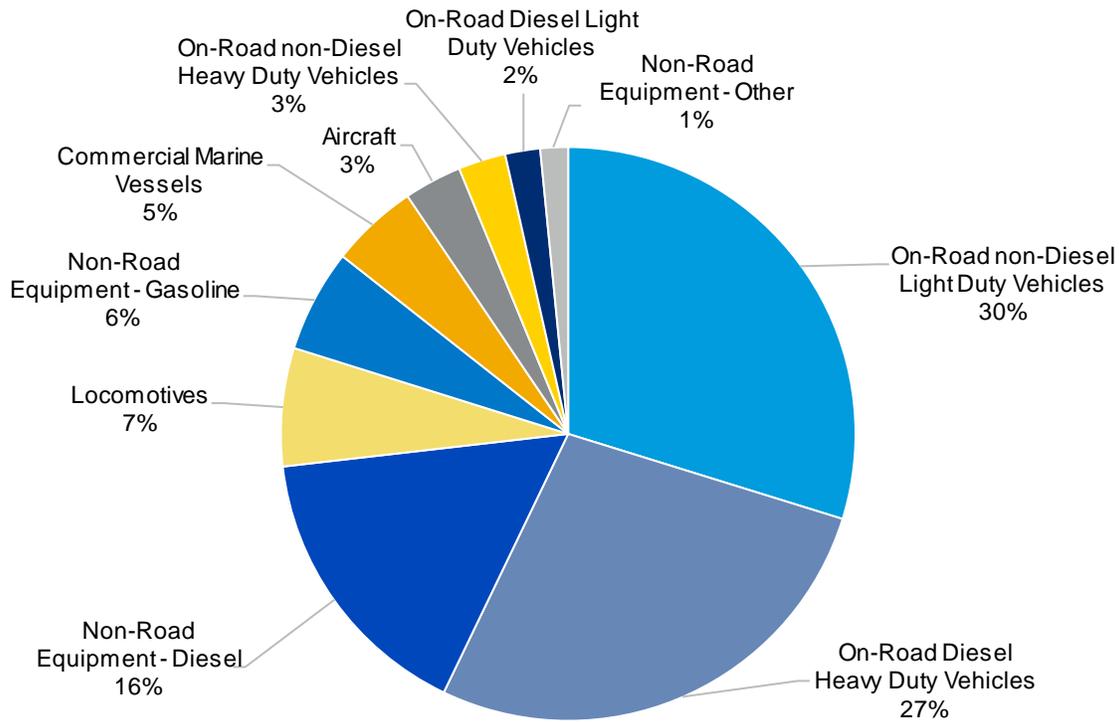
**Figure 1: All NOx Emission Sources In New York State (2014)**



(Source: 2014 EPA National Emissions Inventory)

As shown in Figure 2 below, a breakdown of New York State's mobile source NOx emissions inventory, a sizable portion of NOx emissions can be attributable to on- and off-road diesel equipment as passenger cars have become cleaner, due to federal and state emission standards. Many of the Plan's goals listed under Section V can be achieved by focusing on mobile sources that have the largest contribution to NOx emissions, including diesel-powered trucks and buses.

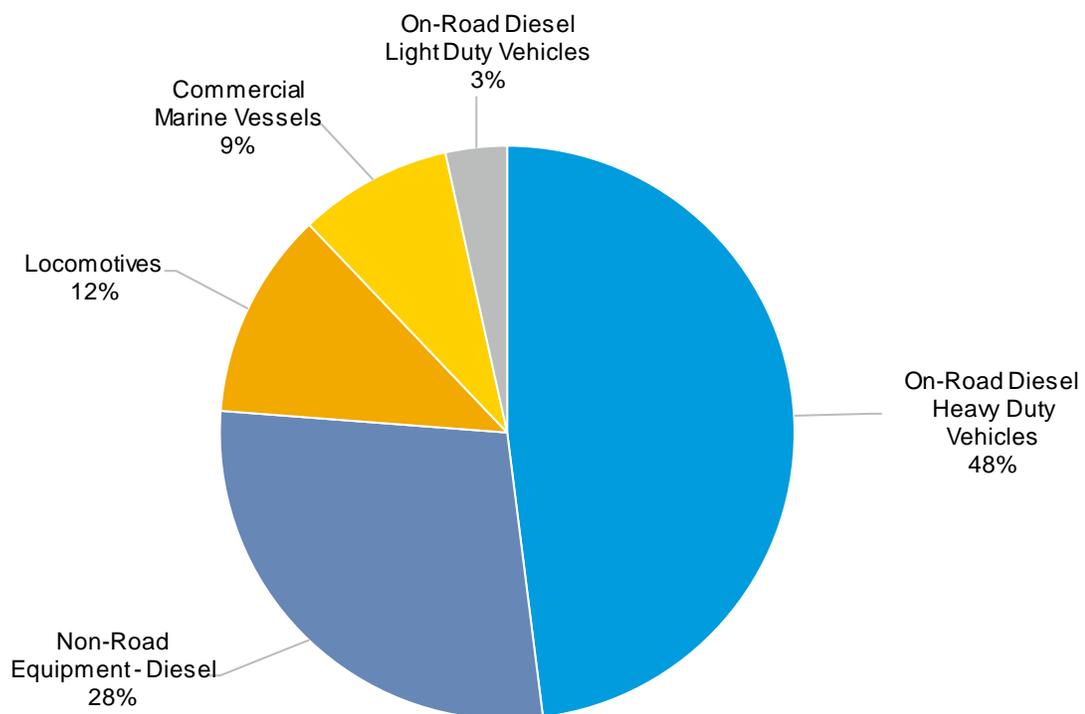
**Figure 2: Mobile Source NOx Contributions in New York State (2014)**



(Source: 2014 EPA National Emissions Inventory)

Of all diesel-powered mobile sources, the on-road heavy duty diesel vehicle category represents the most significant source of NOx emissions in New York State (Figure 3).

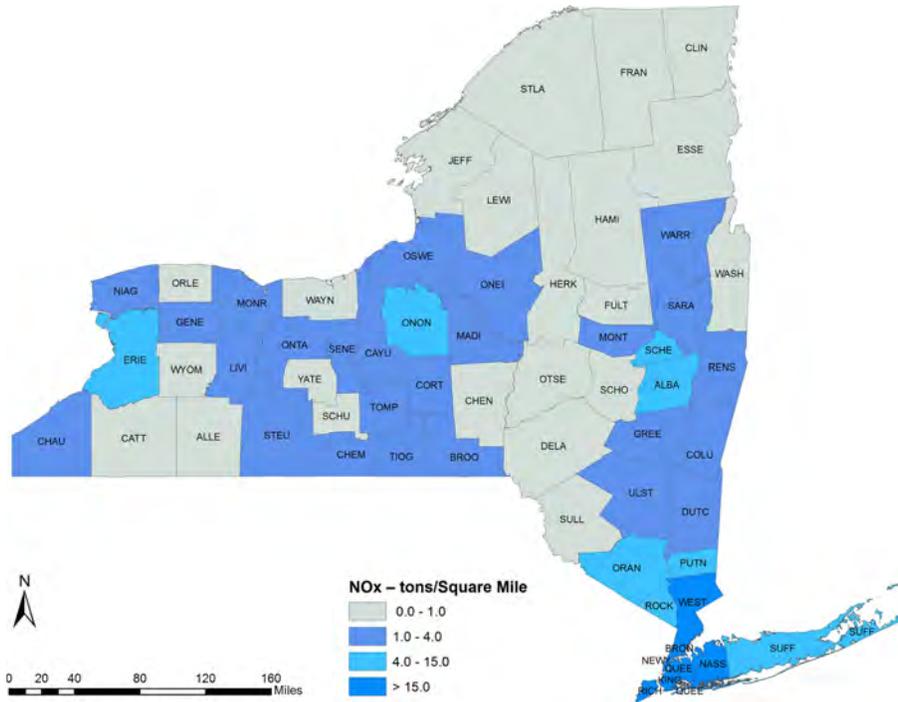
**Figure 3: NOx by Diesel Source Contributions in New York State (2014)**



(Source: 2014 EPA National Emissions Inventory)

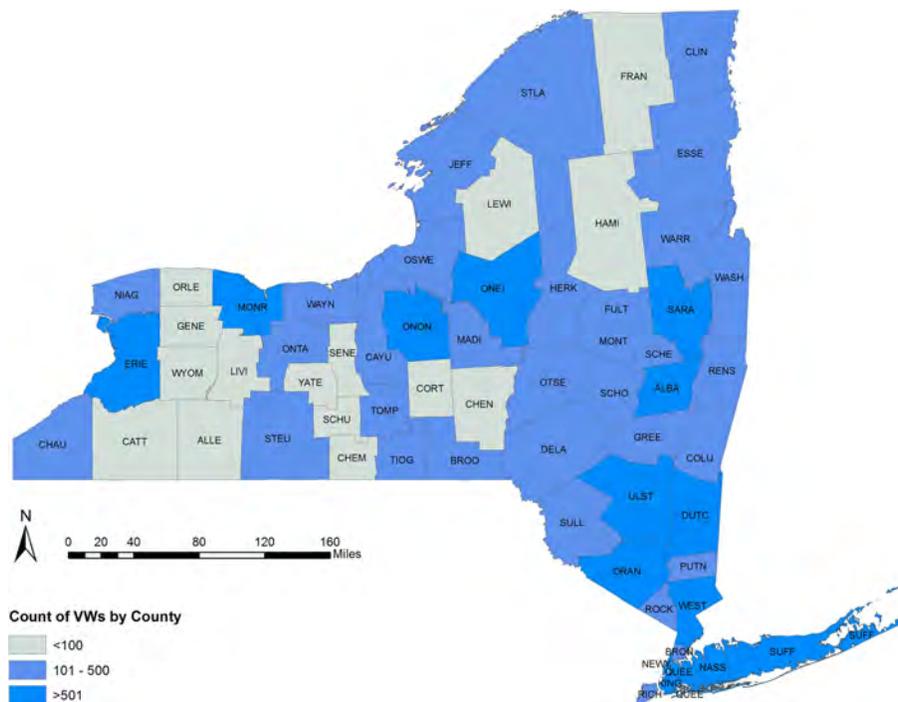
Using the annual EPA National Emission Inventory data for 2014, DEC calculated on-road NOx emissions by square mile for each New York State county. As expected, the highest concentrations of modeled NOx emissions are found in urban areas, with the highest modeled area being the downstate NYMA. (The evaluation presented in Figure 4 below does not indicate, nor is it meant to represent, ambient NOx concentrations).

**Figure 4: On-Road NOx Emissions By County (2014)**



The affected VW vehicles are concentrated generally in those areas with the highest NOx emissions per square mile. Using registration data for calendar years 2015 and 2016, DEC identified approximately 25,000 affected 2.0 liter and 3.0-liter VW vehicles. The distribution of registrations between the 53 Upstate counties and the 9 NYMA counties were roughly equal, with the highest number of vehicles located in New York’s major metropolitan areas (see Figure 5.)

**Figure 5: Distribution of Registered VW Vehicles by New York State County**



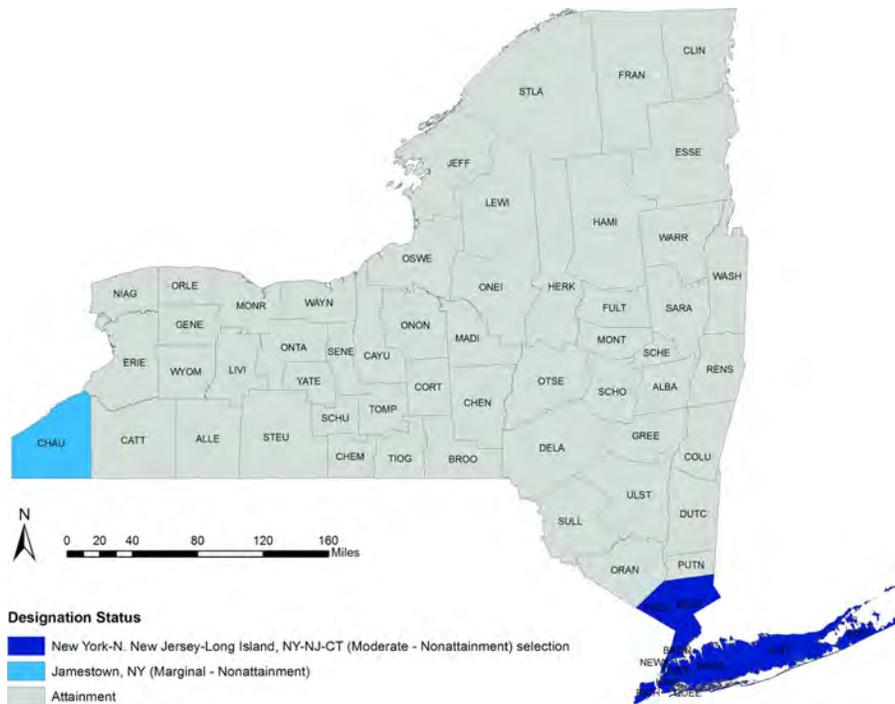
## VII.

# Ozone Nonattainment

Under the federal Clean Air Act, EPA is required to establish NAAQS for six common air pollutants, i.e., criteria pollutants. Areas where air pollution levels exceed the applicable NAAQS for a given criteria air pollutant are designated as being in "nonattainment."

On March 12, 2008, EPA revised the NAAQS for ozone by strengthening the primary 8-hour standard to 0.075 parts per million (ppm) from the 0.080 ppm level previously set in 1997. Based on ambient air quality monitoring, two ozone non-attainment areas were designated within New York State: (i) the New York-Northern New Jersey-Long Island, NY-NJ-CT Metropolitan Statistical Area (NYMA MSA), which includes the counties of Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, and Westchester; and (ii) the Jamestown Metropolitan Statistical Area (Jamestown MSA) which includes only Chautauqua County. See <https://www3.epa.gov/airquality/greenbook/hnmapa.html> and Figure 6 below. Based on ambient monitoring data, EPA found that the Jamestown MSA attained the 2008 NAAQS by the July 20, 2015 attainment date<sup>9</sup>; EPA however, has not yet formally redesignated the Jamestown MSA as attainment for the 2008 ozone NAAQS.

**Figure 6: New York State Designation Status for the 2008 Ozone NAAQS**



On October 1, 2015, EPA revised the NAAQS for ozone by strengthening the primary and secondary 8-hour standards to 0.070 parts per million (ppm). By letter dated September 22, 2016, DEC recommended that the Jamestown MSA be designated as attainment, and that the 9-county New York Metropolitan Area (NYMA) remain an ozone nonattainment area. On November 16, 2017, EPA designated the Jamestown MSA as attainment/unclassifiable under the 2015 NAAQS for ozone<sup>10</sup>. On June 4, 2018, EPA designated the nine county NYMA MSA as nonattainment, while designating the remaining counties of Dutchess, Orange, Putnam and Ulster as attainment/unclassifiable under the 2015 NAAQS for ozone<sup>11</sup>.

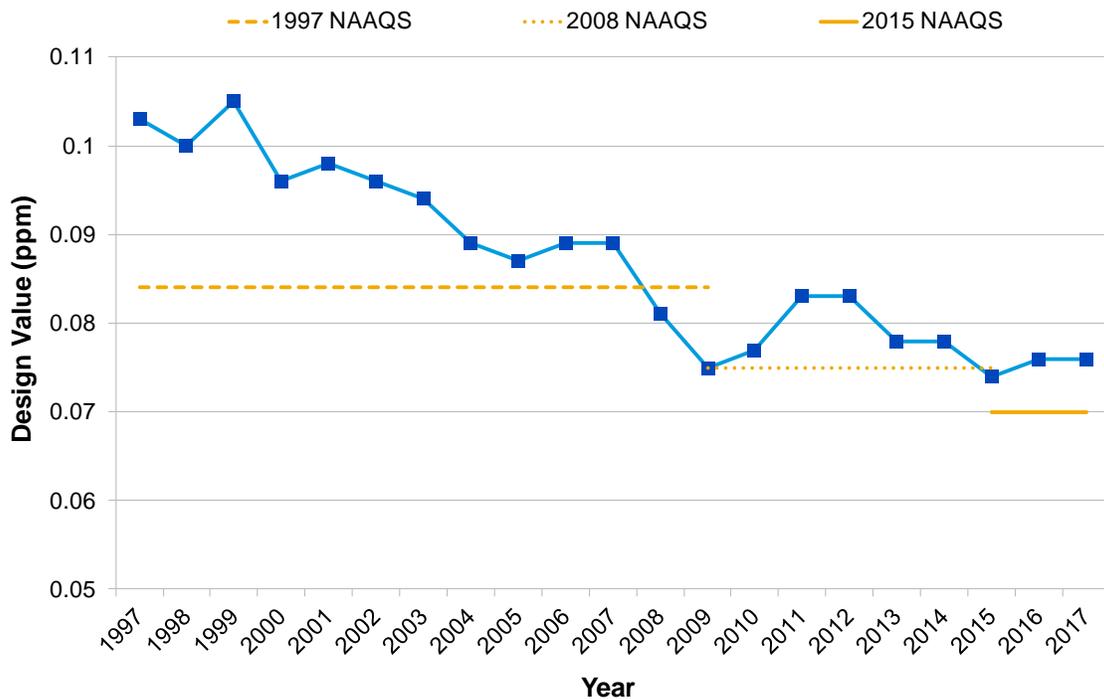
<sup>9</sup> <https://www.epa.gov/sites/production/files/2016-04/documents/20160411factsheet.pdf>

<sup>10</sup> <https://www.gpo.gov/fdsys/pkg/FR-2017-11-16/pdf/2017-24640.pdf>

<sup>11</sup> <https://www.govinfo.gov/content/pkg/FR-2018-06-04/pdf/2018-11838.pdf>

New York has made consistent progress in reducing ozone levels across the state, including in the NYMA ozone nonattainment area. Figure 7 below demonstrates the declining trend in ozone concentrations at the Susan Wagner monitor in Richmond County. Continued progress in reducing levels requires a suite of strategies, but two areas are predominant. First, reductions in transported emissions including ozone from states upwind of New York are necessary. New York has consistently and repeatedly pressed EPA to exercise its authority to reduce that transported pollution including, most recently, by petitioning EPA on March 13, 2018 to require the reduction in NOx emissions from power plants and industrial facilities located in nine states that contribute to New York’s ozone levels. Second, reducing emissions from motor vehicles, particularly heavy duty trucks, is critical. Although New York continues to press EPA to strengthen NOx emission limits on new heavy duty vehicles<sup>12</sup>, existing vehicles would still provide a disproportionate contribution – with emissions up to 25 times higher than new vehicles (see Attachment 1) – to elevated ozone levels as long as these vehicles remain on the road. The strategies in this Plan will accelerate vehicle turnover, thereby reducing ozone levels across the State and, in particular, the downstate ozone nonattainment area.

**Figure 7: Ozone Trend at Susan Wagner Ozone Monitor (Richmond Co), 1997-2017**



<sup>12</sup> [https://www.dec.ny.gov/docs/air\\_pdf/epaairstandard81616.pdf](https://www.dec.ny.gov/docs/air_pdf/epaairstandard81616.pdf)

## VIII.

# Greenhouse Gas Reductions

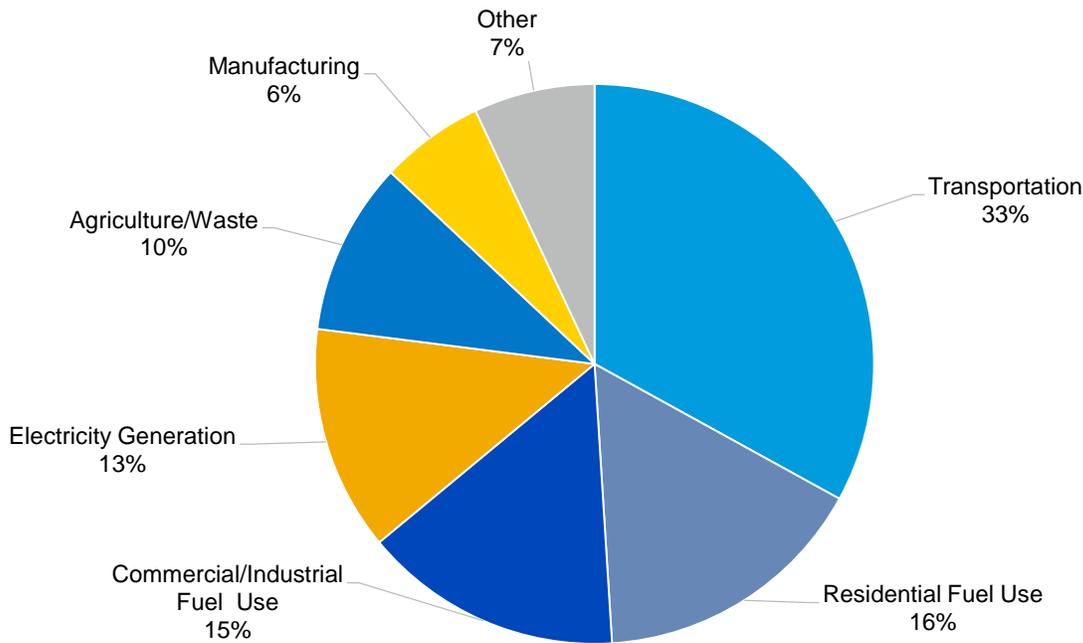
Addressing global climate change is the most critical environmental challenge of our time. Atmospheric concentrations of carbon dioxide (CO<sub>2</sub>), methane, and GHGs continue to increase, greatly exceeding concentrations found in historical measurements. Scientists have projected that global CO<sub>2</sub> emissions will have reached a new record in 2017 and will continue to rise in 2018.<sup>13</sup> The continued release of these gases will compound climate change impacts, which include rising sea levels, higher average temperatures, fewer cool nights, and more intense precipitation events. New York State has already experienced the devastation of catastrophic storms exacerbated by sea-level rise and extremely heavy precipitation, including Hurricane Irene and Tropical Storm Lee in 2011, and Superstorm Sandy in 2012.

*“New York is committed to reducing GHG emissions from the transportation sector, just as we have already significantly reduced emissions from electric power.”*

Governor Andrew M. Cuomo

Under Governor Cuomo’s leadership, New York has prioritized the reduction in GHG emissions to combat climate change. In Executive Order 166, Governor Cuomo committed New York State to achieve a 40% reduction in GHG emissions from 1990 levels by 2030, and 80% by 2050 from all emitting activities of the economy. New York has made much progress in reducing CO<sub>2</sub> emissions from power plants’ fossil fuel combustion by over 59% since 2005.<sup>14</sup> As a result of this substantial reduction in power sector emissions supported by New York’s environmental and clean energy programs, the transportation sector is now the largest source of GHG emissions in New York (and nationwide<sup>15</sup>), accounting for roughly 33% of all GHG emissions statewide (see figure 8).<sup>16</sup>

Figure 8: New York State Greenhouse Gas Inventory (2015)



Reference: “New York State Greenhouse Gas Inventory: 1990 – 2015, Final Report.” New York State Energy Research Development Authority (NYSERDA). March 2018. Adapted from Table S-1, 2015 New York State Greenhouse Gas Inventory (MMtCO<sub>2</sub>e)

<sup>13</sup> Jackson, R.B., C. Le Quere, R.M. Andrews, J.G. Canadell, G.P. Peters, J. Roy and L. We. 2017. Warning signs for stabilizing global CO<sub>2</sub> emissions. Environmental Research Letters 12(11).

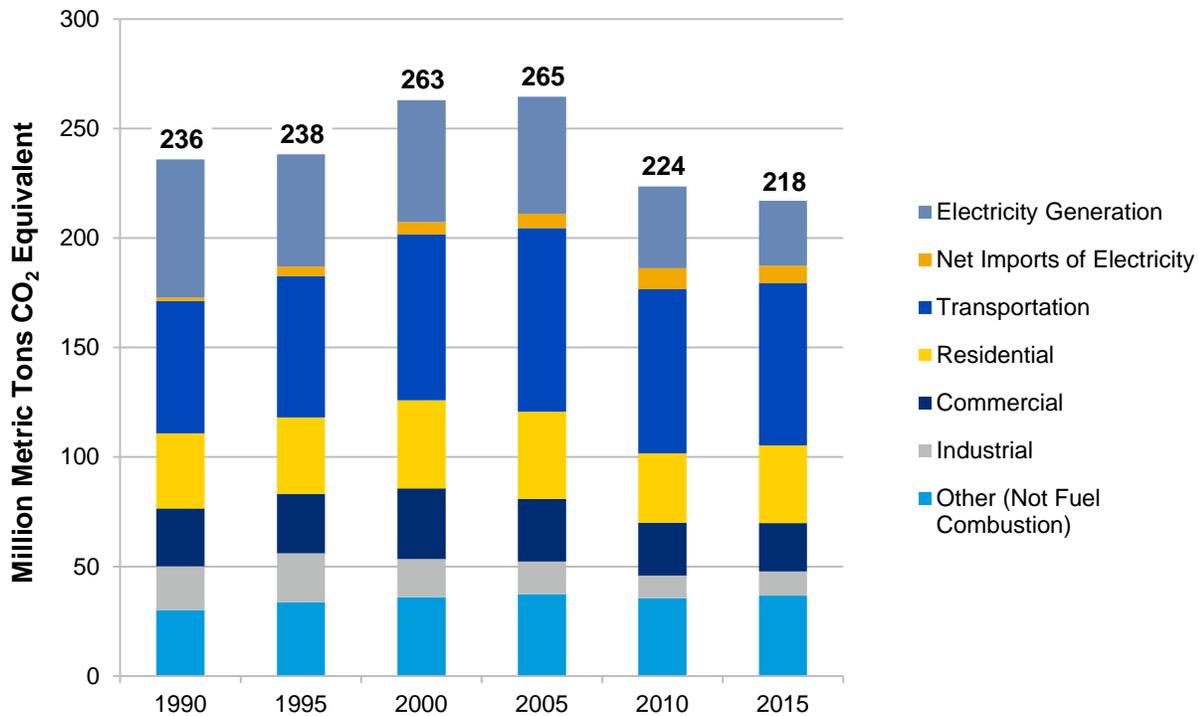
<sup>14</sup> Based on NY’s assessment of baseline emissions found at: <https://rggi.org/allowance-tracking/emissions> and actual emissions for 2017 as reported in the RGGI CO<sub>2</sub> Allowance Tracking System located at: <https://rggi-coats.org/eats/rggi/>

<sup>15</sup> Table 2-12 of 2016 draft Inventory of US GHG emissions <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>

<sup>16</sup> <https://www.governor.ny.gov/news/governor-cuomo-announces-22-million-municipalities-zero-emission-vehicles-and-infrastructure>

While the Settlement’s focus is to target NOx reductions, projects completed through this Plan will result in significant reductions in GHG emissions, as well as particulate matter, hydrocarbon, and mobile source air toxics. The strategies in this Plan will accelerate vehicle turnover, resulting in a beneficial reduction of GHG emissions as newer vehicles are manufactured to more stringent certification standards. GHG emissions from energy use, including transportation, are down 13% from 1990 to 2015. The trend of New York State’s CO<sub>2</sub> equivalent emissions (i.e., the amount of CO<sub>2</sub> having the same GHG global warming potential) is shown in Figure 9 below.

**Figure 9: New York State CO<sub>2</sub> Equivalent 1990 - 2015<sup>17</sup>**



This Plan’s mitigation projects will replace older, less efficient, more polluting diesel engines with about 255 electric motors powered by New York’s relatively clean electric grid and by newer, lower emitting, alternative and diesel fueled engines. Many of the anticipated VW Mitigation projects will result in significant GHG emission reductions themselves, while the electrification of the transportation system stimulated by this Plan will produce even greater long-term emissions reductions. To fully document the benefit of Plan investments, DEC will require recipients of VW Settlement funds to calculate and report lifetime NOx, VOC, PM, and GHG emission reductions expected as a condition of receiving funds.

<sup>17</sup> [New York State Greenhouse Gas Inventory: 1990 – 2015, Final Report](#)  
New York State Energy Research Development Authority (NYSERDA) March 2018.

## IX.

# Zero Emission Vehicle Program/ VW Electrification Projects

New York is committed to transitioning our transportation system away from fossil fuels, towards increasing reliance on emission-free electric vehicles. The objective of New York's light-duty Zero Emission Vehicle (ZEV) program is to ensure that vehicle manufacturers research, develop, and market electric vehicles (EVs) that have no direct tailpipe emissions. The ZEV program is defined by State of California regulations under Title 13, California Code of Regulations, Sections 1962.1 and 1962.2 with the projected number of vehicles to be sold based on an automaker's sales in each participating state. The Clean Air Act allows states outside of California to adopt the same low emission and ZEV standards. California, New York and eight additional states –Connecticut, Maine, Maryland, Massachusetts, New Jersey, Oregon, Rhode Island, and Vermont – implement the ZEV program. By directly requiring automakers to invest in clean technology, the ZEV program is considered one of the nation's most forward-looking climate policies. In May 2014, the Governors from eight states, including New York, committed to a multi-state Zero Emissions Vehicle Action Plan designed to generate 3.3 million ZEV sales in these states by 2025.

In January 2013, there were only 500 publicly available charging stations in New York.<sup>18</sup> Since then, the State has adopted policies and implemented programs to further promote increased ZEV sales and the deployment of electric vehicle charging infrastructure. Currently, there are approximately 2,000 publicly available charging outlets in New York<sup>19</sup> that serve over 25,000 ZEVs registered in the state. The Charge NY initiative aims to achieve 3,000 charging outlets statewide to support an expected 30,000-40,000 plug-in EV on the road in New York by the end of 2018. Governor Cuomo established a revised Charge NY goal of 10,000 charging outlets by 2021. New York State has implemented the Drive Clean ZEV rebate program for consumers who buy ZEVs and municipal rebate programs for both ZEV purchases and ZEV infrastructure. Most recently, electric utilities are also partnering with municipalities to promote the adoption of EVs.<sup>20</sup>

The VW Settlement provides an opportunity to accelerate market adoption of clean transportation technologies. The Trust Agreement provides a mechanism to electrify medium- and heavy-duty vehicles and equipment traditionally powered by diesel engines and to expand infrastructure for light-duty vehicles. The purchase of new "All-Electric" vehicles and equipment, re-powering of existing diesel engines with electric motors, and a provision for electric charging infrastructure are all clearly defined as eligible mitigation actions items in the Trust Agreement. Further, Appendix D-2 offers greater funding potential for the all-electric sub-categories compared to diesel and alternative fuel sub-categories.

### Knocking Down Barriers

Barriers that have restricted wide-scale adoption of medium- and heavy-duty electric vehicles/equipment to date are:

- Large incremental purchase price differences compared to traditional technologies (primarily diesel);
- Lack of operational experience with clean technologies and the lack of established data on fuel and operational savings when converting to electric power;
- Expensive charging infrastructure that is often not standardized across manufacturers; and
- Potentially high cost of electricity associated with demand charges.

New York State is already removing barriers to shift the transportation sector towards cleaner fuels and electrification. The availability of VW Appendix D settlement funds will complement New York's ongoing efforts to support clean transportation.

<sup>18</sup> <https://www.governor.ny.gov/news/governor-cuomo-announces-charge-ny-program-accelerate-use-and-benefits-electric-vehicles-new>

<sup>19</sup> [https://www.afdc.energy.gov/fuels/electricity\\_locations.html](https://www.afdc.energy.gov/fuels/electricity_locations.html)

<sup>20</sup> <http://www1.nyc.gov/office-of-the-mayor/news/600-17/leading-charge-mayor-fast-charging-ev-hubs-all-5-boroughs>

Electrification provides significant lifetime operational and maintenance cost savings compared to conventional diesel-powered engines. Using electric transit buses as an example, the United States Department of Transportation found that zero emission buses will provide a substantial reduction in operational and maintenance costs compared to conventional buses.<sup>21</sup> A recent independent study for New York City Transit found that over a 12-year life of an electric transit bus, the annual savings for combined fuel cost (diesel or CNG vs. electricity) and bus maintenance is approximately \$39,000, which more than offsets the initial higher purchase cost spread over the 12 year period.<sup>22</sup> In addition to recorded decreases in fuel and equipment maintenance costs, zero emission buses also run quieter than conventional buses, reducing noise pollution in the areas they service. Similar fuel and maintenance savings have been reported for electric drayage trucks.<sup>23</sup>

Where deemed appropriate, New York will place conditions on the receipt of VW funding to accelerate breaking down these barriers and animating the market for electrification. As an example, fuel and maintenance cost savings will be reported by owners of new electric vehicles receiving VW Settlement funds to further inform other fleets on the economic advantages of all-electric transportation.

DEC will develop funding incentives with Project Sponsors to reflect the cost differential between new electric and equivalent diesel vehicles and equipment. DEC estimates that greater than 60% of New York State's \$127.7 million allocation will support electrification of the transportation sector.



<sup>21</sup> <https://www.transportation.gov/r2ze/benefits-zero-emission-buses>

<sup>22</sup> <http://blogs.ei.columbia.edu/2016/05/31/going-electric-adds-up-to-a-good-idea-for-nyc-buses/>

<sup>23</sup> <http://www.fleetowner.com/blog/calculating-costs-and-savings-electric-trucks>

## X.

# Anticipated Categories of Eligible Mitigation Actions and Estimated Funding Percentages

Appendix D-2 of the Trust Agreement restricts funding to ten eligible mitigation action items, and further places restrictions on project specific administrative expenses and light-duty zero emission vehicle supply equipment (both capped at 15%). Most of the mitigation action items contain sub-categories, and each sub-category has an upper funding ceiling limiting the extent of Trust funding (e.g., “Up to 25% of the cost of a new diesel or alternate fuel vehicle”). See Attachment 2 for more detail.

DEC has completed its preliminary assessment of potential mitigation actions based on the numerous project proposals received during the robust public comment process and through discussions with multiple diverse stakeholders and other New York State governmental entities. DEC plans to direct the VW allocation as outlined in Table 1 below, with the understanding that funding adjustments by mitigation action item will occur over time in response to market interest, ability for recipients to provide cost share, and lessons learned over time.

**TABLE 1: Estimated New York State Funding by VW Settlement Mitigation Action Item**

Eligible Mitigation Action Item	New York State Estimated Funding	Funding (%)
Item 1: Class 8 Local Freight & Port Drayage Trucks	Up to \$11,500,000	Up to 9%
Item 2: Class 4-8 School Bus, Shuttle Bus, or Transit Bus	At least \$52,400,000	At least 40.5%
Item 3: Freight Switchers	Up to \$8,000,000	Up to 6%
Item 4: Ferries/Tugs	Up to \$3,500,000	Up to 2.5%
Item 5: Ocean Going Vessels (OGV) Shorepower	\$0	0%
Item 6: Class 4-7 Local Freight Trucks	\$8,500,000	7%
Item 7: Airport Ground Support Equipment (charging equipment)	\$3,200,000	2.5%
Item 8: Forklifts and Port Handling Equipment	Up to \$1,000,000	Up to 1%
Item 9: Light Duty Zero Emission Vehicle Supply Equipment	\$19,200,000	15%
Item 10: Diesel Emission Reduction Act (DERA) Option*	Up to \$10,000,000	Up to 8%
Administrative Costs (excluding Item 9)	Up to \$10,900,000	Up to 8.5%
<b>Mitigation Trust Funding Totals</b>	<b>\$127,701,807</b>	<b>100%</b>

\* Approximately \$4.1M of the Item 10, DERA Option, represents a set aside for future projects currently not identified

DEC estimates that approximately 1,400 existing diesel-powered vehicles/pieces of equipment would be replaced or re-powered based on the projects envisioned in Table 1. The Plan would devote at least 60% of the funding towards electrification projects, involving school buses, transit buses, medium- and heavy-duty trucks, airport ground support equipment charging infrastructure, port handling equipment, and light-duty electric vehicle charging equipment. DEC has not proposed funding for any Ocean Going Vessel Shorepower projects (Item 5) due to limited interest received to date.

The Plan seeks to prioritize the replacement of diesel vehicles and equipment with all-electric replacements, DEC anticipates, however that in some project categories, the number of vehicle replacements – and corresponding emission reductions – will be greater if some funding is provided for diesel-to-diesel replacements, which will require a lower amount of financial support. In some cases, funding for diesel-to-diesel replacements will be limited to smaller fleets with limited access to electrification infrastructure and/or to environmental justice communities and other locations that bear a disproportionate burden of diesel emissions. In those locations, the substantially lower incentives necessary for diesel-to-diesel retrofits may allow for larger emission reduction

benefits than if the same amount of funding was made available for more expensive diesel-to-electric replacements.

The mix of investments envisioned by this Plan will promote the goals identified in Section V. For example, retirement and replacement of older, high-emitting trucks and school buses used primarily in the New York City metropolitan area will yield substantial reductions of NOx and other pollutants. Replacement of transit buses with electric buses and investment in EV charging infrastructure will reduce NOx emissions and support the necessary transition to an electrified transportation system.

The projects and programs identified below will be administered by designated Project Sponsors for each category, under DEC's oversight. All funding from the Mitigation Fund will be managed by the Project Sponsors. Although DEC will not receive or spend any of the funding provided, it will coordinate the implementation of this Plan with each of the Project Sponsors.

The Trust Agreement provides VW Beneficiaries, including New York State, with the flexibility to adjust their overall Mitigation Plan goals and associated spending plans. DEC envisions that modifications to the preliminary funding estimates may occur for the following reasons during the course of implementing the Plan:

- Continued input obtained from stakeholders throughout the duration of the Mitigation Plan;
- Lower than expected interest for a given mitigation action item;
- Experience gained from implementing VW Mitigation projects;
- Inability to complete certain projects in a timely manner;
- Change in NAAQS designation(s); and
- Technologies—currently not available—being offered commercially in future years.

Funding levels and NYS-defined eligibility requirements may also require adjustment if market conditions warrant a change in the level of public support. For example, a higher incentive may need to be provided per vehicle/equipment early in the implementation phase to encourage early adoption, but could decrease over time as technology advances and the financial benefits become apparent, allowing the State to increase the overall number of vehicles/equipment funded. Any proposed changes to the Mitigation Plan will be submitted to the Trustee for review and approval, to the extent required by the governing Consent Decree documents.

## XI.

# New York State NOx Mitigation Projects

As noted in Table 1 above, New York State proposes to use VW Mitigation Trust to fund nine of the ten possible eligible mitigation action categories. Appendix D-2 of the Trust Agreement establishes vehicle and equipment eligibility, scrappage requirements, and maximum funding levels allowed. See Attachment 2 of this Plan for those requirements specific to each mitigation action item.

### Item 1. Class 8 Local Freight Trucks and Port Drayage Trucks (Large Trucks)

Up to \$11.5 million in funding, up to 885 tons of NOx reduced, replace approximately 145 trucks with all-electric, hybrid electric, alternative fueled or new diesel trucks (Revised August 1, 2019)

Consistent with the requirements of the VW Settlement, this category provides for the replacement or repowering of engine model year 1992 – 2009 Class 8 local freight trucks and port drayage trucks. Trucks eligible for replacement or repowering under this Plan include Class 8 waste haulers, dump trucks, concrete mixers, garbage trucks and semi tractors, among others.

Through several existing programs administered by NYSERDA and New York City Department of Transportation (NYTVIP<sup>24</sup>, NYCDOT<sup>25</sup>), this Plan will provide partial funding through voucher incentives for approximately 145 Class 8 local Freight and Port Drayage truck replacement projects statewide with preferential funding given to replacement of older diesel-powered trucks with **All-Electric** trucks and to projects in proximity to EJ areas. Comments received from the public have identified the need to retire and replace older diesel trucks often utilized in, or close to, EJ communities.

The funding amount provided will consider the availability of other mechanisms to finance the initial purchase cost while also considering anticipated savings due to reduced fuel and maintenance costs. DEC and implementing Project Sponsors (see Section XIII.) will develop eligibility criteria to restrict funding for diesel-to-diesel replacements to small fleets located in proximity to EJ areas.

DEC projects that investments in this category will produce substantial NOx reductions of up to 885 tons over a 10-year vehicle lifetime, based on a projected replacement of approximately 145 diesel-powered trucks.



<sup>24</sup> <https://truck-vip.ny.gov/>

<sup>25</sup> <http://www.huntspointctp.com/>



## Item 2. Transit Buses, School Buses and Shuttle Buses

**At least \$52.4 million in funding, at least 700 tons of NOx reduced, approximately 100 all-electric transit buses and 400 new alternative fuel, electric or diesel powered school and paratransit buses**

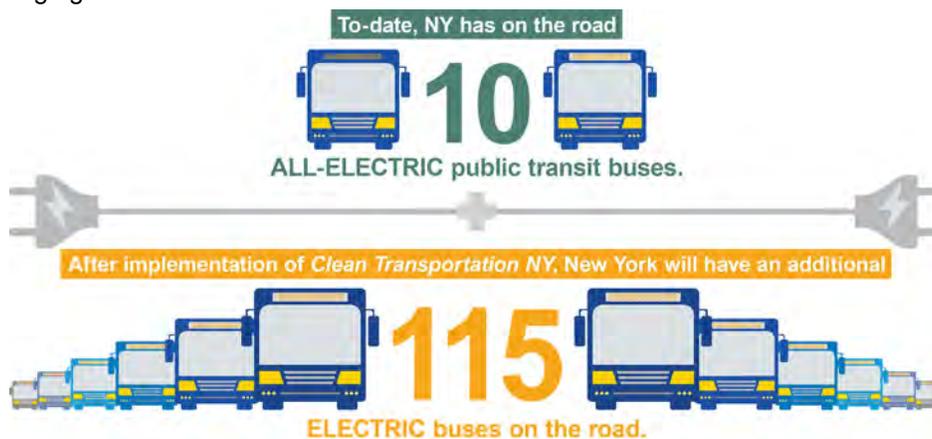
Consistent with the requirements of the VW Settlement, this Plan provides for the replacement or repowering of transit buses, school buses, and shuttle buses. Buses eligible for replacement or repowering under this Plan include buses of engine model years 2009 and older.

This Plan proposes to provide partial funding through voucher incentives for up to 500 diesel bus replacements, including mass transit, school, and paratransit shuttle buses, with preferential funding given to **All-Electric** transit and school buses and proximity to EJ areas. Comments from the public, including public transit fleet operators, advocated using funding to support the transformation of transit bus fleets to electricity. In addition, many commenters recommended funding the replacement of school buses, particularly in school bus fleets in urban EJ neighborhoods. Some commenters emphasized the opportunity to replace school buses in some fleets with electric buses.

Based on the input received, this Plan will support the electrification of the public transit bus fleets across the State by funding the replacement of existing diesel-powered buses with only all-electric buses. This program is intended to increase the total number of electric transit buses in the state from the 10 currently being piloted by the Metropolitan Transit Authority (MTA) and others already planned to at least 125 electric buses in transit fleets across the State. At the outset, funding will be based on the up-front cost of the all-electric buses compared to equivalent diesel buses. However, as experience is gained and the financial advantages of electric buses are demonstrated, DEC may adjust the funding support provided in future solicitations. Funding will also be provided for both depot and en-route charging infrastructure.

DEC will also seek to support the replacement of school buses with electric buses to the extent feasible and cost effective. DEC will also work with Project Sponsors to provide funding to replace older, diesel-powered school buses with new diesel buses in some circumstances (e.g. smaller fleets), particularly where it will provide benefits in EJ communities, but the amount of such funding will depend on the level of interest in electric buses. The funding amount will also consider the availability of other mechanisms to finance the initial incremental purchase cost while also considering anticipated savings due to reduced fuel and maintenance costs. Funding will be available for electric school bus charging infrastructure.

DEC projects that the investments in this category (all bus types) will produce NOx reductions of at least 700 tons over a 10-year vehicle lifetime, based on a projected replacement of at least 500 buses with approximately 100 all-electric transit buses and 400 new electric, alternative fuel, or diesel powered school and paratransit buses.



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### Item 3. Freight Switchers

**Up to \$8 million in funding, up to 634 tons of NOx reduced, 10 freight switchers with new diesel or electric freight switchers or engines**

Consistent with the requirements of the VW Settlement, this Plan provides for the replacement or repowering of pre-Tier 4 vintage switcher locomotives that operate 1,000 hours or more per year.

Some commenters have recommended the replacement of freight switchers, which can provide substantial cost-effective NOx emission reductions at freight yards, including those located in proximity to EJ areas. Given the potential substantial emissions reductions, DEC will seek to identify opportunities to provide partial funding for replacement of up to ten switchers, including using electric-powered engines, if possible. Projects that provide benefits to EJ areas will be prioritized. If demand for funding falls short of ten eligible projects, DEC may reallocate funding from this category to other categories with more robust demand.



DEC projects that the investments in this category will produce NOx reductions of up to 634 tons over a 10-year vehicle lifetime, based on a projected repowering of 10 freight switchers with new diesel engines.

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### Item 4. Ferries and/or Tugs

**Up to \$3.5 million in funding, up to 394 tons of NOx reduced, 12 ferries/tugs repowered with new diesel or electric engines**

Consistent with the requirements of the VW Settlement, this Plan provides for the repowering of ferries and/or tugboats which currently have unregulated, Tier 1, or Tier 2 marine engines.

This Plan proposes to provide partial funding for the re-powering of up to 12 ferries and/or tugboats, in accordance with comments received from the public. DEC has determined that replacement or repowering of tugs and ferries can result in substantial cost-effective NOx reductions, providing air quality benefits in the areas where such boats travel. DEC will work with Project Sponsors to consider electrification options. If demand for funding falls short, funding from this category may be reallocated to other categories with more robust demand.



DEC projects that the investments in this category will produce NOx reductions of up to 394 tons over a 10-year vehicle lifetime, based on a projected repowering of 12 ferries and/or tugs with new, cleaner, diesel engines.

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## Item 6. Class 4-7 Local Freight Trucks (Medium Trucks)

**\$8.5 million in funding, up to 378 tons of NOx reduced, 265 all-electric, hybrid electric, alternative fueled, or new diesel trucks**

Consistent with the requirements of the VW Settlement, this Plan provides for the replacement or repowering of engine model year 1992 – 2009 Class 4-7 local freight trucks. Trucks eligible for replacement or repowering under this Plan include Class 4-7 delivery trucks, courier service trucks, box trucks, waste haulers, and dump trucks.

Several comments were received recommending funding for the replacement of local freight trucks, particularly those that operate within or near EJ areas. Through existing programs managed by NYSERDA and NYCDOT, this Plan proposes to provide voucher incentive funding for approximately 265 Class 4-7 local freight trucks statewide with preferential funding provided to the replacement of older diesel trucks with **All-Electric** trucks and to replacement projects in proximity to EJ areas. The funding amount will also consider the availability of other mechanisms to finance a portion of the initial purchase cost and anticipated savings from reduced fuel and maintenance costs. DEC and implementing Project Sponsors will develop eligibility criteria to restrict funding for diesel-to-diesel replacements (e.g., limit to small fleets), to be utilized after prioritizing funding for electric trucks.

The replacement or repowering of older freight trucks can result in substantial cost-effective NOx reductions, often in urban EJ areas. DEC projects that the investments in this category will produce NOx reductions of up to 378 tons over a 10-year vehicle lifetime, based on a projected replacement of approximately 265 trucks with all-electric, hybrid electric, alternative-fueled, or new diesel-powered trucks.



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## Item 7. Airport Ground Support Equipment

**\$3.2 million funding, up to 151 tons of NOx reduced, 77 charging stations to support up to 154 all-electric airport ground support equipment**

Based on input provided by the Port Authority of New York and New Jersey (PANYNJ), this Plan proposes to provide partial funding for approximately 77 charging stations to support All-Electric ground support equipment (GSE) used to service aircraft at New York City area airports. These charging stations will be used to charge approximately 154 pieces of electric-powered GSE that replace existing diesel-powered GSE.

Consistent with the requirements of the VW Settlement, PA-NYNJ will require a commitment that owners of the GSE will repower or replace and scrap existing GSE.

Implementation of this project will provide substantial cost-effective NOx reductions in the areas surrounding NY airports, often in proximity to EJ areas. DEC projects NOx emission reductions of 151 tons over a 10-year vehicle lifetime.



## Item 8. Forklifts and Port Cargo Handling Equipment

Up to \$1 million funding, up to 54 tons of NOx reduced, 4 all-electric forklifts or port cargo handling equipment

Consistent with the requirements of the VW Settlement, this Plan provides for the replacement or repowering of forklifts and port handling equipment with **All-Electric** equipment. Eligible forklifts include forklifts with greater than 8,000 pounds lift capacity. Eligibility also includes the charging infrastructure associated with new all-electric forklifts and port handling equipment.

This Plan proposes partial funding for approximately four **All-Electric** pieces of port cargo handling equipment operated by tenants or operators at port facilities in New York State. Funding will also be available for electric port handling equipment charging infrastructure. Commenters recommended replacing cargo handling equipment at freight facilities near EJ areas. DEC estimates that this project will produce NOx emission reductions of 54 tons over a 10-year vehicle lifetime.



## Item 9. Light Duty Zero Emission Vehicle Supply Equipment (EVSE)

\$19.2 million for light-duty zero emission vehicle supply equipment and hydrogen fueling stations

To support the transition away from fossil fuels, New York will use 15% of its allocation towards the acquisition, installation, and operation and maintenance of new light-duty (up to 8,500 pounds Gross Vehicle Weight Rating) zero emission vehicle supply equipment for the projects specified below. By stimulating the transition to electric vehicles, these projects will reduce NOx and GHG emissions. Many commenters recommended that the maximum investment allowed by the settlement documents should be directed to this category.

Light duty electric vehicle supply equipment eligible for Trust funding includes Level 1, Level 2, or DC fast charging equipment (or analogous successor equipment). Such equipment must be located in a public place, workplace, or multi-unit dwelling and cannot be consumer light duty vehicle supply equipment (i.e., cannot be located at a private residential dwelling that is not a multi-unit dwelling). In accordance with the Consent Decree requirements, Trust funds will not be made available or used to purchase or rent real estate, other capital costs, (e.g., construction of buildings, parking facilities, etc.) or general maintenance (i.e., maintenance other than supply equipment).

Light duty electric vehicle supply equipment eligible for Trust funding also includes hydrogen dispensing equipment capable of dispensing at least 100 kg/day hydrogen at a pressure of 70 megapascals (MPa) (or analogous successor technologies) that will be available to the public.



This Plan will direct funding from this category to statewide projects currently being defined with several governmental partners and stakeholders including, but not limited to, the following electric vehicle charging infrastructure:

1. Workplace Charging (Level 1, Level 2)
2. Multi-Unit Dwelling Charging (Level 1, Level 2)
3. Level 3 Direct Current Fast Charging

A specific breakdown of funding and locations will be determined by DEC and Project Sponsors (likely NYSERDA and NYPA) based on needs and benefits provided. Investments in EJ and other underserved areas will be prioritized.

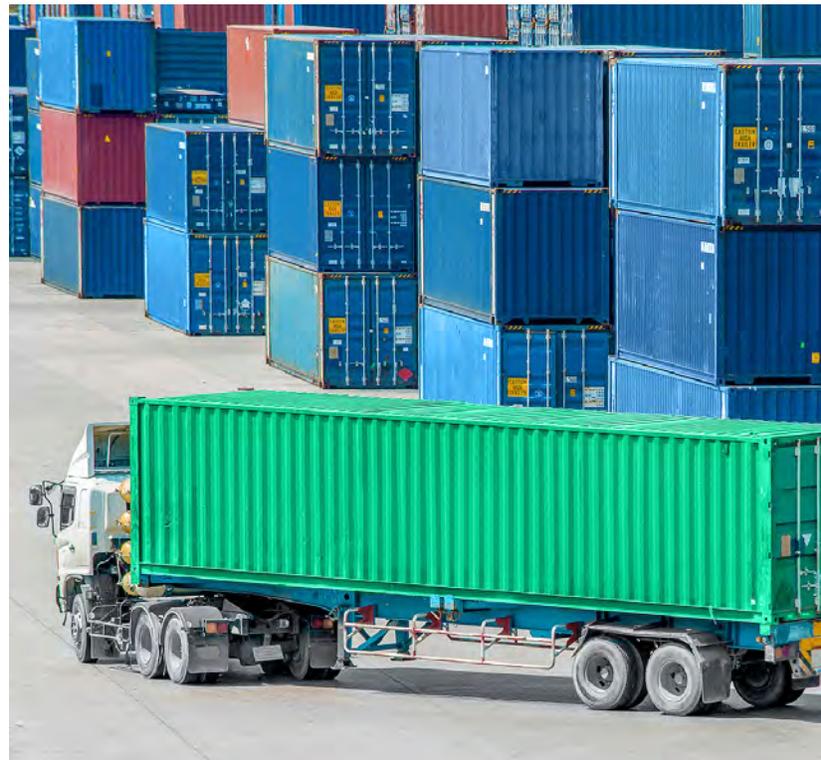
In addition, the Plan may make up to \$4 million available to partially fund hydrogen fueling stations, to the extent there is demand for such funding. If demand is insufficient, any remaining funding will be used for the electric vehicle charging equipment identified above.

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## Item 10. Federal Diesel Emission Reduction Act (DERA) Option

Up to \$10 million in funding, up to 1,310 tons of NOx reduced, estimated 300 newer diesel trucks

The settlement documents allow the State to use Trust funds for the non-federal voluntary match, pursuant to Title VII, subtitle G, Section 793 of the federal DERA program in the Energy Policy Act of 2005 (codified at 42 U.S.C. 16133). This will allow the State to use such Trust funds for actions not specifically enumerated in this Appendix D, but otherwise eligible under DERA pursuant to all DERA guidance documents available from the EPA. Projects that could be eligible under this category include exhaust controls, engine upgrades, cleaner fuels, idle reduction technologies, engine repowers, and vehicle or engine replacements. Trust funds shall not be used to meet the non-federal mandatory cost share requirements, as defined in the applicable DERA program guidance, of any DERA grant. EPA's *DERA Option: Eligible Mitigation Action #10 under the Volkswagen Partial Settlement, Appendix D, Factsheet for States, District of Columbia and Puerto Rico (April 2017)* and *Detailed Comparison of VW Eligible Mitigation Action 1-9 and Eligible Mitigation Action #10 (DERA Option) (June 2017)* are included as Attachment 3.



Under this category, this Plan will provide partial funding to the PANYNJ proposal for a drayage truck replacement program<sup>26</sup> to replace an estimated 300 existing Class 8 diesel trucks with newer vehicles with engine model year (EMY) 2012 and newer engines. Funding will be limited to replacement of trucks used primarily to service the Port Authority's facilities in New York, unless pursuant to a collaboration with New Jersey regarding funding based on vehicle registration and/or domicile location information. The Port Authority truck replacement proposal documents highly cost-effective NOx reductions. The Port Authority's New York port operations facilities are located near potential EJ communities and neighborhoods that have been subjected to elevated levels of diesel exhaust emissions<sup>27</sup>. EPA DERA guidance acknowledges the importance of diesel emission reductions at port facilities by the increased DERA funding levels available for drayage truck replacements operating at these facilities when compared to non-drayage truck replacement funding levels<sup>28</sup>. Additionally, stakeholder input has

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<sup>26</sup> <https://www.panynj.gov/truckers-resources/truck-replacement.html>

<sup>27</sup> <https://www.dec.ny.gov/public/911.html>

<sup>28</sup> [USEPA National Clean Diesel Grant Program, FY 2017 State Clean Diesel Grant Program Information Guide – June 7, 2017](#)

included comments to reduce diesel emissions from port facilities. DEC estimates that this truck replacement project will produce 10-year lifetime NOx emission reductions of up to 1,310 tons.

DEC has also reserved an additional \$4.1 million within this category for projects that are not currently identified, but may be identified in the future. Potential future DERA projects may include commercial waste haulers operating in EJ areas. To the extent possible, electrification projects will receive preferential funding consideration. This \$4.1 million may also be used for additional projects in other categories with robust demand for funding.

## Administrative Costs

The VW Trust agreement allows for the recovery of the costs of administering funded projects, up to a project-specific limit of 15%. See Attachment 2 for a listing of eligible administrative expenditures.

DEC believes significant savings can be achieved by utilizing existing programs administered by other NYS governmental agencies acting as Project Sponsors. Therefore, DEC has allocated a maximum of 10% of the New York State allocation for administrative costs in the development of this Mitigation Plan, but Project Sponsors should endeavor to limit administrative costs to the extent possible. DEC will refine administrative costs for all Project Sponsors based on documented need, but in no case shall administrative costs exceed 15% for any project. Project Sponsors will include among their administrative functions data collection and evaluation for mechanisms within their project areas that can further extend the clean vehicle objectives of each project. Project Sponsors will undertake outreach to fleets to inform them about New York State programs, facilitate participation, and potentially aggregate purchases to achieve bulk savings to speed program completion and achieve per project savings. Project Sponsors may only seek to recover the costs of such efforts as administrative costs to the extent allowed by Attachment A.

## XII.

# General Description of Expected Ranges of Emission Benefits

DEC has designed the Plan to maximize emissions reductions in both the short term and long term by stimulating the transition toward electrified transportation. Diesel-powered vehicle and equipment replacements, engine re-powering, installation of electric vehicle supply equipment, and a multitude of federal DERA eligible actions all result in a wide range of emission benefits for the life of the vehicle. Many variables impact the actual emissions reductions realized, including the vehicle type, certification standards, operational use, remaining useful life, and age of the vehicle or engine being replaced; the characteristics of the replacement vehicle or engine; and duration that the new vehicle/equipment will remain in New York State, etc. As lead agency, DEC will require all projects funded by VW Settlement to report estimated emission reductions.

The current EPA heavy-duty compression-ignition exhaust emission standards<sup>29</sup> for NOx (see Attachment 1, four tables) show:

- Heavy-duty highway vehicles may provide up to a 96% reduction in NOx emissions per vehicle, based on replacing a model year 1992 engine with a model year 2010 engine;
- Non-road equipment replacements, depending on the type of equipment and engine power rating, may reduce NOx emissions by 20% to 95% for each engine;
- Locomotives may reduce NOx emissions by up to 89% for per engine, based on replacing the oldest (Tier 0) engine with the newest (Tier 4) engine; and
- Replacement or re-power of a ferry or tug engine may provide a NOx reduction of up to 80% for each vessel.

Older diesel vehicles, equipment, locomotives, and marine vessels were designed, manufactured, and certified to less stringent certification standards when compared to engines manufactured to meet current certification standards. Original emission control systems also degrade over time. As a result, replacing or re-powering these engines will net even larger benefits than referenced above.

In addition, replacement electric vehicles provide a 100% NOx emissions reduction from existing vehicles, and a nearly 80% overall reduction in CO<sub>2</sub> emissions when accounting for the emissions from electricity provided by New York's relatively low-carbon electrical grid.

Eligible projects funded under this Beneficiary Mitigation Plan will offset the excess NOx emissions caused by the approximately 25,000 New York State VW vehicles equipped with emission defeat device software. On-road emissions testing conducted by West Virginia University's Center for Alternative Fuels, Engines & Emissions found the affected VW vehicles were at times emitting NOx up to 40 times the applicable EPA certification standard.<sup>30</sup> The Partial Consent Decrees require the Settling parties to remove or modify at least 85% of the subject vehicles by June 30, 2019. To accomplish this, VW has offered every owner and lessee of a subject vehicle a buyback or lease termination, thereby eliminating a significant portion of the excess NOx emissions caused by the VW vehicles after 2015. Significant progress in removing the offending vehicles had been made as of March 13, 2018.<sup>31</sup>

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<sup>29</sup> This comparison does not consider any in-use degradation of in-use vehicles or equipment. Actual reductions could be greater.

<sup>30</sup> [http://www.theicct.org/sites/default/files/publications/WVU\\_LDDV\\_in-use\\_ICCT\\_Report\\_Final\\_may2014.pdf](http://www.theicct.org/sites/default/files/publications/WVU_LDDV_in-use_ICCT_Report_Final_may2014.pdf)

<sup>31</sup> <https://www.cand.uscourts.gov/crb/vwmdl/claims-reports>

Based in part on the estimated excess NOx emissions from the 2.0-liter vehicles, as published by Massachusetts Institute of Technology and Harvard University,<sup>32</sup> and the reported progress for the buy-back and approved repair modification programs, DEC estimates the excess lifetime NOx emissions from the 25,000 New York State registered VW vehicles (4.37% of total) at roughly 3,000 tons. New York estimates that implementation of the projects identified in this Plan will yield estimated 10-year lifetime NOx emission reductions of at least 4,500 tons, which is equivalent to the annual emissions of up to 65,000 typical passenger vehicles over an estimated 10-year useful lifetime. The actual NOx reductions realized will depend on which projects are ultimately funded, including the age of the vehicles being replaced and other factors mentioned above, as well as the types of replacement vehicles (e.g., electric or newer diesel).

**Figure 10: Comparison of New York State NOx Emissions – VW Defeat Device Equipped Vehicles and Mitigation Plan Projects**



As stated the Mitigation Plan’s overall goals (Section V.), New York State intends to not only realize short-term NOx reductions through VW funded projects, but more importantly, to transform existing markets to electrified solutions that will perpetuate emission reduction gains into future vehicle and equipment purchases. In addition to reduced NOx emissions, that transition will provide substantial reductions in carbon emissions, and those reductions will increase over time as the transition from fossil fuels to electricity as the energy fuel for transportation proceeds. The replacement of diesel buses, trucks and other equipment with electrified vehicles and equipment envisioned by this Plan will yield at least 130,000 tons in lifetime CO<sub>2</sub> emission reductions. The electric vehicle and equipment emission reductions include CO<sub>2</sub> emissions from the current mix of relatively low-carbon electric power generation in New York State.

<sup>32</sup> Impact of the Volkswagen emissions control defeat device on US public health, [https://scholar.harvard.edu/files/seastham/files/erl\\_10\\_11\\_114005.pdf](https://scholar.harvard.edu/files/seastham/files/erl_10_11_114005.pdf)

### XIII.

## Partnerships

DEC has actively solicited comments and suggestions from both private and public partners in the development of this Mitigation Action Plan. Other New York State governmental entities act as “Project Sponsors,” to which DEC will instruct the Trustee to provide VW Settlement funds directly. In coordination with DEC, Project Sponsors will implement the VW Settlement eligible mitigation actions using refined eligibility and funding requirements. To the extent possible, Project Sponsors will utilize existing programs, with consultation from DEC, that have demonstrated success. Potential Project Sponsors identified to date include:

- New York State Energy Research and Development Authority (NYSERDA)
- New York Power Authority (NYPA)
- Transit Authorities (Statewide)
- Port Authority of New York and New Jersey (PANYNJ)
- New York State Department of Transportation (NYSDOT)
- New York City Department of Transportation (NYCDOT)

Eligible Mitigation Action Item	Potential Project Sponsors*
Item 1: Class 8 Local Freight & Port Drayage Trucks	NYCDOT, NYSEDA
Item 2: Class 4-8 School Bus, Shuttle Bus, or Transit Bus	NYSEDA, NYPA, Transit Authorities
Item 3: Freight Switchers	To Be Determined
Item 4: Ferries/Tugs	To Be Determined
Item 6: Class 4-7 Local Freight Trucks	NYCDOT, NYSEDA
Item 7: Airport Ground Support Equipment	PANYNJ
Item 8: Forklifts and Port Handling Equipment	PANYNJ
Item 9: Light Duty Zero Emission Vehicle Supply Equipment	NYPA, NYSEDA, Others to Be Determined
Item 10: Diesel Emission Reduction Act (DERA) Option	PANYNJ, Others to Be Determined

\*Additional Project Sponsors may be identified as DEC is still actively reviewing proposals submitted to the DEC website.

## XIV.

# Public Outreach

In accordance with Section 4.1 of the VW Settlement, New York State has actively sought, and will continue to seek, input from local and statewide stakeholder groups. In addition, DEC will post its proposed Beneficiary Mitigation Plan on a website dedicated to providing the most current VW Settlement information, <http://www.dec.ny.gov/chemical/109784.html>. The DEC website also provides the public the opportunity to make suggestions and to provide feedback regarding the State's plans to utilize environmental mitigation trust funds at: [VW.AppenD@dec.ny.gov](mailto:VW.AppenD@dec.ny.gov). To date, this mailbox has received approximately 190 responses, including several detailed project proposals. The information provided was extremely helpful in forming the development of this Plan.

DEC will continue to accept input on this Plan prior to submission and approval by the Trustee. In addition, comments will be welcome as the Plan is being implemented, to inform plan implementation and potential plan revisions.

Further, DEC conducted six public outreach events to seek comment related to this Mitigation Action Plan at the following locations/dates:

### LONG ISLAND CITY (QUEENS, NY)

July 10, 2017 (4:00 p.m. and 6:00 p.m.)  
DEC Region 2 Long Island City Office  
1 Hunter's Point Plaza  
47-40 21st Street  
Long Island City, NY 11101-5401

### ALBANY

July 20, 2017 (4:00 p.m. and 6:00 p.m.)  
DEC Central Office  
625 Broadway  
Albany, NY 12233

### ROCHESTER

July 24, 2017 (4:00 p.m. and 6:00 p.m.)  
Central Library of Rochester and Monroe County  
114 South Ave  
Rochester, NY 14604

A total of over 150 people attended the six public meetings.

Upon request, DEC held over approximately 60 meetings, presentations, or conference calls, both individually and in group settings, with stakeholder groups including:

- Environmental groups
- State and local governmental agencies
- Public and private transportation groups
- Medium- and Heavy-Duty vehicle manufacturers
- Trade and Industry groups
- Environmental Justice groups

DEC will continue to undertake outreach efforts during the implementation of the Plan.

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## Conclusion

The investments described in this Plan will contribute to continued cleaner and healthier air quality throughout New York State, particularly in areas bearing a disproportionate burden of diesel pollution. Implementation of this Plan will also further New York's aggressive efforts to combat climate change by prioritizing the replacement of diesel vehicles with tailpipe emissions-free electric vehicles and equipment, stimulating the transformation to a low-carbon transportation system. DEC and the Project Sponsors will continue to seek public input throughout the implementation of this Plan in order to maximize the benefits to New Yorkers.

This is not a solicitation for projects, and is not intended to provide details related to future application or project selection processes. Information on project application and project selection will be available on the DEC VW Settlement website after the Plan has been submitted to and approved by the Trustee. See the DEC VW Settlement website located at <http://www.dec.ny.gov/chemical/109784.html>.



ATTACHMENT 1

**EPA Exhaust  
Emission Standards**



## Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards

	Year	HC (g/bhp-hr)	NMHC (g/bhp-hr)	NMHC + NOx g/bhp-hr)	NOx (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	Idle CO (percent exhaust gas flow)	Smoke <sup>a</sup> (Percentage)	Useful Life (hours/years/miles)	Warranty Period (years/miles)
Federal <sup>b</sup>	1974-78	-	-	16	-	-	40	-	20 / 15 / 50	-	-
	1979-84	1.5	-	10	-	-	25	-	20 / 15 / 50	-	-
	1985-87	1.3	-	-	10.7	-	15.5	-	20 / 15 / 50	LHDDE: - / 8 / 110,000 MHDDE: - / 8 / 185,000 HHDDE: - / 8 / 290,000	-
	1988-89	1.3 <sup>d</sup>	-	-	10.7	0.6	15.5	0.5 <sup>c</sup>	20 / 15 / 50	1990-97 and 1998+ for HC, CO, and PM: LHDDE: - / 8 / 110,000 MHDDE: - / 8 / 185,000 HHDDE: - / 8 / 290,000 1994+ urban buses for PM only: - / 10 / 290,000 1998+ for NOx: LHDDE: - / 10 / 110,000 MHDDE: - / 10 / 185,000 HHDDE: - / 10 / 290,000	5 / 100,000 <sup>g</sup>
	1990	1.3 <sup>d</sup>	-	-	6.0	0.6	15.5	0.5 <sup>c</sup>	20 / 15 / 50		
	1991-93	1.3	-	-	5.0 [ABT]	0.25 [ABT] 0.10 <sup>e</sup>	15.5	0.5 <sup>c</sup>	20 / 15 / 50		
	1994-97	1.3	-	-	5.0 [ABT]	0.1 [ABT] 0.07 <sup>f</sup> , 0.05 <sup>g</sup>	15.5	0.5 <sup>c</sup>	20 / 15 / 50		
	1998-2003	1.3	-	-	4.0 [ABT]	0.1 [ABT] 0.05 <sup>g</sup>	15.5	0.5 <sup>c</sup>	20 / 15 / 50		
	2004-2006 <sup>h</sup>	-	-	2.4 (or 2.5 with a limit of 0.5 on NMHC) <sup>o</sup> [ABT <sup>i, j</sup> ]	-	0.1 0.05 <sup>g</sup>	15.5	0.5	20 / 15 / 50	For all pollutants: <sup>p</sup> LHDDE: - / 10 / 110,000 MHDDE: - / 10 / 185,000 HHDDE: 22,000 / 10 / 435,000	LHDDE: 5 / 50,000 All other HDDE: 5 / 100,000 <sup>g</sup>
2007+ <sup>h, k, l, m, n</sup>	-	0.14 <sup>o</sup>	2.4 (or 2.5 with a limit of 0.5 on NMHC) [ABT]	0.2 <sup>o</sup>	0.01	15.5	0.5	20 / 15 / 50			

### Notes:

The test procedures are the EPA Transient Test Procedure and the EPA Smoke Test Procedure.

- a** Percentages apply to smoke opacity at acceleration/lug/peak modes.
- b** Standards for 1990 apply only to diesel-fueled heavy-duty engines (HDE). Standards for 1991+ apply to both diesel- and methanol-fueled HDEs. Standards that apply to urban buses specifically are footnoted.
- c** This standard applies to the following fueled engines for the following model years: methanol - 1990+, natural gas and liquefied petroleum gas (LPG) - 1994+.
- d** For petroleum-fueled engines, the standard is for hydrocarbons (HC). For methanol-fueled engines, the standard is for total hydrocarbon equivalent (THCE).
- e** Certification standard for urban buses for 1993.

- f** Certification standard for urban buses from 1994-95.
- g** Certification standard for urban buses from 1996 and later. The in-use standard is 0.07.
- h** Load Response Test certification data submittal requirements take effect for heavy-duty diesel engines beginning in model year 2004. The following requirements take effect with the 2007 model year: steady-state test requirement and Not-to-Exceed (NTE) test procedures for testing of in-use engines. On-board diagnostic requirements applicable to heavy-duty diesel vehicles and engines up to 14,000 pounds gross vehicle weight rating (GVWR) phase in from the 2005 through 2007 model years.

Continued

- i The modified averaging, banking, and trading program for 1998 and later model year engines applies only to diesel cycle engines. Credits generated under the modified program may be used only in 2004 and later model years.
- j For heavy-duty diesel engines, there are three options to the measurement procedures currently in place for alternative fueled engines: (1) use a THC measurement in place of a non-methane hydrocarbon (NMHC) measurement; (2) use a measurement procedure specified by the manufacturer with prior approval of the Administrator; or (3) subtract two percent from the measured THC value to obtain an NMHC value. The methodology must be specified at time of certification and will remain the same for the engine family throughout the engines' useful life. For natural gas vehicles, EPA allows the option of measuring NMHC through direct quantification of individual species by gas chromatography.
- k Starting in 2006, refiners must begin producing highway diesel fuel that meets a maximum sulfur standard of 15 parts per million (ppm).
- l Subject to a Supplemental Emission Test (1.0 x Federal Test Procedure [FTP] standard (or Family Emission Limit [FEL]) for nitrogen oxides [NO<sub>x</sub>], NMHC, and particulate matter [PM]) and a NTE test (1.5 x FTP standard [or FEL] for NO<sub>x</sub>, NMHC, and PM).
- m EPA adopted the lab-testing and field-testing specifications in 40 CFR Part 1065 for heavy-duty highway engines, including both diesel and Otto-cycle engines. These procedures replace those previously published in 40 Code of Federal Regulations (CFR) Part 86, Subpart N. Any new testing for 2010 and later model years must be done using the 40 CFR Part 1065 procedures.
- n Two-phase in-use NTE testing program for heavy-duty diesel vehicles. The program begins with the 2007 model year for gaseous pollutants and 2008 for PM. The requirements apply to diesel engines certified for use in heavy-duty vehicles (including buses) with GVWRs greater than 8,500 pounds. However, the requirements do not apply to any heavy-duty diesel vehicle that was certified using a chassis dynamometer, including medium-duty passenger vehicles with GVWRs of between 8,500 and 10,000 pounds.

- o NO<sub>x</sub> and NMHC standards will be phased in together between 2007 and 2010. The phase-in will be on a percent-of-sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.
- p Note that for an individual engine, if the useful life hours interval is reached before the engine reaches 10 years or 100,000 miles, the useful life shall become 10 years or 100,000 miles, whichever occurs first, as required under Clean Air Act section 202(d).
- q Years or miles, whichever comes first but never less than the basic mechanical warranty for the engine family.

**Code of Federal Regulations (CFR) citations:**

- 40 CFR 86.099-11 Emission standards for 1999 and later model year diesel heavy-duty engines and vehicles.
- 40 CFR 86.004-11 Emission standards for 2004 and later model year diesel heavy-duty engines and vehicles.
- 40 CFR 86.007-11 Emission standards and supplemental requirements for 2007 and later model year diesel heavy-duty engines and vehicles.

### Nonroad Compression-Ignition Engines: Exhaust Emission Standards

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr)	NOx (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Smoke <sup>a</sup> (Percentage)	Useful Life (hours /years) <sup>b</sup>	Warranty Period (hours /years) <sup>b</sup>
Federal	kW < 8	1	2000-2004	-	10.5	-	1.0	8.0	20/15/50	3,000/5	1,500/2
		2	2005-2007	-	7.5	-	0.80	8.0			
		4	2008+	-	7.5	-	0.40 <sup>c</sup>	8.0			
	8 ≤ kW < 19	1	2000-2004	-	9.5	-	0.80	6.6		3,000/5	1,500/2
		2	2005-2007	-	7.5	-	0.80	6.6			
		4	2008+	-	7.5	-	0.40	6.6			
	19 ≤ kW < 37	1	1999-2003	-	9.5	-	0.80	5.5		5,000/7 <sup>d</sup>	3,000/5 <sup>e</sup>
		2	2004-2007	-	7.5	-	0.60	5.5			
		4	2008-2012	-	7.5	-	0.30	5.5			
			2013+	-	4.7	-	0.03	5.5			
	37 ≤ kW < 56	1	1998-2003	-	-	9.2	-	-		8,000/10	3,000/5
		2	2004-2007	-	7.5	-	0.40	5.0			
		3 <sup>f</sup>	2008-2011	-	4.7	-	0.40	5.0			
		4 (Option 1) <sup>g</sup>	2008-2012	-	4.7	-	0.30	5.0			
		4 (Option 2) <sup>g</sup>	2012	-	4.7	-	0.03	5.0			
		4	2013+	-	4.7	-	0.03	5.0			
	56 ≤ kW < 75	1	1998-2003	-	-	9.2	-	-		8,000/10	3,000/5
		2	2004-2007	-	7.5	-	0.40	5.0			
		3	2008-2011	-	4.7	-	0.40	5.0			
		4	2012-2013 <sup>h</sup>	-	4.7	-	0.02	5.0			
			2014+ <sup>i</sup>	0.19	-	0.40	0.02	5.0			
75 ≤ kW < 130	1	1997-2002	-	-	9.2	-	-	8,000/10	3,000/5		
	2	2003-2006	-	6.6	-	0.30	5.0				
	3	2007-2011	-	4.0	-	0.30	5.0				
	4	2012-2013 <sup>h</sup>	-	4.0	-	0.02	5.0				
		2014+	0.19	-	0.40	0.02	5.0				

Continued

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr)	NOx (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Smoke <sup>a</sup> (Percentage)	Useful Life (hours /years) <sup>b</sup>	Warranty Period (hours /years) <sup>b</sup>
<b>Federal</b>	130 ≤ kW < 225	1	1996-2002	1.3 <sup>j</sup>	-	9.2	0.54	11.4	20/15/50	8,000/10	3,000/5
		2	2003-2005	-	6.6	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 <sup>h</sup>	-	4.0	-	0.02	3.5			
			2014+ <sup>i</sup>	0.19	-	0.40	0.02	3.5			
	225 ≤ kW < 450	1	1996-2000	1.3 <sup>j</sup>	-	9.2	0.54	11.4			
		2	2001-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 <sup>h</sup>	-	4.0	-	0.02	3.5			
			2014+ <sup>i</sup>	0.19	-	0.40	0.02	3.5			
	450 ≤ kW < 560	1	1996-2001	1.3 <sup>j</sup>	-	9.2	0.54	11.4			
		2	2002-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 <sup>h</sup>	-	4.0	-	0.02	3.5			
			2014+ <sup>i</sup>	0.19	-	0.40	0.02	3.5			
	560 ≤ kW < 900	1	2000-2005	1.3 <sup>j</sup>	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5	0.10	3.5			
			2015+ <sup>i</sup>	0.19	-	3.5 <sup>k</sup>	0.04 <sup>l</sup>	3.5			
	kW > 900	1	2000-2005	1.3 <sup>j</sup>	-	9.2	0.54	11.4			
2		2006-2010	-	6.4	-	0.20	3.5				
4		2011-2014	0.40	-	3.5 <sup>k</sup>	0.10	3.5				
		2015+ <sup>i</sup>	0.19	-	3.5 <sup>k</sup>	0.04 <sup>l</sup>	3.5				

Notes on following page.

**Notes:**

- For Tier 1, 2, and 3 standards, exhaust emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), hydrocarbons (HC), and non-methane hydrocarbons (NMHC) are measured using the procedures in 40 Code of Federal Regulations (CFR) Part 89 Subpart E. For Tier 1, 2, and 3 standards, particulate matter (PM) exhaust emissions are measured using the California Regulations for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines.
- For Tier 4 standards, engines are tested for transient and steady-state exhaust emissions using the procedures in 40 CFR Part 1039 Subpart F. Transient standards do not apply to engines below 37 kilowatts (kW) before the 2013 model year, constant-speed engines, engines certified to Option 1, and engines above 560 kW.
- Tier 2 and later model naturally aspirated nonroad engines shall not discharge crankcase emissions into the atmosphere unless these emissions are permanently routed into the exhaust. This prohibition does not apply to engines using turbochargers, pumps, blowers, or superchargers.
- In lieu of the Tier 1, 2, and 3 standards for NO<sub>x</sub>, NMHC + NO<sub>x</sub>, and PM, manufacturers may elect to participate in the averaging, banking, and trading (ABT) program described in 40 CFR Part 89 Subpart C.
- a** Smoke emissions may not exceed 20 percent during the acceleration mode, 15 percent during the lugging mode, and 50 percent during the peaks in either mode. Smoke emission standards do not apply to single-cylinder engines, constant-speed engines, or engines certified to a PM emission standard of 0.07 grams per kilowatt-hour (g/kW-hr) or lower. Smoke emissions are measured using procedures in 40 CFR Part 86 Subpart I.
- b** Useful life and warranty period are expressed hours and years, whichever comes first.
- c** Hand-startable air-cooled direct injection engines may optionally meet a PM standard of 0.60 g/kW-hr. These engines may optionally meet Tier 2 standards through the 2009 model years. In 2010 these engines are required to meet a PM standard of 0.60 g/kW-hr.
- d** Useful life for constant speed engines with rated speed 3,000 revolutions per minute (rpm) or higher is 5 years or 3,000 hours, whichever comes first.
- e** Warranty period for constant speed engines with rated speed 3,000 rpm or higher is 2 years or 1,500 hours, whichever comes first.
- f** These Tier 3 standards apply only to manufacturers selecting Tier 4 Option 2. Manufacturers selecting Tier 4 Option 1 will be meeting those standards in lieu of Tier 3 standards.
- g** A manufacturer may certify all their engines to either Option 1 or Option 2 sets of standards starting in the indicated model year. Manufacturers selecting Option 2 must meet Tier 3 standards in the 2008-2011 model years.
- h** These standards are phase-out standards. Not more than 50 percent of a manufacturer's engine production is allowed to meet these standards in each model year of the phase out period. Engines not meeting these standards must meet the final Tier 4 standards.
- i** These standards are phased in during the indicated years. At least 50 percent of a manufacturer's engine production must meet these standards during each year of the phase in. Engines not meeting these standards must meet the applicable phase-out standards.
- j** For Tier 1 engines the standard is for total hydrocarbons.
- k** The NO<sub>x</sub> standard for generator sets is 0.67 g/kW-hr.
- l** The PM standard for generator sets is 0.03 g/kW-hr.

**Citations: Code of Federal Regulations (CFR) citations:**

- 40 CFR 89.112 = Exhaust emission standards
- 40 CFR 1039.101 = Exhaust emission standards for after 2014 model year
- 40 CFR 1039.102 = Exhaust emission standards for model year 2014 and earlier
- 40 CFR 1039 Subpart F = Exhaust emissions transient and steady state test procedures
- 40 CFR 86 Subpart I = Smoke emission test procedures
- 40 CFR 1065 = Test equipment and emissions measurement procedures

### Federal Marine Compression-Ignition (CI) Engines: Exhaust Emission Standards

Category <sup>a, b</sup>	Tier	Displacement (L/cylinder)	Power <sup>c</sup> (kW)	Speed (rpm)	Model Year	NOx (g/kW-hr)	HC (g/kW-hr)	HC+NOx <sup>d</sup> (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Useful Life <sup>e</sup> (years/hours)		Warranty Period <sup>f</sup> (years/hours)		
C1 Commercial	1	≥ 2.5	≥ 37	rpm < 130	2004 <sup>h</sup>	17.0	-	-	-	-	10 / 10,000	5 / 5,000			
				130 ≤ rpm < 2000		45.0 x N <sup>-0.20</sup> <sup>i</sup>	-	-	-						
				rpm ≥ 2000		9.8	-	-	-						
	2	all	disp < 0.9	≥ 37	-	2005 <sup>h</sup>	-	-	7.5 (ABT)	0.40 (ABT)	5.0	10 / 10,000	5 / 5,000		
			0.9 ≤ disp < 1.2	-	2004 <sup>h</sup>	-	-	7.2 (ABT)	0.30 (ABT)	5.0					
			1.2 ≤ disp < 2.5	-	2004 <sup>h</sup>	-	-	7.2 (ABT)	0.20 (ABT)	5.0					
			2.5 ≤ disp < 5.0	-	2007 <sup>h</sup>	-	-	7.2 (ABT)	0.20 (ABT)	5.0					
	C1 Commercial & Recreational	1	≥ 2.5	≥ 37	rpm < 130	2004	17	-	-	-	-	10 / 1,000	5 / 500		
130 ≤ rpm < 2000					45.0 x N <sup>-0.20</sup> <sup>i</sup>		-	-	-						
rpm ≥ 2000					9.8		-	-	-						
2		all	disp < 0.9	≥ 37	-	2007	-	-	7.5 (ABT)	0.40 (ABT)	5.0	10 / 1,000	5 / 500		
			0.9 ≤ disp < 1.2	-	2006	-	-	7.2 (ABT)	0.30 (ABT)	5.0					
			1.2 ≤ disp < 2.5	-	2006	-	-	7.2 (ABT)	0.20 (ABT)	5.0					
			2.5 ≤ disp < 5.0	-	2009	-	-	7.2 (ABT)	0.20 (ABT)	5.0					
C1 Commercial & Recreational < 75 kW		3	< 0.9	< 8	-	2009+	-	-	7.5 (ABT)	0.40 (ABT)	8.0	5 / 3,000	10 / 1,000 for CI Recreational	2.5 / 1,500	10 / 500 for CI Recreational
	8 ≤ kW < 19			-	2009+	-	-	7.5 (ABT)	0.40 (ABT)	6.6					
	19 ≤ kW < 37			-	2009-2013	-	-	7.5 <sup>j</sup> (ABT)	0.30 <sup>j</sup> (ABT)	5.5	7 / 5,000				
				-	2014+	-	-	4.7 <sup>j</sup> (ABT)	0.20 (ABT)	5.0					
	37 ≤ kW < 75			-	2009-2013	-	-	7.5 <sup>j</sup> (ABT)	0.30 <sup>j</sup> (ABT)	5.0	10 / 10,000				
				-	2014+	-	-	4.7 <sup>j</sup> (ABT)		5.0					

Continued

Category <sup>a, b</sup>	Tier	Displacement (L/cylinder)	Power <sup>c</sup> (kW)	Speed (rpm)	Model Year	NOx (g/kW-hr)	HC (g/kW-hr)	HC+NOx <sup>d</sup> (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Useful Life <sup>e</sup> (years/hours)	Waranty Period <sup>f</sup> (years/hours)
C1 Commercial Engines with ≤ 35 kW/L power density <sup>k</sup>	3 <sup>l</sup>	< 0.9	-	-	2012+	-	-	5.4 (ABT)	0.14 (ABT)	8.0 for < 8 kW 6.6 for 8 ≤ kW < 19 5.5 for 19 ≤ kW < 37 5.0 for ≤ 37 kW	5 / 3,000 for commercial engines < 19 kW 7 / 5,000 for commercial engines 19 ≤ kW < 37 10 / 10,000 for C1 Commercial ≤ 37 kW	2.5 / 1,500 for commercial engines < 19 kW 3.5 / 2,500 for commercial engines 19 ≤ kW < 37 5 / 5,000 for C1 Commercial ≤ 37 kW
		0.9 ≤ disp < 1.2	All	-	2013+	-	-	5.4 (ABT)	0.12 (ABT)			
		1.2 ≤ disp < 2.5	< 600	-	2014-2017	-	-	5.6 (ABT)	0.11 (ABT)			
				-	2018+	-	-	5.6 (ABT)	0.10 (ABT)			
		2.5 ≤ disp < 3.5	< 600	-	2013-2017	-	-	5.6 (ABT)	0.11 (ABT)			
				-	2018+	-	-	5.6 (ABT)	0.10 (ABT)			
				≥ 600	2013+	-	-	5.6 (ABT)	0.11 (ABT)			
		3.5 ≤ disp < 7.0	< 600	-	2012-2017	-	-	5.8 (ABT)	0.11 (ABT)			
				-	2018+	-	-	5.8 (ABT)	0.10 (ABT)			
				≥ 600	2012+	-	-	5.8 (ABT)	0.11 (ABT)			
C1 Commercial Engines with > 35 kW/L power density & All Recreational Engines <sup>k</sup>	3 <sup>l</sup>	< 0.9	≥ 75	-	2012+	-	-	5.8 (ABT)	0.15 (ABT)	8.0 for < 8 kW 6.6 for 8 ≤ kW < 19 5.5 for 19 ≤ kW < 37 5.0 for ≥ 37 kW	5 / 3,000 for commercial engines < 19 kW 7 / 5,000 for commercial engines 19 ≤ kW < 37 10 / 10,000 for C1 Commercial ≥ 37 kW 10 / 1,000 for CI Recreational	2.5 / 1,500 for commercial engines < 19 kW 3.5 / 2,500 for commercial engines 19 ≤ kW < 37 5 / 5,000 for C1 Commercial ≥ 37 kW 5 / 500 for CI Recreational
		0.9 ≤ disp < 1.2	All	-	2013+	-	-	5.8 (ABT)	0.14 (ABT)			
		1.2 ≤ disp < 2.5		-	2014+	-	-	5.8 (ABT)	0.14 (ABT)			
		2.5 ≤ disp < 3.5		-	2013+	-	-	5.8 (ABT)	0.12 (ABT)			
		3.5 ≤ disp < 7.0		-	2012+	-	-	5.8 (ABT)	0.11 (ABT)			
C1 Commercial > 600 kW	4 <sup>m</sup>	All	600 ≤ kW < 1,400	-	2017+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.04 (ABT)	5.0	10 / 10,000	5 / 5,000
		All	1,400 ≤ kW < 2,000	-	2016+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.04 (ABT)			
		All	2,000 ≤ kW < 3,700	-	2014+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.04 (ABT)			
		< 7.0	≥ 3,700	-	2014-2015	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.12 (ABT)			
				-	2016+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.06 (ABT)			

Continued

Category <sup>a, b</sup>	Tier	Displacement (L/cylinder)	Power <sup>c</sup> (kW)	Speed (rpm)	Model Year	NOx (g/kW -hr)	HC (g/kW -hr)	HC+NOx <sup>d</sup> (g/kW-hr)	PM (g/kW-hr)	CO (g/kW -hr)	Useful Life <sup>e</sup> (years/hours)	Waranty Period <sup>f</sup> (years/hours)
C2	1	≥ 2.5	≥ 37	rpm < 130	2004	17.0	-	-	-	-	10 / 20,000	5 / 10,000
				130 ≤ rpm < 2,000		45.0 x N <sup>-0.20 i</sup>	-	-	-			
				rpm ≥ 2,000		9.8	-	-	-			
	2	5.0 ≤ disp < 15.0	all	-	2007	-	-	7.8 (ABT)	0.27 (ABT)	5.0	10 / 20,000	5 / 10,000
			15.0 ≤ disp < 20.0	< 3,300		-	-	8.7 (ABT)	0.50 (ABT)	5.0		
			15.0 ≤ disp < 20.0	≥ 3,300		-	-	9.8 (ABT)	0.50 (ABT)	5.0		
			20.0 ≤ disp < 25.0	all		-	-	9.8 (ABT)	0.50 (ABT)	5.0		
			25.0 ≤ disp < 30.0	all		-	-	11.0 (ABT)	0.50 (ABT)	5.0		
	3 <sup>o, p</sup>	7.0 ≤ disp < 15.0	< 2,000	-	2013+	-	-	6.2 (ABT)	0.14 (ABT)	5.0	10 / 20,000	5 / 10,000
			2,000 ≤ kW < 3,700	-		-	-	7.8 (ABT)	0.14 (ABT)	5.0		
		15.0 ≤ disp < 20.0	< 2,000	-	2014+	-	-	7.0 (ABT)	0.34 (ABT)	5.0		
		20.0 ≤ disp < 25.0	< 2,000	-		-	9.8 (ABT)	0.27 (ABT)	5.0			
		25.0 ≤ disp < 30.0	< 2,000	-		-	11.0 (ABT)	0.27 (ABT)	5.0			
	4 <sup>m, p</sup>	All	600 ≤ kW < 1,400	-	2017+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.04 (ABT)	5.0	10 / 20,000	5 / 10,000
		All	1400 ≤ kW < 2,000	-	2016+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.04 (ABT)			
		All	2,000 ≤ kW < 3,700 <sup>q</sup>	-	2014+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.04 (ABT)			
		< 15.0	≥ 3,700	-	2014-2015	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.12 (ABT)			
		15.0 ≤ disp < 30.0		-	2014-2015	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.25 (ABT)			
		All		-	2016+	1.8 (ABT)	-	0.19 HC <sup>n</sup>	0.06 (ABT)			

Continued

Category <sup>a, b</sup>	Tier	Displacement (L/cylinder)	Power <sup>c</sup> (kW)	Speed (rpm)	Model Year	NOx (g/kW -hr)	HC (g/kW -hr)	HC+NOx <sup>d</sup> (g/kW-hr)	PM (g/kW-hr)	CO (g/kW -hr)	Useful Life <sup>e</sup> (years/hours)	Waranty Period <sup>f</sup> (years/hours)
C3	1	≥30.0	All	rpm < 130	2004	17.0	-	-	-	-	3 / 10,000	3 / 10,000
				130 ≤ rpm < 2,000		$45.0 \times N^{-0.20 i}$	-	-	-			
				rpm ≥ 2,000		9.8	-	-	-			
	2	≥30.0	All	rpm < 130	2011	14.4	2.0	-	-	5.0	3 / 10,000	3 / 10,000
				130 ≤ rpm < 2,000		$44.0 \times N^{-0.23 i}$		-	-			
				rpm ≥ 2,000		7.7		-	-			
	3	≥ 30.0	All	rpm < 130	2016	3.4	2.0	-	-	5.0	3 / 10,000	3 / 10,000
				130 ≤ rpm < 2,000		$9.0 \times N^{-0.20 i}$		-	-			
				rpm ≥ 2,000		2.0		-	-			

**Notes:**

- a** For Tiers 1 and 2, Category 1 (C1) marine engines are greater than or equal to 37 kilowatts (kW) and have a displacement less than 5.0 liters per cylinder (L/cylinder); Category 2 (C2) marine engines have a displacement greater than or equal to 5.0 L/cylinder and less than 30 L/cylinder; and Category 3 (C3) marine engines have a displacement greater than or equal to 30.0 L/cylinder. For Tiers 3 and 4, Category 1 represents engines up to 7 L/cylinder displacement; and Category 2 includes engines from 7 to 30 L/cylinder. The definition of Category 3 marine engines remains the same.
- b** Tiers 1 and 2 for marine engines less than 37 kW are subject to the same emission standards as for land-based engines. See Table 1 in 40 Code of Federal Regulations (CFR) Part 89.112 and 40 CFR Part 89.104.
- c** For Tiers 1 and 2, this refers to the rated power; for Tiers 3 and 4, this refers to the maximum engine power.
- d** Total hydrocarbon (THC) plus nitrogen oxides (NOx) for Tier 2 standards.
- e** Useful life is expressed in hours or years, whichever comes first. For Tiers 3 and 4, a longer useful life in hours for an engine family must be specified if either: 1) the engine is designed, advertised, or marketed to operate longer than the minimum useful life; or 2) the basic mechanical warranty is longer than the minimum useful life.
- f** Warranty period is expressed in years and hours, whichever comes first.
- g** For Tiers 3 and 4, there are no evaporative emission standards for diesel-fueled engines, or engines using other nonvolatile or nonliquid fuels (e.g., natural gas). If an engine uses a volatile liquid fuel, such as methanol, the engine's fuel system and the vessel in which the engine is installed must meet the evaporative emission requirements of 40 Code of Federal Regulations (CFR) Part 1045 that apply with respect to spark-ignition engines. Manufacturers subject to evaporative emission standards must meet the requirements of 40 CFR 1045.112 as described in 40 CFR 1060.1(a)(2).
- h** Indicates the model years for which the specified standards start.
- i** N is the maximum test speed of the engine in revolutions per minute (rpm).
- j** Manufacturers of Tier 3 engines greater than or equal to 19 kW and less than 75 kW with displacement below 0.9 L/cylinder may alternatively certify some or all of their engine families to a particulate matter (PM) emission standard of 0.20 grams per kilowatt-hour (g/kW-hr) and a NOx+HC emission standard of 5.8 g/kW-hr for 2014 and later model years.
- k** The applicable Tier 2 NOx+HC standards continue to apply instead of the Tier 3 values for engines at or above 2000 kW.

**Continued**

- l** These Tier 3 standards apply to Category 1 engines below 3700 kW except for recreational marine engines at or above 3700 kW (with any displacement), which must meet the Tier 3 standards specified for recreational marine engines with a displacement of 3.5 to 7.0 L/cylinder.
- m** The following provisions are optional: 1) Manufacturers may use NO<sub>x</sub> credits to certify Tier 4 engines to a NO<sub>x</sub>+HC emission standard of 1.9 g/kW-hr instead of the NO<sub>x</sub> and HC standards. See 40 CFR 1042.101(a)(8)(i) for more details. 2) For engines below 1000 kW, manufacturers may delay complying with the Tier 4 standards until October 1, 2017. 3) For engines at or above 3700 kW, manufacturers may delay complying with the Tier 4 standards until December 31, 2016.
- n** The Tier 4 standard is for HC (not HC+NO<sub>x</sub>) in g/kW-hr.
- o** These Tier 3 standards apply to Category 2 engines below 3700 kW; no Tier 3 standards apply for Category 2 engines at or above 3700 kW, although there are Tier 4 standards that apply.
- p** An alternative set of Tier 3 and Tier 4 standards for PM, NO<sub>x</sub>, and HC are available for Category 2 engines at or above 1400 kW, but must be applied to all of a manufacturer's engines in a given displacement category in model years 2012 through 2015.

Tier	Maximum engine power	Model year	PM (g/kW-hr)	NO <sub>x</sub> (g/kW-hr)	HC (g/kW-hr)
3	kW ≥ 1400	2012-2014	0.14	7.8 NO <sub>x</sub> +HC	
4	1400 ≤ kW < 3700	2015	0.04	1.8	0.19
	kW ≥ 3700	2015	0.06	1.8	0.19

- q** Interim Tier 4 PM standards apply for 2014 and 2015 model year Category 2 engines with per-cylinder displacement at or above 15.0 liters: 0.34 g/kW-hr for engines 2000 = kW < 3000, and 0.27 g/kW-hr for engines 3300 = kW < 3700.

**Code of Federal Regulations (CFR) Citations:**

- 40 CFR 89.104 = Tier 1 and Tier 2 useful life & warranty period for marine CI engines less than 37 kW
- 40 CFR 89.112 = Tier 1 and Tier 2 emission standards for marine CI engines less than 37 kW
- 40 CFR Part 89, Subpart E = Tier 1 and Tier 2 test procedures for marine CI engines less than 37 kW
- 40 CFR 94.8 = Tier 1 standards for C3 engines; also, Tier 1 and Tier 2 emission standards for C1 and C2 engines
- 40 CFR 94.9 = Useful life values corresponding to the standards in §94.8
- 40 CFR 94.10 = Warranty periods corresponding to the standards in §94.8
- 40 CFR Part 94, Subpart B = Test procedures for measuring emissions relative to the emission standards in §94.8
- 40 CFR 1042.101 = Tier 3 and Tier 4 exhaust emission standards and useful life for C1 and C2 engines
- 40 CFR 1042.104 = Tier 2 and Tier 3 exhaust emission standards and useful life for C3 engines
- 40 CFR 1042.107 = Evaporative emission standards for marine CI engines using methanol or any other volatile liquid fuel
- 40 CFR 1042.120 = Warranty periods corresponding to the standards in 40 CFR Part 1042
- 40 CFR Part 1042, Subpart F = Test procedures for measuring emissions relative to the emission standards in 40 CFR Part 1042

**Locomotives: Exhaust Emission Standards**

	Duty-Cycle <sup>b</sup>	Tier	Year <sup>c</sup>	HC <sup>i</sup> (g/hp-hr)	NOx (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	Smoke (percentage) <sup>m</sup>	Minimum Useful Life (hours / years / miles) <sup>n</sup>	Warranty Period (hours / years / miles) <sup>n</sup>
<b>Federal</b> <sup>a</sup>	Line-haul	Tier 0	1973-1992 <sup>d, e</sup>	1.00	9.5 [ABT]	0.22 [ABT]	5.0	30 / 40 / 50	(7.5 x hp) / 10 / 750,000 <sup>o</sup>	1/3 * Useful Life
		Tier 1	1993-2004 <sup>d, e</sup>	0.55	7.4 [ABT]	0.22 [ABT]	2.2	25 / 40 / 50	(7.5 x hp) / 10 / 750,000 <sup>o</sup> (7.5 x hp) / 10 / -	
		Tier 2	2005-2011 <sup>d</sup>	0.30	5.5 [ABT]	0.10 <sup>k</sup> [ABT]	1.5	20 / 40 / 50	(7.5 x hp) / 10 / -	
		Tier 3	2012-2014 <sup>f</sup>	0.30	5.5 [ABT]	0.10 [ABT]	1.5	20 / 40 / 50	(7.5 x hp) / 10 / -	
		Tier 4	2015+ <sup>g</sup>	0.14	1.3 [ABT]	0.03 [ABT]	1.5	-	(7.5 x hp) / 10 / -	
	Switch	Tier 0	1973-2001	2.10	11.8 [ABT]	0.26 [ABT]	8.0	30 / 40 / 50	(7.5 x hp) / 10 / 750,000 <sup>o</sup>	
		Tier 1	2002-2004 <sup>h</sup>	1.20	11.0 [ABT]	0.26 [ABT]	2.5	25 / 40 / 50	(7.5 x hp) / 10 / -	
		Tier 2	2005-2010 <sup>h</sup>	0.60	8.1 [ABT]	0.13 <sup>l</sup> [ABT]	2.4	20 / 40 / 50	(7.5 x hp) / 10 / -	
		Tier 3	2011-2014	0.60	5.0 [ABT]	0.10 [ABT]	2.4	20 / 40 / 50	(7.5 x hp) / 10 / -	
		Tier 4	2015+	0.14 <sup>j</sup>	1.3 <sup>j</sup> [ABT]	0.03 [ABT]	2.4	-	(7.5 x hp) / 10 / -	

**Notes:**

- a** These standards apply to locomotives that are propelled by engines with total rated horsepower (hp) of 750 kilowatts (kW) (1006 hp) or more, unless the owner chooses to have the equipment certified to meet the requirements of locomotives. This does not include vehicles propelled by engines with total rated horsepower of less than 750 kW (1006 hp); see the requirements in 40 Code of Federal Regulations (CFR) Parts 86, 89 and 1039. The test procedures specify chassis-based testing of locomotives. These test procedures include certification testing, production line testing, and in-use testing using the Federal Test Procedure (FTP) when the locomotive has reached between 50-70 percent of its useful life.
- b** Line-haul locomotives are powered by an engine with a maximum rated power (or a combination of engines having a total rated power) greater than 2300 hp. Switch locomotives are powered by an engine with a maximum rated power (or a combination of engines having a total rated power) of 2300 hp or less.
- c** The Tier 0 standards apply to locomotives manufactured after 1972 when they are manufactured or remanufactured. Note that interim standards may apply for Tier 0 or Tier 1 locomotives remanufactured in 2008 or 2009, or for Tier 2 locomotives manufactured or remanufactured in 2008-2012.
- d** Line-haul locomotives subject to the Tier 0 through Tier 2 emission standards must also meet switch standards of the same tier.
- e** The Tier 0 standards apply for 1993-2001 locomotives not originally manufactured with a separate loop intake air cooling system
- f** Tier 3 line-haul locomotives must also meet Tier 2 switch standards.
- g** Manufacturers using credits may elect to meet a combined nitrogen oxides (NOx) plus hydrocarbon (HC) standard of 1.4 grams per brakehorsepower-hour (g/bhp-hr) instead of the otherwise applicable Tier 4 NOx and HC standards.

- h** Tier 1 and Tier 2 switch locomotives must also meet line-haul standards of the same tier.
- i** The numerical emission standards for HC must be met based on the following types of hydrocarbon emissions for locomotives powered by the following fuels: (1) alcohol: total hydrocarbon equivalent (THCE) emissions for Tier 3 and earlier locomotives, and non-methane hydrocarbon equivalent (NMHCE) for Tier 4; (2) natural gas and liquefied petroleum gas: non-methane hydrocarbon (NMHC) emissions; and (3) diesel: total hydrocarbon (THC) emissions for Tier 3 and earlier locomotives, and NMHC for Tier 4.
- j** Manufacturers may elect to meet a combined NO<sub>x</sub>+HC standard of 1.4 g/bhp-hr instead of the otherwise applicable Tier 4 NO<sub>x</sub> and HC standards.
- k** The line-haul particulate matter (PM) standard for newly remanufactured Tier 2 locomotives is 0.20 g/bhp-hr until January 1, 2013, except as specified in 40 CFR Part 1033.150(a).
- l** The switch PM standard for new Tier 2 locomotives is 0.24 g/bhp-hr until January 1, 2013, except as specified in 40 CFR Part 1033.150(a).

- m** The smoke opacity standards apply only for locomotives certified to one or more PM standards or Family Emission Limits (FEL) greater than 0.05 g/bhp-hr. Percentages apply to smoke opacity at steady state/30-second peak/3-second peak, as measured continuously during testing.
- n** Useful life and warranty period are expressed in megawatt-hours (mw-hr), years, or miles, whichever comes first. Manufacturers are required to certify to longer useful lives if their locomotives are designed to last longer between overhauls than the minimum useful life value.
- o** For locomotives originally manufactured before January 1, 2000, and not equipped with mw-hr meters.

**Code of Federal Regulations (CFR) Citations:**

- 40 CFR 1033.101 = Emission Standards and Useful Life
- 40 CFR 1033.120 = Warranty Requirements

ATTACHMENT 2

**Appendix D-2 to Partial Consent  
Decree MDL No. 2672 CRB (JSC)**



**APPENDIX D-2**  
**Eligible Mitigation Actions and Mitigation Action Expenditures**

**APPENDIX D-2**

**ELIGIBLE MITIGATION ACTIONS AND MITIGATION ACTION EXPENDITURES**

1. Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks)

- a. Eligible Large Trucks include 1992-2009 engine model year Class 8 Local Freight or Drayage. For Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year trucks at the time of the proposed Eligible Mitigation Action, Eligible Large Trucks shall also include 2010-2012 engine model year Class 8 Local Freight or Drayage.
- b. Eligible Large Trucks must be Scrapped.
- c. Eligible Large Trucks may be Repowered with any new diesel or Alternate Fueled engine or All-Electric engine, or may be replaced with any new diesel or Alternate Fueled or All-Electric vehicle, with the engine model year in which the Eligible Large Trucks Mitigation Action occurs or one engine model year prior.
- d. For Non-Government Owned Eligible Class 8 Local Freight Trucks, Beneficiaries may only draw funds from the Trust in the amount of:
  1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.
  3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  4. Up to 75% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- e. For Non-Government Owned Eligible Drayage Trucks, Beneficiaries may only draw funds from the Trust in the amount of:
  1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  2. Up to 50% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.

3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  4. Up to 75% of the cost of a new all-electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- f. For Government Owned Eligible Class 8 Large Trucks, Beneficiaries may draw funds from the Trust in the amount of:
1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.
  3. Up to 100% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  4. Up to 100% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

2. Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Eligible Buses)

- a. Eligible Buses include 2009 engine model year or older class 4-8 school buses, shuttle buses, or transit buses. For Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year buses at the time of the proposed Eligible Mitigation Action, Eligible Buses shall also include 2010-2012 engine model year class 4-8 school buses, shuttle buses, or transit buses.
- b. Eligible Buses must be Scrapped.
- c. Eligible Buses may be Repowered with any new diesel or Alternate Fueled or All-Electric engine, or may be replaced with any new diesel or Alternate Fueled or All-Electric vehicle, with the engine model year in which the Eligible Bus Mitigation Action occurs or one engine model year prior.
- d. For Non-Government Owned Buses, Beneficiaries may draw funds from the Trust in the amount of:
  1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.

3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  4. Up to 75% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- e. For Government Owned Eligible Buses, and Privately Owned School Buses Under Contract with a Public School District, Beneficiaries may draw funds from the Trust in the amount of:
1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.
  3. Up to 100% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  4. Up to 100% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

### 3. Freight Switchers

- a. Eligible Freight Switchers include pre-Tier 4 switcher locomotives that operate 1000 or more hours per year.
- b. Eligible Freight Switchers must be Scrapped.
- c. Eligible Freight Switchers may be Repowered with any new diesel or Alternate Fueled or All-Electric engine(s) (including Generator Sets), or may be replaced with any new diesel or Alternate Fueled or All-Electric (including Generator Sets) Freight Switcher, that is certified to meet the applicable EPA emissions standards (or other more stringent equivalent State standard) as published in the CFR for the engine model year in which the Eligible Freight Switcher Mitigation Action occurs.
- d. For Non-Government Owned Freight Switchers, Beneficiaries may draw funds from the Trust in the amount of :
  1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine(s) or Generator Sets, including the costs of installation of such engine(s).
  2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) Freight Switcher.

3. Up to 75% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).
  4. Up to 75% of the cost of a new All-Electric Freight Switcher, including charging infrastructure associated with the new All-Electric Freight Switcher.
- e. For Government Owned Eligible Freight Switchers, Beneficiaries may draw funds from the Trust in the amount of:
1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine(s) or Generator Sets, including the costs of installation of such engine(s).
  2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) Freight Switcher.
  3. Up to 100% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).
  4. Up to 100% of the cost of a new All-Electric Freight Switcher, including charging infrastructure associated with the new All-Electric Freight Switcher.

#### 4. Ferries/Tugs

- a. Eligible Ferries and/or Tugs include unregulated, Tier 1, or Tier 2 marine engines.
- b. Eligible Ferry and/or Tug engines that are replaced must be Scrapped.
- c. Eligible Ferries and/or Tugs may be Repowered with any new Tier 3 or Tier 4 diesel or Alternate Fueled engines, or with All-Electric engines, or may be upgraded with an EPA Certified Remanufacture System or an EPA Verified Engine Upgrade.
- d. For Non-Government Owned Eligible Ferries and/or Tugs, Beneficiaries may only draw funds from the Trust in the amount of:
  1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine(s), including the costs of installation of such engine(s).
  2. Up to 75% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).

- e. For Government Owned Eligible Ferries and/or Tugs, Beneficiaries may draw funds from the Trust in the amount of:
  - 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine(s), including the costs of installation of such engine(s).
  - 2. Up to 100% of the cost of a Repower with a new All-Electric engine(s), including the costs of installation of such engine(s), and charging infrastructure associated with the new All-Electric engine(s).

5. Ocean Going Vessels (OGV) Shorepower

- a. Eligible Marine Shorepower includes systems that enable a compatible vessel's main and auxiliary engines to remain off while the vessel is at berth. Components of such systems eligible for reimbursement are limited to cables, cable management systems, shore power coupler systems, distribution control systems, and power distribution. Marine shore power systems must comply with international shore power design standards (ISO/IEC/IEEE 80005-1-2012 High Voltage Shore Connection Systems or the IEC/PAS 80005-3:2014 Low Voltage Shore Connection Systems) and should be supplied with power sourced from the local utility grid. Eligible Marine Shorepower includes equipment for vessels that operate within the Great Lakes.
- b. For Non-Government Owned Marine Shorepower, Beneficiaries may only draw funds from the Trust in the amount of up to 25% for the costs associated with the shore-side system, including cables, cable management systems, shore power coupler systems, distribution control systems, installation, and power distribution components.
- c. For Government Owned Marine Shorepower, Beneficiaries may draw funds from the Trust in the amount of up to 100% for the costs associated with the shore-side system, including cables, cable management systems, shore power coupler systems, distribution control systems, installation, and power distribution components.

6. Class 4-7 Local Freight Trucks (Medium Trucks)

- a. Eligible Medium Trucks include 1992-2009 engine model year class 4-7 Local Freight trucks, and for Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year trucks at the time of the proposed Eligible Mitigation Action, Eligible Trucks shall also include 2010-2012 engine model year class 4-7 Local Freight trucks.
- b. Eligible Medium Trucks must be Scrapped.

- c. Eligible Medium Trucks may be Repowered with any new diesel or Alternate Fueled or All-Electric engine, or may be replaced with any new diesel or Alternate Fueled or All-Electric vehicle, with the engine model year in which the Eligible Medium Trucks Mitigation Action occurs or one engine model year prior.
- d. For Non-Government Owned Eligible Medium Trucks, Beneficiaries may draw funds from the Trust in the amount of:
  - 1. Up to 40% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  - 2. Up to 25% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.
  - 3. Up to 75% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  - 4. Up to 75% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.
- e. For Government Owned Eligible Medium Trucks, Beneficiaries may draw funds from the Trust in the amount of:
  - 1. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) engine, including the costs of installation of such engine.
  - 2. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g., CNG, propane, Hybrid) vehicle.
  - 3. Up to 100% of the cost of a Repower with a new All-Electric engine, including the costs of installation of such engine, and charging infrastructure associated with the new All-Electric engine.
  - 4. Up to 100% of the cost of a new All-Electric vehicle, including charging infrastructure associated with the new All-Electric vehicle.

7. Airport Ground Support Equipment

- a. Eligible Airport Ground Support Equipment includes:
  - 1. Tier 0, Tier 1, or Tier 2 diesel powered airport ground support equipment; and
  - 2. Uncertified, or certified to 3 g/bhp-hr or higher emissions, spark ignition engine powered airport ground support equipment.
- b. Eligible Airport Ground Support Equipment must be Scrapped.

- c. Eligible Airport Ground Support Equipment may be Repowered with an All-Electric engine, or may be replaced with the same Airport Ground Support Equipment in an All-Electric form.
- d. For Non-Government Owned Eligible Airport Ground Support Equipment, Beneficiaries may only draw funds from the Trust in the amount of:
  - 1. Up to 75% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
  - 2. Up to 75% of the cost of a new All-Electric Airport Ground Support Equipment, including charging infrastructure associated with such new All-Electric Airport Ground Support Equipment.
- e. For Government Owned Eligible Airport Ground Support Equipment, Beneficiaries may draw funds from the Trust in the amount of:
  - 1. Up to 100% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
  - 2. Up to 100% of the cost of a new All-Electric Airport Ground Support Equipment, including charging infrastructure associated with such new All-Electric Airport Ground Support Equipment.

8. Forklifts and Port Cargo Handling Equipment

- a. Eligible Forklifts includes forklifts with greater than 8000 pounds lift capacity.
- b. Eligible Forklifts and Port Cargo Handling Equipment must be Scrapped.
- c. Eligible Forklifts and Port Cargo Handling Equipment may be Repowered with an All-Electric engine, or may be replaced with the same equipment in an All-Electric form.
- d. For Non-Government Owned Eligible Forklifts and Port Cargo Handling Equipment, Beneficiaries may draw funds from the Trust in the amount of:
  - 1. Up to 75% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
  - 2. Up to 75% of the cost of a new All-Electric Forklift or Port Cargo Handling Equipment, including charging infrastructure associated with such new All-Electric Forklift or Port Cargo Handling Equipment.
- e. For Government Owned Eligible Forklifts and Port Cargo Handling Equipment, Beneficiaries may draw funds from the Trust in the amount of:

1. Up to 100% of the cost of a Repower with a new All-Electric engine, including costs of installation of such engine, and charging infrastructure associated with such new All-Electric engine.
  2. Up to 100% of the cost of a new All-Electric Forklift or Port Cargo Handling Equipment, including charging infrastructure associated with such new All-Electric Forklift or Port Cargo Handling Equipment.
9. Light Duty Zero Emission Vehicle Supply Equipment. Each Beneficiary may use up to fifteen percent (15%) of its allocation of Trust Funds on the costs necessary for, and directly connected to, the acquisition, installation, operation and maintenance of new light duty zero emission vehicle supply equipment for projects as specified below. Provided, however, that Trust Funds shall not be made available or used to purchase or rent real-estate, other capital costs (e.g., construction of buildings, parking facilities, etc.) or general maintenance (i.e., maintenance other than of the Supply Equipment).
- a. Light duty electric vehicle supply equipment includes Level 1, Level 2 or fast charging equipment (or analogous successor technologies) that is located in a public place, workplace, or multi-unit dwelling and is not consumer light duty electric vehicle supply equipment (i.e., not located at a private residential dwelling that is not a multi-unit dwelling).
  - b. Light duty hydrogen fuel cell vehicle supply equipment includes hydrogen dispensing equipment capable of dispensing hydrogen at a pressure of 70 megapascals (MPa) (or analogous successor technologies) that is located in a public place.
  - c. Subject to the 15% limitation above, each Beneficiary may draw funds from the Trust in the amount of:
    1. Up to 100% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that will be available to the public at a Government Owned Property.
    2. Up to 80% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that will be available to the public at a Non-Government Owned Property.
    3. Up to 60% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that is available at a workplace but not to the general public.
    4. Up to 60% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that is available at a multi-unit dwelling but not to the general public.

5. Up to 33% of the cost to purchase, install and maintain eligible light duty hydrogen fuel cell vehicle supply equipment capable of dispensing at least 250 kg/day that will be available to the public.
  6. Up to 25% of the cost to purchase, install and maintain eligible light duty hydrogen fuel cell vehicle supply equipment capable of dispensing at least 100 kg/day that will be available to the public.
10. Diesel Emission Reduction Act (DERA) Option. Beneficiaries may use Trust Funds for their non-federal voluntary match, pursuant to Title VII, Subtitle G, Section 793 of the DERA Program in the Energy Policy Act of 2005 (codified at 42 U.S.C. § 16133), or Section 792 (codified at 42 U.S.C. § 16132) in the case of Tribes, thereby allowing Beneficiaries to use such Trust Funds for actions not specifically enumerated in this Appendix D-2, but otherwise eligible under DERA pursuant to all DERA guidance documents available through the EPA. Trust Funds shall not be used to meet the non-federal mandatory cost share requirements, as defined in applicable DERA program guidance, of any DERA grant.

### Eligible Mitigation Action Administrative Expenditures

For any Eligible Mitigation Action, Beneficiaries may use Trust Funds for actual administrative expenditures (described below) associated with implementing such Eligible Mitigation Action, but not to exceed 15% of the total cost of such Eligible Mitigation Action. The 15% cap includes the aggregated amount of eligible administrative expenditures incurred by the Beneficiary and any third-party contractor(s).

1. Personnel including costs of employee salaries and wages, but not consultants.
2. Fringe Benefits including costs of employee fringe benefits such as health insurance, FICA, retirement, life insurance, and payroll taxes.
3. Travel including costs of Mitigation Action-related travel by program staff, but does not include consultant travel.
4. Supplies including tangible property purchased in support of the Mitigation Action that will be expensed on the Statement of Activities, such as educational publications, office supplies, etc. Identify general categories of supplies and their Mitigation Action costs.
5. Contractual including all contracted services and goods except for those charged under other categories such as supplies, construction, etc. Contracts for evaluation and consulting services and contracts with sub-recipient organizations are included.
6. Construction including costs associated with ordinary or normal rearrangement and alteration of facilities.
7. Other costs including insurance, professional services, occupancy and equipment leases, printing and publication, training, indirect costs, and accounting.

### Definitions/Glossary of Terms

“Airport Ground Support Equipment” shall mean vehicles and equipment used at an airport to service aircraft between flights.

“All-Electric” shall mean powered exclusively by electricity provided by a battery, fuel cell, or the grid.

“Alternate Fueled” shall mean an engine, or a vehicle or piece of equipment that is powered by an engine, which uses a fuel different from or in addition to gasoline fuel or diesel fuel (e.g., CNG, propane, diesel-electric Hybrid).

“Certified Remanufacture System or Verified Engine Upgrade” shall mean engine upgrades certified or verified by EPA or CARB to achieve a reduction in emissions.

“Class 4-7 Local Freight Trucks (Medium Trucks)” shall mean trucks, including commercial trucks, used to deliver cargo and freight (e.g., courier services, delivery trucks, box trucks moving freight, waste haulers, dump trucks, concrete mixers) with a Gross Vehicle Weight Rating (GVWR) between 14,001 and 33,000 lbs.

“Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Buses)” shall mean vehicles with a Gross Vehicle Weight Rating (GVWR) greater than 14,001 lbs. used for transporting people. See definition for School Bus below.

“Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)” shall mean trucks with a Gross Vehicle Weight Rating (GVWR) greater than 33,000 lbs. used for port drayage and/or freight/cargo delivery (including waste haulers, dump trucks, concrete mixers).

“CNG” shall mean Compressed Natural Gas.

“Drayage Trucks” shall mean trucks hauling cargo to and from ports and intermodal rail yards.

“Forklift” shall mean nonroad equipment used to lift and move materials short distances; generally includes tines to lift objects. Eligible types of forklifts include reach stackers, side loaders, and top loaders.

“Freight Switcher” shall mean a locomotive that moves rail cars around a rail yard as compared to a line-haul engine that moves freight long distances.

“Generator Set” shall mean a switcher locomotive equipped with multiple engines that can turn off one or more engines to reduce emissions and save fuel depending on the load it is moving.

“Government” shall mean a State or local government agency (including a school district, municipality, city, county, special district, transit district, joint powers authority, or port authority, owning fleets purchased with government funds), and a tribal government or native village. The term “State” means the several States, the District of Columbia, and the Commonwealth of Puerto Rico.

“Gross Vehicle Weight Rating (GVWR)” shall mean the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers, and cargo.

- Class 1: < 6000 lb.
- Class 2: 6001-10,000 lb.
- Class 3: 10,001-14,000 lb.
- Class 4: 14,001-16,000 lb.
- Class 5: 16,001-19,500 lb.
- Class 6: 19,501-26,000 lb.
- Class 7: 26,001-33,000 lb.
- Class 8: > 33,001 lb.

“Hybrid” shall mean a vehicle that combines an internal combustion engine with a battery and electric motor.

“Infrastructure” shall mean the equipment used to enable the use of electric powered vehicles (e.g., electric vehicle charging station).

“Intermodal Rail Yard” shall mean a rail facility in which cargo is transferred from drayage truck to train or vice-versa.

“Port Cargo Handling Equipment” shall mean rubber-tired gantry cranes, straddle carriers, shuttle carriers, and terminal tractors, including yard hostlers and yard tractors that operate within ports.

“Plug-in Hybrid Electric Vehicle (PHEV)” shall mean a vehicle that is similar to a Hybrid but is equipped with a larger, more advanced battery that allows the vehicle to be plugged in and recharged in addition to refueling with gasoline. This larger battery allows the car to be driven on a combination of electric and gasoline fuels.

“Repower” shall mean to replace an existing engine with a newer, cleaner engine or power source that is certified by EPA and, if applicable, CARB, to meet a more stringent set of engine emission standards. Repower includes, but is not limited to, diesel engine replacement with an engine certified for use with diesel or a clean alternate fuel, diesel engine replacement with an electric power source (e.g., grid, battery), diesel engine replacement with a fuel cell, diesel engine replacement with an electric generator(s) (genset), diesel engine upgrades in Ferries/Tugs with an EPA Certified Remanufacture System, and/or diesel engine upgrades in Ferries/Tugs with an EPA Verified Engine Upgrade. All-Electric and fuel cell Repowers do not require EPA or CARB certification.

“School Bus” shall mean a Class 4-8 bus sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events. May be Type A-D.

“Scrapped” shall mean to render inoperable and available for recycle, and, at a minimum, to specifically cut a 3-inch hole in the engine block for all engines. If any Eligible Vehicle will be replaced as part of an Eligible project, Scrapped shall also include the disabling of the chassis by cutting the vehicle’s frame rails completely in half.

“Tier 0, 1, 2, 3, 4” shall refer to corresponding EPA engine emission classifications for nonroad, locomotive, and marine engines.

“Tugs” shall mean dedicated vessels that push or pull other vessels in ports, harbors, and inland waterways (e.g., tugboats and towboats).

“Zero Emission Vehicle (ZEV)” shall mean a vehicle that produces no emissions from the on-board source of power (e.g., All-Electric or hydrogen fuel cell vehicles).



ATTACHMENT 3

**The DERA Option, Eligible Mitigation Action #10  
under the Volkswagen Partial Settlement**

## **The DERA Option: Eligible Mitigation Action #10 under the Volkswagen Settlement, Appendix D**

### **Factsheet for States, District of Columbia and Puerto Rico**

#### **Background**

The United States government and Volkswagen (VW) have resolved allegations that VW violated the Clean Air Act by selling approximately 590,000 vehicles equipped with defeat devices. As a part of this settlement, VW is required to provide \$2.7 billion for the 2.0 liter violating engines and \$225 million for the 3.0 liter violating engines to an environmental trust to fully remediate the amount of excess NO<sub>x</sub> emissions from the affected vehicles. There are two mitigation trust agreements: one for states, Puerto Rico, and the District of Columbia and one for federally recognized Indian tribes. The trusts will be administered by Wilmington Trust, an independent trustee. The provisions of the mitigation trusts are found largely in paragraphs 14–19 of the Consent Decree and Appendix D to the Consent Decree. The purpose of the mitigation trusts is to fund eligible mitigation actions that replace diesel emission sources with cleaner technology, thereby offsetting the excess emissions of nitrogen oxides (NO<sub>x</sub>) caused by the violating 2.0 and 3.0 liter vehicles. This mitigation work is in addition to the emission reductions achieved by requiring Volkswagen to buy back or modify the violating 2.0 and 3.0 liter vehicles.

The settlement is structured to provide the states, Puerto Rico, the District of Columbia, and federally recognized Indian tribes with the ability to select and implement appropriate mitigation actions funded by Volkswagen. Appendix D-1B to the Consent Decree provides the allocation of funds, under which no state receives less than \$8.125 million and Indian tribes receive a separate allocation of approximately \$59 million. Appendix D-2 provides a broad array of Eligible Mitigation Actions (EMAs) that beneficiaries can implement. Beneficiaries must elect to become beneficiaries within 60 days after the executed trust agreements have been filed with the Court (Trust Effective Date). Beneficiaries have 10 years from the Trust Effective Date to request their allocation and implement mitigation actions.

Eligible Mitigation Actions 1-9 may be implemented directly by the beneficiary; eligibility determinations and funding requests under EMAs 1-9 will be handled by the beneficiary. EMA Option 10 (DERA Option), allows states and tribes to use mitigation trust funds under specific EPA Diesel Emissions Reduction Program (DERA) grants. This document serves to distinguish between EMAs 1-9 and the DERA Option, as well as provide guidance for those states choosing to implement the DERA Option. For the purposes of this document, the term “state” will be used to describe the 50 states, the District of Columbia and Puerto Rico. Separate guidance will be provided for tribes.

#### **Eligible Mitigation Actions**

The information in Table 1 summarizes the eligible vehicles and equipment, emissions reduction activities, and applicable funding limits allowed under EMAs 1-9 versus those allowed under the

DERA Option. Many types of projects are eligible under both EMAs 1-9 and the DERA Option. However, there are some differences between the options in terms of project eligibility and funding limits for certain types of projects. Activities allowed under the DERA Option, that are not eligible under EMAs 1-9, are highlighted below in Table 1. Beneficiaries may split their Mitigation Trust Funds between EMAs 1-9 and the DERA Option as they choose.

Under VW EMAs 1-9, only a certain portion of the cost of an activity is eligible for funding through the trust. The mitigation trust funding limits (percentages) shown in Table 1, column 1, represent the maximum portion of the costs that can be covered with mitigation trust funds under EMAs 1-9. The rest of the cost must be borne from other sources of funds.

Under VW EMA 10, the DERA Option, only a certain portion of the cost of an activity is eligible for funding under EPA’s State Clean Diesel Grant Program. The DERA funding limits (percentages) shown in Table 1, column 2, represent the maximum portion of the costs that can be covered with a combination of DERA funds and any non-federal voluntary matching funds provided by a grantee. The portion of the costs that exceed the DERA funding limit is referred to as the “mandatory cost-share,” and is the responsibility of the grantee. Voluntary and mandatory cost-shares are discussed in more detail below under “Implementing the DERA Option.”

Where the funding limit in Table 1 is listed as a range, the funding limit varies based on the specific type of engine purchased (e.g. conventional diesel vs electric). Full details on EMAs 1-9 may be found in Appendix D, and full details on eligible DERA activities may be found in the applicable EPA State Clean Diesel Grant Program Information Guide. Additionally, a more detailed version of the information provided in Table 1, containing more specific eligibility information and funding limits, is available in *Detailed Comparison of Volkswagen Eligible Mitigation Action 1-9 and Eligible Mitigation Action #10 (DERA Option)* at [www.epa.gov/cleandiesel/volkswagen-vw-settlement-dera-option](http://www.epa.gov/cleandiesel/volkswagen-vw-settlement-dera-option).

**Table 1. Comparison of EMAs 1-9 and EMA 10 (DERA Option)**

<b>VW EMAs 1-9</b> Eligible Activities and Mitigation Trust Funding Limits	<b>VW EMA 10 (DERA Option)</b> Eligible Activities and DERA Funding Limits*
<p><b>Class 4-7 Local Freight Truck</b>  <b>Class 8 Local Freight Trucks</b>  <b>Class 8 Port Drayage Trucks</b></p> <p>Engine Model Year 1992-2009                      Engine Replacement: 40-75% non-gov, 100% gov                      Vehicle Replacement: 25-75% non-gov, 100% gov</p> <p>Engine Model Year 2010-2012 only where State regulations already require upgrades to 1992-2009 engine model year trucks                      Engine Replacement: 40-75% non-gov, 100% gov                      Vehicle Replacement: 25-75% non-gov, 100% gov</p>	<p><b>Class 5-8 All Diesel Highway Vehicles</b>  <b>Class 8 Diesel Drayage Trucks</b></p> <p>Engine Model Year 1995-2006                      Engine Replacement: 40-60%                      Vehicle Replacement: 25-45% (50% for Dray)                      Retrofits +/- Aero, LRR Tires: 100%                      Idle Reduction: 25%                      Clean Alternative Fuel Conversion: 40%</p> <p>Engine Model Year 2007-2009                      Engine Replacement (All-electric): 60%                      Vehicle Replacement (All-electric): 45% (50% for Dray)                      Retrofits +/- Aero, LRR Tires: 100%                      Idle Reduction (no APUs or generators): 25%                      Clean Alternative Fuel Conversion: 40%</p>

<b>VW EMAs 1-9</b> Eligible Activities and Mitigation Trust Funding Limits	<b>VW EMA 10 (DERA Option)</b> Eligible Activities and DERA Funding Limits*
<p><b>Class 4-8 School Bus</b> <b>Class 4-8 Shuttle or Transit Bus</b></p> <p>Engine Model year 2009 or Older  Engine Replacement: 40-75% non-gov, 100% gov  Vehicle Replacement: 25-75% non-gov, 100% gov</p> <p>Engine Model Year 2010-2012 only where State regulations already require upgrades to 1992-2009 engine model year buses  Engine Replacement: 40-75% non-gov, 100% gov  Vehicle Replacement: 25-75% non-gov, 100% gov</p>	<p><b>Type A, B, C, D Diesel School Bus</b> <b>Class 5-8 Diesel Shuttle, Transit or Other Bus</b></p> <p>Engine Model Year 1995-2006  Engine Replacement: 40-60%  Vehicle Replacement: 25-45%  Retrofits +/- Aero, LRR Tires: 100%  Idle Reduction: 25%  Clean Alternative Fuel Conversion: 40%</p> <p>Engine Model Year 2007-2009  Engine Replacement (All-electric): 60%  Vehicle Replacement (All-electric): 45%  Retrofits +/- Aero, LRR Tires: 100%  Idle Reduction (no APUs or generators): 25%  Clean Alternative Fuel Conversion: 40%</p>
<p><b>Freight Switchers</b> 1000+ hours per year</p> <p>Pre-Tier 4  Engine Replacement: 40-75% non-gov, 100% gov  Vehicle Replacement: 25-75% non-gov, 100% gov</p>	<p><b>Diesel Locomotives</b> 1000+ hours per year</p> <p>Unregulated - Tier 2 <b>Line Haul</b> and Switcher  Tier 2+ Switcher  Engine Replacement: 40-60%  <b>Remanufacture: 40%</b>  Vehicle Replacement: 25-45%  <b>Retrofits: 100%</b>  <b>Idle Reduction/Shorepower: 40%</b></p> <p><b>Tier 2+ Line Haul</b>  <b>Retrofits: 100%</b>  <b>Idle Reduction/Shorepower: 40%</b>  <b>Remanufacture: 40%</b></p>
<p><b>Ferries/Tugs</b></p> <p>Unregulated-Tier 2 Ferry and Tug Engines  Engine Replacement/Reman/Upgrade:  40-75% non-gov, 100% gov  Vehicle Replacement: 25-75% non-gov, 100% gov</p>	<p><b>Marine Diesel Engines</b> 1000+ hours per year</p> <p>Unregulated-Tier 2 <b>Marine Engines</b>  Engine Replacement/Reman/Upgrade: 40-60%</p>
<p><b>Ocean Going Vessel and Great Lakes Vessels Shorepower</b></p> <p>Costs associated with the shore-side system and installation  Non-government Owned: 25%  Government Owned: 100%</p>	<p><b>Marine Shore Power Connection Systems</b></p> <p>Costs associated with the shore-side system and installation: 25%</p>

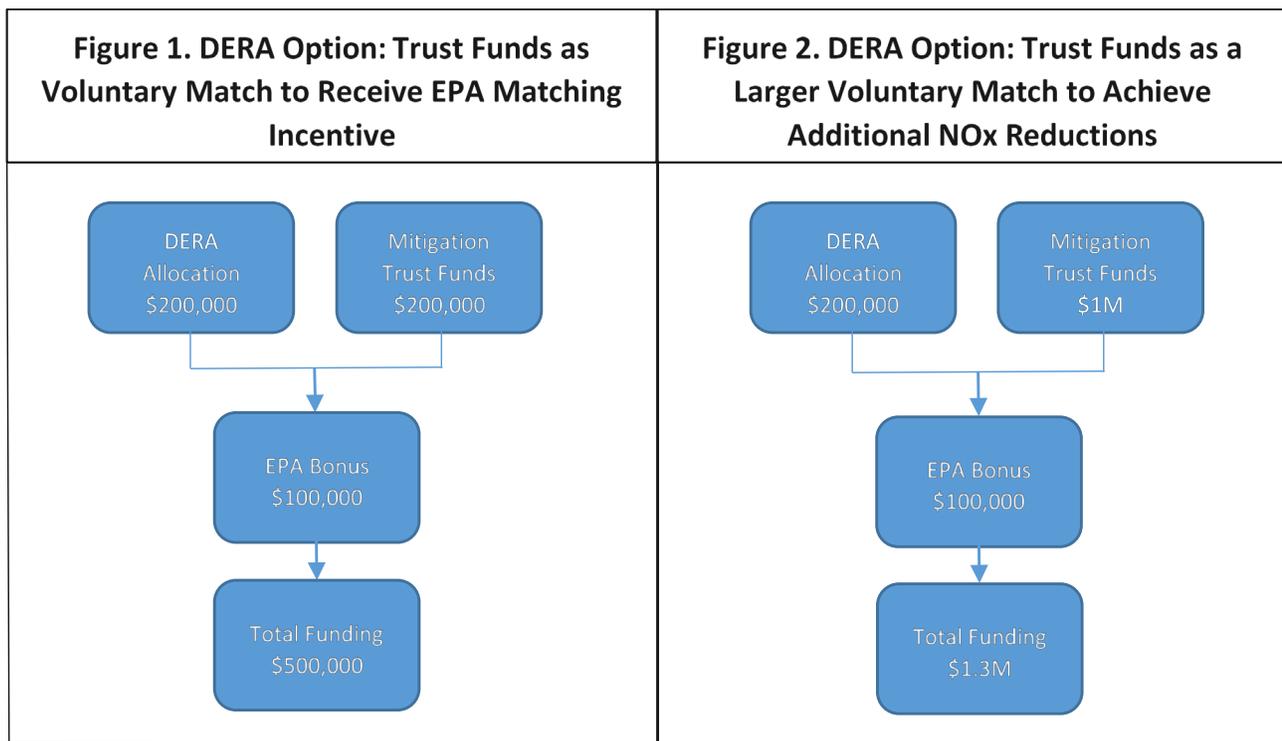
<b>VW EMAs 1-9</b> Eligible Activities and Mitigation Trust Funding Limits	<b>VW EMA 10 (DERA Option)</b> Eligible Activities and DERA Funding Limits*
	<b>Electrified Parking Spaces (EPS)</b>  Costs associated with the equipment and installation to provide off-board electrical power to heating/cooling/electrical systems of hoteling trucks, or to plug-in trailer refrigeration systems: 30%
<b>Airport Ground Support Equipment (GSE)</b>  Tier 0-Tier 2 Diesel engines Uncertified, or certified to 3 g/bhp-hr or higher emissions, spark ignition engines Engine Replacement (All-electric): 75% non-gov, 100% gov Vehicle Replacement (All-electric): 75% non-gov, 100% gov	<b>Nonroad Diesel Engines</b> <b>Construction</b> , Cargo Handling (Ports and Airports), <b>Agriculture, Mining, Energy Production</b> 500+ hours per year  Tier 0-Tier 3 0-50 HP, 2005 and newer 51-300 HP, 1995 and newer 301+ HP, 1985 and newer  Engine Replacement/ <b>Reman/Upgrade</b> : 40-60% <b>Vehicle/Equipment Replacement (Diesel, Alt Fuel, Hybrid)</b> : 25-35% Vehicle/Equipment Replacement (All-electric): 45% <b>Retrofits</b> : 100% <b>Engine Replacement (diesel, Alt Fuel)</b> : 40-50% Engine Replacement (All-electric): 60% <b>Reman/Upgrade</b> : 40%
<b>Forklifts and Port Cargo Handling Equipment</b>  Forklifts, reach stackers, side loaders, and top loaders with >8000lbs lift capacity Rubber-tired gantry cranes, straddle carriers, shuttle carriers, terminal tractors Engine Replacement (All-electric): 75% non-gov, 100% gov Vehicle Replacement (All-electric): 75% non-gov, 100% gov	
<b>Light Duty Zero Emission Vehicle Supply Equipment</b> A State may use up to fifteen percent (15%) of its allocation of Trust Funds on costs for the acquisition, installation, operation and maintenance of new light duty zero emission vehicle supply equipment for projects as specified in Appendix D-2, EMA #9.	

\*Notes:

- Project eligibility criteria and applicable funding limits for the DERA Option are subject to change pending final program guidance issued by EPA for the State Clean Diesel Grant Program.
- Items that are **highlighted** are allowed under the DERA Option, and are not eligible under EMAs 1-9.

## Implementing the DERA Option

As defined in Title 2 Code of Federal Regulations Section 200.99, *voluntary committed cost sharing (or matching)* means funds specifically pledged on a voluntary basis in the proposal's budget or the Federal award on the part of the non-Federal entity and that becomes a binding requirement of Federal award. Under the DERA Option, states may use mitigation trust funds as their non-federal voluntary match under EPA's State Clean Diesel Grant Program. Per DERA's statutory authority, if a state provides a voluntary match equal to the base allocation offered by EPA, EPA will provide a matching incentive equal to 50 percent of the base allocation. For example, if EPA offers a base allocation of \$200,000 to the state, the state could contribute \$200,000 of its Trust Funds as a voluntary match and the state would receive an additional \$100,000 in EPA funding as a matching incentive. The total project budget would then be \$500,000, not including any mandatory cost-share funds contributed by project partners, fleet owners, or other another source (not Federal or trust funds). See Figure 1 below for an example. In addition to a voluntary match provided by a state in order to receive the EPA matching incentive, a state may contribute mitigation trust funds as a larger voluntary match in order to achieve additional NOx reductions under their State Clean Diesel Program grant. See Figure 2 below for an example.



Any voluntary matching funds provided by the state, including mitigation trust funds, are subject to the DERA funding limits defined in the applicable State Clean Diesel Grant Program guidance. Many of the eligible project types under EPA's State Clean Diesel Grant Program are funded at less than 100% and therefore require a mandatory cost-share. These mandatory cost-share requirements are typically provided by project partners (e.g., fleet owners). **Mitigation trust funds cannot be used to meet the non-federal mandatory cost-share requirements of any DERA grant.** See Table 2 for a summary of DERA funding limits and mandatory cost-shares required under EPA's State Clean Diesel Grant Program.

It is possible that the state entity which is designated as the trust beneficiary is not the same entity that has been designated as the lead state agency which receives and administers DERA funds under the State Clean Diesel Grant Program. In these instances, the beneficiary and the state DERA grantee will need to coordinate project planning, reporting, and funding.

**Table 2. Maximum Funding Limits and Minimum Mandatory Cost-Shares for EPA’s State Clean Diesel Grant Program**

<b>DERA Eligible Activities</b>	<b>DERA Funding Limits (DERA Funds + Voluntary Match)</b>	<b>Minimum Mandatory Cost-Share (Fleet Owner Contribution)</b>
Exhaust Control Retrofit	100%	0%
Engine Upgrade / Remanufacture	40%	60%
Highway Idle Reduction	25%	75%
Locomotive Idle Reduction	40%	60%
Marine Shore Power	25%	75%
Electrified Parking Space	30%	70%
Engine Replacement – Diesel or Alternative Fuel	40%	60%
Engine Replacement – Low NOx	50%	50%
Engine Replacement – All-Electric	60%	40%
Vehicle/Equipment Replacement – Diesel or Alternative Fuel	25%	75%
Vehicle/Equipment Replacement – Low NOx	35%	65%
Vehicle/Equipment Replacement – All-Electric	45%	55%
Clean Alternative Fuel Conversion	40%	60%

Note: Project eligibility criteria and applicable funding limits for the DERA Option are subject to change pending final program guidance issued by EPA for the State Clean Diesel Grant Program

### **How to Apply Trust Funds to State Clean Diesel Grants**

At the beginning of the annual State Clean Diesel Grant Program cycle, EPA asks for a Notice of Intent to Participate from each state. After the Notice is submitted, states will submit final workplans and applications to EPA. States choosing to implement the DERA Option may include mitigation trust funds as a non-federal voluntary match in their State Clean Diesel Program applications as shown in Figures 1 and 2 above. States that wish to receive the matching incentive from EPA must include a voluntary match at least equal to the base EPA funding amount on their Notice of Intent to Participate and on their application submitted to EPA.

Note: If DERA funding is not available, then trust funds will not be available under the DERA Option until such time as DERA may be appropriated funding and the state is awarded a new State Clean Diesel Program grant.

## Reporting Requirements

Recipients of DERA grants must submit Quarterly Programmatic Reports and a Final Programmatic Report to EPA as required under the DERA grant terms and conditions. A beneficiary implementing the DERA Option may submit its DERA reports to the trustee to fulfill its reporting requirement for any portion of its mitigation trust funds utilized under the DERA Option. Additionally, a beneficiary may submit its state's Final Approved State Clean Diesel Workplan to the trustee as its beneficiary Mitigation Plan and as its funding request for actions funded under the DERA Option.

## Resources

Link to Consent Decree: [www.epa.gov/enforcement/partial-consent-decree-volkswagen](http://www.epa.gov/enforcement/partial-consent-decree-volkswagen)

State Program Guide and information: [www.epa.gov/cleandiesel/clean-diesel-state-allocations](http://www.epa.gov/cleandiesel/clean-diesel-state-allocations)

## Questions

Please submit questions related to the **DERA Option** to the Clean Diesel helpline.

Clean Diesel Helpline: [CleanDiesel@epa.gov](mailto:CleanDiesel@epa.gov) | 1-866-623-2322

Questions about the rest of the Consent Decree, including EMAs 1-9, should be directed to your state agency designated as the beneficiary.

## Detailed Comparison of VW Eligible Mitigation Action 1-9 and Eligible Mitigation Action #10 (DERA Option)

<u>Eligible Mitigation Actions 1-9*</u>				<u>Eligible Mitigation Action 10: DERA Option**</u>		
Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks) Class 4-7 Local Freight Trucks (Eligible Medium Trucks) For, 1) Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year trucks at the time of the proposed EMA, and 2) Eligible Trucks shall also include 2010-2012 engine model year trucks.				Class 5-8 Medium and Heavy Duty Highway Vehicles (including Drayage Trucks)		
Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	Trust Funding Limits		Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	DERA Funding Limits
		Non-Gov. Owned	Gov. Owned			
Engine replacement with new diesel or alternate fueled engine, MY (model year) in which the EMA occurs or one engine model year prior	1992-2009	40%	100%	Engine replacement with diesel or alternate fueled engine, 2017 MY or newer	1995-2006	40%
				Engine replacement with engine certified to CARB's Optional Low-NOx standards, 2017 MY or newer	1995-2006	50%
Engine replacement with new all-electric engine, engine MY in which the EMA occurs or one engine MY prior	1992-2009	75%	100%	Engine replacement with an electric motor or an electric power source, 2017 MY or newer	1995-2009	60%
Vehicle replacement with new diesel or alternate fueled vehicle, engine MY in which the EMA occurs or one engine MY prior	1992-2009	25% (50% for Drayage)	100%	Vehicle replacement with diesel or alternate fueled vehicle, 2017 MY or newer engine (2012 MY or newer engine for Drayage)	1995-2006	25% (50% for Drayage)
				Vehicle replacement with vehicle powered by engine certified to CARB's Optional Low-NOx standards, 2017 MY or newer engine	1995-2006	35% (50% for Drayage)
Vehicle Replacement with all-electric vehicle, engine MY in which the EMA occurs or one engine MY prior	1992-2009	75%	100%	Vehicle replacement with all-electric vehicle, 2017 MY or newer engine	1995-2009	45% (50% for Drayage)
				Retrofits with verified exhaust control technologies (SCR is the only eligible retrofit technology for vehicles with 2007-2009 MY engines)	1995-2009	100%
				Verified Aerodynamic Technologies and Low Rolling Resistance Tires (in conjunction with above activities)	1995-2009	100%
				Verified Idle Reduction Technologies (APUs and generators are not eligible on vehicles with 2007-2009 MY engines)	1995-2009	25%
				Clean Alternative Fuel Conversion	1995-2009	40%

<u>Eligible Mitigation Actions 1-9*</u>				<u>Eligible Mitigation Action 10: DERA Option**</u>		
<b>Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Eligible Buses)</b> For, 1) Beneficiaries that have State regulations that already require upgrades to 1992-2009 engine model year buses at the time of the proposed EMA, and 2) Eligible Buses shall also include 2010-2012 engine model year class 4-8 school buses, shuttle buses, or transit buses.				<b>Type A, B, C, D Buses</b> <b>Class 5-8 Transit, Shuttle, or other buses</b>		
Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	Trust Funding Limits		Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	DERA Funding Limits
		Non-Gov. Owned	Gov. Owned			
Engine replacement with new diesel or alternate fueled engine, engine MY in which the EMA occurs or one engine model year prior	2009 and older	40%	100%	Engine replacement with diesel or alternate fueled engine, 2017 MY or newer	1995-2006	40%
				Engine replacement with engine certified to CARB's Optional Low-NOx standards, 2017 MY or newer	1995-2006	50%
Engine replacement with new all-electric engine, engine MY in which the EMA occurs or one engine MY prior	2009 and older	75%	100%	Engine replacement with an electric motor or an electric power source, 2017 MY or newer	1995-2009	60%
Vehicle replacement with new diesel or alternate fueled vehicle, engine MY in which the EMA occurs or one engine MY prior	2009 and older	25%	100%	Vehicle replacement with diesel or alternate fueled vehicle, 2017 MY or newer engine	1995-2006	25%
				Vehicle replacement with vehicle powered by engine certified to CARB's Optional Low-NOx standards, 2017 MY or newer engine	1995-2006	35%
Vehicle Replacement with all-electric vehicle with the engine MY in which the EMA occurs or one engine MY prior	2009 and older	75%	100%	Vehicle replacement with all-electric vehicle, 2017 MY or newer engine	1995-2009	45%
				Retrofits with verified exhaust control technologies (SCR is the only eligible retrofit technology for vehicles with 2007-2009 MY engines)	1995-2009	100%
				Verified Idle Reduction Technologies (APUs and generators are not eligible on vehicles with MY 2007-2009 engines)	1995-2009	25%
				Clean Alternative Fuel Conversion	1995-2009	40%

<b><u>Eligible Mitigation Actions 1-9*</u></b>				<b><u>Eligible Mitigation Action 10: DERA Option**</u></b>		
<b>Freight Switchers</b> Must currently operate 1000+ hours per year.				<b>Line Haul (freight and passenger) and Switcher Locomotives</b> Must currently operate 1000+ hours per year		
Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	Trust Funding Limits		Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	DERA Funding Limits
		Non-Gov. Owned	Gov. Owned			
Engine replacement with new diesel or alternate fueled engine or generator sets that are EPA certified for the engine MY in which the EMA occurs	Pre-Tier 4	40%	100%	Engine replacement with 2017 MY or newer Tier 4 engine	Unregulated – Tier 2; Tier 2+ switcher	40%
Engine replacement with new all-electric engine	Pre-Tier 4	75%	100%	Engine replacement with 2017 MY or newer all-electric engine	Unregulated – Tier 2; Tier 2+ switcher	60%
Locomotive replacement with new diesel or alternate fueled freight switcher that is EPA certified for the engine MY in which the EMA occurs	Pre-Tier 4	25%	100%	Locomotive replacement with equipment powered by a 2017 MY or newer engine (diesel or alternate fuel)	Unregulated – Tier 2; Tier 2+ switcher	25%
Locomotive replacement with new all-electric freight switcher	Pre-Tier 4	75%	100%	Locomotive replacement with 2017 MY or newer all-electric equipment	Unregulated – Tier 2; Tier 2+ switcher	45%
				Certified Remanufacture System or Verified Engine Upgrade	Unregulated - Tier 2+	40%
				Retrofit with verified exhaust control technology	Unregulated - Tier 2+	100%
				Idle reduction technology, including shore power	Unregulated – Tier 2+	40%
<b>Ferries/Tugs</b>				<b>Marine Engines</b> Must currently operate 1000+ hours per year.		
Engine replacement with new Tier 3 or 4 diesel or alternate fueled engine	Pre-Tier 3	40%	100%	Engine replacement with a 2017 MY or newer Tier 3 or Tier 4 engine (diesel or alternative fuel)	Pre-Tier 3	40%
Engine replacement with new all-electric engine	Pre-Tier 3	75%	100%	Engine replacement with 2017 MY or newer all-electric engine	Pre-Tier 3	60%
Certified Remanufacture System or Verified Engine Upgrade	Pre-Tier 3	40%	100%	Certified Remanufacture System or Verified Engine Upgrade	Pre-Tier 3	40%

<b>Eligible Mitigation Actions 1-9*</b>				<b>Eligible Mitigation Action 10: DERA Option**</b>		
<b>Ocean Going Vessels (OGV) Shore Power</b>				<b>Marine Shore Power Connection System</b>		
Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	Trust Funding Limits		Activity	Vehicle and Equipment Eligibility (Engine Model Year or Tier)	DERA Funding Limits
		Non-Gov. Owned	Gov. Owned			
Costs associated with shore-side system	n/a	25%	100%	Costs associated with shore-side system	n/a	25%
<b>Airport Ground Support Equipment Forklifts and Port Cargo Handling Equipment</b>				<b>Nonroad Diesel Engines</b>		
Engine replacement with new all-electric engine	GSE: Pre-Tier 3 diesel; 3 g/bhp-hr and higher spark ignition	75%	100%	Engine replacement with all-electric engine	0-50 HP = 2005 and newer;	60%
Equipment replacement with new all-electric equipment	Forklifts and Port CHE: Greater than 8000 lbs lift capacity			75%	100%	
				Engine replacement with a 2017 MY or newer engine (diesel or alternative fuel)	301+HP = 1985 and newer;	45%
				Equipment replacement with equipment powered by 2017 MY or newer engine (diesel or alternative fuel)	See FY2017 State Clean Diesel Program Guide for complete engine tier restrictions	40%
				Retrofit with verified exhaust control technologies		25%
				Verified Engine Upgrade		100%
				<b>Electrified Parking Spaces (Truck Stop Electrification)</b>		
				Labor and equipment of eligible EPA SmartWay verified electrified parking space technologies	n/a	30%
<b>Light Duty Zero Emission Vehicle Supply Equipment</b>						
Level 1, level 2, or fast charging equipment that is not consumer light duty electric vehicle supply equipment						
See Appendix D-2 for details						

\* The term "Repower" in the Consent Decree has been changed to "Engine replacement" for ease of comparison.

\*\* DERA Option eligibility and cost-shares are based on the FY2017 State Clean Diesel Program Guide. Subsequent years are subject to change.

## **Definitions/Glossary of Terms from Appendix D-2 to Partial Consent Decree MDL No. 2672 CRB (JSC)**

**“Airport Ground Support Equipment”** shall mean vehicles and equipment used at an airport to service aircraft between flights.

**“All-Electric”** shall mean powered exclusively by electricity provided by a battery, fuel cell, or the grid.

**“Alternate Fueled”** shall mean an engine, or a vehicle or piece of equipment which is powered by an engine, which uses a fuel different from or in addition to gasoline fuel or diesel fuel (e.g., CNG, propane, diesel-electric Hybrid).

**“Certified Remanufacture System or Verified Engine Upgrade”** shall mean engine upgrades certified or verified by EPA or CARB to achieve a reduction in emissions.

**“Class 4-7 Local Freight Trucks (Medium Trucks)”** shall mean trucks, including commercial trucks, used to deliver cargo and freight (e.g., courier services, delivery trucks, box trucks moving freight, waste haulers, dump trucks, concrete mixers) with a Gross Vehicle Weight Rating (GVWR) between 14,001 and 33,000 lbs.

**“Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Buses)”** shall mean vehicles with a Gross Vehicle Weight Rating (GVWR) greater than 14,001 lbs used for transporting people. See definition for School Bus below.

**“Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)”** shall mean trucks with a Gross Vehicle Weight Rating (GVWR) greater than 33,000 lbs used for port drayage and/or freight/cargo delivery (including waste haulers, dump trucks, concrete mixers).

**“Drayage Trucks”** shall mean trucks hauling cargo to and from ports and intermodal rail yards.

**“Forklift”** shall mean nonroad equipment used to lift and move materials short distances; generally includes tines to lift objects. Eligible types of forklifts include reach stackers, side loaders, and top loaders.

**“Freight Switcher”** shall mean a locomotive that moves rail cars around a rail yard as compared to a line-haul engine that move freight long distances.

**“Generator Set”** shall mean a switcher locomotive equipped with multiple engines that can turn off one or more engines to reduce emissions and save fuel depending on the load it is moving.

**“Government”** shall mean a State or local government agency (including a school district, municipality, city, county, special district, transit district, joint powers authority, or port authority, owning fleets purchased with government funds), and a tribal government or native village. The term ‘State’ means the several States, the District of Columbia, and the Commonwealth of Puerto Rico.

**“Gross Vehicle Weight Rating (GVWR)”** shall mean the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers, and cargo.

Class 1: < 6000 lb; Class 2: 6001-10,000 lb; Class 3: 10,001-14,000 lb; Class 4: 14,001-16,000 lb; Class 5: 16,001-19,500 lb; Class 6: 19,501-26,000 lb; Class 7: 26,001-33,000 lb; Class 8: > 33,001 lb

**“Hybrid”** shall mean a vehicle that combines an internal combustion engine with a battery and electric motor.

**“Intermodal Rail Yard”** shall mean a rail facility in which cargo is transferred from drayage truck to train or vice-versa.

**“Port Cargo Handling Equipment”** shall mean rubber-tired gantry cranes, straddle carriers, shuttle carriers, and terminal tractors, including yard hostlers and yard tractors that operate within ports.

**“Repower”** shall mean to replace an existing engine with a newer, cleaner engine or power source that is certified by EPA and, if applicable, CARB, to meet a more stringent set of engine emission standards. Repower includes, but is not limited to, diesel engine replacement with an engine certified for use with diesel or a clean alternate fuel, diesel engine replacement with an electric power source (grid, battery), diesel engine replacement with a fuel cell, diesel engine replacement with an electric generator(s) (genset), diesel engine upgrades in Ferries/Tugs with an EPA Certified Remanufacture System, and/or diesel engine upgrades in Ferries/Tugs with an EPA Verified Engine Upgrade. All-Electric and fuel cell Repowers do not require EPA or CARB certification.

**“School Bus”** shall mean a Class 4-8 bus sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events. May be Type A-D.

**“Tier 0, 1, 2, 3, 4”** shall refer to corresponding EPA engine emission classifications for nonroad, locomotive and marine engines.

**“Tugs”** shall mean dedicated vessels that push or pull other vessels in ports, harbors, and inland waterways (e.g., tugboats and towboats).

**“Zero Emission Vehicle (ZEV)”** shall mean a vehicle that produces no emissions from the on-board source of power (e.g., All-Electric or hydrogen fuel cell vehicles).





**COMMISSIONER BASIL SEGGOS**

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